Environmental Assessment

Conversion of the 939th Rescue Wing
at
Portland International Airport, Oregon

Headquarters, Air Force Reserve Command
Environmental Division

September 2002

ABBREVIATIONS AND ACRONYMS

°F	degrees Fahrenheit
142 FW	142nd Fighter Wing
939 ARW	939th Air Refueling Wing
939 RQW	939th Rescue Wing
AAQS	Ambient Air Quality Standards
ACM	Asbestos Containing Material
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AFPD	Air Force Policy Directive
AFRC	Air Force Reserve Command
AGE	aerospace ground equipment
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
AIRFA	American Indian Religious Freedom Act
ANCA	Airport Noise and Capacity Act
ANG	Air National Guard
ANGB	Air National Guard Base
AQCR	Air Quality Control Region
AQMD	Air Quality Management District
ARPA	Archeological Resources Protection Act
ART	Air Reserve Technician
AST	aboveground storage tank
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
BASH	Bird/Wildlife-Aircraft Strike Hazard
BCE	Base Civil Engineer
BMP	Best Management Practice
BOD	Biological Oxygen Demand
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Controlled Firing Area
CFR	Code of Federal Regulation
CO	Carbon Monoxide
CSAR	Combat Search and Rescue
CWA	Clean Water Act
CY	Calendar Year
dB	decibel
dBA	A-weighted decibel
DDE	dichlorodiphenyldichloroethane
DDT	dichlorodiphenyltrichloroethane
DEQ	Department of Environmental Quality
DNL	Day-Night Average Sound Level
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEMA	Federal Emergency Management Agency
FICON	Federal Interagency Committee on Noise
FIP	Federal Implementation Plan
FONSI	Finding of No Significant Impact
FY	Fiscal Year
g/m^2	grams per square meter
GOV	government-owned vehicle
gpm	gallons per minute
HAP	High Accident Potential
HAP	Hazardous Air Pollutant
HAZMAT	Hazardous Material
HSWA	Hazardous and Solid Waste Amendments
HUD	U.S. Department of Housing and Urban Development
IAP	International Airport
IFR	Instrument Flight Rules
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IMC	Instrument Meteorological Conditions
INM	Integrated Noise Model

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IRP	Installation Restoration Program
JP-8	jet aviation fuel
kg	Kilogram
km/h	Kilometer per hour
LATN	Low Altitude Tactical Navigation
LTM	Long Term Monitoring
LTO	landing-takeoff
mg/m^3	milligrams per cubic meter
mph	miles per hour
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NM	Nautical Mile
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
O_3	Ozone
ODFW	Oregon Fish and Wildlife
ORANG	Oregon Air National Guard
ORS	Oregon Revised Statutes
P.L.	Public Law
Pb	Lead
PCBs	Polychlorinated biphenyls
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
POL	Petroleum, Oils, and Lubricants
POV	privately-owned vehicle
ppm	parts per million
PSD	Prevention of Significant Deterioration
PSEL	Plant Site Emission Limits
QD	Quantity Distance
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROI	Region of Influence
SARA	Superfund Amendments and Reauthorization Act
SATAF	Site Activation Task Force
SEL	Sound Exposure Level
SHPO	State Historic Preservation Office
SIOP	Strategic Integrated Operations Plan
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
SPCC	Spill Prevention, Control, and Countermeasures
SWPC	Storm Water Pollution Prevention Control
TGO	touch-and-go
TMDL	Total Maximum Daily Load
tpy	tons per year
TSCA	Toxic Substances Control Act
TSP	total suspended particulate
U.S.	United States
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USDA-WA	U.S. Department of Agriculture-Wildlife Services
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UTA	Unit Training Assembly
VFR	Visual Flight Rule
VMC	Visual Meteorological Conditions
VMT	Vehicle Miles Traveled
VOC	volatile organic compound
μ/m^3	micrograms per cubic meter

ENVIRONMENTAL ASSESSMENT OF CONVERSION OF THE 939TH RESCUE WING, PORTLAND AIR NATIONAL GUARD BASE, OREGON

Portland International Airport, Oregon

SEPTEMBER 2002

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ENVIRONMENTAL ASSESSMENT OF
CONVERSION OF THE 939TH RESCUE WING
PORTLAND AIR NATIONAL GUARD BASE, OREGON

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1. Purpose of and Need for Proposed Action

1.1 Background

The Air Force Reserve Command (AFRC) currently bases the 939th Rescue Wing (939 RQW) at Portland Air National Guard Base (ANGB), Oregon. The current mission of the 939 RQW is to organize, train, and employ a combat-ready Rescue Wing to execute worldwide peacetime and Combat Search and Rescue (CSAR) operations in support of humanitarian and national security interests. Recent decisions have been made to consolidate all pararescue aircraft at active duty installations due to the high operations tempo of their mission. AFRC proposes to replace existing pararescue aircraft (i.e., HC-130P and C-130E aircraft and HH-60G helicopters) with KC-135R Stratotanker air-refueling aircraft. The current AFRC primary pararescue mission would be converted to an air-refueling mission. As a result, the existing 939 RQW would be converted to the 939th Air Refueling Wing (939 ARW). However, AFRC intends to maintain a pararescue team presence at Portland ANGB through the establishment of a Pararescue Squadron. The preparation of an Environmental Assessment (EA) has been undertaken to assess the potential environmental impacts associated with the proposed conversion.

The EA will address AFRC's Proposed Action and reasonable alternatives to the Proposed Action. It will be developed to analyze and document potential environmental consequences associated with the proposed activities associated with the aircraft and mission conversion. If the analyses presented in the EA indicate that implementation of the Proposed Action would not result in significant environmental or socioeconomic impacts, a Finding of No Significant Impact (FONSI) will be prepared. If significant environmental issues result that cannot be mitigated to insignificant, an Environmental Impact Statement (EIS) will be required.

A U.S. Air Force (USAF) representative will be the decision-maker. The decision-maker, based on the analysis in the EA, will decide whether there are significant adverse environmental impacts associated with the conversion of the 939 RQW. Based on the review of the analysis, the decision-maker will either sign a FONSI or recommend the analysis proceed to an EIS.

1.2 Purpose of the Action

USAF pararescue functions worldwide are considered to be low-density, high-demand, meaning that there are very few assets to perform a large and consistent number of missions. Many of the

missions are to rigorous overseas locations that are very demanding on the equipment and personnel. USAF senior leadership has decided the pararescue function should be more centrally controlled and managed to create efficiencies in the use of the equipment and the deployment of personnel. The purpose of the Proposed Action is to maintain a mission at Portland ANGB while complying with the decision to consolidate pararescue assets.

National security objectives determine the military's force structure and the accompanying mission for AFRC units. There is an increased reliance on AFRC units to fulfill primary missions traditionally assigned to active duty USAF units. Since the number of overseas active duty units have been reduced, United States (U.S.) based forces, including AFRC units, now have a relatively greater responsibility to respond to overseas threats and humanitarian efforts. The increased need for homeland defense has also added more requirements on U.S. based forces. These missions have created an increase in training requirements for U.S. based forces to be ready for any contingency. Aerial refueling is one of the many missions AFRC units accomplish to increase overall force readiness.

1.3 Location

Portland ANGB comprises 245.4 acres in the southeast portion of the Portland International Airport (IAP) within the City of Portland in Multnomah County, Oregon (see Figure 1-1). The Base's property consists of two parcels. Parcel 1 (19.9 acres) and Parcel 2 (225.5 acres) are both leased from the Port of Portland. Both leases terminate in 2029. Access to the Base is via Northeast Cornfoot Road (Cornfoot Road), which borders the Base's entire southern property line. The primary mission of the Base is to provide operational headquarters and training facilities for the Oregon Air National Guard's (ORANG) 142nd Fighter Wing (142 FW). Several other units each with their own military mission also occupy the Base. These include the 939 RQW and the ORANG's 116th Tactical Control Squadron, 244th Combat Communications Squadron, and 272nd Combat Communications Squadron.

1.4 Summary of Key Environmental Compliance Requirements

1.4.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) is a Federal statute requiring the identification and analysis of potential environmental impacts of proposed Federal actions before those actions

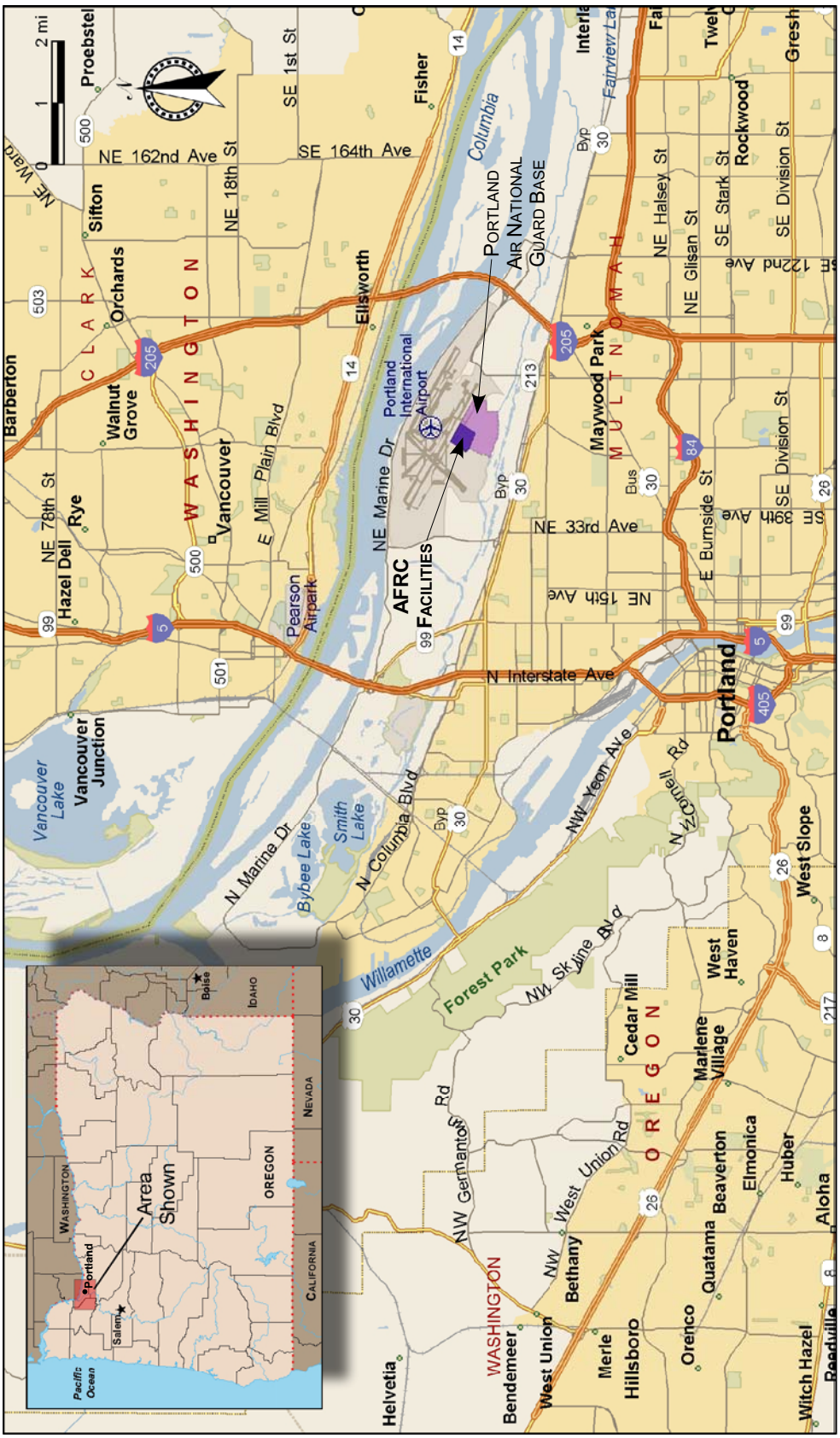

Figure 1-1. Location of Portland ANGB and Surrounding Area

are taken. NEPA legislated a structured approach to environmental impact analysis that requires Federal agencies to use an interdisciplinary and systematic approach in their decision-making process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. The intent of NEPA is to protect, restore, or enhance the environment through well-informed Federal decisions.

The process for implementing NEPA is codified in Title 40 of the Code of Federal Regulations (CFR), Parts 1500-1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee Federal policy in this process. To this end, the CEQ regulations specify that an EA be prepared to:

- Briefly provide evidence and analysis for determining whether to prepare an EIS or a FONSI
- Aid in an agency's compliance with NEPA when an EIS is unnecessary
- Facilitate preparation of an EIS when one is necessary.

Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF's implementing regulation for NEPA is 32 CFR Part 989, as amended, the *Environmental Impact Analysis Process (EIAP)*.

1.4.2 Integration of Other Environmental Statutes and Regulations

To comply with NEPA, the planning and decision-making process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decision-maker to have a comprehensive view of major environmental issues and requirements associated with the Proposed Action. According to CEQ regulations, the 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."

The EA will examine potential effects of the Proposed Action and alternatives on twelve resource areas, including airspace management, safety, air quality, noise, land use, geological

resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, hazardous materials and waste management, and transportation and circulation. The following paragraphs present examples of relevant laws, regulations, and other requirements that are often considered as part of the analysis.

Safety

- Air Force Instruction (AFI) 91-202, The U.S. Air Force Mishap Prevention Program, implements AFPD 91-2, Safety Programs
- AFI 91-301, Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program, implements AFPD 91-3, Occupational Safety and Health

Air Quality

- Clean Air Act (CAA) (42 United States Code [U.S.C.] 7401-7671g), as amended

Noise

- AFI 32-7063, Air Installation Compatible Use Zone (AICUZ) Program
- Airport Noise Capacity Act (ANCA)

Land Use

- Land use guidelines established by the U.S. Department of Housing and Urban Development (HUD) and based on findings of the Federal Interagency Committee on Noise (FICON) recommend acceptable levels of noise exposure for land use.

Water Resources

- Clean Water Act (CWA) 1977 (33 U.S.C. 1251 et seq., as amended)
- Water Quality Act of 1987 (Public Law [P.L.] 95-217)
- Executive Order (EO) 11988, Floodplain Management

Geological Resources

- EO 12699, Seismic Safety

Biological Resources

- Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.)
- EO 11990, Protection of Wetlands
- CWA, under Section 404

Cultural Resources

- National Historic Preservation Act of 1966 (NHPA) (16 U.S.C. 470 et seq.)
- Protection of Historic and Cultural Properties (36 CFR 800 [1986])
- Archeological Resources Protection Act of 1979 (16 U.S.C. 470aa-47011)
- EO 13007, Indian Sacred Sites
- EO 13175, Consultation and Coordination with Indian Tribal Governments

Socioeconomics and Environmental Justice

- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks

1.4.3 Interagency and Intergovernmental Coordination for Environmental Planning

NEPA requirements help ensure that environmental information is made available to the public during the decision-making process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process. CEQ regulations implementing NEPA specifically state, "There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process shall be termed scoping." The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. AFI 32-7060 requires the USAF to implement a process known as Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), which is used for the purpose of agency coordination and implements scoping requirements.

Through the IICEP process, AFRC notified relevant Federal, state, and local agencies of the action proposed and provided them sufficient time to make known their environmental concerns specific to the action. The IICEP process also provided AFRC the opportunity to cooperate with and consider state and local views in implementing the Federal proposal. Upon receipt, agency responses were provided to AFRC and incorporated into the analysis of potential environmental impacts performed as part of the EA. AFRC coordinated with agencies such as the Federal

Aviation Administration (FAA), U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), State Historic Preservation Offices (SHPOs), and other Federal, state, and local agencies. Appendix A includes a copy of the IICEP letter mailed to the agencies for this action, the IICEP distribution list, and agency responses.

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2. Description of Proposed Action and Alternatives

2.1 Introduction

Concerned with the structure of its force, decisions have been made by the USAF to consolidate all pararescue aircraft at active duty installations. This is due to the high operations tempo of their mission. This action would enable AFRC to maintain a military presence at Portland ANGB while complying with the USAF decision to consolidate pararescue aircraft. A Site Activation Task Force (SATAF) meeting was conducted at Portland ANGB in January 2001 to identify all of the necessary actions to support a new ARW at Portland ANGB. This section considers the Proposed Action and several alternatives to the Proposed Action.

2.2 Proposed Action

Headquarters AFRC proposes to replace existing pararescue aircraft (i.e., HC-130P and C-130E aircraft and HH-60G helicopters) with eight KC-135R Stratotanker air-refueling aircraft at Portland ANGB. The pararescue aircraft would be transferred to another stateside USAF base. The current AFRC primary pararescue mission would be converted to an air-refueling mission. The existing 939 RQW would be converted to the 939 ARW. As a result, AFRC operations at Portland ANGB would change. However, AFRC intends to maintain a pararescue team presence at Portland ANGB through the establishment of a Pararescue Squadron. Eleven construction, renovation, and demolition projects totaling approximately 16 acres would be required to support KC-135R aircraft at Portland ANGB. These projects would involve the demolition of existing infrastructure, new construction, and the development of new impervious surface area.

2.2.1 Mission

The proposed mission of the 939 ARW would be to supply the pilots, navigators, refueling-boom operators, and various support specialists to provide worldwide in-flight refueling for strategic bombers, reconnaissance aircraft, airborne warning and control system aircraft, airlift and fighter aircraft for the U.S. and its allies. Under the new mission, the 939 ARW would contribute force enhancement and deployment capability to support global reach and global power for America. Additionally, HQ AFRC desires to have all KC-135 aircraft tasked or capable of being tasked under the Strategic Integrated Operations Plan (SIOP). The SIOP supports the mission to deter

major military attack, especially nuclear attack, on the U.S. and its allies, and to employ forces if deterrence fails.

The current weekday population for permanent assigned Air National Guard (ANG) personnel at Portland ANGB is 537 civilian and military personnel. The AFRC weekday population for permanent assigned personnel is 222. During Unit Training Assembly (UTA) periods, the Base population increases substantially with up to 1,325 additional ANG and 736 traditional Reservists. As a result of the SATAF for the beddown of the KC-135R aircraft, it was determined that there would be a loss of four Air Reserve Technician (ART) personnel positions and 107 traditional Reservist positions. The number of permanent full-time civilian positions is not expected to change. In addition, 53 additional Pararescue Squadron personnel would be added.

AFRC considered other aircraft and missions for this conversion. These alternate missions and aircraft are discussed in Section 2.3.

2.2.2 Characteristics of the KC-135R Aircraft

The KC-135 Stratotanker is the mainstay of USAF aerial refueling. Over 730 aircraft were built of which 546 remain in the Air Force inventory. Some of those have been upgraded to keep them in service until 2020. The KC-135R Stratotanker is capable of refueling fixed-wing and rotary-wing aircraft. Fixed-wing aircraft are refueled with the refueling boom that extends from the bottom of the plane near the tail section. Rotary-wing aircraft and fixed-wing aircraft fitted with a probe are refueled using a hose and drogue system that extends from the wings of the airplane. The KC-135 is approximately 136 feet long, 38 feet high, and has a wingspan of almost 131 feet. It is capable of carrying just over 200,000 pounds of fuel. Depending on the fuel load configuration, the aircraft is capable of carrying up to 83,000 pounds of cargo and 37 troops. KC-135A aircraft were delivered to the USAF between 1957 and 1965. In 1984 a major KC-135A renovation program began resulting in the KC-135R. The renovation program continues today. Many major systems of the aircraft were improved in the renovation program. The most notable improvement is the new CFM-56 engine. Addition of the new engine allows the KC-135R to offload 50 percent more fuel, makes the aircraft 25 percent more fuel efficient, reduces operating costs by 25 percent, and makes the aircraft 96 percent quieter than the KC-135A.

The FAA classifies aircraft into three noise categories: Stage 1, Stage 2, and Stage 3 in order from loudest to the quietest. The KC-135R meets the standards for classification as a Stage 3 aircraft. The crew of a KC-135R is made up of two pilots, one navigator, and one boom operator. Figure 2-1 details some of the characteristics of the KC-135R aircraft.

2.2.3 Aircraft Operations

The KC-135R is a short to medium range tanker aircraft, meeting the air-refueling needs of USAF bomber, fighter, cargo, and reconnaissance forces. It also supports U.S. Army, U.S. Navy, U.S. Marine Corps, and allied aircraft. The typical air-refueling mission would use air-refueling tracks already established in the Department of Defense (DoD) *Flight Information Publication AP/1B, Area Planning, Military Training Routes* with generic routing to and from the tracks. These air-refueling tracks are located throughout the country. The 939 ARW would use air-refueling tracks on the west coast already used by KC-135 aircraft stationed at Beale Air Force Base (AFB), California and Fairchild AFB, Washington. Use of established airspace with a base altitude of 3,000 feet above ground level (AGL) does not require environmental analysis in accordance with the USAF *EIAP*, 32 CFR 989, as amended. The KC-135R does not require use of low-level (less than 3,000 feet AGL) airspace.

Aircraft operations consist of takeoffs, landings, touch-and-gos, and closed pattern flights. Operations at Portland IAP consist solely of takeoffs and landings for military aircraft assigned to the Portland ANGB. The 939 RQW performed a total of 1,992 aircraft operations in calendar year (CY) 2000. Of this total, the fixed-wing aircraft currently flown by the 939 RQW, the HC-130P and the C-130E, performed a combined 636 operations, while the HH-60G helicopters performed 1,356 operations. Should the KC-135R aircraft beddown at Portland ANGB, the 939 ARW would conduct approximately six to eight aircraft operations per day resulting in maximum of approximately 1,800 operations per year. These operations would occur Monday through Friday and on occasional weekends. Therefore, there would be a reduction of approximately 190 aircraft operations per year under the Proposed Action.

The Proposed Action would require the KC-135R aircraft to use alternative training locations for touch-and-go and closed pattern flights. Since a pilot performing a touch-and-go or a closed pattern flight essentially performs a landing and a takeoff, touch-and-gos and closed pattern flights are each counted as two operations. These operations are necessary for pilots and crew to maintain the required proficiency in their particular specialty. Approximately 37.5 percent or

Primary Function:	Aerial Refueling
Engines:	Four CFM-International F108-CF-100 turbofans
Thrust:	22,224 pounds (98.86kN) per engine
Cruise Speed:	530 mph (853km/h; Mach 0.71)
Maximum Speed:	600 mph (966km/h; Mach 0.80)
Range:	9,732 nm (18,024km) with 120,000 pounds (54,431kg) of transfer fuel; Unlimited with inflight refueling
Service Ceiling:	40,000 feet (12,192m)
Wingspan:	130 feet, 10 inches (39.87m)
Length:	136 feet, 3 inches (41.51m)
Height (at Tail):	41 feet, 8 inches (12.69m)
Maximum Takeoff Weight:	322,500 pounds (146,284kg)
Operating Weight:	119,231 pounds (54,082kg)
Fuel Capacity (all tanks and bladders):	203,000 pounds (92,079kg)
Maximum Payload:	83,000 pounds (37,648kg)
Number of 463L Pallets:	Six
Crew:	Four (two pilots, navigator, boom operator)
Cargo Compartment:	
Length:	84 feet, 4 inches (25.69m)
Width:	10 feet, 9 inches (3.29m)
Height:	6 feet, 6 inches (1.99m)

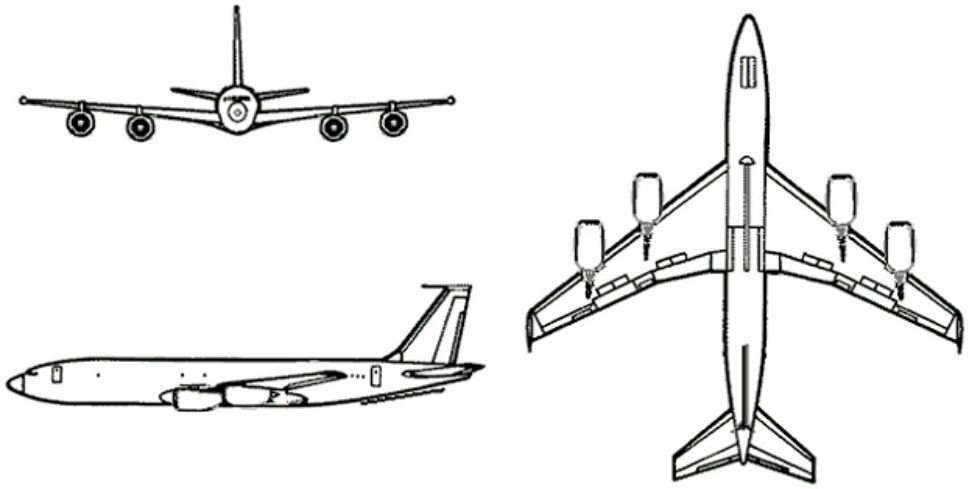


Figure 2-1. Characteristics of KC-135R

675 of the KC-135R aircraft taking off from Portland IAP would perform four aircraft operations at an alternate training location. A total of 2,700 touch-and-go closed pattern operations would occur at these sites. The alternate training locations potentially include; Klamath Falls IAP, Oregon; Beale AFB, California; and Grant County IAP, Washington. For planning and analysis

purposes, it will be assumed that KC-135R aircraft training operations would be evenly split among the three proposed alternate training locations, and that no more than 900 KC-135R aircraft training operations a year would be conducted at each of these sites.

2.2.4 Related Operations

The air-refueling mission would cause a substantial increase in the amount of aviation jet fuel (JP-8) that would be delivered to the Base. The current delivery method for JP-8 is by 10,000-gallon capacity tanker trucks that are owned and operated by a private entity. The 939 RQW and the 142 FW used approximately 8.0 million gallons of JP-8 to fuel all aircraft each year in CY1999 and CY2000. Should the full complement of eight KC-135R aircraft be stationed at Portland ANGB, the total amount of JP-8 needed for mission-related activities of the 939 ARW and 142 FW is estimated to be 16.6 million gallons per year.

Existing and proposed construction at Portland ANGB would meet a majority of the requirements for maintenance activities of the KC-135R. However, some engine testing operations may occur at facilities owned by the Port of Portland. Such testing would be done in accordance with the ORANG's Ground Run-up Use agreement. A state-of-the-art hush house (a facility used to contain a majority of the noise generated during engine testing) is located at Portland IAP and very close to Portland ANGB.

2.2.5 Proposed Construction Program

The existing infrastructure at Portland ANGB is inadequate to support the proposed mission. The Proposed Action includes eleven construction, renovation, and demolition projects that would be required to support the KC-135R aircraft mission at Portland ANGB. These projects are detailed below and summarized in Table 2-1. Figure 2-2 shows a map of Portland ANGB and Figure 2-3 shows the location of the proposed construction and demolition projects.

