Department of the Army

Joint Base Lewis-McChord, Washington

ENVIRONMENTAL ASSESSMENT

Northwest Aviation Operations
Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington

December 2019

This page left intentionally blank.

Cover photo credit: Capt. Jesse Paulsboe,
https://www.army.mil/article/95684/16th_combat_aviation_brigade_completes_collective_crew_training

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

LIST OF ACRONYMS and ABBREVIATIONS

ADNL	A-weighted Day Night Average
AGL	Above Ground Level
AHAS	Avian Hazard Advisory System
AIRFA	American Indian Religious Freedom Act
AQCR	Air Quality Control Region
Army	U.S. Army
ARTCC	Air Route Traffic Control Center
ASEL	A-weighted Sound Exposure Level
ATC	Air Traffic Control
BA	Biological Assessment
BMP	Best Management Practice
BPA	Bonneville Power Administration
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH	Critical Habitat
CONUS	Contiguous United States
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
dBP	Peak Sound Level
DNL	Day-night Average Sound Level
DoD	Department of Defense
DOPAA	Description of Proposed Action and Alternatives
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FNSI	Finding of No Significant Impact
FORSCOM	US Army Forces Command
ft	foot/feet
GHG	Greenhouse Gas
HAMET	High-Altitude Mountain Environmental Training
HCP	Habitat Conservation Plan
HLZ	Helicopter Landing Zone
HTA	Helicopter Training Area
IFR	Instrument Flight Rules
JBLM	Joint Base Lewis-McChord
km	Kilometer(s)

L_{max}	Maximum Noise Level
LULC	Land Use Land Cover
METL	Mission Essential Task List
mi	mile(s)
MSL	Mean Sea Level
MTA	Mountain Training Area
MTR	Military Training Route
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NM	Nautical Mile
NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NWR	National Wildlife Refuge
SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
SOP	Standing Operating Procedure
SULMA	Special Use Land Management Area
VFR	Visual Flight Rules
VMC	Visual-Meteorological Conditions
VOR	Very High Frequency Omni Directional Range
VR	Visual Route
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WISAARD	Washington Information System for Architectural and Archaeological Records Data
YTC	Yakima Training Center

This page left intentionally blank.

1 INTRODUCTION

The U.S. Army (Army) at Joint Base Lewis-McChord (JBLM) proposes to establish three off-base helicopter training areas (HTAs) and one mountain training area (MTA) (Figure 1-1). The Army is the lead Federal agency for compliance with the National Environmental Policy Act (NEPA) and is preparing an Environmental Assessment (EA) to meet the compliance requirements of the Council on Environmental Quality (CEQ) regulations implementing NEPA at 40 Code of Federal Regulations (CFR) Part 1500-1508 as well as Army NEPA implementing regulations at 32 CFR Part 651. The proposed training areas would support JBLM training operations at off-base locations within Washington State. Training operations would be conducted using the following aircraft, the MH/UH-60 Black Hawk, AH-64 Apache, and MH/CH-47 Chinook. The training areas are expected to be permanently established and utilized as soon as the appropriate approvals are granted. In 2015, JBLM conducted an extensive public scoping campaign for this project and analysis of those comments have been used to formulate this document.

Under NEPA regulations (40 CFR Part 1500-1508) and the Army NEPA implementing regulation at 32 CFR 651, the Army must conduct an environmental analysis to inform decision-makers and the public of the potential environmental consequences of proposed Army actions. This EA evaluates the potential effects of the proposed aviation operations in Washington. The public comment period for the Draft EA will be January 8, 2020 to February 7, 2020. The EA will also be found online at https://home.army.mil/lewis-mcchord/index.php/my-Joint-Base-Lewis-Mcchord/all-services/public_works-environmental_division/environmental-impact-analysis.

1.1 Purpose of the Proposed Action

The *purpose* of the proposed action is for the Army to conduct the necessary type, level, and duration of aircraft movements through the National Airspace System, so aircrews can attain and maintain flying proficiency and be ready for immediate deployment world-wide in support of the National Defense Mission.

1.1.1 High Altitude Training Operations

The proposed high altitude mountain training area would provide JBLM aviation units with mandatory high-altitude flight operations training within short flight time from JBLM, so aircrews can attain and maintain high-altitude flying proficiency.

1.1.2 Low-Level Training Operations

The proposed low-level helicopter training areas will provide JBLM aviation units with low-level training areas off JBLM to eliminate training conflicts between JBLM aviation units and other units training at JBLM.

1.2 Need for the Proposed Action

The following sections identify the *need* for the proposed action. JBLM on-base training areas are currently limited due to a reduction in flight density (i.e. the number of aircraft that can train safely in a training area at the same time) as a result of 2011 regulation changes (JBLM Regulation 95-1, See Section 1.4 below) and scheduling conflicts with

other units, particularly ground-based activities by Brigade Combat Teams, who are given priority of usage. Currently, in order to complete needed low-level training, aircrews select off-base locations in low population areas to conduct flight tasks in accordance with Federal Aviation Administration (FAA) and Army regulations. High Altitude Mountainous Environment Training (HAMET) is currently limited to three sites in the contiguous United States (CONUS) which all require extensive travel time, scheduling difficulties and cost. Currently, all Army installations have off-post training areas for tenant aviation units to utilize.

1.2.1 **High Altitude Training Operations**

High altitudes (6,000 to 14,000 ft [1,830 to 4,270 m] elevation) and mountainous terrain pose several challenges to Army helicopter pilots. High altitudes are associated with high-wind, high-density altitude (i.e. pressure altitude that is corrected for temperature and humidity), turbulence and atmospheric instability. These factors greatly affect the performance of a helicopter engine and the handling characteristics of an aircraft. For example, an increased density altitude decreases the effectiveness of the rotor blades in providing both overall lift and thrust power to the tail rotor for directional control (i.e. increasing density altitude increases “drag”). Thus, an increased angle of attack and increased power are required to offset the increased drag. Simultaneously, the engine is less capable of producing power in the thinner air of higher altitudes, and the higher the altitude, the greater these effects have on the aircraft. As such, it is imperative that pilots master performance planning, power management, and high-altitude flight techniques to compensate for decreased aircraft performance in high-altitude, mountainous environments. HAMET was developed to prepare pilots for success in high-altitude, combat operations. HAMET adapts the National Guard’s school for individual mountain helicopter training taught in Gypsum, Colorado.

1.2.2 **Low-Level Training Operations**

Opportunities for low-level training by JBLM aviation units are limited by on-base airspace restrictions. JBLM aviation regulations were changed in 2011. These changes reduced the allowable aircraft density (i.e., the number of aircraft that can train safely in a training area at the same time) in the training areas for increased safety (JBLM Regulation 95-1, See Section 1.4 below). In addition, low-level training conflicts with training activities by other units, including ground-based activities by Brigade Combat Teams, who are given priority of usage.

As noted above, in order to meet low-level training requirements, aircrews individually select areas off-base to train. Crews choose low population areas for this training to the greatest extent possible; however, off-base landings are confined to airports which tend to be near population centers and do not contribute to realistic tactical training. These activities comply fully with FAA and Army regulations, however the lack of designated off-base training areas means that the impacts of these activities have not been assessed. In addition, JBLM desires to consolidate off-base low-level aircrew training in areas that have been thoroughly analyzed within an EA for hazards, noise receptors, environmental considerations, and other land and air uses by the public. These

proposed HTAs replicate environments that we expect to encounter when we deploy. JBLM requires dedicated off-base HTAs, as have existed in the past, which will allow all assigned units and missions to meet the Aircrew Training Program requirements for Full Spectrum day and night training. The old HTA leases were allowed to expire in 1992 after the 9th Infantry Division deactivated. Approved MTAs and low-level HTAs off-base would alleviate land-use conflicts that are occurring now and may allow for future changes of aviation crew training at JBLM.

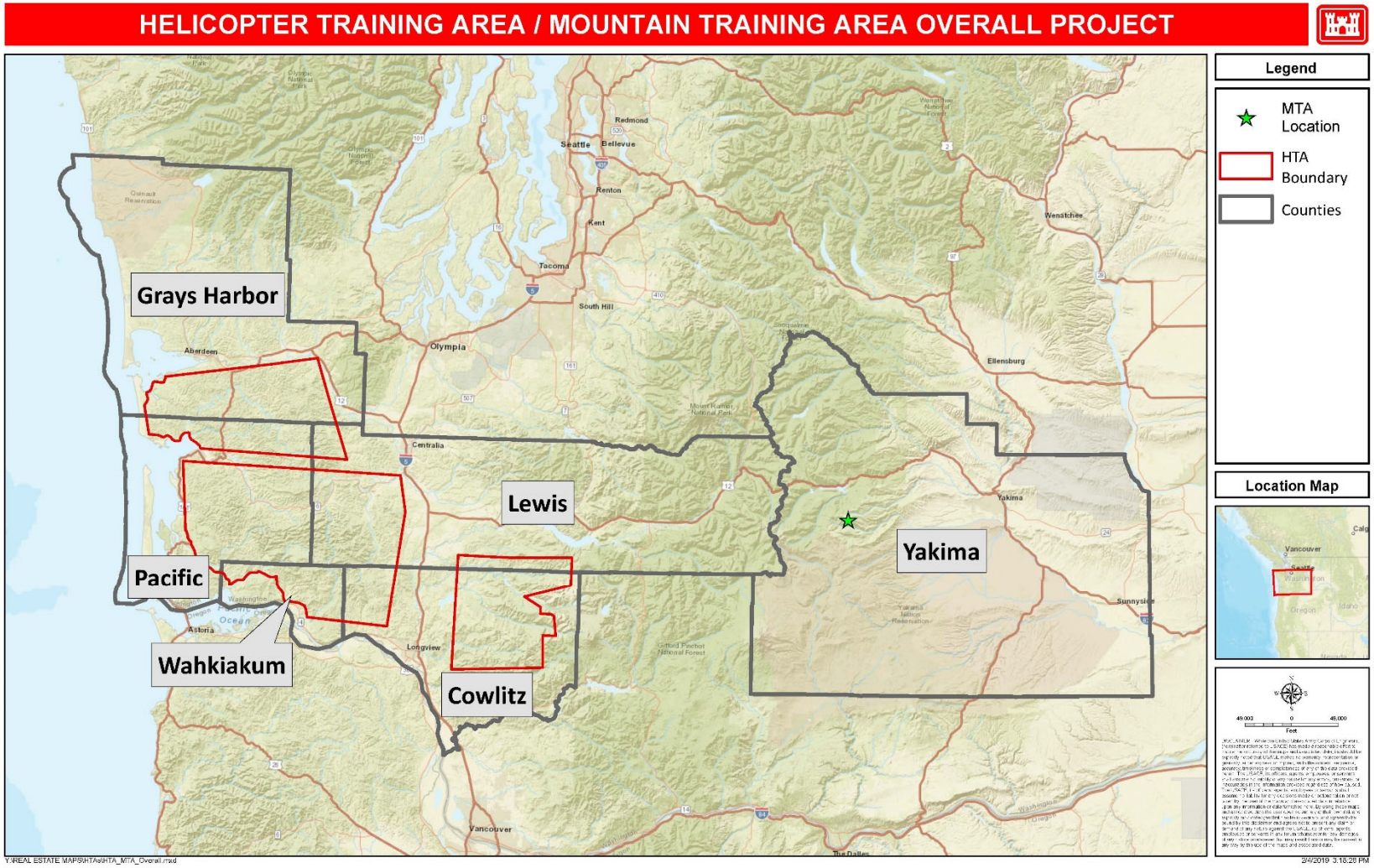


Figure 1-1. General location map of proposed training areas

1.3 Scope of Analysis

This EA analyzes the potential environmental effects of two alternatives: a No Action Alternative and one action alternative. The document analyzes direct effects (those caused by the action alternative and occurring at the same time and place) and indirect effects (those caused by the action alternative and occurring later in time or farther removed in distance, but that are still reasonably foreseeable). The potential for cumulative effects (effects resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions) is also addressed, and mitigation measures to avoid, minimize, rectify, reduce, or compensate for impacts are identified, where appropriate.

1.4 Relationship to Statutes, Regulations, and Policies

The intent of the EA is to comply with NEPA by assessing the potential impacts of off-base aviation operations on resources in Washington State. Additional guidance for NEPA compliance and for assessing impacts is provided in the CEQ *Regulations for Implementing the Procedural Provisions of NEPA* (40 CFR Parts 1500-1508), and *Environmental Effects of Army Actions* (32 CFR Part 651).

Army decisions that affect environmental resources and conditions also occur within the framework of numerous laws, regulations and Executive Orders (EOs). Some of these authorities prescribe standards for compliance; others require specified planning and management actions, the use of which is designed to protect environmental values potentially affected by proposed training operations. Laws and related regulations bearing on the proposed Army actions include, but are not limited to, the American Indian Religious Freedom Act (AIRFA), the Clean Air Act; Clean Water Act; Coastal Zone Management Act; Endangered Species Act; Migratory Bird Treaty Act; Marine Mammal Protection Act; National Historic Preservation Act; Noise Control Act; and Pollution Prevention Act.

EOs bearing on proposed Army actions include EO 11990 (*Protection of Wetlands*), EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), EO 13007 (*Sacred Indian Sites*), EO 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*), EO 13175 (*Consultation and Coordination with Indian Tribal Governments),* and EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*).