In July 2001, a Sustainability Planning meeting was held at Portland ANGB to determine the viability of promoting the tenets of sustainability as part of the design and use of the proposed facilities. Although not yet in effect, the draft Air Force Civil Engineering Sustainability Policy would be used to attempt to achieve optimum resource efficiency and minimize damage to the human and natural environments throughout the life cycle of a facility. A preliminary review indicates that although the concept of sustainability was not formally used, the facility projects in support of the Proposed Action appear to meet many of the sustainability goals.

Table 2-1. Proposed Construction Projects

Project No.	Project Title	FY	Demolition (sq. ft.)	Construction (sq. ft.)
1	Phase 1 - Aircraft Parking Overlay - Fuel Hydrant System	03	N/A	291,110
2	Phase 2 - Aircraft Parking Overlay - Fuel Hydrant System	04	N/A	291,110
3	Add/Alter Maintenance Hangar, Building 375	04	N/A	8,930
4	Alter Maintenance Hangar, Building 310	03	N/A	N/A
5	Modify Maintenance Shops, Buildings 360, 365, and 380	03	1,786	37,222
6	Modify Squadron Operations, Building 304	04	6,714	6,717
7	Fire/Crash Rescue Station	03	8,608	16,146
8	Aircraft Maintenance Hangar	05	N/A	25,834
9	Phase 1 - Consolidated Training Facility	03	N/A	3,380
10	Phase 2 - Consolidated Training Facility	04	N/A	16,157
11	Add/Alter Pararescue Squadron Facility, Building 315	04	N/A	6,980

Notes: FY – Fiscal Year
N/A – Not Applicable
sq. ft. – square feet

Project No. 1 — Phase 1 – Aircraft Parking Overlay – Fuel Hydrant System. The current parking ramp is inadequate to withstand the weight of the KC-135R. There would be a 6-inch structural concrete overly applied to the eastern half of the aircraft parking area. The Fuel Hydrant System is necessary to meet mission requirements for launching aircraft. A type-III hydrant system would be installed, including approximately 1,950 linear feet of pipeline from the pump house to the aircraft parking area and three aircraft fueling pits. The fueling pits would be capable of pumping 600 gallons of fuel per minute. A 10-foot blast fence would be installed approximately 50 feet from the southern edge of the existing parking apron to protect buildings, equipment, and personnel from the strong, turbulent exhaust of the KC-135R. Approximately 200 square feet of office space would be added to the Petroleum, Oil and Lubricants (POL) complex for AFRC fuels administrative personnel. This is Phase 1 of a 2-Phase project

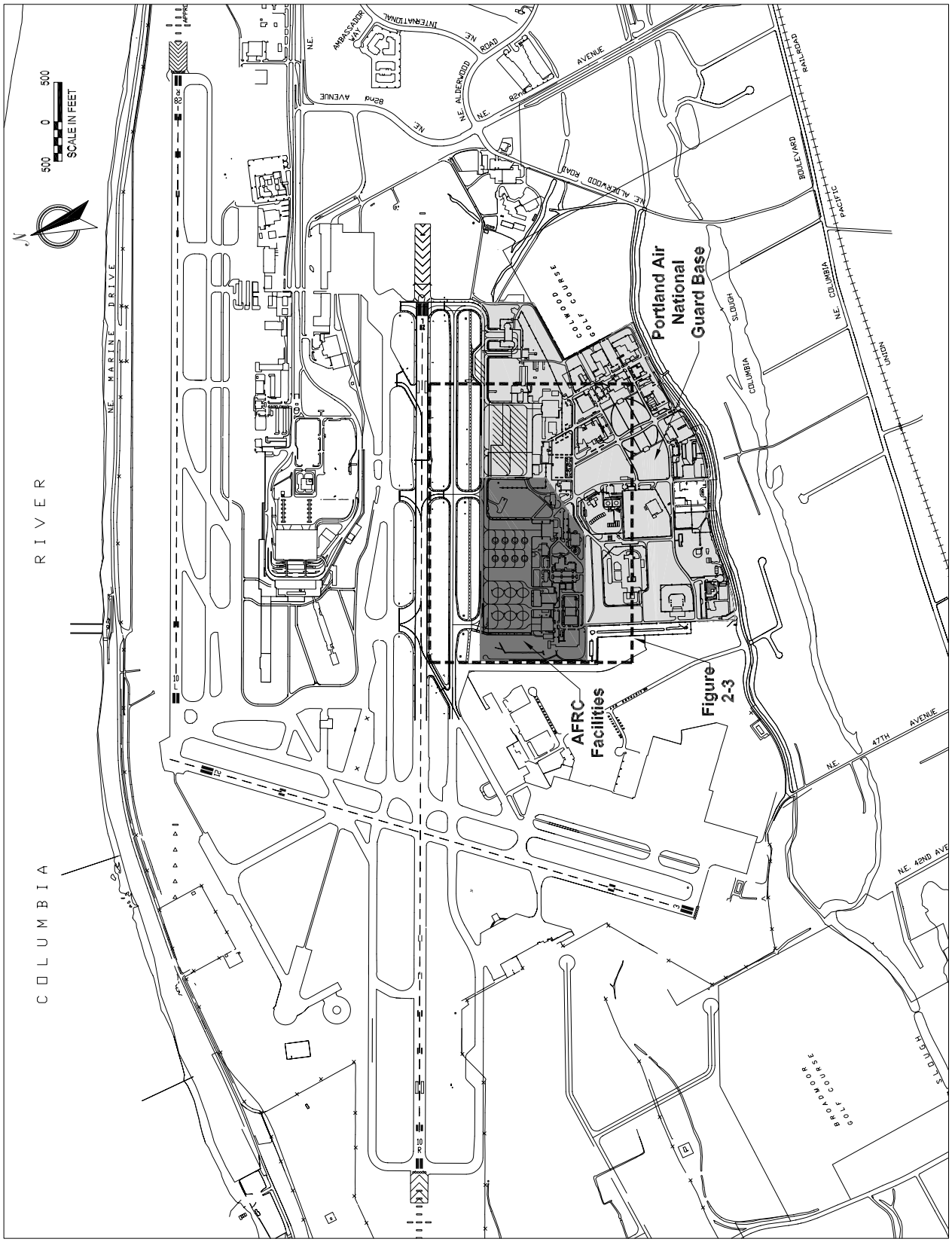


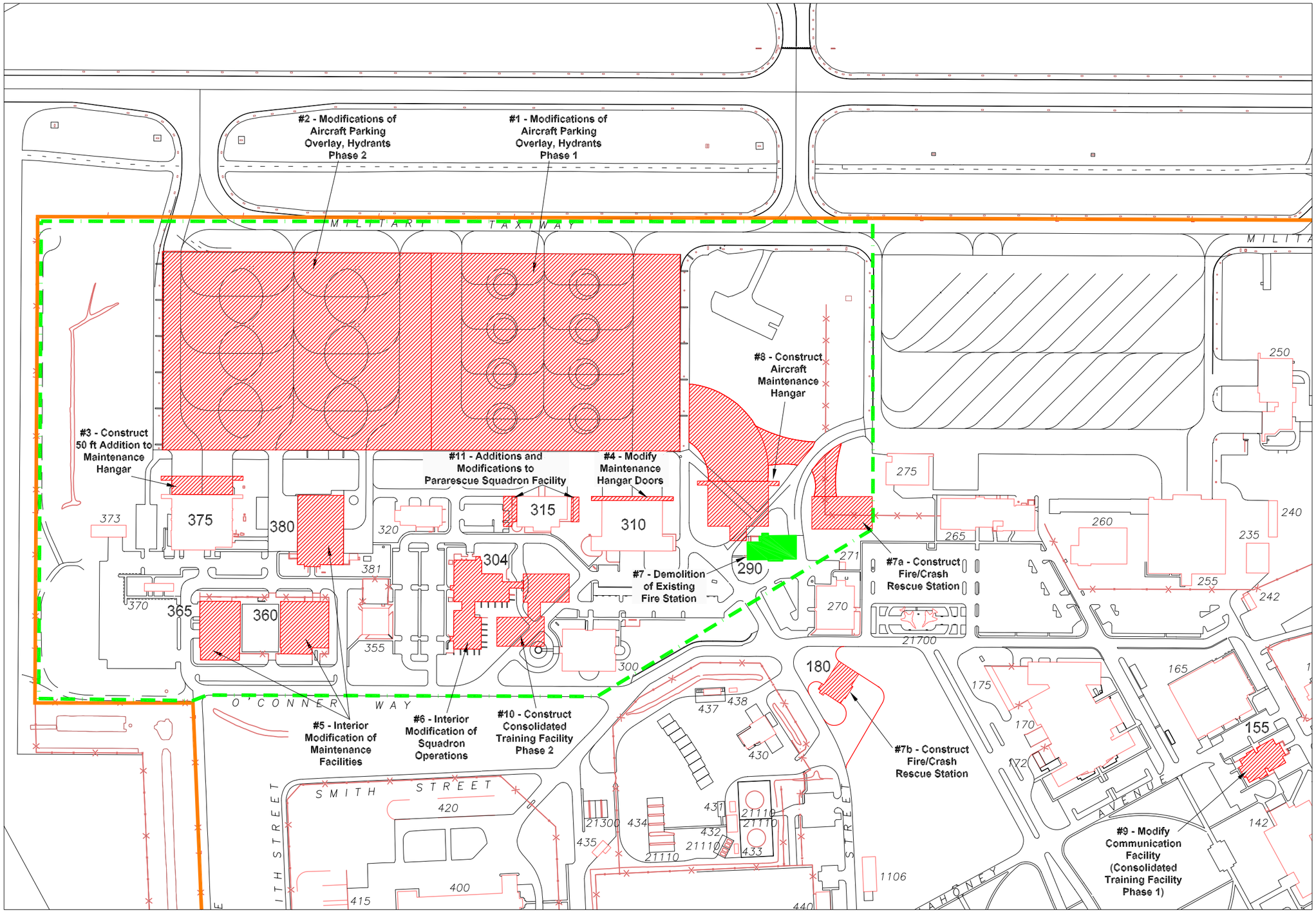
Figure 2-2. Portland ANGB and Surrounding Vicinity

Project No. 2 — Phase 2 – Aircraft Parking Overlay – Fuel Hydrant System. The hydrant system installed as part of Phase 1 (see Project No. 1) would be extended to cover three more KC-135R parking spaces. A 6-inch structural concrete overlay would be applied to the western half of the aircraft parking area. A 10-foot blast fence would be installed approximately 50 feet from the southern edge of the existing parking apron to protect buildings, equipment, and personnel from the strong, turbulent exhaust of the KC-135R.

Project No. 3 — Add/Alter Maintenance Hangar, Building 375. The addition would create a hangar large enough to contain a KC-135R aircraft so that fuel cell maintenance and corrosion control activities could be performed while protecting the aircraft and personnel from adverse weather. The addition would consist of a foundation, floor slab, reinforced concrete footings, structural steel framing, precast metal wall panels, metal roof decking, and preformed metal roofing panels, fascias, and trim. The addition includes building mechanical and electrical systems, site utilities, pavements, and site improvements. In addition, new hangar doors would be installed.

Project No. 4 — Alter Maintenance Hangar, Building 310. The proposed KC-135R aircraft is longer than the existing HC-130P and C-130E aircraft currently assigned to Portland ANGB. The existing three-section hangar doors on Building 310 would be modified by cutting the two center sections and their support structures to fit around the rear section of the KC-135R aircraft. This would allow for a majority of the KC-135R aircraft to be contained within the hangar during maintenance activities.

Project No. 5 — Modify Maintenance Shops, Buildings 360, 365, and 380. The modifications include the mechanical and electrical systems in Building 365 to switch the location of the engine shop and the aerospace ground equipment (AGE) shop. Building 360 would be modified to include a refueler boom maintenance area, hydraulics shop, avionics shop, and maintenance management and control offices. Approximately 1,800 square feet of the existing building would be demolished to make room for the new shops. Building 380 would be modified to consolidate the Aircraft Generation Squadron, deployable assets and mobility equipment storage, maintenance supply liaison, accessories shop, and support equipment storage.



LEGEND

- Building Construction/Modifications
- Building Demolitions
- AFRC Facilities
- Portland ANGB

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Figure 2-3. Locations of Proposed Construction and Demolition Projects at Portland ANGB

Project No. 6 — Modify Squadron Operations, Building 304. Current space is inadequate for the KC-135R squadron operations and life support functions. Modifications would be made to include interior demolition of 6,715 square feet and installation of interior walls and finishes to support squadron operations and life support functions.

Project No. 7 — Fire/Crash Rescue Station. Construction space is extremely limited at Portland ANGB, especially along the flightline. The existing fire station is located at the only viable site for the construction of Project No. 8 — Aircraft Maintenance Hangar. Therefore, the existing fire station would be demolished and a new facility would be constructed. The new facility would have a foundation, floor slab, reinforced concrete footings, structural steel framing, precast concrete wall panels, metal roof decking, and preformed metal roofing panels, fascias, and trim. There would be five vehicle bays and sufficient crew quarters and support areas in the building. There are two proposed siting locations for the proposed Fire/Crash Rescue Station (see Figure 2-3).

- *Project No. 7a — Fire/Crash Rescue Station*. The proposed location would be on the flightline adjacent to the location of the proposed Aircraft Maintenance Hangar (Project No. 8).
- *Project No. 7b — Fire/Crash Rescue Station*. The alternate location would be on the southeast corner of the intersection of Carey Street and O'Conner Way.

Project No. 8 — Aircraft Maintenance Hangar. The KC-135R aircraft requires a scheduled maintenance hangar that can support isochronal maintenance (regularly scheduled maintenance performed on airplanes, similar to having a car serviced). Some of the procedures performed during isochronal maintenance require the aircraft to be propped up on jacks. Because of the potential for severe weather at Portland ANGB (e.g., high winds and cold temperatures), a new facility is required that can totally enclose a KC-135R aircraft. The new facility would include a foundation, floor slab, reinforced concrete footings, structural steel framing, precast metal wall panels, metal roof decking, and preformed metal roofing panels, fascias, and trim.

Project No. 9 — Phase 1 – Consolidated Training Facility. Current space for the Command Post and facilities for handling of classified information at Portland ANGB are inadequate to support the needs of a KC-135R squadron. The new facility would have a foundation, floor slab, reinforced concrete footings, structural steel framing, precast concrete wall panels, metal roof decking, and preformed metal roofing panels, fascias, and trim.

Project No. 10 — Phase 2 – Consolidated Training Facility. The construction of the Consolidated Training Facility begun as part of Phase I (see Project No. 9) would be expanded to include space for 939 ARW staff functions presently located in the Squadron Operations facility. The new facility would have a foundation, floor slab, reinforced concrete footings, structural steel framing, precast concrete wall panels, metal roof decking, and preformed metal roofing panels, fascias, and trim.

Project No. 11 — Add/Alter Pararescue Squadron Facility, Building 315. Current space is inadequate to support the proposed increase of 53 personnel and equipment associated with the Pararescue Squadron. Building 315 would be modified by constructing a 5,800 sq. ft. addition to the building. In addition, a 1,180 sq. ft. covered storage area would be added to the eastern side of the building. The covered storage area would be unheated and open on the eastern side. Approximately 1,250 sq. ft. of interior modifications would also be made to Building 315.

2.3 Alternatives to the Proposed Action

As part of the NEPA process, potential alternatives to the Proposed Action must be evaluated. Two alternatives to the Proposed Action were considered to determine their feasibility as a viable alternative to conversion to KC-135R aircraft. These alternatives are as follows:

- Conversion to KC-135E aircraft
- Conversion to C-130E aircraft

A preliminary and subjective analysis was conducted to aid in determining the feasibility of the alternatives. Table 2-2 summarizes the results of the comparative analysis. A detailed discussion of the feasibility of converting the existing 939 RQW aircraft to the KC-135E and the C-130E are presented in Sections 2.3.1 and 2.3.2, respectively. In addition, the feasibility of locating the 939 ARW at an airfield other than Portland ANGB is discussed in Section 2.3.3.

2.3.1 Conversion to the KC-135E Aircraft

The KC-135E aircraft is a modified version of the KC-135A aircraft. It has JT3D engines, is 14 percent more fuel-efficient, and can offload 20 percent more fuel than the KC-135A. The KC-135E aircraft has the same dimensions (i.e., length, height, and wingspan) as the KC-135R aircraft (see Section 2.2.2). As previously mentioned, the FAA classifies aircraft into three

Table 2-2. Comparison of Aircraft Alternatives for Portland ANGB

Criteria	Aircraft		
	KC-135R	KC-135E	C-130E
Noise Levels	Slight increase, minimal impact	Significant increases, Major impact	No increase, Negligible impact
Air Emissions	Slight increase, negligible impact	Slight increase, negligible impact	Negligible
Anticipated Position of Port of Portland	Minimal opposition	Strong opposition	Minimal opposition
Expected Conversion Timeline and Potential Mitigation	9-12 months. Minimal mitigation anticipated.	18-24 months. Significant mitigation likely.	6-9 months. Negligible mitigation anticipated.
Aircraft Available	Yes	Yes	No

stages: Stage 1, 2, and 3 in order from loudest to the quietest. The KC-135E is equivalent to a Stage 1 aircraft. The current noise standard for civilian aircraft is Stage 3. As of January 1, 2000, all civil transport aircraft must comply with Stage 3 noise standards (ANCA of 1990). ANCA allows civil airports to restrict or deny operations of non-Stage 3 compliant aircraft. The Port of Portland has developed an active noise reduction program in an effort to be sensitive to local community requests for noise abatement. The Port of Portland would likely require the Air Force to adopt significant mitigation measures to minimize the noise impact of any aircraft stationed at Portland ANGB. The comparative analysis presented above led AFRC to determine that converting to KC-135Es is not a viable alternative. Therefore, the conversion to KC-135E aircraft will not be carried forward for further analysis.

2.3.2 Conversion to C-130E Aircraft

The C-130 Hercules is one of the USAF's most versatile tactical airlift aircraft. Over 2,000 C-130s have been built since the aircraft first flew in 1954. The C-130E is an extended-range development of the C-130B with large under-wing fuel tanks. The first C-130E was delivered to the USAF in April 1962 and 389 were eventually delivered. There were several modifications to the avionics aboard the aircraft. It can perform a large range of missions, but is primarily used for the tactical portion of the airlift mission. The aircraft is approximately 98 feet long, 38 feet

high, and has a wingspan of nearly 133 feet. It is capable of carrying approximately 45,000 pounds of cargo, 92 troops, 64 paratroops, or 74 stretchers. The crew of a C-130E is made up of two pilots, one navigator, one flight engineer, and one loadmaster. There are no C-130E aircraft available in the USAF inventory that could be relocated to Portland ANGB. Therefore, the conversion to C-130E aircraft at Portland ANGB will not be carried forward for further analysis.

2.3.3 Locating the 939 ARW at Another Airfield

The cost of relocation, infrastructure construction, movement of personnel and equipment, recruiting and retention, and loss to the local economy would not make this a viable option. In addition, personnel and the majority of facilities are already in-place at Portland ANGB. Therefore, locating the 939 ARW at another location is not considered to be a viable alternative and will not be carried forward for further analysis.

2.3.4 No Action Alternative

Under the No Action Alternative, the flying assets of the 939 RQW would be transferred to another USAF base, no new aircraft would be assigned to Portland ANGB, and no construction projects would be undertaken. The only military aircraft operations that would occur at Portland ANGB under the No Action Alternative would be associated with existing ORANG (F-15 aircraft) and transient aircraft. Airfield operations at Portland IAP would be reduced by approximately 2,000 operations per year and there would be no additional operations at any of the three alternate training locations. In addition, the Pararescue Squadron would not be established at Portland ANGB. Inclusion of the No Action Alternative is prescribed by the CEQ regulations and therefore, will be carried forward for further analysis in the EA.

The description of existing environmental conditions presented in Section 3, Affected Environment, reflects current conditions at Portland ANGB.

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3. Affected Environment

This section describes the environmental and socioeconomic conditions most likely to be affected by the Proposed Action and provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic impacts from implementation of the Proposed Action. Baseline conditions represent current conditions.

In compliance with NEPA, CEQ guidelines, and 32 CFR Part 989, as amended, the description of the affected environment focuses on those resources and conditions potentially subject to impacts. These resources and conditions include airspace management, safety, air quality, noise, land use, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, hazardous materials and waste management, and transportation and circulation.

The term "resource" refers to those aspects of the human environment that may be affected by a proposed action. Resource areas are organized into broad groupings of environmental assets such as water resources or biological resources. Some aspects of the environment reflect conditions imposed by humans. These include resource areas such as land use and hazardous waste. Analysis of potential environmental effects focuses on those resource areas that are appropriate for consideration in light of a proposed action. All resource areas are initially considered, but some may be eliminated from detailed examination because of their inapplicability to a particular proposal. The nature of the portion of the Proposed Action to occur at the alternate training locations only involves transient flying operations. The KC-135R aircraft assigned to the 939 ARW would only perform transient operations at the three locations. Therefore, resources to be analyzed at the training locations will be limited to those with the potential to be affected by the flying operations. Those resource areas include airspace management, air quality, safety, and noise. The following discussions identify major aspects of the resources and conditions and indicate the affected environment typically grouped under the major headings.

In compliance with NEPA, CEQ guidelines, and 32 CFR Part 989, as amended, the description of the affected environment focuses on those resources and conditions potentially subject to impacts. One environmental resource and condition that is often analyzed in an EA has been omitted from this analysis. The following details the basis for the exclusion:

- **Visual Resources.** The Proposed Action would be in compliance with the Base General Plan: therefore, there would be no changes to the visual and aesthetic resources at Portland ANGB. Individuals would notice a change in the type of military aircraft; however, the proposed KC-135R aircraft or an aircraft of similar type operates at Portland IAP and the three alternate training locations. Accordingly, the USAF has omitted detailed examination of visual resources.

The 939 RQW is a tenant on Portland ANGB. The 142 FW is the host organization for all military functions that occur at Portland ANGB. Most of the management functions for aircraft support operations at Portland ANGB are performed by the 142 FW. Because Portland ANGB is part of the Portland IAP property, which is managed by the Port of Portland, some of the resources will address requirements levied on or by Portland IAP while others are strictly constrained by the management auspices of Portland ANGB.

3.1 Airspace Management

3.1.1 Definition of the Resource

The USAF describes airspace management as the coordination, integration, and regulation of the use of airspace of defined dimensions. The objective of airspace management is to meet military training requirements through the safe and efficient use of available navigable airspace. This is to be accomplished in a peacetime environment, while minimizing the impact on other aviation users and the public (AFI 13-201).

There are two categories of airspace, or airspace areas: regulatory and non-regulatory. Within these two categories, further classifications include controlled, uncontrolled, special use, and airspace for special use. The categories and types of airspace are dictated by the following:

- Complexity or density of aircraft movement
- Nature of the operations conducted within the airspace
- Level of safety required
- National and public interest in the airspace

Controlled Airspace

Controlled airspace is a generic term that encompasses the different classifications (Class A, B, C, D, and E) of airspace and defines dimensions within which air traffic control service is provided to flight under instrument meteorological conditions (IMC), and to flights under visual

meteorological conditions (VMC). All military and civilian aircraft are subject to Federal Aviation Regulations (FARs).

Class A Airspace includes all operating altitudes of 18,000 feet above mean seal level (MSL) and above. Class A airspace is most frequently used by commercial aircraft using altitudes between 18,000 and 45,000 feet MSL.

Class B Airspace typically comprises contiguous cylinders of airspace, stacked one upon another and extending from the surface up to 10,000 feet AGL. To operate in Class B airspace, pilots must contact appropriate controlling agencies and receive clearance to enter the airspace. Additionally, aircraft operating within Class B airspace must be equipped with specialized electronics that allow air traffic controllers to accurately track aircraft speed, altitude, and position. Class B airspace is typically associated with major airport complexes such as Seattle-Tacoma IAP, Washington.

Class C Airspace can generally be described as controlled airspace that extends from the surface or a given altitude to a specified higher altitude. Class C airspace is designed and implemented to provide additional air traffic control into and out of primary airports where aircraft operations are periodically at high-density levels such as Portland IAP, Oregon. All aircraft operating within Class C airspace are required to maintain two-way radio communication with local Air Traffic Control (ATC) facilities.

Class D Airspace encompasses a five-statute-mile radius of an operating ATC-controlled airport such as Klamath Falls IAP, Oregon. It extends from the ground to 2,500 feet AGL or higher. All aircraft operating within Class D airspace must be in two-way communication with the ATC facility.

Class E Airspace can be described as general controlled airspace. It includes designated Federal airways consisting of the high altitude (J or "Jet" Route) system and low altitude (V or "Victor" Route) system. Federal airways have a width of four statute miles on either wide of the airway centerline and can be structured between the altitudes of 700 feet AGL and 18,000 feet MSL. These airways frequently intersect approach and departure paths from both military and civilian airfields. Class E airspace may range from ground level at non-towered airfields up to 18,000 feet MSL. The majority of Class E airspace is where more stringent airspace control has not been established.

Uncontrolled Airspace

Uncontrolled airspace (Class G) is not subject to restrictions that apply to controlled airspace. Limits of uncontrolled airspace typically extend from the surface to 700 feet AGL in urban areas, and from the surface to 1,200 feet AGL in rural areas. Uncontrolled airspace can extend above these altitudes to as high as 14,500 feet MSL if no other types of controlled airspace have been assigned. ATC does not have authority to exercise control over aircraft operations within uncontrolled airspace. Primary users of uncontrolled airspace are general aviation aircraft operating under VMC.

Special Use Airspace

Special Use Airspace consists of airspace within which specific activities must be confined, or wherein limitations are imposed on aircraft not participating in those activities. With the exception of Controlled Firing Areas (CFAs), special use airspace is depicted on aeronautical charts. Chart depictions include hours of operation, altitudes, and the agency controlling the airspace. All special use airspace descriptions are contained in FAA Order 7400.8.

Airspace for Special Use

Airspace for Special Use are areas used by military aircraft but do not put restrictions on non-participating aircraft. They are designated as such for informational purposes for general aviation. Examples of airspace for special use are military training routes, slow routes, and air-to-air refueling tracks/anchors.