Army actions are also governed by Department of Defense (DoD), Army and JBLM regulations, including the following:

- Army Regulation 200-1 (*Environmental Quality – Environmental Protection and Enhancement*; December 13, 2007)
- JBLM Regulation 200-1 (*Environmental Protection and Enhancement*; November 1, 2004)

- Army Regulation 385-10 (*Army Safety Program*; February 24, 2017); Department of the Army Pamphlet 385-90 (*Army Aviation Accident Prevention Program*; August 28, 2007)
- JBLM Regulation 95-1 (*Aviation – Flight Regulations*; December 18, 2012)
- Army Regulation 95-1 (*Flight Regulations*; March 22, 2018)
- Fort Lewis Regulation 350-30 (*Fort Lewis Range Regulations*; March 29, 2000; Change 1 November 23, 2005)
- Fort Lewis Regulation 360-5 (*Army Public Affairs – Fort Lewis Noise and Vibration Complaint Procedure*; March 13, 1998)
- Fort Lewis Regulation 420-5 (*Procedures for the Protection of State and Federally Listed Threatened, Endangered, Candidate Species, Species of Concern, and Designated Critical Habitat;* August 9, 2004)

JBLM Regulation 95-1 prescribes the procedures used by aircrews to execute flying operations (JBLM 2012b). The document states crew requirements and responsibilities, the management of air and land space (i.e. aviation training areas, corridors, and routes) and flight restrictions. It provides the structure for aviation operations at JBLM in order to provide safe and efficient operations and maximize the utility of the space available for training. The regulation is required to be reviewed, and if required, updated annually to ensure it accurately addresses the requirements of local Commanders, Federal Regulations, and technology. The proponent for the regulation is the JBLM Aviation Division Chief as approved by the Joint Base Garrison Commander. Following completion of the environmental analysis and public review process, the regulation will be revised to include the selected alternative.

1.5 Decisions to be Made

Based on the findings of the EA, the Army decision-maker will decide whether to implement the proposed action or another alternative. If the decision-maker selects the proposed action and the EA determines that there would be no significant environmental impacts, a Finding of No Significant Impact (FNSI) would be published. A decision on whether to proceed with the proposed action also depends on permission from landowners to utilize the proposed MTA and helicopter landing zones (HLZs) within the HTAs.

1.6 Public Involvement

The premise for NEPA is that providing information to the decision-maker and the public will improve the quality of final decisions concerning the environmental effects of federal actions. All persons who have a potential interest in the proposed action, including minority, low-income, and Native American groups, are urged to participate in the Army's environmental impact analysis process conducted under NEPA.

The Army conducted an initial scoping effort July 1, 2015 through November 3, 2015. Three HTAs and the Okanogan MTA were presented, with one HLZ proposed in the HTAs and seven HLZs proposed in the MTA. Over 2,000 comments were received. Public concerns were largely related to helicopter flights in and around federally

designated wilderness areas as well as recreation, noise, and socioeconomics impacts to the Okanogan MTA region. Details of the scoping alternative description and summaries of the public responses received can be found in Appendix B. Scoping comments were considered in preparing the Draft EA.

The Army will make the EA available for public review and comment for 30 days, from January 8, 2020 to February 7, 2020. The Notice of Availability (NOA) of the EA will be mailed electronically and/or hard copy to known stakeholders and interested parties. The NOA will also be publicized on the JBLM website and in local newspapers and libraries. The EA will be available for download from the JBLM website (https://home.army.mil/lewis-mcchord/index.php/my-Joint-Base-Lewis-Mcchord/all-services/public_works-environmental_division/environmental-impact-analysis).

The Army will review and respond to comments received during the public comment period. If new impacts are found, these will be analyzed accordingly.

2 PROPOSED ACTION AND ALTERNATIVES

Alternatives considered under NEPA must include the proposed action, and the No Action alternative. The No Action alternative is included as a means of comparison to the action alternative to help distinguish the relative merits and disadvantages between alternatives. Pursuant to Army Regulation 32 CFR 651, *Environmental Analysis of Army Actions*, the selected alternative must meet the project purpose and need and it should be environmentally acceptable, to the extent possible.

2.1 Proposed Action

The U.S. Army at JBLM proposes to establish three off-base HTAs and one MTA to enable aircrews to attain and maintain flying proficiency in support of the National Defense Mission while reducing scheduling difficulties, travel time, and cost.

2.2 Selection Criteria

2.2.1 Training Area Screening

The Army used detailed screening and evaluation criteria to select the proposed mountain training area and helicopter training areas. In response to the 2015 public scoping, as described below in Section 2.3.3 and further detailed in Appendix B, the Army reformulated the screening and evaluation criteria. The final screening criteria are shown in Table 2-1 below. Notable changes from the initial scoping effort include a change in the *Land Availability* focus for the HLZs within the HTAs and to identify a new MTA, shifted to a preference for privately owned land. The *Terrain to Facilitate HLZ Operations* slope has been reduced from 15 to 10 degrees. *Distance from Sensitive Noise Receptors* was added to protect publically valued lands such as designated Wilderness areas. Additionally, the *High Altitude Terrain* criteria was included to define the altitude threshold for HAMET.

Mission Essential Task List (METL) area requirements include but are not limited to a 1.9 mile (mi) (3 kilometer (km)) radius for landing area reconnaissance, a 3.1 mi (5 km)

radius for evasive maneuvers, and a 6.2 mi (10 km) radius for firing techniques (includes simulation of target acquisition and instrumentation prior to firing though with no actual weapons firing), team employment, close combat attack and combat maneuvering flight simulations. Evaluation criteria (Table 2-2) were used to refine the polygons for each of the proposed training areas.

Table 2-1. Updated screening criteria for training area boundaries

Size of Proposed Training Area*	12-24 mi (20-40 km) routes in each HTA
Distance from JBLM*	20 minutes flight time from JBLM
Environmental Feasibility	Least amount of threatened/endangered species or habitat preferred
Land Ownership	Privately owned land preferred
High Altitude Terrain**	Land at or above 6,000’
Presence of Suitable Terrain**	Pinnacle, ridgeline, and draw preferred
Terrain to Facilitate HLZ Operations*	Open area less than 10 degrees of slope sized for H-60/H-64/H-47 (H-47 preferred)
Distance from Sensitive Noise Receptors	1-mile (1.6 km) buffer from noise receptors (i.e., parks, schools, and hospitals)

*HTAs only
**MTAs only

Table 2-2. Evaluation criteria for training area boundaries

Terrain Relief within HTA Boundaries	Higher amount of terrain features preferred
Number of Land Owners	Fewer is preferred
Density of Livestock	Lower density is preferred
Airspace Analysis	Fewer public airports preferred
Flight Hazards	Fewer towers and active logging operations preferred
Number of Developed Areas within HTA Boundaries	Fewer is preferred

2.2.2 **Helicopter Landing Zone Screening**

HLZs are necessary within each HTA in order to meet the purpose and need for the action as described above in Sections 1.1 and 1.2. HLZs within the HTAs were chosen based on the criteria in Table 2-3. Generally, a HLZ is an area that can accommodate the landing of one or more helicopters simultaneously. The terrain condition, slope, and overall topography of the HLZ are taken into consideration when selecting a HLZ. Sites chosen for HLZs must have soil conditions that are capable of supporting the weight of the aircraft to prevent aircraft from being mired, creating excessive dust, or blowing snow. Loose material can cause obscured visual conditions and flying debris can be dangerous for personnel on the ground as well as the flight crew and the aircraft.

HLZs selected during the initial 2015 screening were sited on state- and federally-owned land. These HLZs have been removed from further consideration based on the updated criteria in Table 2-3. Following the 2015 scoping process the Army shifted potential HLZ locations to privately owned land. Potential HLZs were identified through inspection of satellite imagery using the revised selection criteria. Potential HLZ parcels were identified in all three HTAs. All potential HLZ parcels are on privately owned land, which is predominately used for timber production. Sites that met the screening criteria were plentiful in HTA 2 and HTA 3 (see maps in Appendix A), due to relatively gentle topography and large areas of actively logged land, owned by a broad selection of timber companies. Acceptable options in HTA 4 (see map in Appendix A) were significantly scarcer and the topography is steeper overall. A more detailed discussion on HLZs can be found in Section 2.4.2.3.

MTA HLZs were initially selected for their training-appropriate characteristics (i.e. high-altitude mountainous terrain, uneven surfaces, and pinnacle/pinnacle-like and ridge/ridge-like features) but also with safety as a consideration so as to not harm pilots or citizens, or damage aircraft or ground infrastructure. However, revised screening criteria (Table 2-1) for an MTA boundary has led to an MTA where the entire training area would be available for pilots to conduct take-offs and landings without the need to designate specific HLZs. The proposed MTA is discussed in greater detail in Section 2.4.2.1.

Table 2-3. Screening criteria for helicopter landing zone selection

Distance to Noise Receptors	1-mile (1.6 km) buffer from noise receptors (i.e., parks, schools, and hospitals)
Land Availability	Privately owned land
Landowner Support	Preliminary agreement from landowners for inclusion in the draft EA
Terrain to Facilitate HLZ Operations*	Open area less than 10 degrees of slope sized for H-60/H-64/H-47 (H-47 preferred)
Vegetation	Existing open areas or areas of potential future timber harvest
Flight Hazards	Avoidance of existing flight hazards including transmission lines

2.3 Alternatives Considered but Eliminated from Further Consideration

2.3.1 Established High-Altitude Training Sites

Currently, aviation units at JBLM can conduct high-altitude training operations at three existing locations: 1) the Army National Guard training site in Gypsum, Colorado, 2) Fort Carson in Colorado Springs, Colorado, or 3) Fort Bliss in El Paso, Texas. However, all three sites require extended travel times, travel costs, and scheduling training slots with limited availability. Any out-of-state training site requires additional time for personnel to be away from the home station, which can have adverse effects on soldiers and their families. This alternative was dismissed as it does not meet the project purpose. Due

to the high demand for these training sites, availability does not meet the current needs of aircrews stationed at JBLM.

2.3.2 **Alternative Sites for Helicopter Training**

Additional sites were identified during the initial screening process as described above in Section 2.2.1. Figure 2-1 shows the sites which include one MTA located in the Cascades east of Mt. St. Helens and surrounding Mt. Adams (Packwood), and two HTAs (Olympic Peninsula and Darrington). These sites were eliminated from subsequent consideration because they failed to adequately meet several of the selection criteria. Most notably, these areas included significant areas of critical habitat for protected species.

Following the 2015 scoping process, Goat Butte, a 7,401 foot peak directly east of Mount Adams, was considered as a potential MTA, given the presence of suitable terrain features (Figure 2-1) and being outside of a federally designated Wilderness Area as was the case in the Packwood MTA. The Confederated Tribes and Bands of the Yakama Nation were consulted and they raised substantial concerns with potential impacts to tribal cultural and natural resources. The Yakama Nation as the landowner for this site, formally requested that Goat Butte be removed from further consideration as an MTA, as it is located within a closed area of the Yakama Reservation.

2.3.3 **Scoping Alternative: Three HTAs and Okanogan MTA**

As noted in Section 1.6, the Scoping Alternative was released for public review July 1, 2015 through November 3, 2015. Based on the high level of public interest and nature of comments received to the Army's proposed action, screening criteria were modified and this alternative no longer meets the updated criteria, largely because of the shift from public lands to private land ownership. The 2015 Scoping Alternative included three HTAs and the Okanogan MTA (Figure 2-2). There was one HLZ proposed in the HTAs and seven HLZs proposed in the MTA. The alternative proposed that the training areas would be available for use day and night, 24 hours a day, 365 days a year, with the exception of Federal holidays. Appendix B contains the final scoping report which summarizes the scoping process and comments received.

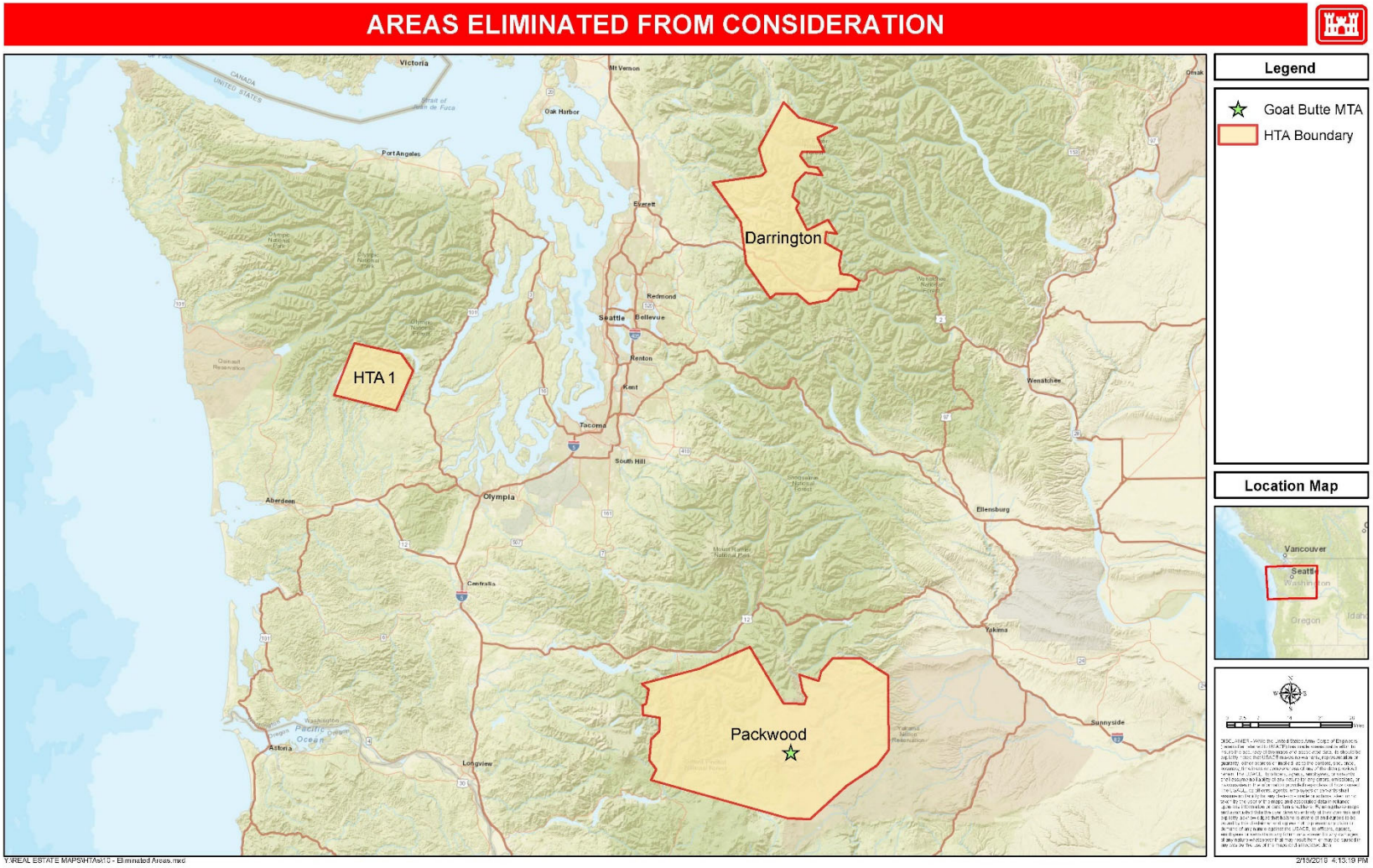


Figure 2-1. Location map of sites eliminated during initial screening

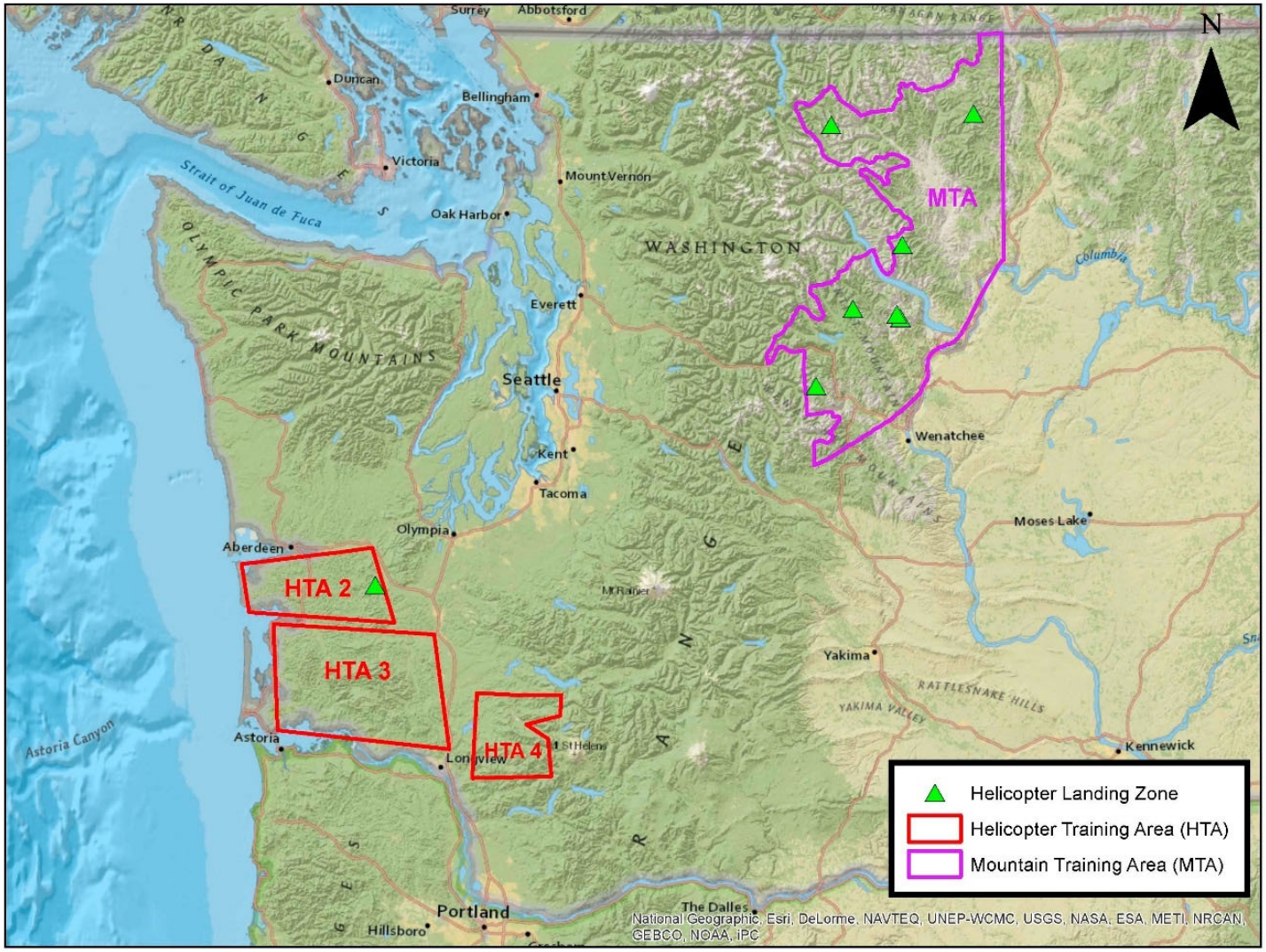


Figure 2-2. 2015 Scoping alternative overview map

2.4 Alternatives Carried Forward for Analysis

2.4.1 Alternative 1: No Action Alternative

Analysis of the No Action Alternative is required by the CEQ (40 CFR Part 1500-1508) and Army NEPA implementing regulations (32 CFR 651). The No Action Alternative serves as the baseline condition for analysis of other alternatives. Under the No Action Alternative, JBLM aviation units would not conduct off-base high-altitude training in Washington and low-level flight training would continue to be conducted throughout the state in low population areas including local airports such as the Olympia Regional Airport, Tacoma Narrows Airport, and Sanderson Field in Shelton.

Based on distance from JBLM, the Yakima Training Center (YTC) is not close enough to allow it to be a reasonable primary training area. The fastest en route time for a UH-60 (Black Hawk) is 65 minutes (130 minutes round trip). Also, inclement weather restricts the number of days aircraft can travel to YTC.

The geography of JBLM does not have the elements to meet high-altitude training criteria, therefore crews must leave the confines of the installation to do this mission-critical training. Aircrews would continue to travel to Colorado for short-training periods. These trips are expensive and can often be unavailable as Colorado provides one of the few available HAMET sites in the U.S. and is in high demand.

Low-level training would continue to conflict with training activities by other units, including ground-based activities by Brigade Combat Teams, who are given priority of usage.

Therefore, the No Action Alternative does not meet the purpose and need for the proposed action.

2.4.2 Alternative 2: Three HTAs and Ahtanum MTA

Under Alternative 2, the Army would publish three new HTAs west and southwest of JBLM and establish a new MTA east of JBLM (Figure 1-1). These areas and the associated training activities are described in detail below. The HTAs and the MTA would be located in Washington. The areas would be irregularly-shaped polygons. Aircraft traveling to and from the proposed training areas would not follow a set flight path, and pilots and units would be encouraged to alter their flight paths to and from the HTAs and MTA to avoid flying over the same communities repeatedly. Also, flight paths to each training area would vary depending on weather and other factors. Aircraft would fly to and from the proposed training areas at elevations of 500 feet above ground level (AGL) and higher, avoiding bad weather and populated areas and following FAA regulations for helicopters. In accordance with the Fly Friendly Program, pilots will fly at 2,000 feet AGL when traveling over noise-sensitive areas such as hospitals, schools, parks, wilderness areas, and residential areas to reduce noise. Pilots flying to and from military training areas will maintain this minimum 500 feet AGL elevation and avoid anything on the landscape that might produce a noise complaint. Therefore, during

"friendly flying," populated areas and other noise-sensitive receptors are avoided. The Fly Friendly Program is discussed in greater detail in Section 2.5.2 below.

The HTAs and the MTA, including the proposed landing zones within these areas, would be available for use Monday through Thursday and Saturday from 7 a.m. to 2 a.m. in the spring/summer (March 20–September 21) and 7 a.m. to midnight in the fall/winter (September 22 – March 19). The training areas would not be used on Fridays, Sundays or Federal Holidays. Use of the HTAs and MTA would occur throughout the year, as weather permits.

The existing communication infrastructure, including radio towers within the HTAs and MTA are sufficient to support the proposed training. No new communication infrastructure is proposed. No other additional infrastructure would be needed or utilized as part of the proposed training. There are no ground-based components including vehicles or other equipment proposed as part of this action.

2.4.2.1 Ahtanum Mountain Training Area

The Ahtanum MTA is located within a partially forested mountainous area on the eastern slope of the Cascades in Yakima County. The proposed MTA is the SE ¼, SE ¼, Section 1, Township 12 North, Range 13 East and is approximately 40 acres (Figure 2-3). The MTA is located completely within land owned by the Ahtanum Irrigation District. Land ownership within the area (but outside the MTA) is a patchwork of public and private land, with public land owned and managed by the Washington State Department of Natural Resources (WDNR) as a part of the Ahtanum State Forest, a working forest managed to provide revenue for public services. There are also a small number of private parcels in this region with land above 6000 feet elevation. Within the proposed MTA, helicopters would perform various mission-essential tasks that involve performance planning, power management, and high-altitude flight techniques used to compensate for the decreased aircraft performance at high altitude. Pilots would fly at high altitudes and land within the MTA using varying angles of approach, headings, air speeds, under both day and night conditions (using infrared lights), to reach proficiency for the following tasks:

- Visual-Meteorological Conditions (VMC) takeoff.
- VMC approach (typically 3 degrees) to a landing or to a 10-ft hover.
- Abort and go-around procedures – climb-out maneuvers performed when conditions are no longer suitable for landing. A go-around procedure is a planned diversion around an identified area for landing; for instance, it could be performed for weather-related reasons. An abort procedure is an unplanned diversion around a landing area.
- Elevated (100-500 ft [30-152 m]) reconnaissance over high-altitude landing areas.
- Slope operations – landing operations performed on an angled, uneven surface.
- Pinnacle or ridgeline operations – landing operations performed on a pinnacle, or a formation similar to a pinnacle, that is a high point on a hill.

Figure 2-3. Proposed Ahtanum MTA

2.4.2.2 Low-Level Training Operations

Within the proposed training areas, helicopters would perform various mission-essential tasks that involve flying at low altitudes, from just above ground surface to 500 feet above treetop level. Tasks could include following the contours of the earth as low as 25 feet above the highest obstacle, formation flight, confined area approaches, hovering, low-level navigation, and other flight maneuvers. Pilots would also land at established HLZs to practice tasks such as confined area landings. Potential HLZs have been identified within each HTA based on the criteria discussed above in Section 2.2.1 and through preliminary coordination with landowners. The final proposal would have up to 3 HLZs at any given time within each HTA and be based on landowner cooperation and final real estate agreements. For purposes of this analysis HLZs are being evaluated within the HTAs as shown in Figure 2-4. The training activities would be used to simulate mission activities. However, no refueling, expending of live ordnance, or actual movement of troops and/or equipment between the helicopter and the ground would occur.

2.4.2.3 Helicopter Landing Zones

Potentially suitable HLZ parcels are proposed within each HTA based on the criteria in Table 2-3. The proposed HLZs are identified as privately owned, outside of 1-mile noise buffers, and landowners have provided preliminary support for the proposal. A small number of sites identified are already clear of vegetation, meet the slope requirement and could be established as permanent HLZs. The majority of potential sites (see Figure 2-4) are currently forested and could be utilized as a “rotating” HLZ immediately following timber harvests. JBLM would coordinate with individual landowners based on their harvest schedules. Each rotating HLZ would meet the screening criteria in Table 2-3 and would remain suitable until replanted trees establish. Based on landowner coordination this time period is between 1-3 years post-harvest. All identified potential HLZs will be fully evaluated within the EA.

It is estimated that 10 to 20 landings would occur during each training session. Landings could take place at one or more of the identified HLZs. One to three aircraft will approach, land and depart each HLZ at a time. See Appendix A for maps of each HTA with potential HLZs. Pilots would land, then take off again with little delay on the HLZ. In some cases, only a portion of the helicopter, such as one wheel, would touch the ground. All of the identified HLZs are presently cleared of vegetation and it is assumed that they would need to remain clear to allow them to continue to be usable for training purposes. No more than 40 aircraft per day would use the training areas, with an average of 20 per day (any combination of MH/CH-47 Chinooks, MH/UH-60 Blackhawks, and AH-64 Apaches).

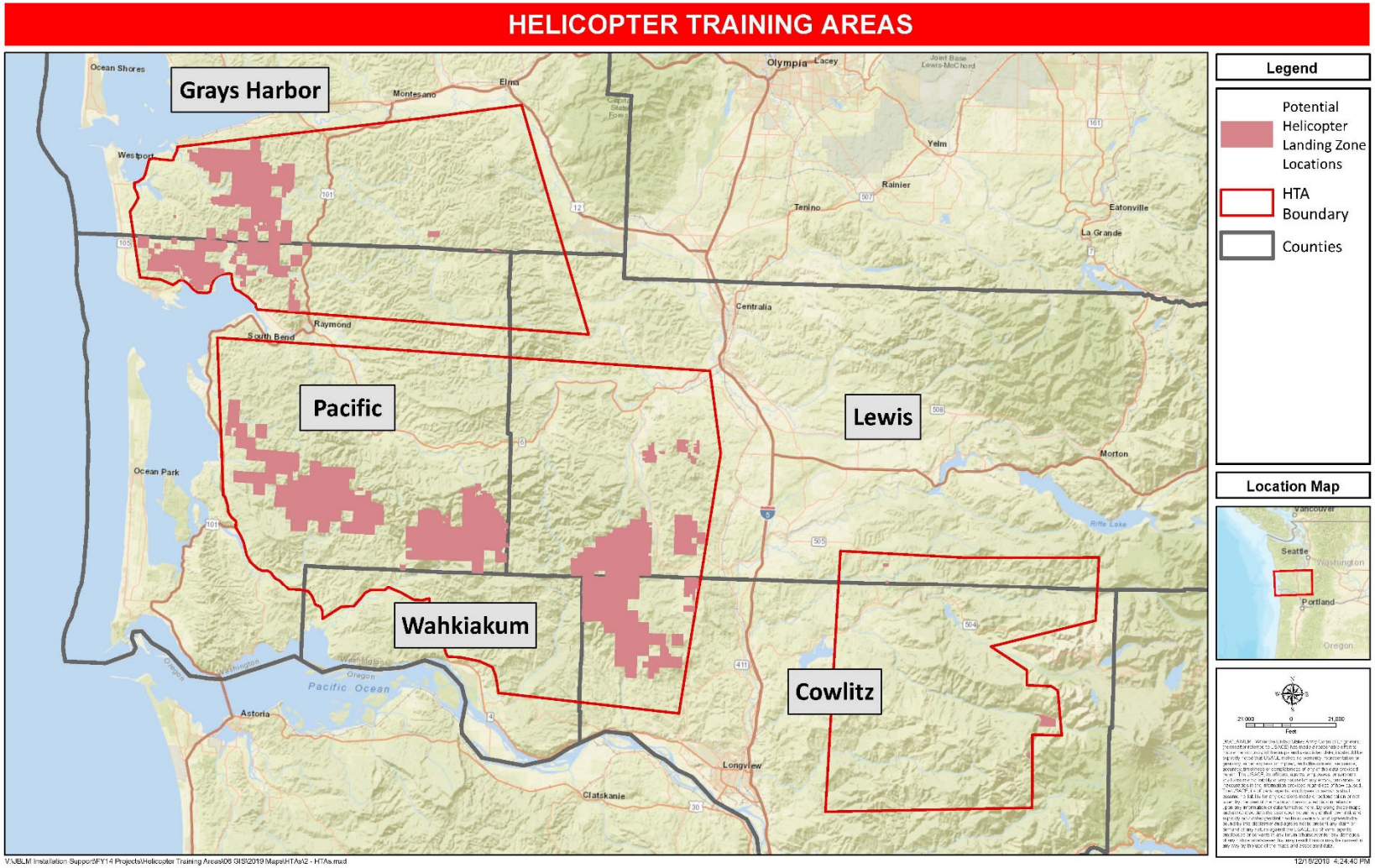


Figure 2-4. Proposed HTAs

2.5 Design Measures, Current Practices, and Best Management Practices

Current practices are physical, structural, or managerial practices that decrease the potential for impacts. Integrated into all of the proposed actions are design features and measures that avoid environmental impacts. Where avoidance is not possible, the design has been modified to minimize those impacts.