Air-to-Air Refueling Tracks/Anchors are designated airspace by the FAA for air-to-air refueling operations. Refueling tracks have designated entry points (initial points), altitude blocks, and exit points. Refueling tracks are normally flown from point A to point B, a straight line. Refueling anchors have the same restrictions as refueling tracks. Refueling anchors are flown using a racetrack pattern to remain within designated airspace. Anchor tracks also may be associated with other designated airspace, such as ATC Assigned Airspace (ATCAA) or warning areas (over water). Such special use activities conducted at or above 3,000 ft AGL are categorically excluded from environmental analysis in accordance with the USAF *EIAP*, 32 CFR Part 989, as amended. Specifically, 32 CFR Part 989, as amended, states that "Formal requests [approved by] the FAA, or host-nation equivalent agency, to establish or modify special use airspace (for example, restricted areas, warning areas, military operating areas) and military

training routes for subsonic operations that have a base altitude of 3,000 feet above ground level or higher" are categorically excluded from environmental analysis.

The 939 RQW is the scheduling authority for the use of three bi-directional low-altitude VFR air-to-air refueling tracks. They are designated AR304AV/AR304BV, AR305AV/AR305BV and AR306AV/AR306BV. Altitude blocks range from 1,000 feet AGL up to 6,000 feet MSL. All of these refueling tracks are located in northwest Oregon, south and east of Portland. These refueling tracks are restricted to HH-60 and C-130 refueling operations only. Aircraft assigned to the 939 ARW would not use the air-to-air refueling tracks currently utilized by the 939 RQW.

The air-to-air refueling tracks/anchors that would be used by the 939 ARW for the refueling missions and the routes used to access the proposed alternate training locations are all located more than 3,000 feet AGL. The tracks/anchors that would be used are established air-refueling tracks found in the DoD *Flight Information Publication AP/1B, Area Planning, Military Training Routes* with generic routing to and from the tracks. Therefore, the proposed use of the existing refueling tracks/anchors do not require environmental analysis in accordance with the USAF *EIAP*, 32 CFR 989, as amended.

Low Altitude Tactical Navigation (LATN) Areas are locally designated and unpublished airspace with north, south, east, and west boundaries. LATN areas can be defined to as low as 300 feet AGL. They are designed to allow aircrews to practice tactical navigation and flying in areas of simulated and varied threat potential without being limited to flying a standardized, published route.

The 939 RQW maintains an HC-130 LATN area in Oregon and Washington. The type of military aircraft training activities conducted within LATNs do not require environmental analysis in accordance with the USAF *EIAP*, 32 CFR Part 989, as amended. Specifically, 32 CFR Part 989, as amended, states that "Flying activities that comply with Federal Aviation Regulations, that are dispersed over a wide area and that do not frequently (more than once a day) pass near the same ground points" need not be assessed. Furthermore, the LATN would not be used by KC-135R aircraft assigned to the 939 ARW and is therefore, not included for further analyses in this EA.

The region of influence (ROI) for airspace management is limited to the airspace in proximity to airfields at Portland IAP, Oregon; Klamath Falls IAP, Oregon; Beale AFB, California; and Grant County IAP, Washington.

3.1.2 Portland ANGB/Portland IAP

As previously stated, Portland ANGB is located on Portland IAP. Portland IAP is located on the south shore of the Columbia River, five miles northeast of downtown Portland, Oregon. Airport property encompasses approximately 3,200 acres. The Airport's two parallel primary runways are oriented in a northwest-southeast direction. One of the runways is 11,000 feet in length while the other runway is 8,000 feet in length. A third runway is oriented northeast-southwest, and is 7,000 feet long. Portland IAP is surrounded by Class C airspace up to 4,000 feet MSL.

As previously stated, the 939 RQW operates C-130E, HC-130P aircraft, and HH-60G helicopters at Portland IAP. Portland IAP totaled 314,378 aircraft operations in CY 2000. Of the total Portland IAP operations, 8,513 aircraft operations, or 2.41 percent, were performed by military aircraft. The 939 RQW aircraft accounted for 1,992 of the military aircraft operations. Table 3-1 shows the number of military operations flown by aircraft type at Portland IAP.

Table 3-1. Summary of Military Aircraft Operations at Portland IAP

Aircraft Type	Operations in CY 2000
Transients	671
F-15s	5,850
C-130	636
Helicopters	1,356
Total	**8,513**

3.1.3 Alternate Training Locations

In addition to the Portland IAP, the Proposed Action would require the use of three regional airfields for airfield operation training (i.e., touch-and-gos and closed pattern flights). The alternate training locations include; Klamath Falls IAP, Oregon; Beale AFB, California; and Grant County IAP, Washington. Although part of the Proposed Action, this section presents the existing conditions at these alternate training locations to form the basis of comparison to the proposed conditions presented in Section 4.1.3.

Klamath Falls International Airport

Klamath Falls IAP is located approximately five miles south of Klamath Falls, Oregon. The primary runway used by all military aircraft is oriented in a northwest/southeast direction, and is 10,301 feet long. A second runway oriented in a northeast/southwest direction, and is 5,258 feet in length. The second runway is only used when weather conditions restrict the use of the primary runway and is limited to use by commercial and private aircraft. Klamath Falls IAP is surrounded by Class D airspace up to 6,600 feet MSL.

A total of 41,554 aircraft operations were performed at Klamath Falls IAP in CY 2000. Military operations account for 9,605 or approximately 23 percent of the total operations conducted in CY 2000. ANG's 173rd Fighter Wing is located on Klamath Falls IAP and operated the F-15 aircraft. Table 3-2 summarizes the military operations conducted at Klamath Falls IAP in CY 2000. KC-135 aircraft currently perform operations at Klamath Falls IAP.

Table 3-2. Summary of Military Aircraft Operations at Klamath Falls IAP

Aircraft Type	Operations in CY 2000
F-15s	4,045
Transient	5,580
Total	**9,605**

The 939 RQW does not currently conduct military aircraft operations at Klamath Falls IAP.

Beale Air Force Base

Beale AFB is located in north-central California approximately 10 miles southeast of Marysville, California. The runway at Beale AFB is oriented northwest/southeast and is 12,000 feet long. Beale AFB is surrounded by Class C airspace up to 4,100 feet MSL. A total of 51,825 military operations were performed at Beale AFB during CY 1999 (the most current data available). Aircraft assigned to Beale AFB include KC-135, RC-135, and U-2 aircraft.

The 939 RQW does not currently conduct military aircraft operations at Beale AFB.

Grant County International Airport

Grant County IAP is located in eastern Washington, approximately 85 miles west-southwest of Spokane, Washington. The airport consists of two primary runways, and two shorter runways. One of the primary runways is oriented northwest/southeast and is 13,502 feet long, while the other primary runway is oriented northeast/southwest and is 9,999 feet long. One of the shorter runways is oriented northwest/southeast and is 3,025 feet long; while the other shorter runway is oriented north/south and is 3,263 feet long. Grant County IAP is surrounded by Class C airspace up to 3,700 feet MSL.

A total of 114,811 aircraft operations were performed at Grant County IAP during CY 1996 (the most current data available). The number of military aircraft operations accounted for 49,384, or 43 percent, of the total number of annual operations. KC-135 aircraft do not currently operate at Grant Count IAP. Table 3-3 depicts the military operations by aircraft type conducted at Grant County IAP.

Table 3-3. Summary of Military Aircraft Operations at Grant County IAP

Aircraft Type	Operations in CY 2000
A-6	677
C-17	41,255
C-130	2,032
P-3	5,420
Total	**49,384**

The 939 RQW does not currently conduct military aircraft operations at Grant County IAP.

3.2 Safety

3.2.1 Definition of the Resource

Aircraft Safety. The FAA is responsible for ensuring the safe and efficient use of the nation's airspace by military and civilian aircraft and for supporting national defense requirements. In order to fulfill these responsibilities, FAA requirements include enactment of safety regulations, management of airspace, establishment and operation of a civil-military common system, and cooperative activities with the DoD. The primary concern with regard to military training flights

is the potential for aircraft mishaps (i.e., crashes), which may be caused by mid-air collisions with other aircraft or objects, weather difficulties, or bird-aircraft strikes.

One of the public's primary safety concerns with regard to the Proposed Action is the potential for aircraft crashes and loss of life and property damage from military training flights. The environment for air safety is based on the physical risks associated with aircraft flight and current military operational procedures concerning air safety. Historical mishap databases enable the military to calculate the mishap rates for each type of aircraft. These rates are based on the estimated flying time that an aircraft is expected to be in the airspace, the accident rate per 100,000 flying hours for that aircraft, and the annual flying hours for that aircraft. Safe flying procedures, adherence to flight rules, and knowledge of emergency procedures form consistent and repeated aspects of training for all aircrews, including those assigned to the 939 RQW.

The USAF has defined four classifications of mishaps: Classes A, B, C, and High Accident Potentials (HAPs) (AFSC 2000a). Class A mishaps result in a fatality or permanent total disability; a total cost in excess of $1 million for injury, occupational illness, and property damage; or destruction or damage beyond repair to military aircraft. Class B mishaps result in permanent partial disability; a total cost in excess of $200,000 but less than $1 million for injury, occupational illness, and property damage; or hospitalization of five or more personnel. Class C mishaps result in total damages between $20,000 and $200,000. Mishaps not meeting the definitions of Classes A, B, and C, but, because of damage or injury necessitate USAF reporting, are classified as HAPs.

Bird/Wildlife-Aircraft Strike Hazard (BASH). BASH is defined as the threat of aircraft collision with birds during flight operations and is a safety concern at all airfields due to the frequency of aircraft operations and the possibility of encountering birds at virtually all altitudes. Most birds fly close to ground level, and more than 95 percent of all reported bird-strikes occur below 3,000 feet AGL. Further, at most military bases, about half of reported bird-strikes occur in the immediate vicinity of the airfield and another 25 percent occur during low-altitude local training exercises. Any gain in altitude represents a substantially reduced threat of a bird-aircraft strike (USAF 1997).

Construction and Explosives Safety. Siting requirements for explosive materials storage (e.g., munitions) and handling facilities are based on safety and security criteria. Air Force Manual 91-201 requires that defined distances be maintained between munitions and fuel storage areas

and a variety of other types of facilities. These distances, called quantity-distance (QD) arcs, are determined by the type and quantity of explosive material to be stored; each explosive materials storage or handling facility has QD arcs extending outward from its sides and corners for a prescribed distance. Within these QD arcs, development is either restricted or altogether prohibited in order to maintain safety of personnel and minimize the potential for damage to other facilities in the event of an accident. QD arcs for multiple facilities at a single site may overlap, leaving a series of arcs as edges of the safety zone. Explosive materials storage and handling facilities must also be located in areas where security can be assumed.

Regional Safety. Several organizations such as, the Oregon State Police, Washington State Police, National Park Service, U.S. Coast Guard, and other public and private groups combine planning functions and physical assets to affect the safety of the region. With the myriad of opportunities for sport and recreation as well as the adverse weather conditions that sometimes affect the region, there are occasions when the resources of these organizations are utilized to their fullest extent.

The ROI for the safety resource area includes aircraft safety as it pertains to airfield operations at Portland IAP, Oregon and the alternate training sites, areas on Portland ANGB where proposed construction activities would occur as it pertains to construction and explosives safety, and regional safety.

3.2.2 Portland ANGB/Portland IAP

Aircraft Safety. The most recent 10-years of historical data on C-130 and HH-60 mishaps are listed in Tables 3-4 and 3-5, respectively. Table 3-4 shows that the rate of Class A and Class B mishaps is less than two mishaps per 100,000 hours of flight time for the C-130 aircraft. Table 3-5 shows that the rate of Class A and Class B mishaps is approximately four mishaps per 100,000 hours of flight time for the H-60 helicopter.

The 142 FW Fire Department maintains a mutual assistance agreement with the Port of Portland. Both organizations have agreed to assist each other in responding to an aircraft mishap, whether the mishap involves a military or civilian aircraft.

Bird/Wildlife-Aircraft Strike Hazard. The 142 FW (939 RQW) actively implements the *142 FW Bird-Aircraft Strike Hazard Plan 91-212*, thereby reducing the potential for a bird strike to occur at the Base. Key elements of the plan include:

Table 3-4. Historical Data on C-130 Mishaps

Year	Class A		Class B		Fatal		Hours	Lifetime Cumulative Hours
	#	Rate [1]	#	Rate [1]	Pilot	All		
FY92	2	0.63	0	0.00	8	24	255,073	10,225,044
FY93	1	0.33	0	0.00	2	6	245,711	10,470,755
FY94	1	0.36	1	0.36	0	8	219,206	10,689,961
FY95	1	0.35	1	0.35	2	6	219,880	10,909,841
FY96	1	0.34	1	0.34	2	9	215,105	11,124,946
FY97	2	0.70	1	0.35	2	13	212,055	11,337,001
FY98	0	0.00	0	0.00	0	0	211,206	11,548,207
FY99	0	0.00	0	0.00	0	0	207,796	11,756,003
FY00	1	0.37	12	4.42	0	3	177,394	11,933,397
FY01	2	0.73	10	3.66	0	0	184,227	12,117,624
Lifetime	**79**	**0.65**	**127**	**1.05**	**134**	**629**	**12,117,624**	

Source: AFSC 2000a
Note: [1] Rate of mishaps per 100,000 hrs flown

Table 3-5. Historical Data on HH-60 Mishaps

Year	Class A		Class B		Fatal		Hours	Lifetime Cumulative Hours
	#	Rate [1]	#	Rate [1]	Pilot	All		
FY91	1	6.85	0	0.00	0	0	14,594	48,839
FY92	1	5.15	0	0.00	0	1	19,401	68,240
FY93	1	4.37	0	0.00	1	12	22,871	91,111
FY94	2	8.25	1	4.13	0	0	24,229	115,340
FY95	1	3.75	1	3.75	2	5	26,666	142,006
FY96	0	0.00	0	0.00	0	0	27,809	169,815
FY97	0	0.00	0	0.00	0	0	26,009	195,824
FY98	1	3.84	0	0.00	4	12	26,014	221,838
FY99	0	0.00	0	0.00	0	0	26,384	248,222
FY00	1	3.90	0	0.00	0	0	25,649	273,871
Lifetime	**9**	**3.29**	**2**	**0.73**	**9**	**34**	**273,871**	

Source: AFSC 2000a
Note: [1] Rate of mishaps per 100,000 hrs flown

- Participation in the Port of Portland Wildlife Advisory Committee and dissemination of information to Base leadership.
- Procedures for reporting hazardous bird activity and altering or discontinuing flying operations.
- Procedures to comply with recommendations of the Wildlife Advisory committee on the Portland ANGB side of Portland IAP.
- Provisions to dissemination information to all assigned and transient aircrews for specific bird hazards and procedures for avoidance.
- Procedures to eliminate or reduce environmental conditions that attract birds to the airfield.

Portland IAP possesses a large amount of wildlife habitat in relation to its overall acreage. Table 3-6 shows the wildlife strike data from CY1996 to CY2000 (USDA 2001).

Table 3-6. Portland IAP Wildlife Strikes CY 1996 – 2000

Wildlife Species (Common Name)	1996	1997	1998	1999	2000
Red-tailed Hawk	7	15	6	10	5
Gulls	9	5	11	5	7
Great Blue Heron	1	3	6	4	3
Mallard	2	8	5	4	5
Barn Owl	2	5	6	13	7
American Kestrel	5	1	2	2	7
European Starling	2	3	4	8	5
Swallow	2	1	3	1	15
Canada Geese	0	1	1	1	0
Sparrow	1	1	0	0	0
Crow	1	1	1	1	2
Meadowlark	1	0	0	0	0
Killdeer	0	4	0	0	1
Dove and Pigeon	0	1	1	1	2
Parakeet	0	0	0	1	0
Coyote	0	0	0	1	0
Swift	0	0	0	3	0
Northern Harrier	0	0	0	1	1
Nighthawk	0	0	0	0	1
Turkey Vulture	0	0	0	1	0
Common Snipe	0	0	0	0	2
Unknown	12	0	12	19	14
Totals	**45**	**49**	**58**	**76**	**77**

Source: USDA 2001

The information presented in Table 3-6 indicates that birds pose the greatest wildlife threat to aviation. Larger birds generally cause more damage than smaller birds. However, there are exceptions to these general trends, and minimizing the activities of certain mammals or birds can be very important even though they do not constitute a very significant portion of the strike record. The local surroundings can play an important role in the risks associated with aircraft operations. Effective use of landscaping, management of open spaces, and the size and location of retention ponds are critical factors in dealing with bird/wildlife strike hazards.

Currently, Portland ANGB does not hold a USFWS Depredation Permit to authorize the taking of nuisance species to lessen the danger of bird/wildlife strikes with aircraft. Portland ANGB safety personnel participate in the elimination of wildlife hazards through participation in the Port of Portland Wildlife Advisory Committee. Base personnel have the authority to influence wildlife activities within the confines of Portland ANGB. Through the use of land management practices such as maintaining grass height, elimination of roosting sites, and removal of dead vegetation, Portland ANGB effectively deals with wildlife hazards.

Construction and Explosives Safety. The Fire Department at Portland ANGB provides fire, crash, rescue, and structural fire protection at the Base. All personnel at Portland ANGB abide by a general safety policy relating to the performance of all activities at the Base. Individuals, supervisors, managers, and commanders are expected to give full support to safety efforts. Safety awareness and strict compliance with established safety standards are expected.

Buildings 400, 415, and 420 contain munitions. QD arcs, centered on these buildings, generally extend from Overend Avenue to Case Road, and from O'Connor Way to a point mid-way between Jernstedt Street and Johnson Avenue. The QD arcs for aircraft loaded with munitions in the aircraft parking area extends from the airfield, south to O'Connor Way, and from Building 310 to a point beyond Building 215 (ORANG 1997a).

Regional Safety. Currently, the 939 RQW participates with other regional safety organizations mentioned in Section 3.2.1 to affect rescue operations in the region. Although not an official part of the regional safety team, the equipment, training and expertise of the 939 RQW make them a unique part of regional safety efforts. The C-130 aircraft and HH-60 helicopters manned by dedicated personnel are a great asset to rescue functions wherever they may occur such as in the Columbia River, high in the local mountains, or in the Pacific Ocean.

3.2.3 Alternate Training Locations

In addition to the Portland IAP, the Proposed Action would require the use of three regional airfields for airfield operation training (i.e., touch-and-gos and closed pattern flights). The alternate training locations include; Klamath Falls IAP, Oregon; Beale AFB, California; and Grant County IAP, Washington. Although part of the Proposed Action, this section presents the existing conditions at these alternate training locations to form the basis of comparison to the proposed conditions presented in Section 4.2.3.

Klamath Falls International Airport

As presented in Section 3.1.3, a total of 41,554 aircraft operations were performed at Klamath Falls IAP in CY 2000. Military operations account for 9,605 or approximately 23 percent of the total operations conducted in CY 2000. KC-135 aircraft currently perform operations at Klamath Falls IAP. The 939 RQW does not currently conduct military aircraft operations at Klamath Falls IAP.

Beale Air Force Base

As presented in Section 3.1.3, a total of 51,825 military operations were performed at Beale AFB during CY 1999. Aircraft assigned to Beale AFB include KC-135, RC-135, and U-2 aircraft. The 939 RQW does not currently conduct military aircraft operations at Beale AFB.

Grant County International Airport

As presented in Section 3.1.3, a total of 114,811 aircraft operations were performed at Grant County IAP during CY 1996. The number of military aircraft operations accounted for 49,384, or 43 percent, of the total number of annual operations. KC-135 aircraft do not currently operate at Grant Count IAP. The 939 RQW does not currently conduct military aircraft operations at Grant County IAP.

3.3 Air Quality

3.3.1 Definition of Resource

In accordance with CAA requirements, air quality in a given region or area is measured by the concentration of various "criteria pollutants" in the atmosphere. The measurements of these criteria pollutants are expressed in units of parts per million (ppm) or in units of micrograms per

cubic meter ($\mu g/m^3$). Air quality is not only determined by the types and quantities of atmospheric pollutants and pollutant sources in an area, but also by surface topography, the size of the air basin, and by the prevailing meteorological conditions.

The CAA directed the USEPA to develop, implement, and enforce environmental regulations that would ensure cleaner and healthier ambient air quality. In order to protect public health and welfare, the USEPA developed numerical concentration-based standards, or national ambient air quality standards (NAAQS) for pollutants that have been determined to impact human health and the environment. The USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six air criteria air pollutants including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than 10 microns in diameter (PM_{10}), particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety to protect public health and welfare.

The State of Oregon adopted the NAAQS and promulgated additional State ambient air quality standards (AAQS). The State of Oregon established State AAQS for Particle Fallout and standards for sulfur oxides (SO_x) that are more stringent the Federal primary standards. Table 3-7 presents the primary and secondary NAAQS and State of Oregon AAQS.

Although ozone is considered a criteria air pollutant and is measurable in the atmosphere, it is not often considered as an air pollutant when calculating emissions because ozone is typically not emitted directly from most emission sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or "ozone precursors." These ozone precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emission sources. For this reason, regulatory agencies attempt to limit atmospheric ozone through the control of NO_x and VOCs.

The CAA and USEPA delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in State Implementation Plans (SIPs), which must

Table 3-7. National and State Ambient Air Quality Standards

Pollutant	Standard Value		Standard Type
Carbon Monoxide (CO)			
8-hour Average	9 ppm[b]	(10 mg/m^3)[c,d]	Primary & Secondary
1-hour Average	35 ppm	(40 mg/m^3) [c]	Primary
Nitrogen Dioxide (NO_2)			
Annual Arithmetic Mean	0.053 ppm	(100 $\mu g/m^3$) [c,e]	Primary & Secondary
Ozone (O_3)			
1-hour Average[a]	0.12 ppm	(235 $\mu g/m^3$) [c]	Primary & Secondary
8-hour Average[a]	0.08 ppm	(157 $\mu g/m^3$) [c]	Primary & Secondary
Lead (Pb)			
Quarterly Average		1.5 $\mu g/m^3$	Primary & Secondary
Particulate ≤ 10 microns (PM_{10})			
Annual Arithmetic Mean		50 $\mu g/m^3$	Primary & Secondary
24-hour Average		150 $\mu g/m^3$	Primary & Secondary
Particulate ≤ 2.5 microns ($PM_{2.5}$)			
Annual Arithmetic Mean		15 $\mu g/m^3$	Primary & Secondary
24-hour Average		65 $\mu g/m^3$	Primary & Secondary
Sulfur Dioxide (SO_2)			
Annual Arithmetic Mean	0.03 ppm	(80 $\mu g/m^3$)[c]	Primary
24-hour Average	0.14 ppm	(365 $\mu g/m^3$) [c]	Primary
3-hour Average	0.50 ppm	(1300 $\mu g/m^3$) [c]	Secondary
12-month Arithmetic Mean (SO_x)	0.02 ppm	60 $\mu g/m^3$	State of Oregon
24-hour Average (SO_x)	0.10 ppm	260 $\mu g/m^3$	State of Oregon
Particle Fallout (Monthly Limit)			
Industrial Area		10 g/m^2 [f]	State of Oregon
Residential Area		5.0 g/m^2	State of Oregon
Industrial Area w/ wood waste or soot		5.0 g/m^2	State of Oregon
Residential Area w/ wood waste or soot		3.5 g/m^2	State of Oregon

Notes:

[a] In July of 1997, the 8-hour ozone standard was promulgated and the 1-hour ozone standard was remanded for all areas, excepting areas that were designated non-attainment with the 1-hour standard when the ozone 8-hour standard was adopted. In July of 2000, the ozone 1-hour standard was re-instated as a result of the Federal lawsuits that were preventing the implementation of the new 8-hour ozone standard. As of December of 2001, USEPA estimated that the revised 8-hour ozone standard rules will be promulgated in 2003-2004. In the interim, no areas can be deemed to be definitively non-attainment with the new 8-hour standard.

[b] ppm – parts per million

[c] Parenthetical value is an approximately equivalent concentration.

[d] mg/m^3 – milligrams per cubic meter

[e] $\mu g/m^3$ – micrograms per cubic meter

[f] g/m^2 – grams per square meter

[g] As of 2/1/02, the final $PM_{2.5}$ standards have been promulgated and initial implementation and planning is being conducted by the USEPA. However, the final standards may be subject to changes and/or revocation based on a pending U.S. District Court ruling which is anticipated in Spring 2002. To date, the delay of the NAAQS implementation has resulted as USEPA is awaiting 3-years of monitoring data before making attainment determinations for states and local planning areas.

be developed by the states and approved by the USEPA. Each SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emission budgets assigned to facilities, controls, etc.) must be incorporated into the SIP and approved by the USEPA.

States or other agencies with non-attainment areas for one or more of the NAAQS may petition USEPA for redesignation as a "maintenance area" if they are able to demonstrate they have met the national standard for the three years preceding redesignation. At the time the state petitions USEPA for redesignation, it must also submit a revision of its SIP to provide for the maintenance of the applicable NAAQS for at least 10 years after redesignation ("maintenance plan") pursuant to CAA §175(A).

The CAA prohibits Federal agencies from undertaking projects that do not conform to a USEPA-approved SIP. In 1993, the USEPA developed the General Conformity Rule, which specifies how Federal agencies must determine CAA conformity for sources of non-attainment pollutants in designated non-attainment areas. Through the Conformity Determination process specified in the final rule, any Federal agency must analyze increases in pollutant emissions directly or indirectly attributable to a Proposed Action, and may need to complete a formal evaluation that includes modeling for NAAQS impacts, provision of emission offsets, and potential mitigation for any significant increases in non-attainment pollutants.

In 1997, USEPA initiated work on new General Conformity rules and guidance to reflect the new 8-hour ozone, $PM_{2.5}$, and regional haze standards that were promulgated in that year. However, because of delays in implementation of the new ozone and $PM_{2.5}$ ambient air quality standards, the new conformity requirements have not been completed by USEPA, and draft rule language is not yet available (USEPA 2001).

Regional Air Quality. The USEPA classifies the air quality in an air quality control region (AQCR) or in sub-areas of an AQCR according to whether the concentration of criteria pollutants in ambient air exceeds the primary or secondary NAAQS. All areas within each AQCR are therefore designated as either "attainment," "non-attainment," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS, non-attainment indicates that air quality exceeds NAAQS, and an

unclassifiable air quality designation by USEPA means that there is not enough information to appropriately classify an AQCR. Areas designated as unclassified are considered in attainment.