2.5.1 Best Management Practices and Mitigation

The Army proposes mitigation for adverse effects to the natural environment under the proposed action. Mitigation strategies generally include the following, which are presented in the preferred order for implementation, and were established in accordance with CEQ regulations:

- Avoid the impact altogether by stopping or modifying the proposed action.
- Minimize the impacts by limiting the degree of magnitude of the action and its implementation.
- Rectify the impact by repairing, rehabilitating, or restoring the affected environment.
- Reduce or eliminate the impact over time through use of preservation and maintenance operations during the life of the action.
- Compensate for the impact by replacing resources or providing substitute resources.

Mitigation proposed by the Army includes Standing Operating Procedures (SOPs) and best management practices (BMPs) that minimize risks and potential impacts of Army actions. Many SOPs are incorporated into JBLM or Army regulations. Additional BMPs were identified during the course of developing the proposed action to help avoid or reduce anticipated potential effects to resources from the action. These BMPs are considered to be part of the proposed action. Other mitigation may be identified during the course of preparing the EA. In some cases, mitigation must be implemented to reduce impacts to less-than-significant levels, and is identified as such. To avoid confusion when discussing mitigation in Chapter 3, the term BMP will be used to refer to actions that the Army is already doing (including actions required by regulations), that were developed as part of the proposed action, or that were developed during the environmental assessment process.

Specific BMPs include:

- The training areas would be for aviation aircrews only and not used in conjunction with ground-maneuver training activities or for picking up/dropping off troops or supplies.
- At no time would any aircraft involved in this training carry ammunition.
- Per JBLM (95-1) typical flight restrictions over eagle nests include a no-fly area from the ground to 1200 feet (365 meters) AGL within 1300 feet (396 meters) of nesting sites from 1 December to 31 August.
- Nap-of-the-Earth routes within the HTAs should be situated to avoid overflights over waterbodies (rivers, streams, lakes).
- To prevent accidents, Army aviators would follow the procedures outlined in Army Regulation 385-95 *Army Aviation Accident Prevention*.

- Where feasible, pilots would follow guidance in FAA Advisory Circular 91-36D, which recommends that pilots maintain a minimum altitude of 2,000 feet (610 meters) AGL when flying over noise sensitive areas, such as National Parks, National Wildlife Refuges, Wilderness Areas, and other areas where a quiet setting is a generally recognized feature or attribute of the land.
- Per the Fly Friendly Program, when conditions allow, aircraft will fly no lower than 500 feet (152 meters) AGL and avoid noise-sensitive areas such as Indian Reservations, parks and wilderness areas, residential areas, schools, hospitals and built up areas.
- One pilot would visually focus outside the aircraft when in flight to help avoid bird strikes.
- Habitat Conservation Plan (HCP) requirements such as habitat buffers and timing restrictions would be incorporated into land use agreements and be included on training area maps.
- Training flights would not occur during periods of high risk for wildfire as determined by the Northwest Interagency Coordination Center via the Pacific Northwest 7-Day Significant Fire Potential Chart (https://gacc.nifc.gov/nwcc/predict/outlook.aspx).
- Prior to and following use of landing zones in the HTAs and the MTA, helicopters would be thoroughly washed at JBLM to remove all soil and mud to avoid transporting propagules of weed species onto or off of training areas.

2.5.2 **Fly Friendly Program**

The Fly Friendly Program is the equivalent to the Fly Neighborly Program, both terms are used interchangeably within DoD and Army flight guidelines. The Fly Friendly Program requires that, when weather and visibility conditions allow, aircraft would fly no lower than 500 feet AGL and avoid noise-sensitive areas such as Indian Reservations, parks, wilderness areas, residential areas, schools and hospitals. When these areas cannot be avoided, it is recommended that pilots fly 2,000 feet AGL in noise-sensitive areas to minimize noise disturbance. It is important to emphasize that rules, regulations, and other operating requirements that pertain to safety are paramount; therefore, following the Fly Friendly guidelines will not always be possible. More information on the Fly Friendly Program can be found at www.rotor.com/Operations/flyneighborly/flyneighborlyguide.aspx.

Although there are no set flight paths to the HTAs or MTA, pilots will generally take the most direct route to the training areas, while avoiding noise sensitive areas such as those described above. The elevation pilots will fly to the training areas varies between 500 and 2,000+ feet AGL. This wide range in flight elevation is due to weather constraints such as cloud cover. JBLM aircraft follow visual flight rules (VFR) which require pilots to fly below the cloud level, which varies from day to day and even over the course of a single day. During the summer months, pilots can often fly at 2,000+ feet AGL, but winter weather often requires aircraft to fly at the lower thresholds (500-700 feet AGL).

2.6 Operations and Maintenance

2.6.1 Use of Training Areas by Other than JBLM Military Units

The Army's proposal involves the use of the HTAs and an MTA, including the proposed landing zones within these areas. The training areas would be available for use Monday through Thursday and Saturday from 7 a.m. to 2 a.m. in the spring/summer and 7 a.m. to midnight in the fall/winter. The training areas would not be used on Fridays, Sundays or Federal Holidays. Use of the HTAs and MTA would occur throughout the year, as weather permits. It is expected that JBLM assigned aviation units would use these training areas exclusively. However, it is conceivable that other military units could request to use them for training. The Aviation Division within the Directorate of Plans, Training, Aviation, Mobilization, and Security of JBLM would be the scheduling unit for the HTAs and the MTA, and is the only agency that could approve use of the training areas by other units (provided the annual training frequencies are not exceeded). BMPs and mitigation measures listed in the EA would apply to training activities by all military units using the training areas. Use of the training areas beyond the specified days of the week, times of day and type/number of aircraft provided for this action would require further assessment of impacts to resources and associated NEPA documentation. However, because establishing the training areas could eventually result in their use by other units in the future, it will be included in the EA analysis, particularly in regards to cumulative effects.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Based on Army review, the proposed action has little potential to impact Hazardous Materials and Waste, Socioeconomics or Environmental Justice, as described below. Accordingly, no further discussion of these resource areas is included in the EA analysis.

Hazardous Materials and Waste: The proposed helicopter flight activity would not include new construction or improvements within the project area and, therefore, there would be no storage or removal of hazardous materials and waste. In addition, helicopters would not be maintained or fueled at any HLZ. Therefore, operational impacts would not occur with respect to hazardous materials in association with proposed helicopter flight activity.

Socioeconomics: There would be no change in military, government/civilian, and/or contractor support personnel, and there would be no new construction or improvements within the proposed training areas. Therefore, the proposed action would have no socioeconomic impact on the local communities, and no socioeconomic impacts would occur.

Environmental Justice: The areas around the proposed HLZs do not contain a disproportionate number of low-income or minority populations, and no significant adverse public health or environmental hazards would occur as a result of the proposed action. The Army has implemented several BMPs to mitigate the effects of increased noise, including the implementation of Fort Lewis Regulation 360-5, Noise and Vibration

Complaint Procedure, and the Fly Friendly Program. Therefore, the proposed action would not have disproportionate adverse environmental or public health effects on minority or low-income populations.

3.1 Land Use

Land use addressed in this analysis includes general land use patterns, land ownership, land management plans and Special Use Land Management Areas (SULMAs). Land management plans prepared by federal and state agencies establish goals for future land use and development. SULMAs are designated as part of this process, as lands that deserve more rigorous management.

The total land area underlying the proposed training areas is approximately 1.3 million acres (542,000 ha). Figure 3-1 shows Land Use and Land Cover (LULC) types in the HTAs and Figure 3-2 shows land uses and cover types in the MTA (USGS 2011). The respective acreage of land underlying the training areas that is undeveloped, agriculture, developed open space, and low, medium and high intensity developed land is presented in Table 3-1. The vast majority of the land in the training areas is undeveloped (including open water), approximately 92.6 percent. None of the other land use categories make up a substantial portion of the project area. Developed open space is the next most prevalent (3.9 percent) followed by agriculture (2.8 percent). Low, medium, and high intensity uses make up a very small fraction of the land uses in the project area totaling less than 1 percent (USGS 2011).

Table 3-1. Land Use Classification (Acres) for Areas Underlying the Proposed Training Areas

Training Area	Undeveloped Lands[1]	Agriculture[2]	Developed, Open Space	Developed, Low Intensity	Developed, Medium Intensity	Developed, High Intensity
HTA 2	354,160	4,451	13,497	2,291	154	26
HTA 3	623,621	30,326	31,674	4,719	488	85
HTA 4	262,201	2,306	7,076	1,967	216	57
MTA	38	---	---	---	---	---
Total (% of total)	1,240,020 (92.6)	37,084 (2.8)	52,247 (3.9)	8,977 (0.7)	858 (<0.1)	168 (<0.1)

[1] Undeveloped land includes wetlands, shrub/scrub, open water, mixed forest, grassland/herbaceous, evergreen forest, emergent herbaceous wetlands, deciduous forest, and barren land.
[2] Agriculture includes pasture/hay and cultivated crops.
(Source USGS 2011)

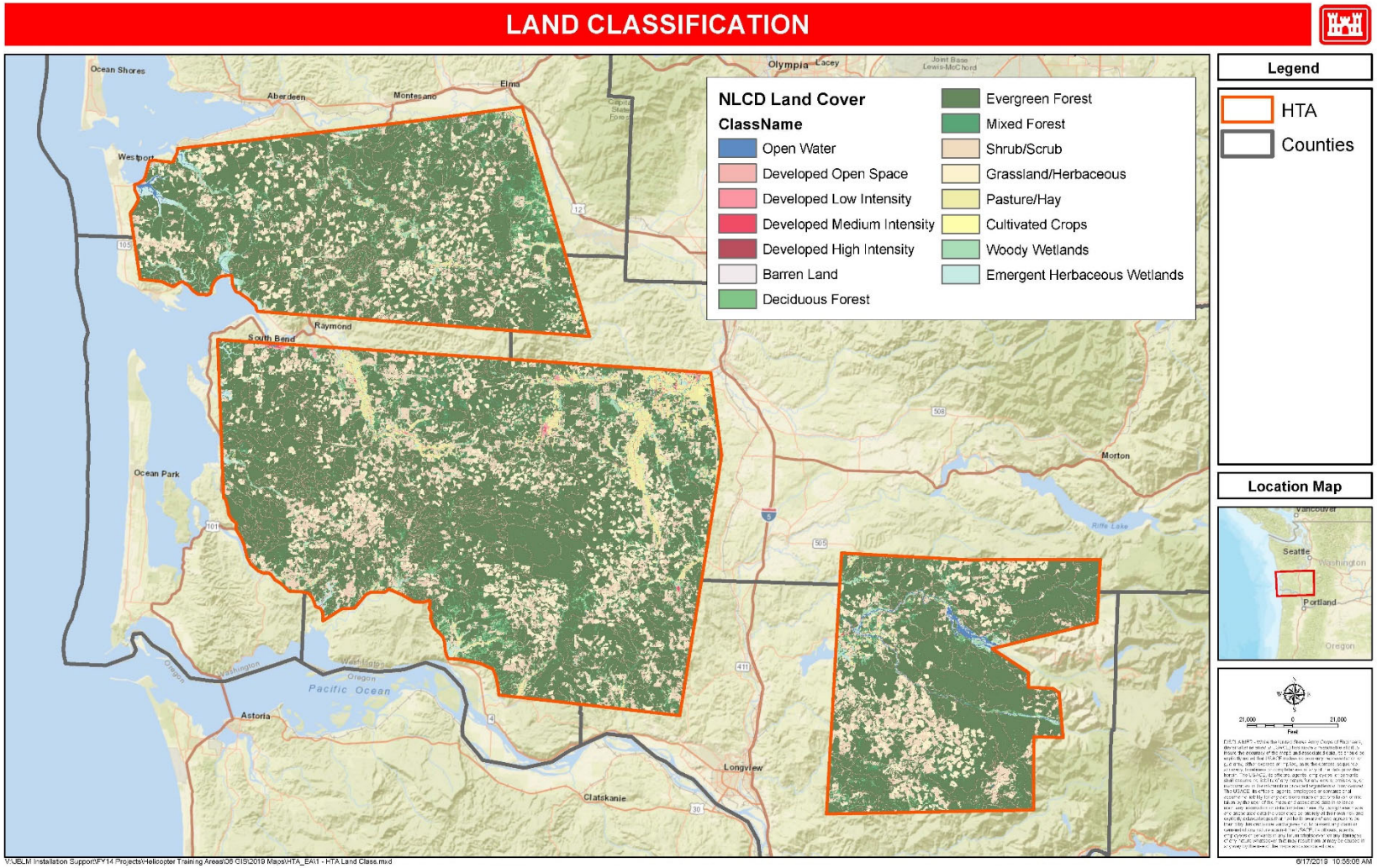


Figure 3-1. Land uses and land cover types in the HTAs.

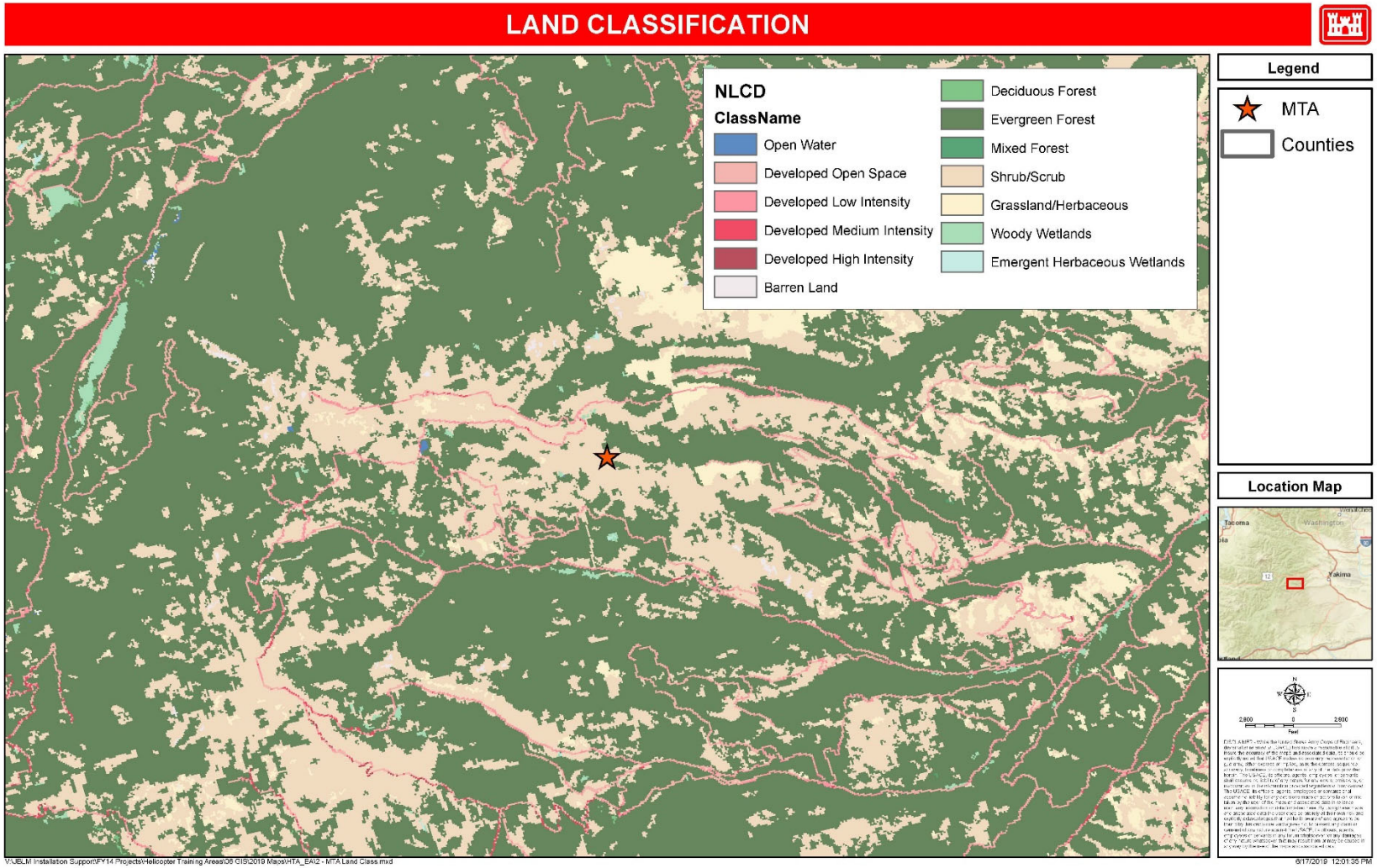


Figure 3-2. Land uses and land cover types in the MTA.

3.1.1 **Special Use Land Management Areas**

SULMAs include areas where management objectives such as outdoor recreation and wildlife conservation may warrant a higher level of protection than in other areas in the affected environment. SULMAs are administered by the National Park Service (National Parks, Monuments, Seashores, Lakeshores, Recreation Areas, and Scenic Riverways), the U.S. Fish and Wildlife Service (USFWS) (National Wildlife Refuges [NWRs], Big Game Refuges, Game Ranges and Wildlife Ranges), and the U.S. Forest Service (Wilderness and Primitive Areas) (FAA 2017). SULMAs within the project area are shown in Figures 3-3 and 3-4. As stated above in Section 2.3, per Advisory Circular 91-36D, the FAA recommends that pilots maintain a minimum altitude of 2,000 feet AGL when flying over noise sensitive areas, which include National Parks, National Wildlife Refuges, Waterfowl Production Areas, wilderness areas, and other areas where a quiet setting is a generally recognized feature or attribute (FAA 2004). Compliance with this recommendation is voluntary, although the advisory circular states that pilots operating noise producing aircraft “should make every effort” to meet these guidelines. There are no national parks, monuments, wilderness areas, scenic areas, wildlife refuges or wild and scenic rivers underlying the proposed training areas. However, depending on the route taken by aircraft between JBLM and the training areas, the flights may cross some of these designated areas.

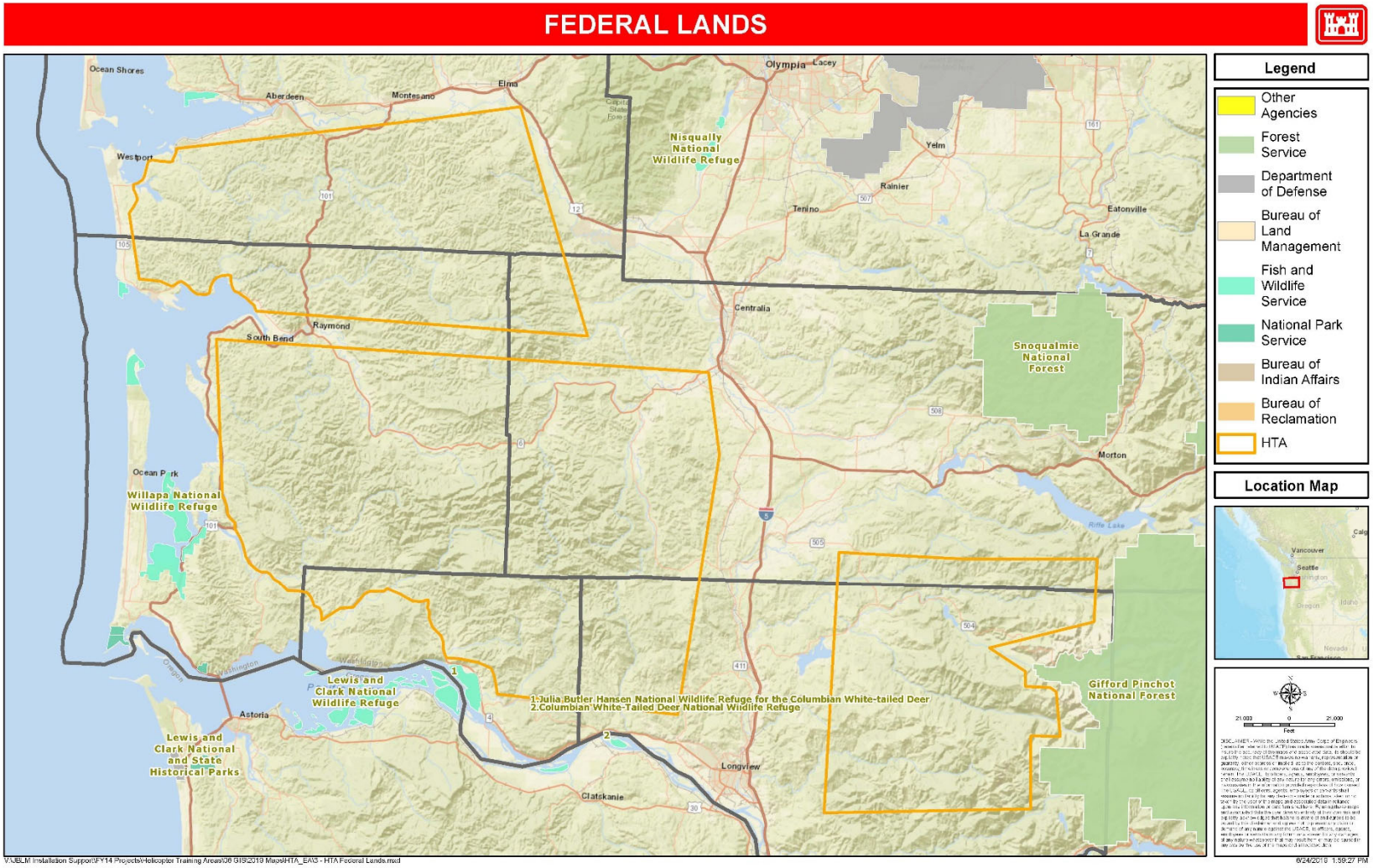


Figure 3-3. SULMAs adjacent to the proposed HTAs.

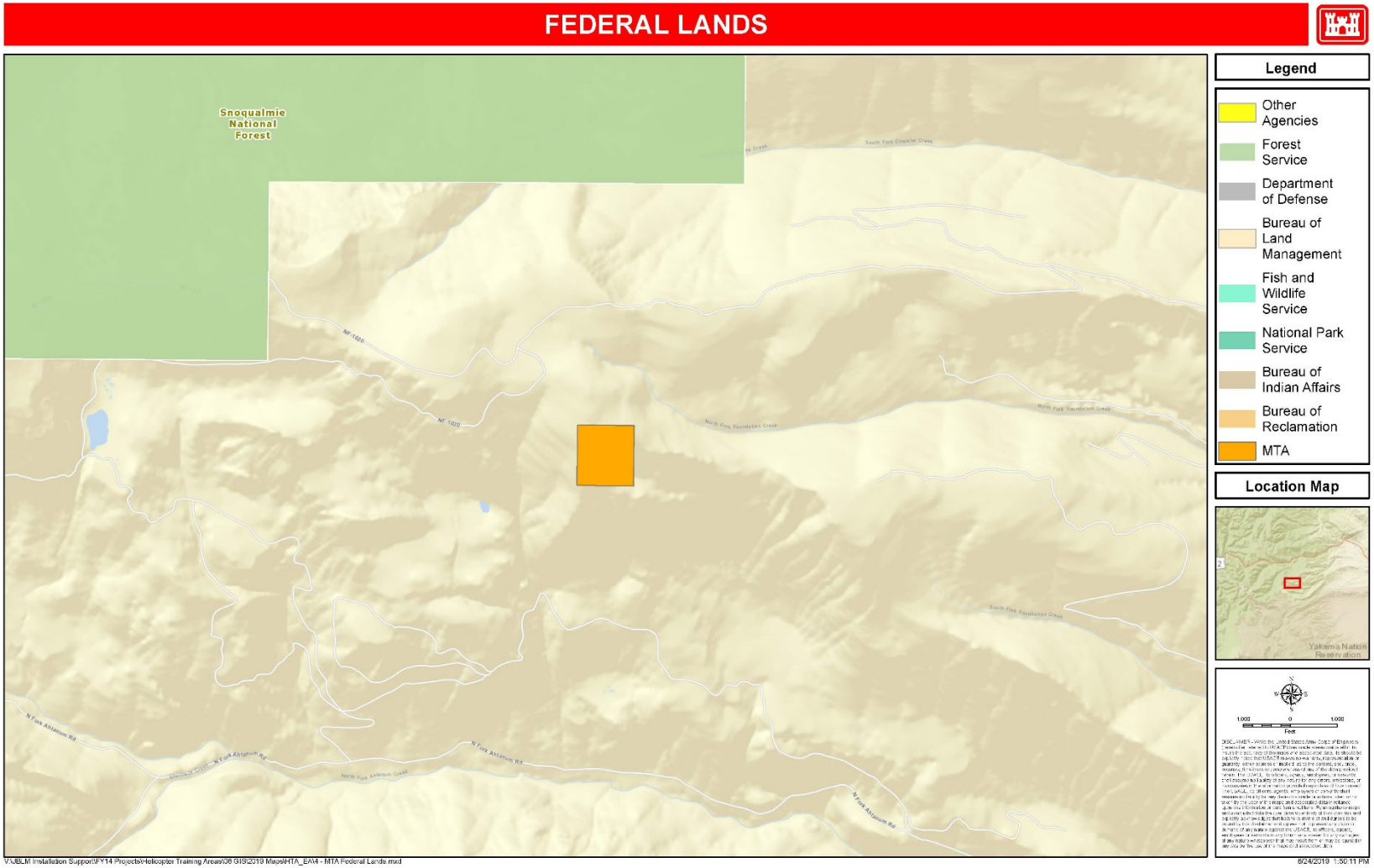


Figure 3-4. SULMAs adjacent to the proposed MTA.

Threshold Criteria
Land use impacts would be considered significant if the proposed training routes conflicted with existing land uses or conflicted with applicable policies or regulations.

3.1.2 **Alternative 1**
The No-Action Alternative maintains current training operations which includes JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses. Off-base training would continue to occur as aircraft operate at nearby airfields and other areas within the local flying area as defined as flights within a 20 minute flight distance from JBLM. There would be no change in land use impacts with the No-Action Alternative, therefore no impacts are expected from this alternative.