Title V of the CAA Amendments of 1990 requires states to permit major stationary sources. A major stationary source is a facility (i.e., plant, base, or activity) that has the potential to emit more than 100 tons annually of any one criteria air pollutant, 10 tons per year of a hazardous air pollutant (HAP), or 25 tons per year of any combination of HAPs. The purpose of the Federal operating permit rule is to establish regulatory control over large, industrial-type activities and to monitor their impact upon air quality. USEPA has designated authority for the Title V Federal operating permit program to the Oregon Department of Environmental Quality (DEQ) (Oregon Revised Statutes, Chapter 486A.300). Oregon DEQ is responsible for implementation of the CAA and controls emissions of air pollutants through issuance of Air Contaminant Discharge permits (Oregon Revised Statutes, Chapter 486A.040).

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be "significant" if: 1) a proposed project is within 10 kilometers of any Class I area; and 2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more (40 CFR 52.21(b)(23)(iii)). A Class I area is defined as an area of significant air quality and high visibility such as a National Park or a wilderness area.

3.3.2 Portland ANGB/Portland IAP

Regional Climate. Portland is approximately 65 miles inland from the Pacific Ocean and midway between the north-south oriented, low Coast Range to the west and the higher Cascade Mountain Range to the east. The mountain ranges are both approximately 30 miles from the city. Air flow in the region is typically to the northwest in the spring and summer and to the southeast in the fall and winter (ORANG 2000a).

Portland has a pronounced winter rainfall climate with an average annual precipitation of approximately 36 inches per year. Approximately 88 percent of the total annual precipitation occurs from October though May. Precipitation occurs mostly as rain; on average there are only 5 days each year with measurable snow. The mean annual temperature is 53.6 degrees Fahrenheit (ºF), with winters averaging between 40 to 50 ºF and summers averaging 64 ºF (ORANG 2000a). Table 3-8 summarizes local climate conditions for the City of Portland.

Table 3-8. Local Climate Summary for the City of Portland

Month	Maximum Temperature Normals (°F)	Precipitation Normals (Inches)
January	39.6	5.35
February	43.6	3.85
March	47.3	3.56
April	51.0	2.39
May	57.1	2.06
June	63.5	1.48
July	68.2	0.63
August	68.6	1.09
September	63.3	1.75
October	54.5	2.67
November	46.1	5.34
December	40.2	6.13

Source: NOAA 1990

Portland ANGB/Portland IAP. Portland ANGB and Portland IAP are located in Multnomah County, Oregon, which is located in the Portland Interstate AQCR No. 193. AQCR No. 193 also includes Benton, Clackamas, Columbia, Lane, Linn, Marion, Multnomah, Polk, Washington, and Yamhill Counties in Oregon and Clark, Cowlitz, Lewis, Skamania, and Wahkiakum Counties in Washington. The installation and local area are bordered on the east by Hood River County, on the south by Clackamas County, on the southwest by Washington County, the northwest by Columbia County and on the north by Clark and Skamania Counties, Washington. All of these bordering counties are in attainment with all NAAQS. However, due to prior non-compliance with NAAQS, AQCR No. 193 has been designated by the USEPA as a maintenance area for ozone and CO.

Portland ANGB is considered to be a major source in that it has the potential to emit more than 100 tons per year of CO, NO_x, and SO_2. In addition, it has the potential to emit HAPs in amounts exceeding the Title V HAP thresholds. However, in lieu of a Title V Operating Permit, Portland ANGB has chosen a Synthetic Minor Election. Air Contaminant Discharge Permit No. 26-3254 was issued to Portland ANGB. It contains Plant Site Emission Limits (PSEL) for engine test cells and "All Other Sources." "All Other Sources" regulated by the permit include 44 boilers, two JP-8 internal floating roof tanks, one fueling station with six fueling points for diesel and gasoline, three paint booths, eight degreasers, two paint scrubber booths, and chemical usage

(ORANG 2001b). In making the Synthetic Minor Election choice, the ORANG has agreed to meet operational limitations to keep its potential emissions below the Title V trigger levels. The operational limitations, which are enforced as part of the Air Contaminant Discharge Permit, restrict the hours of operation of the engine test cells, limit the throughput of the JP-8 fuel storage tanks, and limit the amount of paint that can be used on site.

As required by Oregon DEQ permitting requirements, Portland ANGB routinely calculates annual criteria pollutant emissions from select stationary sources and provides this information to the state. Based on the most recent emissions inventory calculations for devices covered by this permit, actual Portland ANGB stationary source emissions are within the PSEL permit emission limits, and range from 8 to 70 percent of the emission levels allowed by the PSEL permit. However, there is no routine requirement to calculate pollutant emissions for aircraft operations, government-owned vehicles (GOVs) and privately-owned vehicles (POVs), aircraft engine testing, AGE, and other sources not included in the state's stationary source permitting program. Table 3-9 compiles the most recent emission calculation data available for stationary and mobile sources at Portland ANGB.

Table 3-9. Baseline Emissions Inventory Compilation for Portland ANGB[1]

	Emissions Estimates				
Emissions Source Type	**NO_x Emissions (tpy)**	**VOC Emissions (tpy)**	**CO Emissions (tpy)**	**SO_x Emissions (tpy)**	**PM_{10} Emissions (tpy)**
PSEL Stationary Sources [2]	7.8	4.8	4.1	0.3	0.7
Insignificant Stationary Sources	1.2	0.3	2.3	0.1	0.1
POVs [3]	0.2	0.2	1.6	N/A	N/A
AGE	10	1.2	12	0.7	0.7
Aircraft Flight Operations	82	8.8	48	5.2	9.4
Emission Totals:	**101**	**15.3**	**68**	**6.2**	**10.9**

Notes:
[1] Based on CY 1999 basewide air emissions inventory.
[2] Based emission sources included in the Air Contaminant Discharge Permit Number 26-3254.
[3] POV emissions are based on current personnel counts and typical commute and on-Base travel distances. Note that the State of Oregon does not count POV emissions toward the Base's PSEL emissions "budget." These estimates are therefore not included in the emission totals, but are presented for informational purposes only.
tpy – tons per year.
N/A – not applicable

3.3.3 Alternate Training Locations

In addition to the Portland IAP, the Proposed Action would require the use of three regional airfields for airfield operation training (i.e., touch-and-gos and closed pattern flights). The alternate training locations include; Klamath Falls IAP, Oregon; Beale AFB, California; and Grant County IAP, Washington. Although part of the Proposed Action, this section presents the existing conditions at the alternate training locations to form the basis of comparison to the proposed conditions presented in Section 4.3.3.

Klamath Falls International Airport

The Klamath Falls IAP is in Klamath County, in south central Oregon. Klamath County is situated east of the Cascade Mountains in the high desert region of Oregon. The City of Klamath Falls is located at 4,100 feet in elevation (KCGHR 2002). Medford, Oregon, located approximately 81 miles from Klamath Falls IAP receives an average of 18.86 inches of rain a year and has an average temperature of 54.3 °F (NOAA 1990). Klamath County is part of the Central Oregon Intrastate AQCR No. 190 and is within attainment for all criteria pollutants except for PM_{10} and CO, which are at moderate non-attainment levels within the Klamath Falls central business district. AQCR No. 190 also includes Crook, Deschutes, Hood River, Jefferson, Lake, Sherman, and Wasco Counties in Oregon.

Beale Air Force Base

Beale AFB is located in Yuba County and is in the Sacramento Intrastate AQCR No. 28. Butte, Colusa, Glenn, Sacramento, Sutter, Tehama, Yolo Counties and portions of Sutter and Solano Counties are also included in AQCR No. 28. The Feather River Air Quality Management District (AQMD) manages local air quality for Yuba and Sutter Counties. Yuba County has been classified by USEPA as a maintenance area for ozone and PM_{10}. Yuba County is in attainment for all other criteria pollutants. Climate in the Sacramento Valley is strongly affected by "delta breezes," which are characterized by moist air that moves from San Francisco Bay eastward through the Sacramento-San Joaquin River Delta and into the Sacramento area (USAF 2001). The City of Sacramento, located approximately 43 miles to the south of Beale AFB, receives an average of 17.52 inches of rain a year and has an average annual temperate of 60.8 ºF (NOAA 1990).

Grant County International Airport

The Grant County IAP, formerly Larson AFB, is located east of the Cascade Mountains in the semi-arid desert region of central Washington. Grant County receives about eight inches of precipitation per year and has an average temperate of 84 ºF in the summer and 40 ºF in the winter. The airport is used as a training area for government and private aircraft (GEDC 2000). Grant County is within the Eastern Washington-Northern Idaho Interstate AQCR No. 62. While portions of the AQCR are classified as non-attainment for certain pollutants, Grant County is classified as in attainment for all criteria pollutants. AQCR No. 62 includes Benewah, Kootenai, Latah, Nez Perce, and Shoshone Counties in Idaho and Adams, Asotin, Columbia, Garfield, Grant, Lincoln, Spokane, and Whitman Counties in Washington.

3.4 Noise

3.4.1 Definition of the Resource

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying (FICON 1992). Human response to noise can vary according to the type and characteristic of the noise source, the distance between the noise source and the receptor, the sensitivity of the receptor, and the time of day.

Due to the wide variations in sound levels, sound levels are measured using a logarithmic scale expressed in decibels (dB). Thus, a 10-dB increase in noise corresponds to a 100-percent increase in the perceived sound. Under most conditions, a 5-dB change is necessary for noise increase to be noticeable (USEPA 1972). Sound measurement is further refined by using an A-weighted decibel (dBA) scale that emphasizes the range of sound frequencies that are most audible to humans (between 1,000 and 8,000 cycles per second). All sound levels analyzed in this EA are A-weighted; the term dB implies dBA unless otherwise noted (refer to Appendix C, Noise Terminology and Analysis Methodology for a more detailed discussion of noise).

In this EA, a single-event noise such as an overflight is described by the sound exposure level (SEL). Airfield noise levels are measured in day-night average sound level (DNL). The DNL noise metric incorporates a "penalty" for nighttime noise events occurring between the hours of 10:00 P.M. and 7:00 A.M. to account for increased annoyance. A more thorough description of these noise metrics is provided below.

Sound Exposure Level. The SEL measurement is used to describe such noise events as overflying aircraft. The SEL is a measurement that takes into account both the intensity and the duration of a noise event. The SEL measurement is comprised of the following components: 1) a period of time when an aircraft is approaching a receptor and noise levels are increasing; 2) the instant when the aircraft is closest to the receptor and the maximum noise level is experienced; and 3) the period of time when the aircraft moves away from the receptor resulting in decreased noise levels.

Noise generated by aircraft is often assessed in terms of a single event, which is incorporated into SEL measurements. The frequency, magnitude, and duration of single noise events vary according to aircraft type, engine type, power setting, and airspeed. Therefore, individual aircraft noise data are collected for various types of aircraft and engines at different power settings at various phases of flight. These values form the basis for the individual-event noise descriptors at any location and are adjusted to the location by applying appropriate corrections for temperature, humidity, altitude, and variations from standard aircraft operating profiles and power settings.

Day-Night Average Sound Levels. The DNL is the energy-averaged sound level measured over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10:00 P.M. and 7:00 A.M. DNL values are obtained by averaging SEL values for a given 24-hour period. DNL is the preferred noise metric of HUD, FAA, USEPA, and DoD. Studies of community annoyance in response to numerous types of environmental noise show that DNL correlates well with impact assessments; there is a consistent relationship between DNL and the level of annoyance. The "Schultz Curve" (see Appendix C) shows the relationship between DNL noise levels and the percentage of population predicted to be highly annoyed. Most people are exposed to sound levels of 50 to 55 dB (DNL) or higher on a daily basis. Research has indicated that about 87 percent of the population is not highly annoyed by outdoor sound levels below 65 dB (DNL) (FICON 1992). Therefore, the 65 dB (DNL) noise level is typically used to help determine compatibility of military operations with local land use. For comparison purposes, normal conversation (at a distance of 3 feet) is approximately 60 dB, loud speech is approximately 70 dB, and the sound of a train approaching a subway platform is approximately 90 dB. At approximately 120 dB, sound can be intense enough to induce pain, while at 130 dB, immediate and permanent hearing damage can result (NPS 1994).

Noise Modeling. Noise contributions from aircraft operations were calculated using the Integrated Noise Model (INM) computer model, the standard for evaluating aircraft noise impacts in the vicinity of commercial airports or the NOISEMAP computer model, the standard noise estimation methodology used for military airfields. Omega 108 is a stand-alone DoD noise modeling program that allows the user to retrieve data from the NOISEMAP database.

INM is an FAA computer model used to develop aircraft noise exposure maps. The INM database reflects average aircraft operating conditions at an average airport. For each aircraft type in the database, the following information is provided: (1) a set of departure profiles for each applicable trip length, (2) a set of approach parameters, and (3) SEL versus distance curves for several thrust settings. INM uses NOISEMAP's acoustical data for military aircraft in developing noise exposure maps. As described earlier, SEL is essentially an A-weighted sound level corrected for time-duration effects. The noise exposure maps derived from the INM are based on the DNL noise metric.

NOISEMAP uses the following data to develop noise profiles: aircraft types, runway utilization patterns, engine power settings, airspeeds, altitude profiles, flight track locations, number of operations per flight track, engine run-ups, and time of day. NOISEMAP contains acoustical data for most military aircraft. NOISEMAP also uses the DNL noise metric when deriving noise exposure maps.

The ROI for the noise resource area potentially affected by the Proposed Action and Alternatives includes the airport environments surrounding the four civilian/military airfields in the Proposed Action, existing Airspace for Special Use that is currently being flown by the 939 RQW aircraft and airspace that would be used by KC-135R aircraft.

3.4.2 Portland Air National Guard Base

The most recent data available for depicting the noise environment in the vicinity of Portland IAP were provided in the Noise Abatement Plan for Portland IAP dated August 1996 (Port of Portland 1996a). The noise exposure contours used for purposed of this EA are for the year 2000 (5-year future) depicted in the Noise Abatement Plan (see Figure 3-1). (Noise contours are lines that represent measurable noise values similar to the way topographic lines represent measurable ground elevations.) INM Version 4 was used to complete the noise analysis that produced the existing noise contour shown in Figure 3-1.

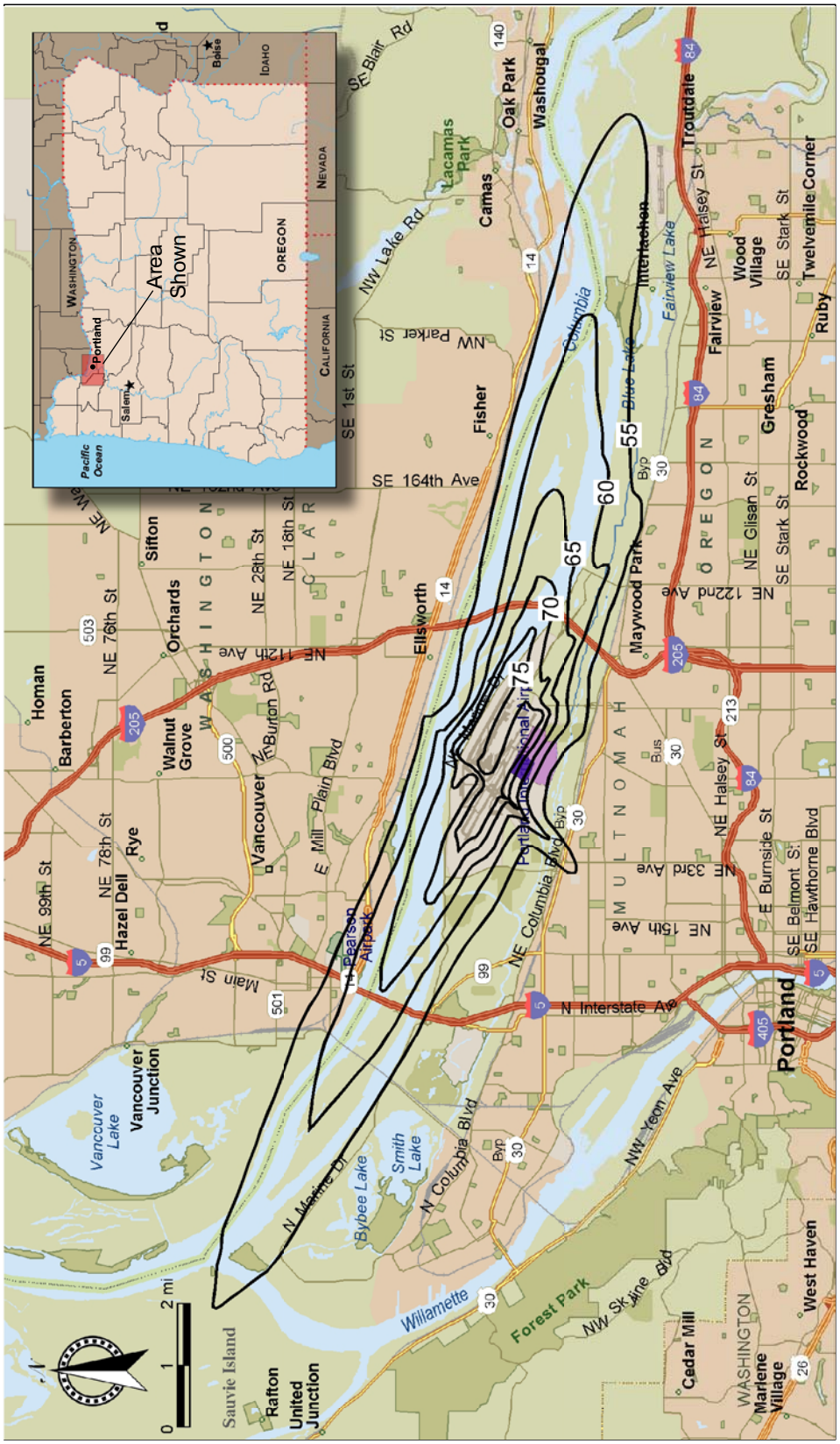

Figure 3-1. Portland IAP Existing Noise Contours

Tables 3-10 and 3-11 provide SEL values (dBA) at various altitudes for 939 RQW and 142 FW aircraft, respectively, operating directly overhead at various speeds and power settings depending on aircraft type (values in the table represent averages). Table 3-12 provides SEL values (dBA) at various altitudes for Boeing 757 commercial aircraft operating directly overhead at various speeds and power settings depending on aircraft type (values in the table represent averages). The Boeing 757 is one of the more common commercial aircraft that operate at Portland IAP.

Table 3-10. SEL Values (dBA) for 939 RQW at Portland IAP

Description	C-130E		HC-130P		HH-60G	
Aircraft Profile	Takeoff Power	Approach Power	Takeoff Power	Approach Power	Takeoff Load	Landing Load
200 feet AGL	101.8	100.1	102.7	101.0	93.4	96.7
500 feet AGL	95.6	93.6	96.5	94.5	87.2	90.5
1,000 feet AGL	90.5	88.2	91.4	89.1	82.1	85.4
2,000 feet AGL	84.9	82.1	85.8	83.0	76.3	79.6
3,150 feet AGL	80.8	77.6	81.7	78.5	72.0	75.1
5,000 feet AGL	76.4	72.7	77.3	73.6	67.0	70.0

Note: Based on steady, level flight and using Omega 108 aircraft profile data from actual overflight noise measurements.

Table 3-11. SEL Values (dBA) for F-15 Aircraft

Description	F-15	
Aircraft Profile	Takeoff Power	Approach Power
200 feet AGL	123.8	100.1
500 feet AGL	117.3	93.9
1,000 feet AGL	112.0	88.9
2,000 feet AGL	106.1	83.4
3,150 feet AGL	101.8	79.2
5,000 feet AGL	97.0	74.6

Note: Based on steady, level flight and using Omega 108 aircraft profile data from actual overflight noise measurements.

Table 3-12. SEL Values (dBA) for Boeing 757 Commercial Aircraft

Description	Boeing 757	
Aircraft Profile	Takeoff Power	Approach Power
200 feet AGL	109.0	98.5
500 feet AGL	102.5	91.3
1,000 feet AGL	97.0	85.0
2,000 feet AGL	90.9	78.1
3,150 feet AGL	86.3	73.3
5,000 feet AGL	81.5	68.3

Note: Based on steady, level flight and using Omega 108 aircraft profile data from actual overflight noise measurements.

3.4.3 Alternate Training Locations

Klamath Falls International Airport

The most recent noise analysis conducted for Klamath Falls IAP was by the 173 FW for a proposed mission change and related facilities development (ORANG 1998c). For consistency in analyzing the noise environment, CY 2000 aircraft operations from Klamath Falls IAP are used in this analysis. Table 3-11 provides SEL values (dBA) at various altitudes for the F-15 aircraft that are stationed at Klamath Falls IAP operating directly overhead at various speeds and power settings.

Beale Air Force Base

The *Final Environmental Assessment for Global Hawk Main Operating Base Beddown* completed in March 2001 was used to provide information on existing conditions for noise analysis purposes at Beale AFB.

Table 3-13 shows a comparison of SELs for the three primary aircraft operating at Beale AFB at various altitudes.

Table 3-13. SEL Values (dBA) for Primary Aircraft at Beale AFB

Description	Global Hawk	U-2	KC-135R	
Aircraft Profile	N/A	N/A	Max-Rated Thrust (Takeoff)	Approach
200 feet AGL	--	--	103.4	102.3
500 feet AGL	92	116	97.2	96.0
1,000 feet AGL	87	110	92.2	90.8
2,000 feet AGL	81	84	86.7	85.0
3,150 feet AGL	--	--	82.7	80.7
5,000 feet AGL	--	--	78.2	76.0

Source: USAF 2001
Note: KC-135R information based on steady, level flight and using Omega 108 aircraft profile data from actual overflight noise measurements.

Grant County International Airport

For purposes of this EA, the results in the *EA for Proposed C-17 Beddown at McCord AFB, Washington* dated January 1997 were used to provide information on existing conditions for noise analysis purposes at Grant County IAP.

Table 3-14 provides SEL values (dBA) at various altitudes for the C-17 aircraft that operate at Grant County IAP operating directly overhead at various speeds and power settings.

Table 3-14. SEL Values (dBA) for C-17 Aircraft

Description	C-17	
Aircraft Profile	Takeoff Power	Approach Power
200 feet AGL	112.0	101.5
500 feet AGL	105.5	94.3
1,000 feet AGL	100.0	88.0
2,000 feet AGL	93.9	81.1
3,150 feet AGL	89.3	76.3
5,000 feet AGL	84.5	71.3

Note: Based on steady, level flight and using Omega 108 aircraft profile data from actual overflight noise measurements.

3.5 Land Use

3.5.1 Definition of Resource

Land use comprises natural conditions or human-modified activities occurring at a particular location. Human-modified land use categories include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, recreational, and other developed use areas. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect specially designated or environmentally sensitive areas.

3.5.2 Portland ANGB/Portland IAP

Portland ANGB is located on land that was previously a marsh and floodplain of the Columbia River. A landfill operation between 1930 and 1939 elevated the site with dredged river sediment and provided approximately 394 acres of land able to be developed.

The Portland ANGB is located within the City of Portland limits. Cornfoot Road, a public thoroughfare, runs along the entire south side of the Base. Colwood Public Golf Course is adjacent to the east side of the Base. The Base is located on leased property from the Port of Portland Authority. Portland ANGB and Portland IAP are zoned General Industrial by the City of Portland.

The 1997 Portland ANGB Master Plan identifies eight categories of land uses on the Base. Open Space and Industrial uses are the largest land use categories making up 22 and 18 percent, respectively. Airfield Pavements, Restricted Safety Zones, Aircraft Maintenance and Aircraft Operations uses are located in the northern portion of the Base. Industrial uses include the Base Civil Engineer (BCE) operations facilities, motor pool, fueling operation and storage, and Base hazardous material storage. Command and Support uses include Security Police operations, unit headquarters, the guardhouses and adjacent gate areas, dining facility, medical training, and communications facilities. These uses occupy primarily the southern, eastern, and central portions of the Base.

The Portland ANGB Master Plan's specified Long-Range Plan represents long-term development for 20 to 25 years into the future. Under this plan, industrial uses would become the major land use with approximately 21 percent of total land area. Table 3-15 lists the existing and future land uses at Portland ANGB.

Table 3-15. Portland ANGB Existing and Future Land Use

Land Use	Existing		Future	
	Acres	Percent	Acres	Percent
Open Space	54.6	22	36.0	15
Industrial	43.4	18	52.5	21
Airfield Pavements	41.4	17	47.3	19
Command and Support	32.0	13	37.8	16
Aircraft Maintenance	31.4	13	29.2	12
Safety Zones	18.3	7	18.3	7
Aircraft Operations	13.1	5	13.1	5
Special Categories	11.6	5	11.6	5
Total	245.8	100	245.8	100

Source: ORANG 2000a

There is a range of land uses in the area surrounding the Portland ANGB. To the south, land use is primarily manufacturing, except for the Broadmoor and Colwood Golf Courses. South of Columbia Boulevard, the land is zoned residential. West of the airport there is a mix of open space, commercial and residential development, and several golf courses. To the north are the Columbia River and the City of Vancouver, Washington, and to the east there is mainly open space along the extension of the main east-west runways (ORANG 2000a).

The ROI for land use resources includes only those areas where proposed construction activities would occur on Portland ANGB. The flying operations at Portland IAP and the three alternate training locations would not affect land use resources at the respective locations.

3.6 Geological Resources

3.6.1 Definition of the Resource

An area's geological resources typically consist of surface and subsurface materials and their inherent properties. Principal factors influencing the ability of geological resources to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography.

The term soil generally refers to unconsolidated materials overlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil depth, structure, elasticity, strength, shrink-swell potential, and erodibility determine a soil's ability to

support man-made structures and facilities. Soils typically are described in terms of their series or association, slope, physical characteristics, and relative compatibility or constraints in regard to particular construction activities and types of land use.

Topography is defined as the relative position and elevations of the natural and/or man-made features of an area that describe the configuration of its surface. An area's topography is influenced by many factors, including human activity, seismic activity of the underlying geological material, climatic conditions, and erosion. Information about an area's topography typically encompasses surface elevations, slope, physiographic features (i.e., mountains, ravines, or depressions), and their influence on human activities.

The major effects of earthquakes are surface rupture, ground shaking and other forms of ground failure including liquefaction and subsidence. These effects of these geohazards are described below.