3.1.3 **Alternative 2**
Most of the activities proposed under this alternative would occur in the air, and therefore would have no effect on land use. With the exception of the HLZs, aircraft would take-off and land at JBLM, at approved landing areas. According to the LULC data, only approximately 7.4 percent of the total land area underlying the proposed training areas is developed (open space; low, medium and high density) or used for agriculture. The remaining 92.6 percent is undeveloped land or open water. The vast majority of the land underlying the proposed HTAs is working forest land under both public and private ownership. The land underlying the proposed MTA is land managed by an irrigation district and surrounded by a patchwork of public and private land, with public land owned and managed by the WDNR as a part of the Ahtanum State Forest, a working forest managed to provide revenue for public services. The primary uses within the Ahtanum State Forest are forest management and livestock grazing (DNR 2010).

Within the HTAs all potential HLZ parcels are located in areas which avoid noise sensitive receptors. The proposed activities in the HLZs are compatible with surrounding land uses, although noise from helicopters could create a temporary nuisance to nearby recreation activities. See Section 3.4.5 for specific noise impacts and effects to recreation in Section 3.8.2. Impacts to land use are anticipated to be less than significant from this alternative because the training areas do not conflict with existing land use policies or regulations.

3.2 Airspace
Airspace above the United States is managed by the FAA through a system of flight rules and regulations, Air Route Traffic Control Center (ARTCC) procedures and airspace management actions. Airspace is categorized by the FAA as controlled, uncontrolled, special use or other. Categories and types of airspace are determined by the density of aircraft movement, the nature of the operation, the level of safety required, and national and public interest. Aviation flight regulations are defined by the Department of the Army in AR 95-1 and specifically for JBLM in JBLM Regulation 95-1. Proposed training areas intersect with numerous published routes and other airspace used by civilian and military aircraft.

3.2.1 **Controlled Airspace**

The FAA defines controlled airspace as having defined dimensions where ARTCC service is provided to IFR and VFR flights in accordance with the airspace classification. There are five classes of controlled airspace, A, B, C, D, and E, defined in Table 3-2 below (FAA 2016).

Table 3-2. Controlled Airspace Designations

Airspace Class	Altitude	Description
A	18,000 to 60,000 feet mean sea level (MSL)	Primarily used by commercial aircraft.
B	Ground level to 10,000 feet MSL	Surrounds the nation's busiest airports and requires operations be cleared by applicable Air Traffic Control (ATC) authorities.
C	Ground level to 4,000 feet MSL	Surrounds primary airports and requires aircraft maintain two-way radio contact with local ATC authorities.
D	Ground level to 2,500 feet MSL	Surrounds airports with control towers and requires aircraft maintain two-way communication with local ATC authorities.
E	Typically extends up to, but not including 18,000 feet MSL and above 60,000 feet MSL.	All controlled airspace not classified as A, B, D or D.

(Source: FAA 2016)

3.2.2 **Uncontrolled Airspace**

Uncontrolled airspace, also known as Class G airspace, extends from the surface to the overlying Class E airspace (FAA 2016). Uncontrolled airspace is used primarily by general aviation aircraft operating in accordance with visual flight rules. ATC does not exercise control over uncontrolled airspace.

3.2.3 **Special Use Airspace**

Special use airspace is regulated airspace within which flight activities must be confined by their nature, or operating limitations are placed on non-participating aircraft. Aircraft operations are prohibited or limited in special use airspace because of hazards or security reasons. Special use airspace includes prohibited areas, restricted areas, warning areas, alert areas, controlled firing areas, and military operation areas.

3.2.4 **Other Airspace**

Other airspace areas consist of airport advisory areas, military training routes (MTRs), parachute jump areas, and areas with specific or temporary flight limitations.

3.2.5 **Published Routes**

Low altitude (up to 18,000 feet MSL) published routes include federal Victor Airways and MTRs. Victor Airways are published routes that are defined by Very High Frequency Omni Directional Range (VOR) navigational aids. Victor Airways are flown by aircraft operating in accordance with both visual and instrument flight rules. Victor Airways extend from 1,200 feet AGL up to 18,000 feet AGL and are assigned a Minimum Enroute Altitude that must be maintained to avoid obstructions on the ground. MTRs include routes that are flown using instrument flight rules Visual Routes (VR). VR identified with four-digit numbers are flown entirely below 1,500 feet AGL, whereas VR routes with three-digit numbers and all Instrument Routes are flown above 1,500 feet AGL at varying published altitudes.

A VR MTR exists within one of the proposed HTAs. VR 331 originates at McChord Field Airfield for C-17 Globemaster III and C-130 Hercules aircraft. The MTR through the proposed HTA is 4 nautical miles (NM) on either side of the centerline. The MTR includes terrain following operations of 300 feet AGL only in VMC. The MTR usage will overlap with the proposed training. This EA will only analyze cumulative impacts from the addition of the proposed training as this MTR is part of the existing condition of the area.

Threshold Criteria

Airspace impacts would be considered significant if the use of airspace by the JBLM Aviation Division was unable to be de-conflicted with the use of airspace by other aircraft on intersecting published routes or other airspace.

3.2.6 **Alternative 1**

The No-Action Alternative maintains current training operations which includes JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses. Off-base training would continue to occur as aircraft operate at nearby airfields and other areas within the JBLM local flying area. It is likely that off-base training overlaps with existing training routes, however, current training is dispersed throughout the areas surrounding JBLM in the absence of designated HTAs. HAMET would require travel to the three sites in CONUS listed in Section 2.3.1. There would be no change in airspace use associated with the No-Action Alternative; therefore no impacts are expected from this alternative.

3.2.7 **Alternative 2**

The aircraft involved in the training would cross numerous published routes and other airspace used by civilian and military aircraft, which would increase the regional air traffic and increase the potential for airspace use conflicts. The VR 331 MTR usage would overlap with the proposed training. To reduce conflicts, all training flights would be scheduled and coordinated with the appropriate ARTCC to de-conflict airspace use. Adherence to standard de-confliction protocols would preclude significant conflicts with civilian and military flights. All flight plans would be filed through the FAA system. Due

to de-confliction SOPs, impacts to airspace as a result of this alternative would not be significant.

3.3 Airspace Safety

3.3.1 Accidents

Military activities conducted in airspace controlled by or under the jurisdiction of the FAA would follow FAA procedures for ATC planning, coordination, and services provided during defense activities and special military operations. These procedures deal with issues such as coordination and scheduling, communication, and altitude, speed, and separation of aircraft, and are in place to prevent in-air collisions and other accidents. JBLM aircrews also follow the provisions in Department of the Army Pamphlet 385-90, Army Aviation Accident Prevention Program. Risks are inherent with aviation activities and airspace training. The DoD does not base its safety standards on accident probabilities, because the risk of people on the ground being injured or killed by an aircraft accident is miniscule (JBLM 2012).

3.3.2 Wildlife Aircraft Strikes

Collisions between aircraft and wildlife, particularly birds, are an airspace safety hazard. The most serious strikes for helicopters are windshield strikes, which have resulted in pilots experiencing confusion, disorientation, loss of communications, and aircraft control problems (FAA 2017). The FAA reports that over 90 percent of the reported bird strikes occur at or below 3,000 feet AGL, although strikes at higher altitudes are common during bird migration, with ducks and geese frequently observed up to 7,000 feet AGL (FAA 2017). Approximately 71 percent of commercial and 73 percent of general aviation occur below 500 feet AGL for the period of record 1990-2017 (FAA 2019). Bird strikes are not reported unless they cause aircraft damage. Birds that are considered the greatest potential hazards to aircraft because of their size, abundance, and/or habit of flying in dense flocks include egrets, gulls, waterfowl, vultures, hawks, owls, blackbirds, and starlings.

Bird strike risks tend to be highest near areas where birds congregate, such as natural areas that serve as breeding or wintering grounds, or man-made areas that provide food, such as landfills. The project area is located in the Pacific Flyway, a major north-south migration corridor for bird species. The Pacific Flyway follows the west coast along Washington, Oregon, and California. Within this corridor, NWRs provide important habitat for birds, including rest areas and food stops for migrating species, or as breeding and wintering habitat (see Section 3.10.2 for more information on birds and bird habitat in the project area).

Wildlife refuges and other natural areas contain unusually high local concentrations of birds, and therefore are associated with increased risks to aircraft (FAA 2014). NWRs adjacent to the proposed HTAs are shown in Figure 3-3, along with other SULMAs that may contain large populations of birds as well.

The U.S. Air Force (USAF) within the Avian Hazard Advisory System (AHAS) has developed a predictive model, called the Bird Avoidance Model (AHAS 2015). The model includes data for the general risk of bird strikes (low, moderate, severe) throughout the U.S. The risk is quantified for the mass of birds present within a 2-week period of the year based on a given time of day (dawn, day, dusk, and night). According to this model, bird strike risks for the HTAs generally range from low to moderate, with no areas of severe risk present in any of the training areas. Bird strike risk is generally lower at night. From late April to late September nighttime bird strike risk is low throughout all of the training areas and HTA 4 has low bird strike risk during all time periods. The MTA and HTAs 2 and 3 have a moderate bird strike risk during day, dawn and dusk year-round. Bird strike risk is greatest during the winter months and least during the summer months.

Threshold Criteria

Airspace safety impacts would be considered significant if there is a risk of harm to the general public or risks of bird strikes and crashes exceed levels that exist with typical military training activities, assuming all safety procedures and regulations are adhered to.

3.3.3 **Alternative 1**

The No-Action Alternative retains existing airspace to currently published routes and existing training areas. Ongoing training activities would continue to occur within JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses. Helicopter training would continue to be limited based on the available airspace within JBLM. Off-base training would continue to occur as aircraft operate at nearby airfields and other areas within the JBLM local flying area. HAMET would require travel to the three sites in CONUS listed in Section 2.3.1. There would be no additional safety risks associated with collisions or bird aircraft strikes. Ongoing training operations involve some level of risk for both collisions and bird aircraft strikes, but these would be considered insignificant because the bird strike risk remains moderate to low throughout the year on JBLM and is not higher risk than ongoing military training activities.

3.3.4 **Alternative 2**

3.3.4.1 Accidents

There is some risk involved with all helicopter flight, particularly when conducting difficult maneuvers to allow pilots to gain proficiency in these techniques for combat situations. During low altitude training in the HTAs, pilots fly very close to the ground. There is also some degree of risk associated with confined area approaches and other activities conducted in the HTAs. During HAMET training in the MTA, aircraft perform differently at high-altitude which can increase risk. Pilots minimize the risks inherent in these mission essential tasks by following numerous safety procedures designed to avoid in-air collisions and crashes. These safety procedures, which are discussed in AR 385-10, *The Army Safety Program*, focus on applying risk-management procedures to identify hazardous conditions and correct the shortcomings responsible for these conditions. Additionally, JBLM aviation units follow FAA instructions to avoid airspace

use conflicts that could result in collisions with other airplanes. Continuing to follow safety protocols would minimize risks of accidents during training operations. In some circumstances, weather or other conditions, such as smoke from prescribed burns or wildfires, could temporarily make training areas unavailable for use. Under this alternative, risks of accidents are not expected to constitute a significant impact, provided JBLM aviation units continue to follow strict safety measures for avoiding them.

3.3.4.2 Bird Aircraft Strikes

Risks of bird strikes would be greatest in the HTAs where helicopters fly at low elevations. In order to reduce the risk of bird strikes, one pilot would remain focused outside the aircraft at all times for obstacle avoidance. Based on the USAF's Bird Avoidance Model, which considers geographic location but not flight altitude, the risk of bird strikes in all of the proposed training areas would generally be low to moderate, with the greatest risks from early October to mid-April (AHAS 2015). The rest of the year, risk would be low or moderate, and would be low at night from late April to late September (AHAS 2015). Overall, risks associated with proposed training activities would not represent a significant impact, provided pilots remain aware of the hazard, focused on their surroundings, and are knowledgeable of areas where birds tend to congregate.

3.4 Noise

3.4.1 General Noise Overview

Noise can be defined as unwanted sound. Military operations are often the source of noise (e.g., gunfire, detonations, aircraft flyovers, transport of heavy vehicles, etc.) experienced by the military community and the civilians who live and work around the installation.

The loudest sounds the human ear can hear comfortably have one trillion times the acoustic energy of sounds that the ear can barely detect. Because of this vast range, a logarithmic unit called the decibel (dB) is used to represent the intensity of sound. Table 3-3 provides the approximate loudness of some typical sounds.

Table 3-3. Typical Noise Levels of Common Outdoor and Indoor Activities

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet fly-over at 1,000 feet	110	Rock band performance
Gas lawn mower at 3 feet	100	
Diesel truck at 50 feet, 50 miles per hour	90	Food blender at 3 feet
Noisy urban area, daytime	80	Garbage disposal at 3 feet
Gas lawn mower at 100 feet Commercial area	70	Vacuum cleaner at 10 feet Normal speech at 3 feet
Heavy traffic at 300 feet	60	Large business office

Quiet urban area, daytime	50	Dishwasher in the next room
Quiet urban area, nighttime Quiet suburban area, nighttime	40	Theater (background) large conference room (background)
	30	Library
Quiet rural area, nighttime	20	Bedroom at night Concert hall (background) Broadcast/recording studio (background)
Lowest threshold of human hearing	0	Lowest threshold of human hearing
Source: Army 2003.		

The dB scale is a logarithmic measure used to quantify sound power or sound pressure. A sound that is 10 dB higher than another would be perceived as twice as loud. A number of factors affect sound as the human ear perceives it. These include the actual level of noise, the frequencies involved, the period of exposure to the noise, and changes or fluctuations in noise levels during exposure. In order to correlate the frequency characteristics from typical noise sources to the perception of the human ear, several frequency networks (systems of measuring units) have been developed. The most common of these measuring units are:

- A-weighted Scale – The human ear cannot perceive all pitches or frequencies equally well. Reflecting this fact, measures can be adjusted, or weighted, to compensate for the human lack of sensitivity to low-pitched and high-pitched sounds. This adjusted measurement unit is known as the A-weighted decibel, or dBA. The dBA is used to evaluate noise from transportation activities (traffic and aircraft) and from small-arms firing.
- C-weighted Scale – The C-weighted scale measures more of the low-frequency components of noise than does the A-weighted scale. This unit, symbolized as dBC, is used for evaluating impulse noise and vibrations generated by heavy weapons such as artillery, mortars, armor (20 mm or greater) and explosive charges.
- Peak Sound Level – The peak sound level (dBP) is a flat-weighted scale that can be used to measure noise from small-arms (less than or equal to 20 mm) firing, heavy artillery, and explosives.
- Day-Night Sound Level – The day-night average sound level (DNL) is useful to account for the difference in response to noises that occur during sleeping hours as compared to waking hours. This indicator is defined as the average sound level in decibels during a 24-hour period, with a 10-dB penalty applied to nighttime sound levels. The 10-dB penalty accounts for the fact that noises at night sound louder because there are usually fewer noises occurring at that time.

Note that noise levels in one scale cannot be added or compared mathematically to levels in another scale. For this analysis, all sound levels are weighted using the A-

weighting scale (dBA), which emphasizes the frequencies best heard by the human ear unless otherwise noted.

Another factor that is relevant to the analysis of noise is whether the noise is continuous or impulse. Sources of continuous noise include urban environments with heavy traffic and large airports. Impulse noise consists of almost instantaneous sharp sounds, such as clicks, pops, and bangs. Continuous noise is fundamentally different from impulse noise and noise threshold criteria for the two types differ. For example, permanent damage to unprotected ears due to continuous noise occurs at approximately 85 dBA with an eight-hour-per-day exposure while the threshold for permanent damage to unprotected ears due to impulse noise is approximately 140 dBP, for noise events that last less than one second (Amrein and Letowski 2012).

The DoD uses a suite of computer models to assess environmental noise. Model outputs are typically summarized in the form of noise contours, which are superimposed on land use maps to avoid potential impacts. The DoD, like most federal agencies, measures environmental noise with the DNL, which measures the average daily noise over a period of one year. The DNL metric incorporates a penalty for nighttime noise (10 p.m. to 7 a.m.), when loud sounds are most annoying. The FAA and DoD utilize a threshold of 65 dBA for identifying potentially significant noise impacts in residential areas. However, since sporadic and/or short-term noise events typically produce noise contours well below the DNL threshold of 65 dBA, this metric is not applicable to the training operations being addressed in this document. Although single-event DNL noise contours may fall well below 65 dBA, it does not necessarily mean that the events do not cause annoyance or other impacts.

Single-event noise generated by short-term activities such as aircraft overflights can be evaluated with alternative metrics, such as maximum noise level (L_{max}) and sound exposure level (SEL). L_{max} represents the highest decibel registered on a sound level meter during a noisy event. SEL considers both the intensity and duration of a single noise event. SEL provides a measure of the total sound exposure for an entire event as if it were compressed into a single second. L_{max} and SEL noise levels associated with common transportation noise sources are shown in Figure 3-5.

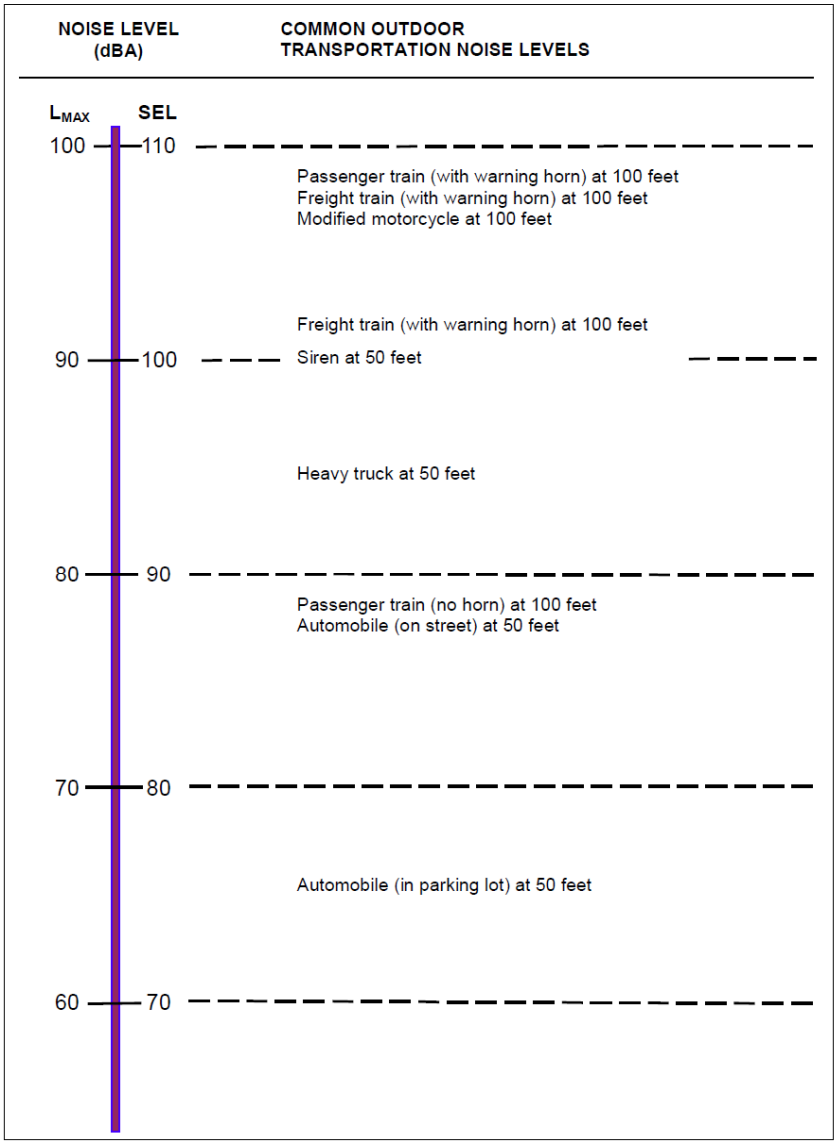


Figure 3-5. Common Transportation Noise Levels

Helicopter noise varies between models with respect to the number, type, and design of rotors, the number of blades/rotor, and the number and type of engines. Within models, blade load, blade speed, weather conditions, tilt of the rotor, speed of the aircraft, and aircraft activity (taking off, landing, etc.) are additional sources of variation which influence noise (Larkin 1996). Table 3-4 lists maximum noise levels for the Army aircraft that would conduct the proposed training activities (the CH-47 is comparable to the MH-47 Chinook helicopter, and the UH-60 is comparable to the MH-60 Blackhawk helicopter).

Table 3-4. Maximum Noise Levels of Aircraft

Altitude AGL (feet)	Maximum Level, dBA		
	AH-64	CH-47	UH-60
200	92	92	88
500	83	84	80
1,000	77	78	73
1,500	73	74	69
2,000	70	71	66
2,500	67	68	63

Source: USACHPPM 2009

3.4.2 **Army Noise Policy and Noise Complaint Program**

Army aircraft noise is not addressed in state or local noise regulations, which primarily pertain to on-the-ground noise sources. However, the Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978 (42 U.S. Code 4901-4918) requires federal agencies to conduct their programs in a manner that promotes an environment free of any noise that could jeopardize public health or welfare. Regulation and control of operational noise by the Army is covered in Army Regulation 200-1, *Environmental Protection and Enhancement*. This regulation addresses the requirements of the Noise Control Act of 1972 and the Quiet Communities Act of 1978. This regulation requires the Army to do the following:

- Evaluate and document the impact of noise produced by ongoing and proposed Army actions/activities and minimize annoyance to humans to the extent practicable.
- Develop installation noise management plans as appropriate.
- Reduce noise to acceptable levels in on-post noise sensitive locations through appropriate land use planning and/or architectural and engineering controls.
- Monitor, record, archive, and address operational noise complaints.
- Develop and procure weapons systems and other military combat equipment that produce less noise, when consistent with operational requirements. Measure the noise emitted by all combat equipment and weapons systems to be used in training before deploying them to units.
- Procure commercially manufactured products, or those adapted for general military use that produce less noise, and comply with regulatory noise emissions standards.
- Acquire property only as a last resort to resolve off-post noise issues.
- Manage operational noise issues and community relations to maintain sustainable testing and training capabilities and prevent encroachment.

The JBLM Public Affairs Office operates a program established to respond to noise complaints. People may register noise complaints by calling 253-967-0146 (Community Relations Staff), or 253-967-0852 (Noise Complaint Hotline). Each noise complaint is routed to the Public Affairs Office and recorded on a Noise Complaint Questionnaire form. The Public Affairs Office investigates complaints and responds to each

complainant. The Public Affairs Office asks the complainant questions, and tries to obtain insight into why the complaint was generated. The Public Affairs Office maintains a log of all noise complaints that include the location, date, time, and cause of the complaint. From 1994 to 2014, JBLM has averaged 134 noise complaints per year. The number of complaints has ranged from a high of 495 complaints in 1998 to a low of 14 in 2006. The majority of these complaints result from artillery training, with the remainder from aircraft missions (Army 2014). Additionally, the majority of complaints originate from areas south and west of JBLM (Yelm, Roy, Tumwater, Olympia, Lacey, and Rainier).

3.4.3 **Affected Environment**

This section addresses the potential effects of noise on humans within the project area. The effects of noise on specific resource areas such as wildlife, cultural resources, and recreation areas are discussed elsewhere in this chapter under the appropriate resource areas.

General day-night ambient noise level estimates for various types of land use within the United States vary widely, from approximately 35 dBA in wilderness areas to a maximum of 85 to 90 dBA in the noisiest urban areas. Additional examples of day-night noise levels for various land uses include approximately 40 dBA for rural residential areas, 45 dBA for agricultural cropland, 50 dBA for a typical wooded residential area, 60 dBA for an old urban residential area, and 69 dBA for urban row housing on a major avenue (USEPA 1978). The vast majority of land in the project area is undeveloped and supports non-residential uses. Therefore, background noise levels in much of the project area are low.

As discussed above, aircrews individually select areas off-base to train. Crews choose low population areas for training within the local flying area surrounding JBLM to the greatest extent possible; however, off-base landings are confined to airports and the airports tend to be near population centers. These activities comply fully with FAA and Army regulations, however without identified off-base training areas noise effects have not been fully evaluated.

Threshold Criteria

Noise impacts would be considered significant if the proposed training caused noise levels that jeopardize public health or welfare or violated Army Operational Noise policy provided in Army Regulation 200-1.

3.4.4 **Alternative 1**

The No-Action Alternative maintains current training operations which includes JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses. Additional noise impacts would be expected to continue as aircraft operate at nearby airfields and other areas within the JBLM local flying area. JBLM aviation units would not conduct off-base high-altitude training operations in Washington.

3.4.5 **Alternative 2**

Routes flown would vary with each mission to facilitate realistic navigation training and a single point on the ground would not be expected to be overflown more than once per day. To demonstrate that the proposed training would not reach a 65 dBA-weighted Day Night average Level (ADNL) noise contour or greater, one can look at the method of calculating DNL for CH-47 helicopters, the loudest of the proposed aircraft. The A-weighted Sound Exposure Level (ASEL) of a CH-47 at 500 feet AGL is 92.4 dBA. This information can be used to determine ADNL. The SEL is sound normalized to one second. If there is only one flight per day, the ADNL can be calculated by subtracting a constant representing 10 times the logarithm of the 86,400 seconds in a 24 hour day, which is 49.4 dB. So, for one CH-47 fly over at 500 feet (92.4 dB ASEL), the ADNL would be 43 dB ADNL. The ADNL increases 3 dB for every doubling of operations, so the ADNL for 2 flights would be 46 dB ADNL, 4 flights per day would equal 49 dB ADNL, and 8 flights per day would equal 52 dB ADNL. By continuing these calculations, it would take 128 CH-47 flights occurring over one location within a 24-hour period to achieve a 64 dB ADNL. Given that approaches to the training areas and use within training areas would vary during each training exercise, it is highly unlikely that an incompatible noise zone would ever be generated within the proposed training areas.

The most common noise impact from the proposed training would be annoyance. Research surveys have found a high correlation between the percentages of highly annoyed people and the noise level using the DNL metric (Finegold et al. 1994; Schultz 1978; Table 3-5).

Table 3-5. Percentage of Population Highly Annoyed from Aircraft Noise

DNL in dB	Percentage Highly Annoyed
55	3.3
60	6.5
65	12.3
70	22.1
75	36.5

Sources: Finegold et al., Schultz 1978

To reduce the potential for annoyance, flight altitudes en route to the HTAs and the MTA would adhere to noise-abatement policies that minimize the aircraft noise footprint on and near the installation and within the local flying area in order to establish and sustain positive public relations. No aircraft would fly below 500 feet (152.4 m) along flight routes and all Army aircraft would maintain a minimum of 2,000 feet AGL (609 m AGL) over national parks, monuments, recreation areas and scenic river ways administered by the National Parks Service; national wildlife refuges, big game refuges or wildlife ranges administered by the USFWS; and wilderness and primitive areas administered by the U.S. Forest Service. Additionally, JBLM Regulation 95-1 imposes a 2,000 foot (609 m) altitude restriction for flight over congested areas off the installation. Exceptions to this regulation include emergency situations, periods when weather

conditions dictate a lower altitude, or when the use of a lower altitude is mission essential.

During the lower limits of friendly flying (500 feet) to and from training areas, noise generated by helicopters could be as high as 84 dBA. At this altitude, AH-64's would generate maximum noise levels of 83 dBA, MH-47 Chinook helicopters would generate maximum noise levels of up to 84 dBA, and MH-60 Blackhawks would generate maximum noise levels of 80 dBA (Table 3-4). Adherence to friendly flying protocols would limit the likelihood that many people would be annoyed by aircraft noise, because pilots would avoid all populated areas, residences, and other signs of human presence. At higher altitudes of 2,000 feet AGL, ground-level noise impacts would be lower (70 dBA for AH-64 Apaches, 71 dBA for MH-47 Chinooks, and 69 dBA for MH-60 Blackhawks), but would still have the potential to annoy people, particularly during nighttime training events.