***Surface fault rupture**:* The ground surface within 50 feet of an active fault trace is considered to be in the fault rupture hazard zone and therefore subject to possible rupture from fault movement. No structure for human occupancy is permitted on the trace of an active fault. Active faults are considered faults which have been active during the Holocene period, approximately the last 10,000 years. Potentially active faults are those faults which have been active during the Quaternary period, approximately the last 3 million years. In addition to faults which have been classified as active or potentially active, there are others whose activity has not been clearly established by currently available information.

***Ground shaking**:* Solid ground or rock tends to dampen seismic motion while poorly consolidated and water-saturated materials amplify seismic motion. Areas situated on hard bedrock with little soil cover may be expected to perform satisfactorily during earthquakes. Areas underlain by weakly consolidated materials, such as alluvial fans, large floodplains, bay and delta deposits, and artificial fill are generally considered more vulnerable to damage due to ground shaking.

***Liquefaction**:* Liquefaction is a form of ground failure caused by earthquake motion in water-saturated, unconsolidated, relatively clay-free silts and sands. The result is a "quicksand-like" condition caused by hydraulic pressure (from earthquake motion) forcing soil particles apart and into quicksand-like liquid suspension. Normally firm, but wet, ground materials thus like liquids

and can cause catastrophic ground failure including: landslides; settling and tilting of structures; water, sewer, and pipeline ruptures.

The ROI for geological resources includes only those areas where proposed construction activities would occur on Portland ANGB. The flying operations at Portland IAP and the three alternate training locations would not affect geological resources at the respective locations.

3.6.2 Portland ANGB/Portland IAP

Topography and Geology. Portland ANGB is situated on the Columbia River floodplain. The ground surface is relatively flat and varies in elevation from 13 to 20 feet above MSL. The 100-year floodplain elevation for the area surrounding the Base is 14 feet above MSL.

Soils. Soils at Portland ANGB mostly consist of highly permeable sands from the Pilchuck and Sauvie-Rafton Series. The southeastern corner of the Base has very poorly drained silt-loam deposits. The surficial soils are approximately 15 inches thick and underlain by silty clay-loam to a depth of 60 inches or more. Dredged river sediment has been used to elevate most areas of the Base, including the areas where the proposed construction will occur, by several feet to an elevation above the 100-year floodplain level. The dredge fill deposits are relatively uniform, medium to coarse-grained sands.

Geohazards. The City of Portland is dissected by two earthquake-producing faults. As a result, Portland ANGB and Portland IAP are subject to earthquake hazards. Earthquakes are sudden releases of strain energy stored in the earth's bedrock. Information on earthquakes and fault traces (courses) can be obtained from the U.S. Geological Survey (USGS)'s National Earthquake Information Center in Denver, and the Oregon Department of Geology and Mineral Industries in Portland.

The best-known crustal fault in the Portland area is called the Portland Hills fault; it trends northwest-southeast and is situated between the Tualatin Mountains (also known as the Portland Hills) and the Willamette River in downtown Portland. Another fault, the East Bank fault, is completely concealed beneath sediments. It also trends northwest-southeast.

The East Bank fault, the Portland Hills fault and other northwest-southeast trending faults in the Portland metropolitan area are part of a broad zone of faulting called the Portland Hills Fault

Zone. If seismically active along it entire length, the fault zone poses a significant seismic hazard to the Portland area (USGS 2001).

As previously mentioned, the Portland ANGB and Portland IAP lie within the 100-year floodplain. The Base sits on dredge fill deposits which places it out of the 100-year floodplain elevation. This fill material, however, is subject to liquefaction from potential temblors. As recent as March 25, 1993, a magnitude 5.6 earthquake occurred in Scotts Mills southeast of Portland, resulting in $30 million in damage. This remains the most destructive earthquake in terms of property loss in Oregon's history.

3.7 Water Resources

3.7.1 Definition of the Resource

Water resources include surface water, groundwater, and floodplains. Evaluation of water resources includes identification the quantity and quality of the resource and its demand for potable, irrigation, and industrial purposes.

Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Stormwater flows, which are increased by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to management of surface water. Stormwater also is important to surface water quality because of its potential to introduce sediments and other contaminants into lakes, rivers, and streams.

Groundwater consists of subsurface hydrologic resources. It is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater typically may be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Floodplains are areas of low-level ground present along a river or stream channel. Such lands may be subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding is influenced by local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which evaluates the floodplain for 100- and 500-year flood events. Federal, state, and local regulations often limit floodplain development to passive uses

such as recreational and preservation activities in order to reduce the risks to human health and safety and minimize cost to replace or repair repetitively damaged infrastructure.

The ROI for water resources includes only those areas where proposed construction activities would occur on Portland ANGB. The flying operations at Portland IAP and the three alternate training locations would not affect water resources at the respective locations.

3.7.2 Portland ANGB/Portland IAP

Surface Water. Portland IAP is bordered by the Columbia River to the North and the Upper and Lower Columbia Slough to the south. The Columbia Slough is a complex of narrow and shallow channels on the southern floodplain of the Columbia River between Fairview Lake and the Willamette River. The slough is a highly managed water system draining the most industrialized area of the City of Portland. A weir physically separates the Upper and Lower Sloughs; however, water can be pumped over the weir. The Columbia Slough extends approximately 18 miles. It is one of Portland's largest open space and wildlife habitat resources. The slough receives water from springs to the northeast of Portland IAP. The slough also receives precipitation runoff from the airport. Surface runoff from the airport may contain a variety of contaminants including, pure product hydrocarbons, tire fragments, pesticide and herbicide residue, and local air pollutants captured from frequent precipitation events. The slough is also impacted from runoff from surrounding industrial and residential areas. Nitrates and nitrogen from fertilized lawns and sewer overflows contribute to slough eutrification resulting in extensive rooted aquatic plants and frequent algal blooms.

The water quality of the Columbia River is generally good. High levels of biochemical oxygen demand and total solids, indicating the presence of organic matter and dissolved and suspended solids in the water, adversely impact the river. Levels of lead and iron concentrations are higher in the Columbia River than in other rivers in the region.

Oregon DEQ quantifies total maximum daily load (TMDL) limits that describe the amount of each pollutant a waterway can receive and still not violate water quality standards. The Oregon DEQ has designated the slough as "water quality limited" for; toxics (lead, polychlorinated biphenyls [PCBs], dichlorodiphenyldichloroethane [DDE]/dichlorodiphenyltrichloroethane [DDT], dieldrin, and dioxin), eutrophication (pH, dissolved oxygen, phosphorous, chlorophyll A), and bacteria.

Pollution sources identified by the Oregon DEQ include airport runway maintenance, combined sewer overflow, stormwater drainage, and golf course maintenance.

Groundwater. Unconsolidated-deposit and Miocene basaltic-rock aquifers are the principal aquifers that underlie Portland IAP and Portland ANGB. The unconsolidated deposits are greater than 800 feet thick and yield large volumes of water to wells. These wells, which are a significant source of water supply for the City of Portland, can yield as much as 10,000 gallons per minute (gpm). Miocene basaltic-rock aquifers in the Portland area are about 1,500 thick and yield from less than 10 to 1,000 gpm. According to the USGS, the aquifer has been identified as critically stressed due to over-development of groundwater resources for drinking and industrial uses (USGS 1994).

Portland ANGB purchases water from the City of Portland Bureau of Water Works. The Bureau of Water Works supplies drinking water to more than 840,000 people who live in the Portland Metropolitan area. The primary water source is the Bull Run Watershed located 26 miles east of downtown Portland in the Mt. Hood National Forest. As stated above, the City of Portland also uses groundwater as a supplemental water supply.

Floodplains. FEMA has designated the 100-year floodplain elevation for Portland IAP and Portland ANGB as 14 feet above MSL. Most of the airport and Base lie outside this designated floodplain. The Columbia Slough has been primarily used for flood control and agricultural irrigation. During major storm events, the slough is pumped to maintain and average level of eight feet MSL. Along with flood control of the Columbia Slough, Portland ANGB is further protected by levees and storm drains (ORANG 2000a).

The majority of the southern portion of Portland ANGB is designated as Flood Hazard B, between the limits of the 100- year and 500-year floodplains. Normally in a floodplain area, severe wetness and flooding would restrict the use of this area; however, dikes, levees, and other flood protection devices also protect this area, allowing for development.

3.8 Biological Resources

3.8.1 Definition of the Resource

Biological resources include native or naturalized plants and animals, and the habitats, such as wetlands, forests, and grasslands, in which they exist. Sensitive and protected biological

resources include plant and animal species listed as threatened or endangered by the USFWS or the State of Oregon. Determining which species occur in an area affected by a proposed action may be accomplished through literature reviews and coordination with appropriate Federal and state regulatory agency representatives, resource managers, and other knowledgeable experts.

Under the ESA (16 U.S.C. 1536), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The USFWS also maintains a list of species considered to be candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and may warrant protection under the Act.

The Oregon Department of Fish and Wildlife (ODFW) oversees the protection and management of state-listed threatened and endangered species. Within the Oregon Revised Statutes, "[a] determination that a species is a threatened species or an endangered species shall be based on documented and verifiable scientific information about the species' biological status. To list a species as a threatened species or an endangered species under Oregon Revised Statutes (ORS) 496.004 and 496.171 to 496.182, the commission [Oregon Fish and Wildlife Commission] shall determine that the natural reproductive potential of the species is in danger of failure due to limited population numbers, disease, predation or other natural or human actions affecting its continued existence and, to the extent possible, assess the relative impact of human actions. In addition, the commission shall determine that one or more of the following factors exists: (a) that most populations are undergoing imminent or active deterioration of their range or primary habitat; (b) that overutilization for commercial, recreational, scientific or educational purposes is occurring or is likely to occur; or (c) that existing state or Federal programs or regulations are inadequate to protect the species or its habitat (ORS §§496.176).

Biological resources also include wetlands. Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, unique plant and wildlife habitat provision, stormwater attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of the "waters of the U.S." under Section 404 of the Clean Water Act. The term "waters of the U.S." has a broad meaning under the Clean Water Act and incorporates deep-water aquatic habitats and special

aquatic habitats (including wetlands). The U.S. Army Corps of Engineers (USACE) defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 328).

The ROI for biological resources includes only those areas in proximity to where proposed construction activities would occur on Portland ANGB. The flying operations at Portland IAP and the three alternate training locations would not affect biological resources at the respective locations.

3.8.2 Portland ANGB/Portland IAP

Vegetation. Portland ANGB is located within the Cascade Mixed Forest-Coniferous Forest-Alpine Meadow Province, which is characterized by a series of steep, rugged mountains and narrow coastal plains ranging from sea level to altitudes above 5,000 ft (Bailey 1995). Regional vegetation within this province is characterized by a dense coniferous forest of Douglas-fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), silver fir (*Abies alba*), and Sitka spruce (*Picea sitchensis*) at the lowest elevations. Numerous species of shrubs grow exceptionally well in this forest and around its margins. Along the region's many riparian forests rivers and streams, coniferous trees are replaced by broadleaf species such as black cottonwood (*Populus balsamifera ssp. trichocarpa*) and red alder (*Alnus rubra*). This kind of forest occurs from southern Alaska south through Washington, Oregon, Idaho, and western Montana, continuing into northern California and the Sierra Nevada.

The airport is located in the floodplain of the Columbia River. Periodic flooding in the past had prevented the growth of most tree species within the floodplain, with the exception of flood-tolerant species occurring along streams and sloughs. Tree species that occur in these areas include Oregon ash (*Fraxinus latifolia*), black cottonwood (*Populus balsamifera ssp. trichocarpa*), willow (*Salix* spp.) and bigleaf maple (*Acer macrophyllum*). The surrounding hills and buttes that are not subject to frequent fires, flooding, or other disturbances are characterized by oaks and conifers (ORANG 2000a).

Historically, the Columbia Slough comprised a 60-mile long remnant of lakes, wetlands, and slow-moving channels in the southern floodplain of the Columbia River. The slough currently

comprises 18 miles of waterway, flowing parallel to the Columbia River from Fairview Lake on the east end to Kelly Point Park on the west end. The Slough currently drains more than 34,000 acres of residential, commercial, and industrial lands. Many of the banks are steep and eroded. Undeveloped areas along the Columbia Slough are classified as Flushed Slough and Scrub-shrub with banks that are covered with non-native blackberries (*Rubus* sp.), willows (*Salix* sp.), and shrubs (City of Portland 1991).

Extensive modification by human activities (i.e. residential, commercial, and industrial development) has occurred within the natural vegetation communities surrounding the airport. Other human activities such as agricultural practices and development and maintenance of the airport, parks, and golf courses, has resulted in vegetative cover that is regularly mowed or landscaped (ORANG 2000a). The majority of land at Portland ANGB is open space, making up 22 percent of the Base's area (ORANG 2000a).

Other groundcover vegetation specific to Portland ANGB includes blackberry (*Rubus fructicosus*), rushes (*Juncus sp.*), milkweed (*Asclepias* sp.), tall grasses, and several brush species.

Wildlife. Mammalian species that have the potential to occur in the region include mice, Douglas squirrels (*Tamiasciurus douglasii*), martens (*Martes americana*), chipmunks (*Eutamias* sp.), red tree voles (*Arborimus longicaudus longicaudus*), and wood rats (*Neotoma* sp.). Large mammals that have the potential to occur in this area include elk (*Cervus elaphus*), deer (*Odocoileus* sp.), and bobcat (*Felix rufus*) (Bailey 1995).

There are several wildlife species and wildlife habitats that have been documented on Portland ANGB based on observations made by the U.S. Department of Agriculture Wildlife Services (USDA-WS) in October 2000 over a two-week period (USDA 2001). Dominant wildlife signs and observations during this time included meadow voles (*Microtus pennsylvanicus*), rabbit (*Sylvilagus* sp.), raccoon (*Procyon lotor*), coyote (*Canis latrans*), and moles (USDA 2001).

Many species of amphibians and reptiles inhabit the region's moist, cool forests. Common amphibians that have the potential to occur on the Base include the Pacific treefrog (*Pseudacris regilla*) and the Pacific giant salamander (*Dicamptodon tenebrosus*). Reptiles potentially occur on the Base include the northern alligator lizard (*Gerrhonotus coerulus*), the rubber boa *(Charina*

bottae), and Pacific gopher snake (*Pituophis melanoleucus cantenifer*), which are quite common to the area.

Bird species that migrate through and/or winter in the grasslands and forests of this region are abundant, whereas summer breeding birds are less numerous. The most likely breeding birds in the region include species such as winter wren (*Troglodytes troglodytes*), Townsend's warbler (*Dendroica townsendi*), chestnut-backed chickadee (*Parus rufescens*), red-breasted nuthatch (*Sitta canadensis*), gray jay (*Perisoreus canadensis*), common nighthawk (*Chordeiles minor*), and Steller's jay (*Cyanocitta stelleri*) (Bailey 1995). Several avian species were observed throughout Portland ANGB during the USDA-WS surveys in October 2000. The meadow and lawn areas found throughout Portland ANGB provide habitat for common avian species such as European starlings (*Sturnus vulgaris*), Canada geese (*Branta canadensis*), American crow (*Corvus brachyrhynchos*), brown-headed blackbirds (*Molothrus ater*), sparrows, jays, gray-crowned rosy finch (*Leucosticte tephrocotis*), and various songbirds. Feral pigeons are often found utilizing gravel parking areas and other open spaces for feeding and grit consumption (USDA 2001). In the marshy and stream areas on Base, birds such as great blue heron (*Ardea herodias*) and mallard (*Anas platyrhynchos*) may locally breed. A variety of gull species are also common to the area.

Raptors (i.e., birds of prey) observed at Portland ANGB include red-tailed hawk (*Buteo jamaicensis*), barn owl (*Tyto alba*), American kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), and turkey vulture (*Cathartes aura*) (USDA 2001). All of these species are known to breed and winter in Oregon. In addition, some of these species may possibly breed on the Base.

The Columbia Slough system acts as a wildlife corridor for the introduction, recharge, and passage of bird and animal species. Common wildlife found along the banks include, bobcat (*Felis rufus*), coyote, and river otter (*Lutra canadensis*). Approximately 120 animal species live along the Slough and are representative of the regional wildlife species described above (City of Portland 1991).

Threatened and Endangered Species. The USFWS, NMFS, and the ODFW were contacted regarding the presence of threatened and endangered species in the geographic area of Portland ANGB. The USFWS, NMFS, ODFW, and the City of Portland cooperate in managing the presence of threatened and endangered species in the geographic area of Portland IAP pursuant to the requirements of ESA (*16 U.S.C. 1536)*, Oregon Revised Statutes protecting native

vertebrates and plants on state lands only (*ORS §§496.171 to .192; 498.026; 564.100 to .135*), and the Oregon Forest Practices Act (*ORS §527.610*).

Table 3-16 presents the federally and state-listed species identified as potentially occurring in proximity to Portland ANGB. No federally listed or Federal candidate species of wildlife were observed or are known to breed at Portland ANGB. Although there are no documented nesting sites located on or directly adjacent to Portland ANGB, the bald eagle (*Haliaeetus leucocephalus*), federally listed as threatened, is considered transient species in the immediate area (USDA 2001).

There are six federally listed threatened or endangered plant species with the potential to occur within the area including Portland ANGB. These species include federally listed as endangered Willamette Valley daisy *(Erigeron decumbens var. decumbens)* and Bradshaw's lomatium *(Lomatium bradshawii)*, as well as the federally listed as threatened golden paintbrush *(Castilleja levisecta)*, water howellia *(Howellia aquatilis)*, Kincaid's lupine *(Lupinus oreganus var. kincaidii)*, and Nelson's checkered mallow *(Sidalcea nelsoniana)*. However, vegetative surveys conducted by Port of Portland personnel have not indicated the presence of these species at Portland IAP (see Appendix A, June 12, 2002 correspondence from Port of Portland).

Steelhead (*Oncorhynchus mykiss*) are listed as threatened under the Endangered Species Act. This species occupies tributaries to the Columbia River and are known to use various watercourses in the Portland area, including the Columbia River, Columbia Slough, Willamette River, Johnson Creek, Tryon Creek, Fanno Creek, and the Bull Run/Sandy River basins. The National Marine Fisheries Service (NMFS) identified several major concerns for steelhead within this area. Populations are at low abundance relative to historic levels and at risk for further decline. Adverse modification or curtailment of steelhead habitat has occurred from various human factors, such as forestry, agriculture, urbanization, hydropower, commercial fishing, and water diversions. Natural factors, such as competition, disease, predation, and climate conditions are also considered important factors (City of Portland 1991).

The Columbia Slough generally does not provide preferable or suitable habitat for steelhead and other salmonids. Water quality conditions in the Slough have been adversely affected by various factors including surrounding urban/industrial development and the slough's slow-flushing, backwater configuration. Unlike the Columbia and Willamette Rivers, the slough conveys considerably less water. Because of its low volume and configuration, it flushes very slowly, and

Table 3-16. Federally and State-Listed Threatened and Endangered Wildlife Species Occurring in Proximity to Portland ANGB

Common Name	*Scientific Name*	Federal Status	State Status
MAMMALS			
Gray Wolf	*Canis lupus*	E	E
Kit Fox	*Vulpes macrotis*	NL	T
Wolverine	*Gulo gulo*	NL	T
Columbian White-tailed Deer	*Odocoileus virginianus leucurus*	E	NL
Washington Ground Squirrel	*Spermophilus washingtoni*	NL	E
BIRDS			
Bald eagle	*Haliaeetus leucocephalus*	T	T
Short-tailed Albatross	*Diomeda albatrus*	E	E
Aleutian Canada Goose	*Branta canadensis leucopareia*	T	E
Brown Pelican	*Pelecanus occidentalis*	E	E
Western Snowy Plover	*Charadrius alexandrinus nivosus*	T	T
California Least Tern	*Sterna antillarum browni*	E	E
Marbled Murrelet	*Brachyramphus marmoratus*	T	T
American Peregrine Falcon	*Falco peregrinus anatum*	NL	E
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	NL	E
Northern Spotted Owl	*Strix occidentalis caurina*	T	T
FISH			
Hutton Spring Tui Chub	*Gila bicolor ssp.*	T	T
Oregon Chub	*Oregonichthys crameri*	E	
Columbia River Chum	*Oncorhynchus keta*	T	NL
Borax Lake Chub	*Gila boraxobius*	E	E
Foskett Spring Speckled Dace	*Rhinichthys osculus ssp.*	T	T
Warner Sucker	*Catostomus warnerensis*	T	T
Southern Oregon Coho	*Oncorhynchus kisutch*	T	NL
Oregon Coast Coho	*Oncorhynchus kisutch*	T	NL
Umpqua River Cutthroat	*Oncorhynchus clarki clarki*	E	NL
Lahontan Cutthroat Trout	*Oncorhynchus clarki henshawi*	T	T
Bull Trout	*Salvelinus confluentus*	T	T
Middle Columbia River Steelhead	*Oncorhyncus mykiss gairdneri*	T	NL
Upper Willamette River Steelhead	*Oncorhyncus mykiss irideus*	T	NL
Lower Columbia River Steelhead	*Oncorhyncus mykiss irideus*	T	NL
Snake River Steelhead	*Oncorhyncus mykiss gairdneri*	T	NL
Snake River Sockeye Salmon	*Oncorhyncus nerka*	E	NL
Snake River Chinook Salmon	*Oncorhynchus tshawytscha*	E	T
Upper Willamette River Chinook	*Oncorhyncus tshawytscha*	T	NL
Lower Columbia River Chinook	*Oncorhyncus tshawytscha*	T	NL
Lower Columbia River Coho Salmon	*Oncorhynchus kisutch*	T	E
Lost River Sucker	*Deltistes luxatus*	E	E
Shortnose Sucker	*Chasmistes brevirostris*	E	E

Source: ODFW 2000

Notes: E – Federally or state-listed endangered species
T – Federally or state-listed threatened species
NL– Not listed

tends to accumulate potentially toxic materials and sediment. The slow flushing, combined with limited shading, may also contribute to elevated water temperatures. However, because of its interconnection with the Columbia River, the slough may support occasional and low-level use by steelhead and other salmonids (City of Portland 1991).

Wetlands. The jurisdictional wetlands on Portland ANGB were delineated and confirmed by the USACE in September 1996. A subsequent survey was conducted in November 1996 that identified six individual wetlands totaling 1.81 acres on Portland ANGB (ORANG 1998a). The largest acreage of wetlands is made up of linear constructed channels, and is comprised of 1.75 acres. These wetlands, Wetlands 5 and 6, are located in the central and northwestern portion of the Base. Of the remaining four wetlands, Wetlands 1 and 2 are within the northeastern portion of the Base and comprise a cumulative total of approximately 0.02 acres. Due to their small size, isolation, and minimal functionality, these wetlands are of relatively low value (ORANG 1998a). Two previously delineated wetlands, designated as Wetlands 3 and 4, are no longer considered "waters of the U.S." by the USACE as a result of a U.S. Supreme Court decision (*Solid Waste Agency of North Cook County v. U.S. Army Corps of Engineers*) that precludes the USACE from making an interstate commerce connection to isolated bodies of water solely on the presence or use of those areas by migratory birds. As such, no permits are necessary for the placement of dredged or fill materials in these areas (Army 2001).

3.9 Cultural Resources

3.9.1 Definition of the Resource

Cultural resources are defined by NHPA as prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources may provide insight into living conditions in previous civilizations and/or may retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the NHPA (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (AIRFA)(1978), the Archaeological Resources Protection Act (ARPA), (1979), and the Native American Graves Protection and Repatriation Act (1990).

Typically, cultural resources are subdivided into archaeological resources (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing) or architectural resources (buildings or other structures or groups of structures that are of historic or aesthetic significance). Archaeological resources comprise areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., arrowheads and bottles).

Architectural resources include standing buildings, bridges, dams and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered for the National Register of Historic Places (NRHP). More recent structures, such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future.

Traditional cultural properties or sacred sites can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The ROI for cultural resources includes only those areas in proximity to where proposed construction activities would occur on Portland ANGB. The flying operations at Portland IAP and the three alternate training locations would not affect cultural resources at the respective locations.

3.9.2 Portland ANGB/Portland IAP

Portland ANGB was originally a 394-acre undeveloped marsh and floodplain of the Columbia River. Between 1930 and 1939, a large quantity of dredged river sediment was placed as landfill to elevate the site. From 1940 through 1943, over 100 buildings were constructed, including airmen barracks, officer's quarters, offices, aircraft hangars, a hospital, and storage facilities. Between 1968 and 1972, approximately 125 old unused structures, including barracks and a portion of the hospital complex were removed. In 1970, most of the remaining marshland on the Base was filled with dredge material form the Columbia River to allow for additional development (PANGB 2000). There are 78 individual buildings and structures whose dates of construction range from the early 1940s through the mid-1990s. The majority of these buildings have been modified, altering them significantly from their original forms. The buildings located at Portland ANGB represent architectural types common to military installations and reflect the styles necessary for military effectiveness in the early 21st century (ORANG 2001d)

No prehistoric or historic archeological sites have been recorded at Portland ANGB. The amount of prior disturbance including re-contouring, placement of dredged fill from the Columbia River, demolition of structures and the on-going construction activities have resulted in a disturbed landform not conducive to the survival of archeological sites. There are no known Traditional Cultural Properties or Sacred Sites on Portland ANGB (ORANG 2001d).

3.10 Socioeconomic Resources and Environmental Justice

3.10.1 Definition of the Resource

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Human population is affected by regional birth and death rates, as well as net in or out migration. Economic activity typically comprises employment, personal income, and industrial growth. Impact on these two fundamental socioeconomic indicators also can influence other components, such as housing availability and the provision of public services.

Socioeconomic data shown in this section are presented at county, state, and U.S. levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends. Data have been collected from previously published documents issued by Federal, state, and local agencies; from state and national databases (e.g., U.S. Bureau of Economic Analysis' Regional Economic Information System).

EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, was issued to focus attention of Federal agencies on human health and environmental conditions in minority and low-income communities and to ensure that disproportionately high and adverse human health or environmental effects on these communities are identified and addressed. To provide a thorough evaluation of environmental justice issues, this socioeconomics presentation gives particular attention to the distribution of race and poverty status in areas potentially affected by implementation of the Proposed Action (DENIX 1997). Also included with environmental justice are concerns pursuant to EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. This EO directs Federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children.

The ROI for socioeconomic resources and environmental justice at Portland ANGB is Multnomah County, Oregon. The flying operations at Portland IAP and the three alternate training locations would not affect socioeconomic resources and environmental justice at the respective locations.

3.10.2 Portland ANGB/Portland IAP

Data relevant to Multnomah County, the State of Oregon, and the U.S. are provided in Table 3-17. To comply with EO 12898, ethnicity and poverty status in the vicinity of Portland ANGB were examined and compared to state and national data. The Census Bureau bases the poverty status of families and individuals on threshold variables, including income, family size, number of family members under 18 and over 65 years of age, and amount spent on food. The U.S. poverty threshold is $11,821 for a family of three. In 1990, 13.1 percent of the U.S. population was below the poverty level. Based on the 1990 U.S. Census Bureau (Table 3-17), the number of low-income and minority residents in Multnomah County is lower than the state and national averages.

Table 3-17. Race and Poverty Characteristics in Multnomah County, the State of Oregon, and the U.S.

	U.S.	State of Oregon	Multnomah County, Oregon
Total Population	281,421,906	3,421,399	660,486
Percent White	75.1	86.6	79.2
Percent Black	12.3	1.6	5.7
Percent American Indian and Alaska Native	0.9	1.3	1.0
Percent Asian	3.6	3.0	5.7
Percent Native Hawaiian and Other Pacific Islander	0.1	0.2	0.4
Percent Other	5.5	4.2	4.0
Percent Reporting Two or More Races	2.4	3.1	4.1
Percent Living in Poverty [1]	13.1	13.1	12.4

Source: [1]US Bureau of Census 1990
US Bureau of Census 2000

3.11 Hazardous Materials and Waste Management

3.11.1 Definition of the Resource

Hazardous materials are defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the Toxic Substances Control Act (TSCA), as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that may cause an increase in mortality, a serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA), which was further amended by the Hazardous and Solid Waste Amendments (HSWA), as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that poses a substantial present or potential hazard to human health or the environment.

Issues associated with hazardous material and waste typically center around underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, and use of pesticides and herbicides, fuels, and POL. When such resources are improperly used in any way they can threaten the health and well being of wildlife species, botanical habitats, soil systems, water resources, and humans.

To protect habitats and people from inadvertent and potentially harmful releases of hazardous substances, DoD has dictated that all facilities develop and implement Hazardous Material Emergency Planning and Response (HAZMAT) Plans or Spill Prevention, Control, and Countermeasure (SPCC) Plans. Also, DoD has developed the Installation Restoration Program (IRP), intended to facilitate thorough investigation and cleanup of contaminated sites located on military installations. These plans and programs, in addition to established legislation (i.e., CERCLA and RCRA) effectively form the "safety net" intended to protect the ecosystems on which most living organisms depend.

Solid waste consists of paper products, glass, plastic, wood, aluminum, other metals, and wood and other plant materials.

The ROI for this resource area is limited to the proposed construction activities and aircraft support activities associated with the C-130 aircraft and HH-60 helicopters at Portland ANGB.

The flying operations at Portland IAP and the three alternate training locations would not affect hazardous materials or hazardous waste management at the respective locations.

3.11.2 Portland ANGB/Portland IAP

The Environmental Management office at Portland ANGB (142 FW/EM) is responsible for the hazardous material and hazardous waste management for the installation. All hazardous material and hazardous waste operations of the 939 RQW are managed under the direction and guidance of the 142 FW/EM. In conformance with the policies established by AFPD 32-70, the 142 FW/EM has the following plans to manage hazardous materials and hazardous wastes:

- *SPCC Plan* and *Storm Water Pollution Prevention Control Plan (SWPC)*, dated March 2000. The *SPCC Plan* provides procedures that will: 1) reduce the likelihood of an oil release, 2) prevent oil from entering waters of the U.S., and 3) prevent oil from entering a municipal water or wastewater system in the event of a release. This Plan is required by USEPA regulations (40 CFR Part 112). The *SWPC Plan* is used to comply with the Oregon DEQ's National Pollutant Discharge Elimination System (NPDES) General Storm Water Discharge Permit, 1200-COLS, issued for the Portland ANGB (ODEQ 1999). The *SWPC Plan* describes measures that will be taken at Portland ANGB to monitor and manage stormwater discharge. NPDES regulations are intended to protect water quality by reducing the pollutants introduced to stormwater runoff (ORANG 2000c).
- *Final Compliance Site Inventory and Compliance Assurance and Pollution Prevention Management Action Plan* dated April 2001. The *Final Compliance Site Inventory and Compliance Assurance and Pollution Prevention Management Action Plan* provides guidance on achieving compliance with environmental regulations through pollution prevention. The focus of the plan is to eliminate sources of pollution and lower the overall burden of managing hazardous material and waste sites. The plan helps to establish and maintain an effective pollution prevention program through assessment of pollution sources, prioritization of those sources and identification of pollution prevention initiatives for priority pollutant sources (ORANG 2001c).
- *Hazardous Waste Management Plan* dated June 1998. The *Hazardous Waste Management Plan* provides guidance to Portland ANGB personnel on handling, storage, and disposal of hazardous materials and implements the USEPA "cradle to grave" management and control of hazardous waste. The plan also specifies 55 hazardous waste satellite accumulation sites. Portland ANGB does not have a permitted storage facility for hazardous waste. It is a policy of the 142 FW to ship hazardous waste off the installation as soon as possible. The plan defines each hazardous waste type and informs Portland ANGB personnel of the procedures for management of the wastes. Portland ANGB is a Small Quantity Generator of hazardous waste as regulated by the State of Oregon (ORANG 1998b).

Hazardous Material/Hazardous Waste. Hazardous materials are used by the 939 RQW in aircraft and ground vehicle maintenance, as well as in Base operation and maintenance activities. Hazardous materials stored and used by the 939 RQW include solvents, alcohols, dry chemicals (i.e., corrosion inhibitors), compressed gases (i.e., Halon), fertilizers, disinfectants, lubricant oils, gasoline, cleaning supplies, enamel, paints, adhesives, epoxy, brake and hydraulic fluids, and batteries.

As previously mentioned, the *142 FW Hazardous Waste Management Plan* establishes policies and procedures for handling, storage, and disposal of all hazardous waste generated at Portland ANGB. On-Base generators of hazardous waste are responsible for identifying and accounting for hazardous waste in proper containers at approved hazardous waste satellite accumulation points. When containers become full they are moved to a 180-day hazardous waste accumulation area. Before the end of the 180-day storage period hazardous waste generated at Portland ANGB are disposed of through service contracts with private companies in accordance with appropriate laws and regulations.

Hazardous materials, consumed in large quantities, such as fuel oil, jet fuel, gasoline, and diesel oil, are stored in USTs and ASTs. The *142 FW SPCC Plan* lists all tanks located on Portland ANGB. The use and storage of oil products on Portland ANGB is performed in compliance with the SPCC plan. Hazardous materials used in small quantities are controlled through a Hazardous Materials Pharmacy. The Pharmacy controls the amount of hazardous material issued to users so as to prevent excess quantities from becoming wastes.

Installation Restoration Program Sites. The IRP identified ten sites as sources of potential contamination on Portland ANGB property. The IRP is a three-phase program consisting of a preliminary assessment and site investigation, remedial investigation and feasibility study, and remedial design, remedial action, and if necessary long-term monitoring. There are 10 IRP sites on Portland ANGB. Table 3-18 presents information on each site. Figure 3-2 shows the location of two of the IRP sites that are in close proximity to the proposed construction projects at Portland ANGB.

Table 3-18. Status of IRP Sites on Portland ANGB

IRP Site No.	Description	Status
1	Central Hazardous Waste Storage Area	RI/FS[1]
2	Civil Engineering Hazardous Material Storage Area	RI/FS
3	Hush House	RI/FS
4	Main Drainage Ditch	LTM[2]
5	Aerospace Ground Equipment Maintenance Shop	NFA[3]
6	Washrack West of Building 1355 (Redesignated IRP Site No. 11)	NFA
7	Burn Pit Area	NFA
8	Sanitary Landfill	NFA
9	Petroleum, Oil, and Lubricants Facility	RI/FS
10	Equipment Washrack	NFA
11	Washrack West of Building 250	RI/FS

Notes:
[1] RI/FS – Remedial Investigation/Feasibility Study
[2] LTM – Long-Term Monitoring
[3] NFA – No Further Action

Solid Waste. Solid waste generated at the Portland ANGB is disposed of via contract services at off-Base commercially operated disposal facilities. There are no active landfills in the Portland ANGB. Portland ANGB is responsible for the collection, transportation, and disposal of all solid waste generated at the installation. Procedures for waste and volume reduction are in effect through the Pollution Prevention Management Action Plan (ORANG 2001c).

3.12 Transportation and Circulation

3.12.1 Definition of Resource

Transportation and circulation refer to the movement of vehicles throughout a road and highway network. Primary roads, such as major interstates, are principal arterials, designed to move traffic and not necessarily to provide access to all adjacent areas. Secondary roads, such as major surface streets, are arterials that provide access to residential and commercial areas, hospitals and schools.

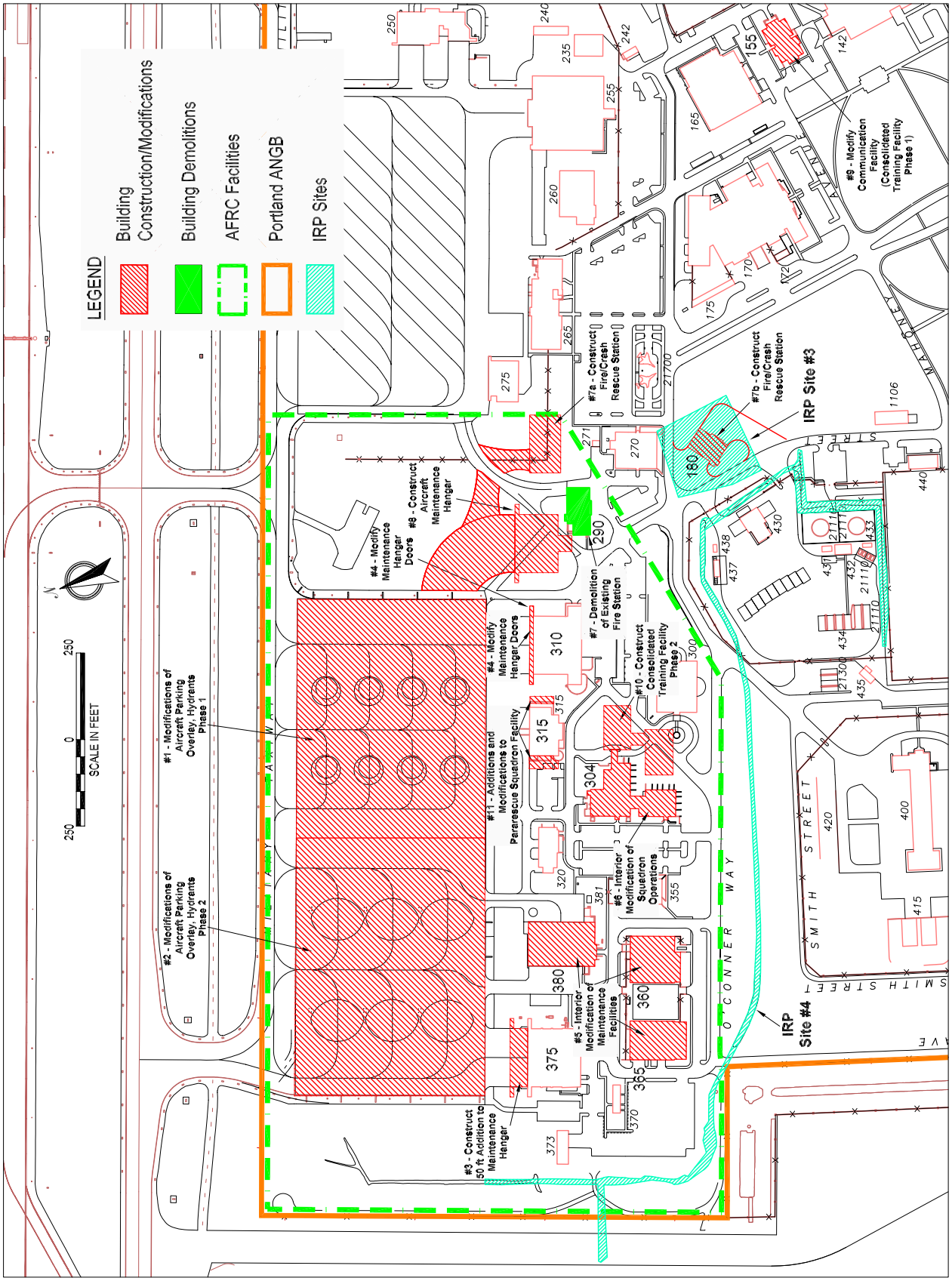

Figure 3-2. IRP Sites at Portland ANGB

3.12.2 Portland ANGB/Portland IAP

Portland ANGB and Portland IAP are situated in the northeast section of the City of Portland, near the Columbia River, approximately ten miles from downtown along Interstate Highway 84 and then along Interstate Highway 205. All public access to Portland ANGB is directly from Cornfoot Road that runs along the entire south property line of the Base. Cornfoot Road is the only major surface street available from which to gain access to the Base. Cornfoot Road is a short two lane road that intersects with Northeast 47th Avenue at its west end and Alderwood Road at its east end. Both 47th Avenue and Alderwood Road intersect to the south with Northeast Columbia Boulevard. Columbia Boulevard is a major vehicular arterial providing access to industrial areas and other parts of the City of Portland.

The primary entry gate at Portland ANGB is on Hampshire Boulevard located along Cornfoot Road. The gate has a traffic gatehouse that is in operation 24 hours a day. POVs make up most traffic entering and leaving the Base. Secondary access to the Base is provided on a limited basis at Overend Avenue, (Gate 2), Carey Street, (Gate 3), and Carl Street (Gate 4). Overend Avenue is used for UTA weekends, convoys, hazardous material access, and emergency situations. Carey and Carl Street gates are used only temporarily for special events or Base contractors (ORANG 1997a).

Vehicular circulation on Portland ANGB is primarily composed of paved roads and parking areas. Pavements are generally in good condition. Vehicular speed on the Base varies from 20 to 35 mph. Hampshire Boulevard is the major north/south circulation axis for the Base. It is aligned with the main entrance gate and has a 30- to 70-foot wide median. Hampshire Boulevard provides direct access from the main entrance gate to the main activities and facilities of the 142 FW and 939 RQW located along O'Connor Way, which is the major east/west circulation axis for the Base.

The ROI for transportation and circulation resources includes only Portland ANGB. The flying operations at the three alternate training locations would not affect transportation and circulation resources at the respective locations

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4. Environmental Consequences

This Section presents an evaluation of the environmental impacts that may result from implementing the Proposed Action or the No Action Alternative. The general approach followed throughout this Section is to briefly describe the range of impacts that would occur and provide a discussion of impacts that are considered significant.

The specific criteria for determining the significance of impacts and assumption for the analyses are presented under each resource area. Significance criteria for most potential impacts were obtained from standard criteria; Federal, state, or local agency guidelines and requirements; and/or legislative criteria. Long-term implications of the Proposed Action are also presented in this Section.

The significance of an action is measured in terms of its context and intensity. The extent to which a proposed action may affect an environmental resource depends on many factors. In some cases, environmental resources may be affected directly, in others they may be affected indirectly, and in some cases, not affected at all.

Context. The significance of an action is analyzed in several contexts, such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance may vary with the setting of a proposed action.

Intensity. Intensity refers to the severity of impact. Impacts may be beneficial or adverse. Consideration must be given to whether an impact affects public health or safety and whether it affects areas having unique characteristics such as historical or cultural resources, wetlands, or ecologically critical areas. The significance of impacts may also depend on the degree of their being controversial or posing highly uncertain, unique, or unknown risks. Significance may be found where an action sets a precedent for future actions having significant effects, as well as in cases involving cumulative impacts. When discussing intensity, consideration must be given to the degree to which the action may adversely affect animal or plant species listed as endangered or threatened or their habitat. Finally, in evaluating intensity, consideration must be given to whether an action threatens a violation of a law or regulation imposed for the protection of the environment.

4.1 Airspace Management

4.1.1 Significance Criteria

Impacts to airspace use were assessed by comparing the projected military flight operations with existing conditions and with forecasted civil aviation activities in the defined ROI. This assessment included analyzing the capability of affected airfields and airspace elements to accommodate projected military activities, and determining whether such increases would have any adverse impacts on overall airspace use in the area. Also included are considerations of such factors as the interaction of the of the proposed use of specific airspace with adjacent controlled, uncontrolled, or other military training airspace; possible impacts on other non-participating civil and military aircraft operations; and possible impacts on civil airports that underlie or are proximate to the airspace involved in the proposal.

Under the Proposed Action, impacts to airspace management are predicated on the extent to which the Proposed Action would affect airfield operations on and air traffic in the vicinity of Portland IAP, Oregon; Klamath Falls IAP, Oregon; Beale AFB, California; and Grant County IAP, Washington, as well as the navigable airspace in proximity to these facilities. For additional information regarding Airspace Management, see Section 3.1.1, Definition of Resources.

4.1.2 Portland ANGB/Portland IAP

Total military aircraft operations at Portland IAP would decrease by approximately two percent under the Proposed Action (see Table 4-1). This is primarily due to having less aircraft stationed at Portland ANGB. Also, mission requirements for the proposed KC-135R aircraft assigned to the 939 ARW (air-refueling mission) would differ from what is currently being performed by the C-130 aircraft and HH-60 helicopters assigned to the 939 RQW (pararescue mission). The construction and future use of the proposed 939 ARW facilities on Portland ANGB would not affect airfield operations at Portland IAP. Furthermore, the KC-135R aircraft is considered a "heavy jet" by Air Traffic Control in terms of airfield approaches and departures, whereas the C-130 aircraft is considered a "large" aircraft (FAA Order 7110.65N, *Air Traffic Control*, Appendix A). In addition, additional wake turbulence would be created by the KC-135R aircraft above that created by C-130 aircraft, requiring additional aircraft separation times or distances. However, when comparing existing C-130 aircraft operations to proposed KC-135R operations,

Table 4-1. Summary of Existing and Proposed Military Aircraft Operations at Portland IAP

Aircraft Type	Operations in CY 2000	Proposed Operations
Transients	671	671
F-15s	5,850	5,850
939 RQW C-130	636	0
939 RQW Helicopters	1,356	0
939 ARW KC-135R	0	1,800
Total	**8,513**	**8,321**

there would be a maximum increase of 3 aircraft operations per day, which would not impact airport capacity. Overall, the Proposed Action would have a positive impact on airfield operations at Portland IAP.

4.1.3 Alternate Training Locations

Klamath Falls International Airport

Under the Proposed Action, KC-135R aircraft would utilize Klamath Falls IAP for airfield training (i.e., touch-and-gos and closed pattern flights). The proposed 939 ARW airfield training would add approximately 900 military aircraft operations per year, or approximately four operations per day, to the existing airfield activities. This would result in an approximate 0.20 percent increase in airfield activity. In addition, KC-135R aircraft currently perform operations at Klamath Falls IAP. Therefore, the Proposed Action would have no significant adverse effects on Klamath Falls IAP.

Beale Air Force Base

Under the Proposed Action, KC-135R aircraft assigned to the 939 ARW would utilize Beale AFB for airfield training (i.e., touch-and-gos and closed pattern flights). The proposed 939 ARW airfield training would add approximately 900 military aircraft operations per year, or approximately four operations per day, to the existing airfield activities. This would result in an approximate 2.0 percent increase in airfield activity. In addition, KC-135R aircraft currently perform operations at Beale AFB. Therefore, the Proposed Action would have no significant adverse effects on Beale AFB.

Grant County International Airport

Under the Proposed Action, KC-135R aircraft assigned to the 939 ARW would utilize Grant County IAP for airfield training (i.e., touch-and-gos and closed pattern flights). The proposed 939 ARW airfield training would add approximately 900 military aircraft operations per year, or approximately four operations per day, to the existing airfield activities. This would result in a 0.8 percent increase in airfield activity. Although KC-135 aircraft do not currently operate at Grant Falls IAP, other large military aircraft including the C-17, operate at the airport. Therefore, the Proposed Action would have no significant adverse effects on Grant County IAP.

4.2 Safety

4.2.1 Significance Criteria

If implementation of the Proposed Action would substantially increase risks associated with mishap potential or flight safety relevant to the public or the environment, it would represent a significant impact. For example, if an action involved shift of aircraft flight patterns into an area known to support large seasonal or resident bird populations, the likelihood of bird strike occurrence would increase, compromising flight safety.

In addition, if implementation of a proposed action would render existing Base facilities incompatible with safety criteria (e.g., facility would fall within a QD arc) safety impacts would be significant.

4.2.2 Portland ANGB/Portland IAP

Aircraft Safety. The Proposed Action would result in a decrease in the number of aircraft operations conducted by AFRC aircraft at Portland IAP by approximately ten percent. Historical data on KC-135 mishaps is listed in Table 4-2. The table shows that the rate of Class A and Class B mishaps is less than two mishaps per 100,000 hours of flight time. This is a slight decrease from mishaps per 100,000 hours for the C-130 aircraft, and less than half of the mishaps per 100,000 hours for the HH-60 helicopter. Therefore, a beneficial impact to airfield safety at Portland IAP would be expected as a result of the Proposed Action.

An aircraft mishap can cause fire and environmental contamination. Military aircraft have the capability to carry large amounts of fuel that can combust in the event of an aircraft crash. Should a crash occur off-Base the initial response is the responsibility of the civilian authorities

Table 4-2. Historical Data on KC-135 Mishaps

Year	Class A		Class B		Fatal		Hours	Lifetime Cumulative Hours
	#	Rate [1]	#	Rate [1]	Pilot	All		
FY92	1	0.39	0	0.00	0	0	255,073	10,225,044
FY93	0	0.00	1	0.41	0	0	245,711	10,470,755
FY94	0	0.00	0	0.00	0	0	219,206	10,689,961
FY95	0	0.00	1	0.45	0	0	219,880	10,909,841
FY96	0	0.00	1	0.46	0	0	215,105	11,124,946
FY97	0	0.00	3	1.41	0	0	212,055	11,337,001
FY98	1	0.47	0	0.00	0	0	211,206	11,548,207
FY99	1	0.48	1	0.48	2	4	207,796	11,756,003
FY00	0	0.00	1	0.56	0	0	177,394	11,933,397
FY01	0	0.00	3	2.71	0	0	184,227	12,117,624
Lifetime	**79**	**0.65**	**127**	**1.05**	**134**	**629**	**12,117,624**	

Source: AFSC 2000a
Note: [1] Rate of mishaps per 100,000 hrs flown

nearest the crash site. These authorities would provide emergency services such as fire, police, and medical assistance, as necessary. In the event of an aircraft mishap, these authorities would notify the nearest USAF installation. Upon notification of the aircraft accident, the commanding officer of the nearest USAF installation dispatches a disaster response force team. The response team would provide security, medical, fire, legal, munitions, and mortuary services, as required. The response team would also assist with evacuation, accident evaluation and investigation, and retrieval of classified materials or equipment, as well as protective measures such as munitions disposal and hazardous/toxic materials removal or treatment. When necessary, the disaster response force team would coordinate activities with other regional response forces to ensure all personnel and equipment are dispatched for proper control of the accident site.

Should an aircraft mishap occur on Portland IAP the 142 FW Fire Department and the Port of Portland would both respond. The 142 FW has several fire fighting vehicles that are deemed sufficient to respond to a mishap with KC-135R aircraft (ORANG 2000c). No additional equipment or personnel are needed to support the KC-135R aircraft at Portland ANGB. Management of the mishap and direction at the scene would be in accordance with the mutual assistance agreement in-place between the 142 FW and the Port of Portland. The existing mutual assistance agreement should be reviewed to ensure it is comprehensive concerning the amount of fuel carried by the KC-135R compared with the amount carried by the C-130 aircraft. Therefore, no significant adverse impacts would be expected as a result of the Proposed Action.

Bird/Wildlife-Aircraft Strike Hazard. Continued implementation of the *142 FW Bird-Aircraft Strike Hazard Plan 91-212* and the bird management activities conducted by the Port of Portland would minimize conditions giving rise to incidents involving bird strikes. In addition, the two percent decrease in aircraft operations at Portland IAP will reduce the likelihood of a bird/wildlife strike with aircraft. Therefore, no significant adverse impacts would be expected as a result of the Proposed Action.

Construction Safety. All construction activities identified for the Proposed Action would be designed and sited to comply with all airfield safety criteria and consistent with guidelines established in the unit's Master Plan. Short-term, minor effects would be expected due to the increase in level of construction activity compared to the normal workday. Contractors would be required to establish and maintain safety programs. Projects associated with the Proposed Action would not pose a safety risk to Base personnel or the activities at the Base. Proposed construction projects would enable the 939 ARW to meet future mission objectives at the Base, and conduct or meet mission requirements in a safe operating environment.

All contractors performing construction activities are responsible for following ground safety regulations and worker compensation programs and are required to conduct construction activities in a manner that does not pose any undue risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets. Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operation; to monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g. infectious waste) agents; to recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

No impacts regarding fire hazards or public safety are expected to occur on Base from construction projects planned as part of the Proposed Action. Proposed construction activities would improve the safety and efficiency of the mission.

Regional Safety. Under the Proposed Action, the physical assets of the 939 RQW (i.e. aircraft) are being transferred to another stateside USAF base. The physical resources of the 939 RQW are being moved, but the expertise and the personnel are to remain. Although they will not have

assets at their immediate disposal, the pararescue personnel will maintain their readiness by training with equipment from other USAF and Army National Guard organizations. The personnel will remain available to affect rescues or assist other Federal, state, or local organizations affect rescues in the region.

4.2.3 Alternate Training Locations

Klamath Falls International Airport

As presented in Section 4.1.3, under the Proposed Action, KC-135R aircraft would utilize Klamath Falls IAP for airfield training. This would result in an approximate 0.20 percent increase from CY2000 airfield activity (refer to Section 3.1.2). In addition, KC-135R aircraft currently perform operations at Klamath Falls IAP. Due to the airport personnel's familiarity with the KC-135 aircraft and the nominal increase in airfield traffic, the Proposed Action would have no significant adverse effects on airfield safety at Klamath Falls IAP.

Beale Air Force Base

As presented in Section 4.1.3, under the Proposed Action, KC-135R aircraft assigned to the 939 ARW would utilize Beale AFB for airfield training. This would result in an approximate 2.0 percent increase from CY1999 airfield activity. In addition, KC-135R aircraft currently perform operations at Beale AFB. Due to the installation personnel's familiarity with the KC-135 aircraft and the nominal increase in airfield traffic, the Proposed Action would have no significant adverse effects on airfield safety at Beale AFB.

Grant County International Airport

As presented in Section 4.1.3, under the Proposed Action, KC-135R aircraft assigned to the 939 ARW would utilize Grant County IAP for airfield training. This would result in a 0.8 percent increase from CY1996 airfield activity. Although KC-135 aircraft do not currently operate at Grant County IAP, other large military aircraft including the C-17, operate at the airport. Due to the airport personnel's familiarity with large military aircraft and the nominal increase in airfield traffic, the Proposed Action would have no significant adverse effects on airfield safety at Grant County IAP.

4.3 Air Quality

4.3.1 Significance Criteria

The potential impacts to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS "attainment" areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Exceed any significance criteria established by the SIP or other established state or local requirements

Impacts to air quality in NAAQS "non-attainment" areas are considered significant if the net changes in project-related pollutant emissions:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Increase the frequency or severity of a violation of any ambient air quality standard
- Delay the attainment of any standard or other milestone contained in the SIP

With respect to the General Conformity Rule, impacts to local and regional air quality would be considered significant if the proposed Federal action would result in an increase in one or more non-attainment pollutants or if such emissions exceed *de minimis* threshold levels established in 40 CFR 93.153(b) for individual non-attainment pollutants (see Appendix B). The associated analyses and Conformity Determination may also apply to pollutants for which an area has been re-designated as a maintenance area.

As described in Appendix B, the General Conformity Rule requires that any Federal action meet the requirements of a SIP or Federal Implementation Plan (FIP). The General Conformity Rule applies only to actions in non-attainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to actions that are considered "regionally significant" or where the total emissions from the action meet or exceed the *de minimis* thresholds. An action is regionally significant when the total non-attainment pollutant emissions exceed 10 percent of

the AQCR's total emissions inventory for that non-attainment pollutant. If a Federal action meets the *de minimis* threshold requirements and is not considered regionally significant, then a full Conformity Determination is not required. The threshold levels (in tons of pollutant per year) depend upon the severity of the non-attainment area as designated by the USEPA. To evaluate whether a Proposed Action is in conformity, the net change in non-attainment pollutants are calculated, then compared to the *de minimis* thresholds. Appendix B presents the *de minimis* thresholds for each criteria pollutant and non-attainment area category.

The *de minimis* threshold emission rates were established by the USEPA in the General Conformity Rule in order to focus analysis requirements on those Federal actions with the potential to have "significant" air quality impacts. These *de minimis* thresholds are similar, in most cases, to the definitions for major stationary sources of criteria and precursors to criteria pollutants under the CAA's New Source Review (NSR) Program (CAA Title I). As shown in Table 4-3 these thresholds vary depending upon the severity of the non-attainment area classification.

Table 4-3. General Conformity Rule *de minimis* Emission Thresholds

Pollutant	Status	Non-Attainment Classification	*de minimis* Threshold (tons/yr)
Ozone (measured as Nitrogen Oxides (NO_x) or Volatile Organic Compounds (VOCs))	Non-attainment	Extreme	10
		Severe	25
		Serious	50
		Moderate/marginal (inside ozone transport region)	50 (VOCs)/100 (NO_x)
		All others	100
	Maintenance	Inside ozone transport region	50 (VOCs)/100 (NO_x)
		Outside ozone transport region	100
Carbon Monoxide (CO)	Non-attainment/ maintenance	All	100
Particulate Matter (PM_{10})	Non-attainment	Serious	70
		Moderate	100
	Maintenance	Not Applicable	100
Sulfur Dioxide (SO_2)	Non-attainment/ maintenance	All	100
Nitrogen Oxides (NO_x)	Non-attainment/ maintenance	Not Applicable	100

Source: (USAF 1995)

Federal PSD regulations also define air pollutant emissions to be "significant" if: 1) a proposed project is within 10 kilometers of any Class I area; and 2) regulated pollutant emissions would cause an increase in the concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more (40 CFR 52.21(b)(23)(iii)). The closest Class 1 PSD area is the Mount Hood Wilderness approximately 122 kilometers (76 miles) from Portland IAP.

Local and regional pollutant impacts of direct and indirect emissions from stationary emission sources from the Proposed Action are addressed through Federal and state permitting program requirements under the NSR and PSD regulations (40 CFR Parts 51 and 52).

As stated in Sections 3.3.2 and 3.3.3, non-attainment and maintenance areas are affected by this Proposed Action. As a result, AFRC must comply with the Federal General Conformity Rule. To do so, a Conformity Analysis has been completed to ensure that the Proposed Action changes in direct and indirect emissions of the ozone precursors (NO_x and VOCs), PM_{10}, and CO will be in conformity with CAA requirements. The approach, calculations, and results of this Conformity Analysis are presented in Appendix B.

The scope of the entire air quality analysis was limited to those operations or activities that result in emissions that would be directly or indirectly attributable to the implementation of the Proposed Action at 1) Portland ANGB and 2) alternate training areas.

4.3.2 Portland ANGB/Portland IAP

At Portland ANGB, the potential sources of increased criteria pollutant emissions would be from 1) construction activities; and 2) aircraft operations, maintenance, and support activities. For analysis purposes, the construction and final configuration of the Proposed Action at Portland ANGB were analyzed separately since these are temporary short-term activities.

Construction Activities. The Proposed Action consists of eleven construction projects at various locations and facilities throughout Portland ANGB. These projects address the requirements for the KC-135R airframe and support facilities and they include demolition or modification of existing buildings and the construction of new facilities as well as smaller modifications and additions to existing structures. Table 4-4 lists the start date, project duration, and areas affected by implementation of the proposed construction projects or facility modifications.

Table 4-4. Proposed Construction Projects at Portland ANGB

Proposed Construction Projects	Start Date (FY)	Duration (Months)	Project Area (ft^2)	Asphalt Area (ft^2)
New Facilities				
Phase 1 Construction of Aircraft Parking Overlay –(Fuel Hydrant System)	2003	9	-	291,110
Phase 1 – Construction of Consolidated Training Facility	2003	12	3,380	-
Phase 2 Construction of Aircraft Parking Overlay –(Fuel Hydrant System)	2004	9	-	291,110
Phase 2 – Construction of Consolidated Training Facility	2004	12	16,157	-
Fire/Crash Rescue Station	2003	12	24,754	4300
Construction of Aircraft Maintenance Hangar	2005	15	25,834	97,030
Existing Facilities				
Modification of Maintenance Shops, Buildings 360, 365 and 380	2003	12	39,008	-
Alteration of Maintenance Hanger, Buildings 375	2004	9	8,930	-
Modification to Squadron Operations, Buildings 304	2004	7	13,431	-
Alter Maintenance Hangar, Bldg. 310	2003	4	-	-
Add/Alter Pararescue Squadron Facility, Bldg. 315	2004	6	6,980	-

FY – Fiscal Year

ft^2 – square feet

The construction projects would generate total suspended particulate matter (TSP) and PM_{10} emissions as fugitive dust from ground disturbing activities (e.g., grading, demolition, soil piles, unpaved roads, etc.) and combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day-to-day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity.

Fugitive dust emissions for various construction activities were calculated using emission factors and assumptions published in USEPA's AP-42. The USEPA guidance assumes that 230 working days are available per year for construction (accounting for weekends, weather, and holidays),

and that only half of these working days would result in uncontrolled fugitive dust emissions (USEPA 1995). Based upon the moist regional climate around Portland, Oregon, the soil moisture content applied to these calculations was assumed to be 50 percent. According to the wind speed data found on the USEPA website, a wind speed of greater then 12 miles per hour is recorded one percent of the time in the Portland area (SSMD 2002).

Construction operations would also result in emissions of criteria pollutants as combustion products from construction equipment, and evaporative emissions from architectural coatings and asphalt paving operations. Emission factors used were based on guidance provided in *Air Quality Thresholds of Significance* from the Sacramento Metropolitan Air Quality Management District (SMAQMD 1994) and acceptable engineering practices.

The results of the emission calculations for construction activities are presented in Table 4-5, and the calculations are included in Attachment 2 to Appendix B. Analysis of the data presented in Table 4-5 indicates that the greatest emissions of VOC, NO_x, CO, SO_x, and PM_{10} would be generated during FY 2004. For purposes of analysis, the project duration, affected site area disturbed, and parking overlay construction presented in Table 4-4 were used to estimate fugitive dust emissions. These emissions would produce slightly elevated short-term PM_{10} ambient air concentrations. However, the effects would be temporary and would fall off rapidly with distance from the proposed construction site.

Table 4-5. Construction Activity Emissions from the Proposed Action at Portland ANGB

	Construction Emissions Estimates [1]				
Fiscal Year	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**
2003	9.92	3.75	8.25	0.50	10.01
2004	15.63	5.37	13.50	0.78	11.13
2005	4.65	2.27	3.98	0.23	3.64
2006	0.41	0.34	0.38	0.02	0.17
Applicable *de minimis* Thresholds[2]	100	50	100	N/A	N/A

Note: [1] Estimates are based on construction project and scheduling information provided by 939 RQW and accepted engineering assumptions.

[2] AQCR No. 193 is in attainment for SOx and PM10, therefore *de minimis* thresholds are not applicable (N/A).

tpy – tons per year.

Combustion by-product emissions from construction equipment exhausts were estimated using USEPA-approved emissions factors for heavy-duty diesel-powered construction equipment (USEPA 1985b). As with fugitive dust emissions, combustion emissions would produce slightly elevated air pollutant concentrations during periods of construction. However, the effects would be temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term impacts.

The projected emissions of all criteria pollutants resulting from the Proposed Action would not contribute to the long-term degradation of air quality in the region. Further, the emissions of maintenance area pollutants (i.e., NO_x, VOCs, and CO) are far below applicable *de minimis* thresholds under the General Conformity Rule (See Appendix B).

Aircraft Operations. Calculations of air pollutant emissions from existing and projected aircraft operations were based on the annual number of landing-takeoff (LTO) and touch-and-go (TGO) cycles at the Portland IAP airfield.

For all aircraft operations, it was assumed that a given LTO cycle includes an approach from 3,000 feet AGL to the airfield, landing, taxi-in to parking position, taxi-out to the runway, take-off, and climb out to 3,000 feet AGL. A TGO cycle is identical to a LTO cycle except all taxiing time has been excluded. The 3,000 feet AGL ceiling is assumed as the atmospheric mixing height, above which any pollutants generated would not contribute to increased pollutant concentrations at ground-level. Therefore, all pollutant emissions from aircraft operations above 3,000 feet AGL were excluded from the calculations and this analysis.

For the various flight profiles, fuel flow rates, times-in-mode, and published aircraft engine emission factors were used for estimating pollutant emissions (AFIERA 2001). Each flight profile is characterized by one or more modes-of-operation or power settings (e.g., takeoff, climb out, approach, taxi). Where possible, actual times-in-mode (e.g., military transport, military combat, etc.) for HH-60G, C-130, and KC-135R aircraft operations were substituted for the default times-in-mode provided by the USEPA (AFIERA 2001). Detailed calculations are presented in Attachment 1 to Appendix B. The net changes in air pollutant emissions for proposed aircraft operations at Portland ANGB are presented in Table 4-6.

Table 4-6. Net Changes in Operational Emissions for the Proposed Action at Portland ANGB (CY 2005)

Air Pollutant Emissions Source	NO_x Emissions (tpy)	VOC Emissions (tpy)	CO Emissions (tpy)	SO_2 Emissions (tpy)	PM_{10} Emissions (tpy)
Operating Emissions Changes					
Aircraft and Engine Run-Up Emissions [1]	24.84	-1.15	13.40	1.56	6.34
Fuel Storage and Handling Emissions [2]	-	0.34	--	--	--
Commercial Fuel Truck Emissions [3]	0.10	0.03	0.17	0.01	0.12
Total Worst Case Net Change	24.94	-0.78	13.54	1.57	6.46
AQCR No. 193 Emission Inventory [4]	160,546	218,893	1,168,089	120,694	272,701
Applicable *de minimis* Thresholds [5]	**100**	**50**	**100**	**N/A**	**N/A**
Percent of *de minimis* Threshold	24.94%	-0.78%	13.54%	--	--

Notes:

[1] Aircraft operations for CY2005 include the 8 proposed KC-135R aircraft and proposed engine run-ups.

[2] Fuel handling emissions were estimated using USEPA and AFIERA guidance as published in *the Final 1999 Air Emissions Inventory* prepared for the 142 FW (dated May 2001).

[3] Diesel fuel truck emission factors are from USEPA MOBIL5 emissions model, as compiled and published in the Air Emissions Inventory Guidance Document for Mobile Sources and Air Force Installations: U.S. Air Force Institute for Environmental Safety and Occupational Health Risk Analysis (AFIERA), July 2001.

[4] Ref: USEPA AIRData NET Tier Report for CY1999.

[5] AQCR No. 193 is in attainment for SOx and PM10, therefore *de minimis* thresholds are not applicable (N/A).

tpy – tons per year.
N/A – not applicable

AGE Operations. Implementation of the Proposed Action calls for an increase from 82 pieces of fuel-powered AGE to 90 pieces of fuel-powered AGE. However, the overall usage of powered AGE is not expected to increase. The slight increase in the numbers and changes in characteristics of AGE equipment are not expected to change the future AGE emissions or fuel use at Portland ANGB. Therefore, no further analysis is required.

Aircraft Engine Testing. As covered under the installation's Operating Permit issued by Oregon DEQ, aircraft engine testing is currently performed on both the HH-60G and C-130 aircraft at the permitted test cell facility. Upon implementation of the Proposed Action, routine off-aircraft engine jet engine testing would be eliminated at the base. The engine of the KC-135R does not

require frequent engine tests and all required repair work is projected to occur offsite at an appropriate maintenance depot. As such, only trim checks and engine run-up tests would only occur at Portland ANGB.

Engine run-up emissions were calculated for existing HH-60G and C-130 aircraft maintenance activities as well as projected KC-135 operations. Like the aircraft operations calculations, the calculation of testing emissions use USEPA- and USAF-approved emission factors and fuel consumption rates for each engine type (AFIERA 2001). Estimated existing and proposed power settings, times-in-modes, and total aircraft engine tests were provided by Portland ANGB staff. The net emissions changes from trim checks and engine run-up tests are presented in Table 4-6 and the calculations are included in Attachment 1 to Appendix B.

Vehicle Operations: The Proposed Action does not include a substantial change in the number of permanent or temporary personnel at Portland ANGB or at other facilities affected by this action. There would be no appreciable change in POV or GOV traffic, and, therefore, an analysis to address vehicle emissions is not required.

Fuel Storage and Handling Emissions. Under the Proposed Action, an estimated increase of 8.6 million gallons of JP-8 jet fuel distribution and use at Portland ANGB would be expected. This would increase the number of commercial fuel tank truck deliveries to the facility as well as a substantial increase in the use of storage tanks, fuel loading facilities, and USAF-operated fuel trucks. As a result, increased evaporative fuel emissions (i.e., VOCs) would be generated by this increase in fuel throughput. The net increase in approximately 0.344 tons per year of VOC emissions were calculated based on the USEPA-approved emission factors. The net change in VOC emissions are shown in Table 4-6.

Fuel Truck Traffic Emissions. Commercial fuel trucks (10,000-gallon capacity - each) are used to transport JP-8 jet fuel from a local distributor to Portland ANGB. Given an increased fuel throughput of 8.6 million gallons per year and a round trip distance of approximately 16 miles, the Proposed Action would result in an increase in approximately 956 trips or 15,289 vehicle miles traveled (VMT). Based on USEPA-approved emission factors for diesel trucks, this increase in local truck VMT would generate a relatively small net increase in pollutant emissions (i.e., less than 0.20 tons/years of any single pollutant) as shown in Table 4-6.

The projected total net changes in criteria pollutant emissions due to the Proposed Action at Portland ANGB are summarized in Table 4-6. This summary also compares the total net estimated emissions changes to the existing regional inventory for AQCR No. 193 and the current General Conformity *de minimis* thresholds for non-attainment pollutants.

The information presented in Table 4-6 shows that NO_x, CO, SO_2, and PM_{10} emissions would increase slightly upon implementation of the Proposed Action at Portland ANGB but that these increases would be well below *de minimis* thresholds. VOC emissions would decrease from implementation of the Proposed Action. Comparison of the net change in air pollutant emissions with the AQCR No. 193 emissions inventory indicates that implementation of the Proposed Action at Portland ANGB would not represent a significant addition of pollutants and, therefore, also meets regional significance requirements under the General Conformity Rule. No adverse impact to ambient air quality at or in the vicinity of Portland ANGB or the maintenance of present air quality is expected.

4.3.3 Alternate Training Locations

Aircraft Flight Operations. The proposed aircraft conversion would require the use of three alternative training locations. These operations would change the amounts and characteristics of regulated air pollutant emissions generated at each location. Estimates of the net increases in aircraft operational emissions associated with the Proposed Action are based on proposed annual airfield operations and available documentation on aircraft emissions profiles, flight patterns, and typical operation characteristics.

For the airfield operations in the vicinity of the alternative training locations, it was assumed that only TGO operations and closed pattern flights would occur. Approximately 900 KC-135R operations per year were assumed for each alternate training location. Emission estimates are therefore the same for all three locations. The TGO cycle includes an approach from 3,000 feet AGL to the alternative training locations, landing, takeoff, and climb out to 3,000 feet AGL. As described above, aircraft engine emission factors were used for estimating pollutant emissions and were applied to the aircraft flight profiles, published fuel flow rates, and times-in-mode for the KC-135R aircraft (AFIERA 2001).

Table 4-7 presents the results of the calculations for criteria pollutant emissions for each of the alternate training locations: Klamath Falls IAP, Oregon; Beale AFB, California; and Grant

Table 4-7. Proposed Action Aircraft Operations Net Emission Increases at Alternate Training Locations

	Net Changes in Criteria Pollutant Emissions				
	NO_x (tpy)	**VOC (tpy)**	**PM_{10} (tpy)**	**SO_2 (tpy)**	**CO (tpy)**
Net Emissions Increase at Klamath Falls IAP, Oregon [1]	5.07	0.02	0.47	0.36	0.82
de minimis Threshold [2]	N/A	N/A	100	N/A	100
Net Increase as a percentage of the *de minimis* Threshold	**-**	**-**	**0.004%**	**-**	**0.008%**
Net Emissions Increase at Beale AFB, California [3]	5.07	0.02	0.47	0.36	0.82
de minimis Threshold	100	100	100	N/A	N/A
Net Increase as a percentage of the *de minimis* Threshold	**0.051%**	**0.0001%**	**0.004%**	**-**	**-**
Net Emissions Increase at Grant County IAP, Washington	5.07	0.02	0.47	0.36	0.82

Source: Calculations are based on proposed operations at each location and AFIERA Guidance for Mobile Sources (AFIERA 2001).
Notes:
[1] Klamath Falls IAP is located in Klamath County, Oregon in AQCR No. 190, which is designated as a moderate non-attaiment area for PM_{10} and CO.
[2] Ref. Table 4-2 above for *de minimis* thresholds for applicable pollutants.
[3] Beale AFB is located in Yuba County, California in AQCR No. 28, which is designated as maintenance area for ozone and PM_{10}.
tpy – tons per year
N/A – not applicable

County IAP, Washington. Grant County IAP is located in an attainment area, so no conformity analysis is required for that location. As shown, aircraft pollutant emissions increases that would occur under the Proposed Action would be far below the established *de minimis* thresholds for all criteria pollutants at Klamath Falls IAP and Beale AFB – both of which are located in non-attainment or maintenance areas (see Section 3.3.3).

Conformity Analysis. Analysis of the proposed emissions at Portland ANGB and the alternate training locations indicates that all applicable non-attainment and maintenance area pollutant emissions associated with each phase of the proposed KC-135R beddown (i.e., construction and operations) meet both *de minimis* and regional significance guidelines under the Final General Conformity Rule. Based on these findings, it is concluded that this AFRC action is exempt from further conformity analysis and determinations. Appendix B includes a conformity analysis that details the net changes in NO_x, VOC, PM_{10}, SO_2, and CO emissions, the calculations, and the

conclusions that result. Based on the analysis presented above, no mitigative actions are required for the Proposed Action at Portland ANGB or the alternate training locations.

4.4 Noise

4.4.1 Significance Criteria

Noise impact analyses typically evaluate potential changes to existing noise environments that would result from implementation of a proposed action. Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (i.e., if the total area exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased noise exposure to unacceptable noise levels). Projected noise impacts were evaluated quantitatively for the Proposed Action.

Noise is a principal concern associated with aircraft operations. Proposed aircraft operations would have to double before an increase in noise is perceived. The main issues concerning noise effects on humans are physiological effects (hearing loss and nonauditory effects), behavioral effects (speech or sleep interference and performance effects), and subjective effects such as annoyance. These issues are discussed in greater detail in Appendix C.

As discussed in Section 3.4.2, SEL values are used to assess aircraft single events. Refer to Appendix C for more information on the noise metrics. Aircraft activities associated with implementation of the Proposed Action differ from those accomplished under existing conditions at Portland IAP and the four airports proposed for use by the 939 ARW. Projected noise impacts were evaluated qualitatively for the ROIs, as discussed below.

4.4.2 Portland ANGB/Portland IAP

Under the Proposed Action, 1,992 combined C-130 aircraft and HH-60 helicopter operations would be replaced with approximately 1,800 KC-135R aircraft operations. Table 4-8 provides a comparison or SEL values (dBA) at various altitudes for KC-135R aircraft operating directly overhead at various speeds and power settings depending on aircraft type (values in the table represent averages). KC-135R SEL values (dBA) are approximately 0 to 4 dB greater than and 5 to 11 dB greater than the same type of C-130 aircraft and HH-60 helicopter operations, respectively as described in Tables 3-10.

Table 4-8. SEL Values (dBA) for KC-135R Aircraft

Description	KC-135R	KC-135R
Aircraft Profile	Max-Rated Thrust (take-off)	Approach
200 feet AGL	103.4	102.3
500 feet AGL	97.2	96.0
1,000 feet AGL	92.2	90.8
2,000 feet AGL	86.7	85.0
3,150 feet AGL	82.7	80.7
5,000 feet AGL	78.2	76.0
16,000 feet AGL	63.6	60.9

Note: Based on steady, level flight and using Omega 108 data from actual overflight noise measurements.

The SEL values (dBA) are slightly higher for the KC-135R aircraft than the currently operated 939 RQW aircraft (i.e., C-130 and HH-60), which may result in minor noise-related impacts. However, this increase would not cause a noise significant impact in the vicinity of Portland IAP because the number of military operations is minimal when compared to the number of commercial aircraft operations conducted at Portland IAP annually. Furthermore, if the analysis were to solely focus on the military aircraft operating from Portland ANGB, the overall noise impact attributable to the KC-135R aircraft in the vicinity of Portland IAP would not be significant because the current noise environment is based on daily DNL averages that are dominated by the aircraft which have the highest SEL, the F-15 aircraft. The F-15 aircraft SEL values (dBA) are approximately 3 to 20 dB greater than the same type of KC-135R aircraft operations as described in Table 3-11. Also, when compared to a more common commercial aircraft operating from Portland IAP, the Boeing 757, the KC-135R aircraft SEL values (dBA) are approximately the same as described in Table 3-12. Therefore, there would be no significant, adverse impacts as a result of the noise generated by the KC-135R aircraft under the Proposed Action.

4.4.3 Alternate Training Locations

Klamath Falls International Airport

Although the 939 RQW does not currently conduct military aircraft operations at Klamath Falls IAP, other military aircraft operations are conducted at Klamath Falls IAP. Once the conversion takes place, the 939 ARW would propose to conduct a maximum of 900 aircraft operations per

year at Klamath Falls IAP. The 939 ARW operations would increase the number of aircraft operations conducted by the military at Klamath Falls IAP by 10 percent. However, the increase in overall aircraft operations at Klamath Falls IAP would be approximately 0.20 percent.

When comparing the SEL values (dBA) for KC-135R aircraft to F-15 aircraft operating at Klamath Falls IAP, the proposed KC-135R SEL values (dBA) range from 3 to 20 dB less than the F-15 aircraft currently operating at the airport. F-15 aircraft contribute the most to the noise levels generated by military aircraft at Klamath Falls IAP. The overall noise impact in the vicinity of Klamath Falls IAP would not be significant because the current noise environment is based on daily DNL averages that are dominated by the aircraft which have the highest SEL, the F-15 aircraft. Therefore, there would be no significant, adverse impacts as a result of the noise generated by the KC-135R aircraft under the Proposed Action.

Beale Air Force Base

Under the Proposed Action, Beale AFB would also receive a maximum of 900 operations per year of KC-135R aircraft activity. U-2 aircraft currently contribute the most to the noise levels generated by military aircraft at Beale AFB. When comparing SEL values (dBA) of the KC-135R aircraft to the U-2 aircraft, KC-135R SEL values range from 13 to 21 dB lower than that of the U-2 aircraft. Although the number of military aircraft operations would increase by approximately 2 percent, the overall noise impact in the vicinity of Beale AFB would not be significant because the current noise environment is based on daily DNL averages that are dominated by the aircraft which have the highest SEL, the U-2 aircraft. Therefore, there would be no significant, adverse impacts as a result of the noise generated by the KC-135R aircraft under the Proposed Action.

Grant County International Airport

Under the Proposed Action, the maximum number of KC-135R aircraft operations proposed for Grant County IAP would be approximately 0.80 percent of the total aircraft operations currently conducted at the airport. C-17 aircraft currently contribute the most to the noise levels generated by military aircraft at Grant County IAP. When comparing SEL values (dBA) of the KC-135R aircraft to the C-17 aircraft, KC-135R SEL values range from 1 to 8 dB lower than that of the C-17 aircraft. Although the number of aircraft operations would increase by approximately 0.08 percent, the overall noise impact in the vicinity of Grant County would not be significant because

the current noise environment is based on daily DNL averages that are dominated by the aircraft which have the highest SEL, the C-17 aircraft. Therefore, there would be no significant, adverse impacts as a result of the noise generated by the KC-135R aircraft under the Proposed Action.

4.5 Land Use

4.5.1 Significance Criteria

The significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. In general, a land use impact would be significant if it were to:

- Be inconsistent or in noncompliance with existing land use plans or policies
- Preclude the viability of existing land use
- Preclude continued use or occupation of an area
- Be incompatible with adjacent land use to the extent that public health or safety is threatened
- Conflict with planning criteria established to ensure the safety and protection of human life and property

4.5.2 Portland ANGB/Portland IAP

Under the Proposed Action, construction activities would result in no changes to existing land use. This would be consistent with present and foreseeable land use patterns on the Base. In addition, the KC-135R aircraft would not contribute to an increase in the noise levels generated in the vicinity of Portland IAP. Therefore, no significant, adverse impacts are anticipated.

4.6 Geological Resources

4.6.1 Significance Criteria

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential impacts of a proposed action on geological resources. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering design are incorporated into project development.

Analysis of potential impacts on geological resources typically includes:

- Identification and description of resources that could potentially be affected

- Examination of a proposed action and the potential effects this action may have on the resource
- Assessment of the significance of potential impacts
- Provision of mitigation measures in the event that potentially significant impacts are identified

4.6.2 Portland ANGB/Portland IAP

Under the Proposed Action, construction activities, such as grading, excavating, and recontouring of the soil, would result in soil disturbance. Implementation of best management practices (BMPs) during construction would limit potential impacts resulting from construction activities. Fugitive dust from construction activities would be minimized by watering and soil stockpiling, thereby reducing to negligible levels the total amount of soil exposed. Standard erosion control means (e.g., silt fencing, sediment traps, application of water sprays, and revegetation at disturbed areas) would also reduce potential impacts related to these characteristics. Therefore, impacts on soils at the Base would not be significant.

The Proposed Action would not cause or create significant changes to the topography of the Portland ANGB. Therefore, no significant impact on regional or local topography or physiographic features would result from implementation of the Proposed Action. Impacts from geohazards can be minimized by appropriate siting of facilities and by appropriate geotechnical construction.

4.7 Water Resources

4.7.1 Significance Criteria

Significance criteria for water resources impacts are based on water availability, quality, and use; existence of floodplains; and associated regulations. A potential impact on water resources would be significant if it were to reduce water availability to existing users or interfere with the supply; create or contribute to overdraft of groundwater basins or exceed safe annual yield of water supply sources; adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions; threaten or damage unique hydrologic characteristics; and violate established laws or regulations that have been adopted to protect or manage water resources of an area. The impact of flood hazards on a proposed action is significant if such an action is proposed in an area with a high probability of flooding.

4.7.2 Portland ANGB/Portland IAP

Surface Water. Implementation of the Proposed Action would have limited short term impacts to water quality around Portland ANGB. The Proposed Action would cumulatively increase surface area and runoff potential on the Base. Soil disturbance would occur during construction activities resulting in increased sediment runoff, potentially moving additional contaminants associated with the soils in to the Columbia Slough via direct runoff or through stormwater drains. Discharge to the Columbia Slough under the Proposed Action will meet the TMDL limits developed under the new Oregon DEQ NPDES General Storm Water Discharge Permit (1200-COLS). Since the Proposed Action would lead to no exceedances of the TMDL limits for the de-icing fluids, (see Section 4.11.2) no effects surface water quality are anticipated. The use of BMPs during construction activities would help to mitigate these short-term adverse impacts from increased sedimentation. In addition, the Portland ANGB *SPCC and SWPC Plans* would be modified to ensure proper measures are in place to account for the proposed increase in the amount of fuel delivered to and distributed on the installation.

Groundwater. Projects associated with the Proposed Action would not significantly impact ground water quality or groundwater recharge. None of the proposed projects would install materials or equipment that could degrade groundwater quality or result in the increased utilization of groundwater resources. No significant increase in impervious surfaces would occur that would adversely impact groundwater recharge.

The alternative location for the Fire/Crash Station (Project No. 7b) is on IRP Site 3. Site 3 – Hush House Area is located on the south side of O'Connor Way across from Building 270 (see Figure 3-2). The IRP Feasibility Study (July 2001) established remedial action objectives and evaluated remedial alternatives for groundwater contamination at this site (142 FW 2001). Currently, Oregon DEQ is reviewing these recommendations before reaching a final decision. This location will not be selected as the site for the Fire/Crash Rescue Station unless Oregon DEQ concurs with the proposed construction plans.

Floodplain. Under the Proposed Action, no "critical action" project would occur within the 100-year floodplain elevation. EO 11988 only applies if Federal actions are considered "critical actions" within the 100-year floodplain (FEMA undated). Critical actions are defined as activities for which even a slight chance of flooding is too great including (1) the creation of an added dimension to a flood event (i.e. storing highly toxic chemicals), (2) the placement of

mobility-limited occupants of buildings (i.e. hospitals) in harms way, or (3) the increased risk of losing essential or irreplaceable records. None of the proposed construction activities meet these criteria, therefore, the Proposed Action is not considered a "critical action" and not subject to the 100-year flood standard of EO 11988. No project would occur to alter or impact the course area of any existing flood hazard area.

Therefore, no significant, adverse impacts to water resources would be expected as a result of the Proposed Action.

4.8 Biological Resources

4.8.1 Significance Criteria

This section evaluates the potential impacts to the biological resources under the Proposed Action and the No Action Alternative. The significance of impact to biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; (2) the proportion of the resource that would be affected relative to its occurrence in the region; (3) the sensitivity of the resource to proposed activities; and (4) the duration of ecological ramifications. The impacts to biological resources are significant if species or habitats of high concern are adversely affected over relatively large areas. Impacts are also considered significant if disturbances cause reductions in population size or distribution of a species of high concern.

Ground disturbance and noise associated with construction may directly or indirectly cause potential impacts to biological resources. Direct impacts from ground disturbance were evaluated by identifying the types and locations of potential ground-disturbing activities in correlation to important biological resources. Habitat removal and damage or degradation of habitats may be effects associated with ground disturbing activities.

The proximate effects of noise associated with a proposed action may be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could have the potential to lead to population declines or local or regional extinction. To evaluate effects, considerations were given to number of individuals or critical species involved, amount of habitat affected, relationship of the area of potential effect to total critical habitat within the region, type of stressors involved, and magnitude of the effects.

The significance of impacts on wetland resources is proportional to the functions and values of the wetland complex. Wetlands function as habitat for plant and wildlife populations, including threatened and endangered species that depend on wetlands for their survival. Wetlands are valuable to the public for flood mitigation, stormwater runoff abatement, aquifer recharge, water quality improvement, and aesthetics. On a global scale, wetlands are significant factors in the nitrogen, sulfur, methane, and carbon dioxide cycles. These parameters vary from year to year or from season to season. Quantification of wetlands functions and values, therefore, is based on the ecological quality of the site as compared with similar sites, and the comparison of the economic value of the habitat with the economic value of the proposed activity that would modify it. A significant adverse impact on wetlands would occur should either the major function or value of the wetland be significantly altered.

As a requirement under the ESA, Federal agencies are required to provide documentation that ensures that agency actions will not adversely affect the existence of any threatened or endangered species. The ESA requires that all Federal agencies avoid "taking" threatened or endangered species (which includes jeopardizing threatened or endangered species habitat). Section 7 of the ESA establishes a consultation process with USFWS that ends with USFWS concurrence or a determination of the risk of jeopardy from a Federal agency project.

4.8.2 Portland ANGB/Portland IAP

Vegetation. Proposed construction activities to support conversion of the 939 RQW at Portland ANGB all occur within the improved areas of the installation as depicted in Figure 2-1. The improved areas of the installation are intensively managed. Land disturbing activities associated with the Proposed Action are limited to lawn, landscaped, and paved areas. Affected areas would be reseeded or replanted following the construction, renovation, and demolition periods.

Discharges from de-icing and anti-icing activities are permitted under the Base's NPDES Permit No. 107220. Discharges from Apron B flow through slotted drains to the storm drain system just above detention Pond No. 1. The Base has implemented a BMP to address the de-icing contamination by equipping Pond No. 1 with Ringlace attached growth media to biologically treat the de-icing agent. Discharge to the Columbia Slough under the Proposed Action would meet the TMDL limits developed under the new Oregon DEQ NPDES General Storm Water Discharge Permit (1200-COLS). Since the Proposed Action would lead to no exceedances of the

TMDL limits for the de-icing fluids, no effects to aquatic vegetation from the increased use of de-icing solution are expected.

Although short-term, localized minor effects could be expected on vegetation in proximity to the construction, renovation, and demolition sites, no significant, adverse effects on vegetation would be expected as a result of the implementation of the Proposed Action at Portland ANGB.

Wildlife. Wildlife habitat on the installation is limited due to fragmentation by the existing facilities, roads, and impervious surfaces at Portland ANGB. Furthermore, most of the area associated with the Proposed Action consists of disturbed, landscaped, paved, or mowed lands. Construction activities would not impact habitat available to the wading birds, waterfowl, or the mammals that occur at Portland ANGB. This assessment is based on the limited extent of areas that would be affected by the Proposed Action.

Potential effects on wildlife are also a function of noise produced by construction operations and aircraft. Predictors of wildlife response include prior experience with noise, proximity, stage in the breeding cycle, activity or context, age, and sex composition. Previous experience with similar activities is the most important of these indicators. The rate of habituation to short-term construction is not known. The proposed construction would occur in improved areas where there is continually a high ambient noise level.

As previously described, discharge to the Columbia Slough under the Proposed Action would meet the TMDL limits developed under the new Oregon DEQ NPDES General Storm Water Discharge Permit (1200-COLS). Since the Proposed Action would lead to no exceedances of the TMDL limits for the de-icing fluids, no effects to wildlife from the increased use of de-icing solution are expected.

Therefore, no significant, adverse impacts on wildlife would be expected to result from the Proposed Action.

Threatened and Endangered Species. As previously mentioned, there are no threatened, endangered or rare species known to occur within the area of the proposed construction and demolition projects. The potential exists for the occurrence of six federally listed plant species in Portland ANGB (see Section 3.8.2). However, as previously mentioned, prior vegetative surveys conducted by the Port of Portland have not indicated the presence of these species on Portland IAP.

The Columbia Slough generally does not provide preferable or suitable habitat for steelhead and other salmonids. As previously described, discharge to the Columbia Slough under the Proposed Action would meet the TMDL limits developed under the new Oregon DEQ NPDES General Storm Water Discharge Permit (1200-COLS). Since the Proposed Action would lead to no exceedances of the TMDL limits for the de-icing fluids from the increased use of de-icing solution, there would be no adverse effects on water quality. As a result, there would be no effects to steelhead or other endangered species potentially present in the Columbia Slough.

Therefore, there would be no effect to threatened, endangered, or rare species as a result of the Proposed Action.

Wetlands. Under Project No. 1 of the construction portion of the Proposed Action, 1,950 feet of pipeline would be installed from the POL pump house to the aircraft parking area as well as three fueling pits. The pipeline would be self-contained in a concrete casing as a spill preventive measure and would follow an established road course that would take it between two designated wetland areas. This route would not encroach upon any Jurisdictional wetlands. No construction or earth moving activities would occur in wetland areas. The use of BMPs would assist in erosion and sediment control, therefore, is not anticipated any adverse impacts would occur from this action.

4.9 Cultural Resources

4.9.1 Significance Criteria

For this EA, impacts to cultural resources include:

- Potential direct impacts to cultural resources as a result of building alteration, demolition, and ground-disturbance associated with construction
- Potential degradation of setting resulting from noise and visual intrusion
- Potential structural damage caused by noise and low frequency sound vibrations

Analysis of potential impacts to cultural resources considers various impacts. Adverse impacts may include 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; neglecting the resource to the extent that it deteriorates or is destroyed; or the sell, transfer, or lease of the property out of agency ownership (or control) without adequate legally

enforceable restrictions or conditions to ensure preservation of the property's historic significance.

4.9.2 Portland ANGB/Portland IAP

The most relevant impacts to cultural resources at Portland ANGB would be related to the direct impacts from building alteration, demolition, and ground disturbing activities.

The Proposed Action project area includes the buildings listed in Table 4-9. These structures were evaluated for eligibility for the NRHP in November 2001 and were determined to lack architectural and historic significance criteria (ORANG 2001d). On January 22, 2002, the Oregon SHPO concurred that no historic properties would be affected (see Appendix A).

Table 4-9. Portland ANGB – Buildings Affected by Proposed Action

Building	Building Use	Year Built
375	HC-130 Fuel Cell Maintenance	1988
310	HC-130 Maintenance Hangar	1988
360	AGE Maintenance Shop	1986
365	Consolidated Maintenance	1986
380	Aircraft Maintenance Shop	1986
304	AFRC Group Headquarters	1985

There are no known potential prehistoric or historic site locations in the areas where ground-disturbing activities are planned. The areas are not considered to have a high sensitivity for cultural resources. Furthermore, the area has been covered with 2 or more feet of dredge material, and has suffered heavy disturbance in the past.

There is no potential for degradation of setting from noise and visual intrusion related to the construction activities proposed in this EA, nor is there potential for structural damage from noise and low frequency sound vibrations associated with the construction activities. No effects would be expected under the Proposed Action because there would be no change to the existing known archaeological, historical, and cultural resources.

4.10 Socioeconomics and Environmental Justice

4.10.1 Significance Criteria

The significance of construction expenditure impacts is assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates ten employment positions may be unnoticed in an urban area but may have significant impacts in a rural region. If potential socioeconomic changes were to result in substantial shifts in population trends or in adverse effects on regional spending and earning patterns, they would be considered significance.

4.10.2 Portland ANGB/Portland IAP

Implementation of the Proposed Action at Portland ANGB would result in a loss of four ART personnel positions and 107 traditional Reservist positions. The number of permanent full-time civilian positions is not expected to change. Short-term beneficial impacts on regional socioeconomics would occur during construction activities at Portland ANGB due to the purchase of materials and use of labor from the regional work force. However, no long-term benefits would occur, and there would be no changes in socioeconomic patterns or trends. Therefore, socioeconomic impacts would be negligible under the Proposed Action.

To comply with EO 12898, minority and low-income populations in the study area have been examined and compared to state and national statistics to determine if minority or low-income groups could be disproportionately affected by the Proposed Action. This review indicates that the number of low-income and minority residents in Multnomah County is lower than the state and national averages (see Table 3-17). Therefore, the percentage of the population in the study area considered to be potentially impacted in relation to environmental justice concerns is considered low. In addition, the short-term socioeconomic benefits of increased jobs associated with the construction under the Proposed Action would be beneficial. Therefore, no minority or low-income populations would be adversely or disproportionately impacted.

In addition, EO 13045 requires that Federal agencies identify and assess environmental health and safety risks that might disproportionately affect children. The Proposed Action would not pose any adverse or disproportionate environmental health risks or safety risks to children living in the vicinity of Portland ANGB. The likelihood of the presence of children at the site where

the Proposed Action would occur is considered minimal, which further limits the potential for any impacts. There would be no significant impacts associated with environmental justice under the Proposed Action.

4.11 Hazardous Materials and Waste Management

4.11.1 Significance Criteria

Numerous local, state, and Federal laws regulate the storage, handling, disposal, and transportation of hazardous materials and waste. The primary purpose of these laws is to protect public health and the environment. Potential impacts associated with hazardous materials and waste would be significant if the storage, use, transportation, or disposal of these substances were to substantially increase the risk to human health or exposure to the environment.

4.11.2 Portland ANGB/Portland IAP

The size of the KC-135R aircraft, when compared to the C-130 and HH-60 aircraft, may cause an increase in the amount of de-icing fluid (propylene glycol) used during the winter months. As a management practice, the 939 RQW would postpone training operations when possible to limit the use of de-icing fluid. De-icing operations occur on the aircraft parking area. The de-icing fluid drains to the pavement, which drains to a stormwater detention pond on the northwest side of the Base. Discharge of de-icing fluid to the storm drain is permitted under the Base's NPDES Waste Discharge Permit No. 1077220. The pond is equipped with Ringlace attached-growth media to biologically treat the de-icing fluid. The minimum detention time in the pond during the treatment process is two days. It is estimated that each KC-135R aircraft would require between 80 and 120 gallons of de-icing fluid during a single de-icing event. Assuming an event that would require four KC-135R aircraft to be deiced and an application of 120 gallons of deicing fluid per aircraft the total Biochemical Oxygen Demand (BOD) loading to the Columbia Slough after treatment in the detention pond would be 37.8 kilograms per day. This is significantly less than the daily limit of 244 kilograms per day established in the NPDES Stormwater Deicing Permit No. 107220 (ORANG 2000c).

Because of the aerial refueling mission of the KC-135R, the amount of aviation fuel that would transit through the Portland ANGB POL management facilities would more than double, from 8,000,000 gallons per year (ORANG 2000) to approximately 16,600,000 gallons per year. The POL storage system is permitted for operations up to 74,000,000 gallons per year (ODEQ 2000).

No additional POL storage facilities are to be constructed. The fuel hydrant system that is part of Project Nos. 1 and 2, as described in Section 2, would be managed under the Base's *SPCC and SWPC Plans*. The pipeline from the POL storage area to the aircraft parking area would be enclosed in a concrete culvert for spill control.

Should the proposed basing of KC-135R aircraft occur at Portland ANGB, it is anticipated that the procurement of products containing hazardous materials, other than de-icing fluid and aviation fuel, would be comparable to those used for the C-130 and HH-60 aircraft due to the similarity of the maintenance and support activities for the military aircraft. Additionally, the number of KC-135Rs is less than the combined number of C-130s and HH-60s that are being relocated. Therefore, it is estimated that the hazardous material procurement and hazardous waste generation would remain comparable to the current conditions at Portland ANGB and there would be no impact to hazardous material management at Portland ANGB.

The Proposed Action has the potential to impact two of the ten IRP sites at Portland ANGB. The remaining eight IRP sites are not near the location of the proposed construction activities.

The alternative location for the Fire/Crash Station (Project No. 7b) is on IRP Site 3. Site 3 – Hush House Area is located on the south side of O'Connor Way across from Building 270 (see Figure 3-2). The IRP Feasibility Study (July 2001) established remedial action objectives and evaluated remedial alternatives for groundwater contamination at this site (142 FW 2001). Currently, Oregon DEQ is reviewing these recommendations before reaching a final decision. This location will not be selected as the site for the Fire/Crash Rescue Station unless Oregon DEQ concurs with the proposed construction plans.

The construction of the pipeline for the hydrant fuel system from the pump house to the aircraft parking area would occur along the western boundary of IRP Site 3, along Carey Avenue. Engineering design and construction management of the proposed project should preclude any direct affects on IRP Site 3.

IRP Site 4 – Main Drainage Ditch is located on the south, east, and north sides of the fuel storage tank and distribution system and along the south side of O'Connor Way from Carey Street to Overend Avenue. The construction of the pipeline for the hydrant fuel system would occur along the road course from the POL storage area to the aircraft parking area. The pipeline would leave the POL storage area along the northern road exit taking it between two sections of IRP Site 4.

The construction or alteration of Buildings 365, 360, and 304 (Project Nos. 5 and 6) would occur within 200 feet of the portion of the drainage ditch that runs along the south side of O'Connor Way. Hazards associated with this site are acceptable for construction workers under USEPA and Oregon DEQ guidelines. Additionally, contaminants in the water and sediment of IRP Site 4 do not pose unacceptable risks to potential on- or off-site ecological receptors. Because of the proximity to the Columbia Slough, it has been recommended that surface water monitoring should continue to evaluate the potential for contaminants to migrate off site via the Main Drainage Ditch (ORANG 2000). Engineering design and construction management of the proposed project would preclude any direct affects on IRP Site 4.

The 142 FW/EM maintains a database detailing the occurrences of Asbestos Containing Material (ACM) on Portland ANGB. The existing Fire Station that would be demolished and the facilities to be renovated as part of the Proposed Action do not contain ACM. In accordance with the 142 FW Hazardous Waste Management Plan, a lead-based paint material survey would be performed on the Fire Station before it is demolished.

Temporary use of additional hazardous materials is expected during implementation of the construction phase of the Proposed Action. The construction activities associated with the Proposed Action would generate typical hazardous wastes including contaminated fuels, spent solvents, off specification material, and used oils. Control, use, storage, and disposal of these materials will be managed under the 142 FW *Hazardous Waste Management Plan*.

As new facilities are constructed and old buildings are renovated, the 142 FW would revise and update the 142 FW *Hazardous Waste Management Plan* to reflect current hazardous waste accumulation locations. All of the construction associated with the Proposed Action would occur in areas that are already significantly developed. Therefore, there would be no significant, adverse impacts to hazardous materials and hazardous waste management under the Proposed Action.

4.12 Transportation and Circulation

4.12.1 Significance Criteria

Impacts to transportation and circulation are evaluated on their potential for disruption or improvement of current transportation patterns and systems, and deterioration or improvement of existing levels of service. Impacts may arise from physical changes to circulation, construction

activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes created by either direct or indirect workforce and population changes related to Base activities. Impact on roadway capacities would be significant if roads with no history of exceeding their designed capacity were forced to operate at or above those capacities.

4.12.2 Portland ANGB/Portland IAP

The Proposed Action would result in elevated construction related traffic due to building construction, modification and demolition. There would be an increase in fuel truck deliveries to Portland ANGB and a temporary increase in truck traffic from the POL storage area to the aircraft parking areas until the fuel hydrant system is in place. At the endpoint of the conversion from the 939 RQW to the 939 ARW there would be a decrease in the number of personnel at Portland ANGB and a decrease in the fuel truck traffic from the POL storage area to the aircraft parking areas resulting in beneficial impacts.

Construction activities would add POV and truck traffic on and near Portland ANGB. Many of the vehicles would be kept on the Base for the duration of the construction activities resulting in a very small increase in daily vehicle trips on the Base. This increase in traffic would not be expected to have a significant impact to the level of service of the roads traveled. Furthermore, impacts from construction activity would be short-term and localized. No long-term impacts to the transportation system at the Base would be expected as a result of the Proposed Action.

During the construction activities there would some disturbance to the circulation patterns on the Base. The impacts are expected to be short-term due to the temporary nature of the construction activities. The transportation system at Portland ANGB is adequate to handle the construction activities associated with the Proposed Action.

The increased volume of fuel required under the Proposed Action would result in an annual increase of approximately 956 fuel delivery trucks to the Base or approximately 3.4 vehicle trips per day, Monday through Friday. Fuel delivery trucks would enter the Base through the primary entry gate, follow Hampshire Boulevard, Johnson Avenue, Carey Street, and the southern entrance/exit to the POL storage area. This impact would not change or impact the level of service of those roads on Portland ANGB or the network of roads leading to Portland ANGB.

As a result of the SATAF, it was determined that there would be a loss of four ART personnel positions and 107 traditional Reservist positions. The number of permanent full-time civilian

positions is not expected to change. The increase in fuel delivery trucks mentioned above would be counterbalanced by the reduction in personnel and the associated reduction in POV trips on Portland ANGB. This reduction would not occur at once but rather in stages throughout the conversion process. Due to the reduction in personnel there would be a slight decrease in the daily or peak-hour traffic volumes and, therefore, the roads in and around Portland ANGB would not exceed their designed capacities.

4.13 No Action Alternative

Under the No Action Alternative, the flying assets of the 939 RQW would be transferred to another USAF base, no new aircraft would be assigned to Portland ANGB, and no construction projects would be undertaken. The only military aircraft operations that would occur at Portland ANGB under the No Action Alternative would be associated with existing ORANG (F-15 aircraft) and transient aircraft. In addition, the Pararescue Squadron would not be established at Portland ANGB.

Airfield operations at Portland IAP would be reduced by approximately 2,000 operations per year and there would be no additional operations at any of the three alternate training locations. This would have a positive impact on airfield operations at Portland IAP and no impact on the operations at the alternate training locations. The significant reduction in military aircraft operations a Portland IAP would result in a decrease in air pollutant emissions. The net changes in air pollutant emissions associated with the No Action Alternative would be an overall improvement in ambient air quality within all affected AQCRs.

Similarly, there would be a reduction in the noise impacts at Portland ANGB due the decrease in military aircraft operations. The alternate training locations would not be affected, as there would be no additional aircraft operations.

Some positive affects would be realized in the hazardous materials and hazardous waste, biological, water, and safety resources due to the reduced number of aircraft operations and support functions associated with the aircraft, such as routine maintenance, washing, and deicing operations.

There would be no affect on the land use, geologic, cultural, and socioeconomic and environmental justice resources should there be no new aircraft to replace the pararescue assets, and no construction program at Portland ANGB.

5. Cumulative and Adverse Impacts

5.1 Cumulative Impacts

Cumulative impacts on environmental resources result from incremental effects of proposed actions, when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, state, and local) or individuals. Informed decision-making is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

The Port of Portland Master Plan identifies two alternatives to meet projected future growth needs. The two alternatives were judged to be sufficient from an environmental and financial perspective so that the decision on which alternative to implement would be based on operational factors, such as efficiency of aircraft operation and the ability to accommodate needs beyond 2020. The timeline for implementation of either alternative is not presented in the plan, however, either alternative would eventually require the relocation of all facilities and operations at Portland ANGB. Both alternatives identify a new location for Portland ANGB facilities and operations on Portland IAP property. As a part of both alternatives, a need is identified for a third parallel runway that would be partially located on the property that is now Portland ANGB. The need for the third runway and other major capacity expanding projects may never materialize. As an example, with today's baseline forecasts for needs, the runway project is estimated to be needed more than 20 years in the future (Port of Portland 2000a).

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6. Special Procedures

Impact evaluations contained in this EA have determined that no significant environmental impacts would result from implementation of the Proposed Action. However, this determination is based on the following procedures being completed by knowledgeable, responsible personnel from the USAF, working through the appropriate Federal, state, and local agencies:

- If any archeological artifacts or human remains are exposed during construction activities at Portland ANGB, the construction activities will cease, as required by Federal and USAF regulations. Work will not resume until an archeological investigation is completed.

- Implementation of best management practices during any of the proposed construction activities will limit potential adverse effects to soils resulting from the Proposed Action. Fugitive dust from construction activities will be minimized by watering and soil stockpiling, thereby reducing the total amount of soil impacted. Standard erosion control means (e.g., silt fencing, sediment traps, application of water sprays, and revegetation of disturbed areas) will also reduce potential impacts related to these characteristics.

- During construction, sediment and erosion controls will maintain surface water runoff quality at levels comparable to existing conditions.

- All known contaminated areas (IRP or AOC) will be avoided, if possible. Any incursions into contaminated soils will be coordinated with the State of Oregon during the design phase of the proposed projects.

- Appropriate security measures will be implemented at the construction site to ensure the safety of USAF personnel, property, and the Portland ANGB's mission.

- All appropriate permits will be secured prior to and will be adhered to during construction and demolition activities.

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