Noise levels generated from landing and take-offs by helicopters in the HLZs should cause negligible effects, as all proposed HLZs are located in remote areas away from residences. The MTA is located in a remote area which inaccessible via any roads and noise impacts would potentially disturb recreationalists within the Ahtanum State Forest. All potential HLZ parcels were selected based on a 1-mile buffer to noise sensitive receptors. Noise would be expected to cause temporary impacts to the public within audible range of training activities. See Section 3.8.2 for more information on impacts to recreation.

The greatest potential noise impacts would be associated with low-altitude flight in the HTAs. In the low-level training areas noise generated by helicopters during training could reach levels of 90 to 100 dBA.

Overall, the expected noise effects from the proposed action are reduced by the avoiding the most highly populated areas on and off-base and the flight altitudes, particularly over noise sensitive areas as outlined in JBLM Regulation 95-1. It is likely that the proposed training would cause some community annoyance and generate complaints, particularly for training exercises conducted at night. However, due to the large sizes of the training areas and the dispersed nature of the operations resulting in infrequent and limited noise exposures, the proposed training would not jeopardize public health or welfare or violate Army operational noise policies. No significant impacts related to noise are expected as a result of the proposed action.

3.5 Air Quality

The Clean Air Act, as amended in 1990, requires the U.S. Environmental Protection Agency (USEPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. Primary standards set limits to protect public health, and secondary standards set limits to protect public welfare (including protection against decreased visibility and damage to animals, crops, vegetation, and buildings). The NAAQS have been set for six principal pollutants,

known as criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone, lead, carbon monoxide (CO), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and particulate matter less than 10 microns in diameter (PM_{10}). These standards are based on concentrations averaged over various time periods. Standards for pollutants with acute health effects are based on relatively short-term periods (1-hour, 3-hour, 8-hour, or 24-hour), while additional standards are based on relatively long time periods to gauge chronic effects (annual and quarterly). Individual states are responsible for regulating pollution sources.

Under the General Conformity Rule of the Clean Air Act (Section 176(c)) the USEPA established statuary requirements for federal agencies to demonstrate conformity of proposed federal activities with the State Implementation Plan for attainment of the NAAQS. Certain actions are exempted from conformity determinations, while others are presumed to conform if the total project emissions are below *de minimis* levels.

The USEPA has divided the country into geographical regions known as Air Quality Control Regions (AQCRs) to evaluate compliance with NAAQS. The project area is located in the following air quality control regions: Portland Interstate AQCR (#193), Olympic-Northwestern Washington Intrastate AQCR (#228), Puget Sound Intrastate AQCR (#229), and South Central Washington Intrastate AQCR (#230). The USEPA designates AQCRs as either attainment or nonattainment areas for each of the individual criteria pollutants. Attainment areas have concentrations of criteria pollutants below NAAQS, and non-attainment areas have concentrations above NAAQS. Maintenance areas are attainment areas that had a history of nonattainment but have since been reclassified as attainment.

3.5.1 **Air Quality in the Project Area**

According to the USEPA as of July 2019 there are no counties in Washington designated as nonattainment (USEPA 2019). The state of Washington is in attainment with the NAAQS for the six criteria pollutants, or is designated as unclassified/attainment. Areas with the unclassified designation cannot be completely classified because of a lack of information, but are treated as attainment areas for regulatory purposes. There are three areas to the east of the MTA in or near the City of Yakima that are “areas of concern” for $PM_{2.5}$ (WDOE 2019a).

There are also several maintenance areas in the project area, including portions of the Puget Sound in King, Pierce, Thurston, and Yakima Counties, which were previously nonattainment for CO, $PM_{2.5}$, or PM_{10} (WDOE 2019b). A conformity determination is required if the proposed action would exceed the *de minimis* threshold of 100 tons per year for each of these pollutants.

3.5.2 **Greenhouse Gases**

Greenhouse gases (GHG) include carbon dioxide (CO_2), methane, nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These gases effectively

trap heat in the lower atmosphere and are thought to contribute to global climate change.

3.5.3 **Alternative 1**

The No Action Alternative would not change the current emissions from JBLM operations and therefore no air quality assessment was completed. Aircraft will continue to operate on-base, off-base (within the JBLM local flying area), and at nearby airports. This leads to a conservative approach to the air quality assessment, as it assumes that the baseline for the proposed project is zero emissions. In reality, the air quality impact of the Proposed Action would be more accurately (however less conservatively) described as the difference between the emissions from Alternative 2 and Alternative 1, as this would take into account the current training that would be replaced with the Proposed Action. The emissions would remain the same between alternatives; however, they would be emitted in different (analyzed) locations.

3.5.4 **Alternative 2**

Under Alternative 2, emission sources would be limited to aircraft emissions. Other categories of emissions are not applicable as there is no construction associated with the Proposed Action and there would be no operational emissions above baseline levels.

Use of aircraft during training exercises at each of the four training areas and along the flight path to each from JBLM would result in air emissions within the project area. Calculations of projected emissions under the proposed action, based on the projected annual number of training exercises, the duration of training exercises, and the maximum number of aircraft involved, are shown in Table 3-6.

Table 3-6. Aircraft Emissions for Alternative 2

AQCR	**Tons per year**						
	NOx	SOx	CO	VOC	PM 10	PM 2.5	GHG1
193	17.9	1.95	9.1	0.078	3.28	1.6	10,559
228	9.3	1.03	6.0	0.06	1.72	0.08	
229	1.43	0.151	0.37	0.0014	0.25	0.12	
230	3.80	0.441	3.65	0.04	0.73	0.34	

1 – GHG represents the sum of CO_2, CH_4, and N_2O emissions as CO_2-equivalent GHG emissions.

Because each of these pollutants is below the *de minimis* threshold of 100 tons per year, a conformity determination is not required. As described above, this air quality analysis represents a conservative approach as it does not account for reduction in air emissions from training that would be replaced with the Proposed Action. Although GHG emissions associated with this alternative are not expected to significantly increase the rate of climate change and sea level rise, diesel fuel consumption by helicopters are a part of world-wide cumulative contributions to change in climate by way of increases in greenhouse gas emissions; however, the increase is negligible in

the context of all anthropogenic sources of greenhouse gasses, and does not constitute a significant contribution of greenhouse gasses.

3.6 Cultural Resources

Cultural resources are locations on the physical landscape that contain evidence of past human activity. These resources include archaeological sites such as lithic scatters, villages, procurement areas, resource extraction sites, rock shelters, rock images, or shell middens; submerged resources such as fish traps, weirs, or watercraft; historic era sites such as trash scatters, homesteads, railroads, ranches, or logging camps; and structures or buildings over 50 years old. Those cultural resources and related records, artifacts, and remains eligible for inclusion on the National Register of Historic Places are known as historic properties (36 CFR 800.16(l)(1)), and are protected under the National Historic Preservation Act (NHPA) (36 CFR 800.1). Eligible properties must generally be at least 50 years old and possess integrity of physical characteristics, meaning it must "possess integrity of location, design, setting, materials, workmanship, feeling and association" (36 CFR 60.4). Finally, a historic property must be significant under one or more of the following criteria:

- Criterion A. Be associated with events that have made a significant contribution to broad patterns of our history.
- Criterion B. Be associated with the lives of significant persons in our past.
- Criterion C. Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D. Have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

An additional category of historic property is the traditional cultural property. Traditional cultural properties assist in the maintenance of a living community's cultural identity through association with practices or beliefs rooted in that community's history (Parker and King 1998).

A review of the Washington Information System for Architectural and Archaeological Records Data (WISAARD) was conducted for the MTA and the proposed HLZ's located in the helicopter training areas. The majority of the proposed HLZ's are on land owned by private timber companies and aerial maps show that proposed HLZ's are either currently clear cut or have been clear cut in the past and have been replanted. The WISSAARD search found there are no previously recorded archaeological sites or built structures in the MTA and in the majority of the proposed HLZ's. Two proposed HLZ's have recorded resources consisting of Bonneville Power Administration (BPA) structures related to the existing BPA transmission line and the Lytle Logging and Mercantile Company railroad grade located in another proposed landing zone.

However, both of these HLZ's would be removed from consideration due to the presence of cultural resources.

JBLM is currently conducting Section 106 consultation under NHPA with the State Historic Preservation Officer (SHPO) and Tribes.

3.6.1 **Alternative 1**

The No-Action Alternative maintains current training operations which includes JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses. Off-base training would continue to occur as aircraft operate at nearby airfields and other areas within the JBLM local flying area. JBLM aviation units would not conduct off-base high-altitude training operations in Washington. Therefore, there would be no effect to historic properties.

3.6.2 **Alternative 2**

The greatest impacts to historic properties from Alternative 2 would be possible disturbance to historic properties within the MTA and HLZ's as pilots take off and land. However, ground disturbance would be minimal. The HLZ's are located on land owned by private timber companies and aerial maps show that proposed HLZ's are either currently clear cut or have been clear cut in the past and have been replanted. In the MTA, the pilots would be practicing high altitude maneuvers and touching down and lifting off from the ridge. JBLM anticipates a finding of no historic properties affected at the conclusion of Section 106 consultation.

3.7 Water Resources and Wetlands

3.7.1 **Water Resources**

The project area is located in the Pacific Northwest Hydrologic Region, which is drained by the Columbia, Willamette, and Snake River systems. West of the Cascade Range, many streams and rivers are rain-driven systems that are hydrologically flashy and influenced primarily by rain storms during the winter. These streams typically discharge directly into the Pacific Ocean. East of the Cascade Range, the amount of surface water available to streams is limited by reduced precipitation and periods of relatively high solar radiation. Year-round streams in this area are generally fed by snowmelt from higher elevations or by groundwater discharge from aquifers recharged during periods of abundant precipitation.

Major rivers in the project area are shown in Figures 3-6 and 3-7. In the HTAs, major rivers include the North, Willapa, Naselle, Grays, Chehalis, Elochoman, Green, Toutle, and Coweman. Large creeks include Elk, Germany, and Salmon. There are no rivers or creeks within the MTA. None of the proposed HLZs locations within the HTAs would be located near waterbodies.

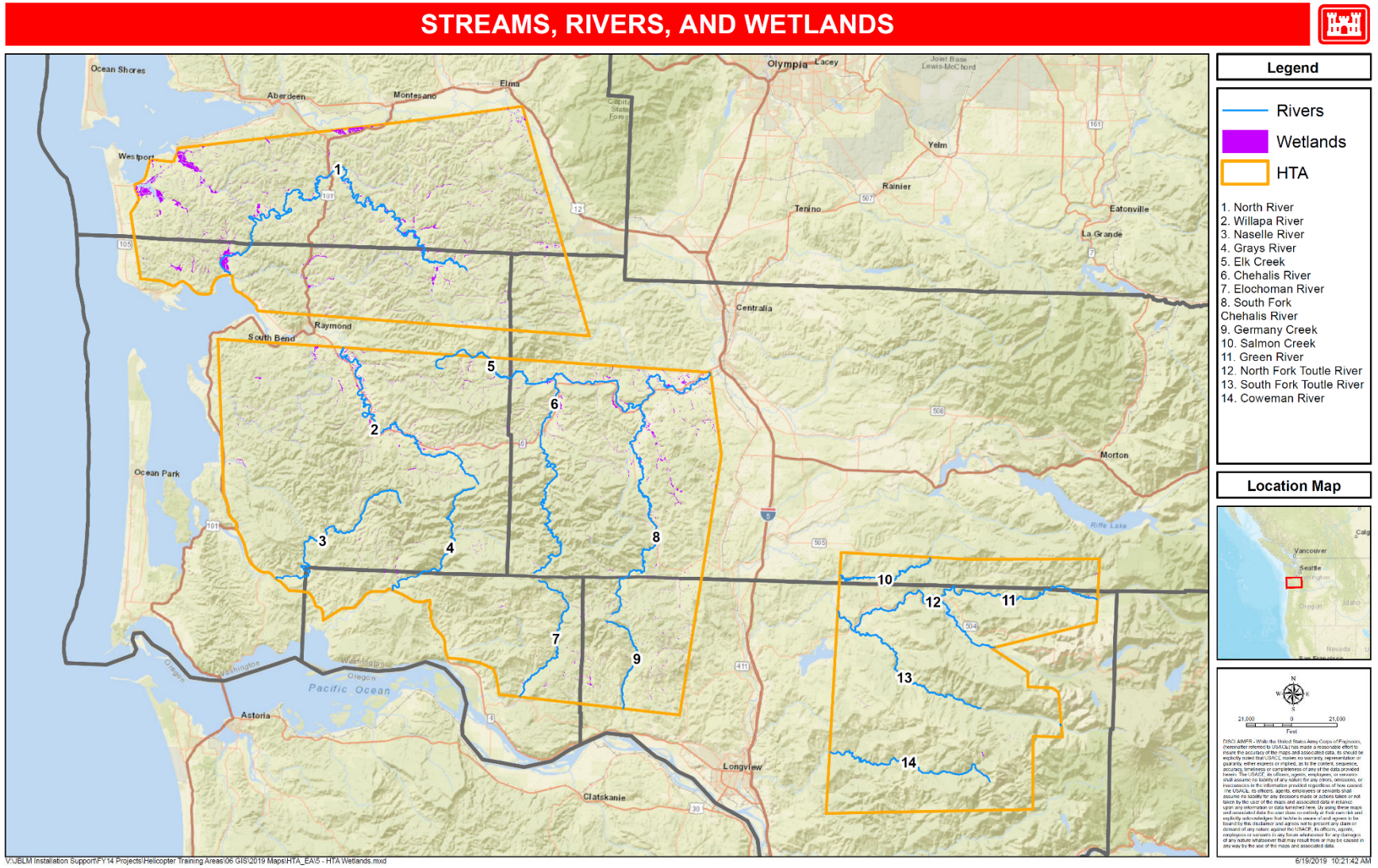


Figure 3-6. Wetlands, Rivers and Streams within the HTAs.

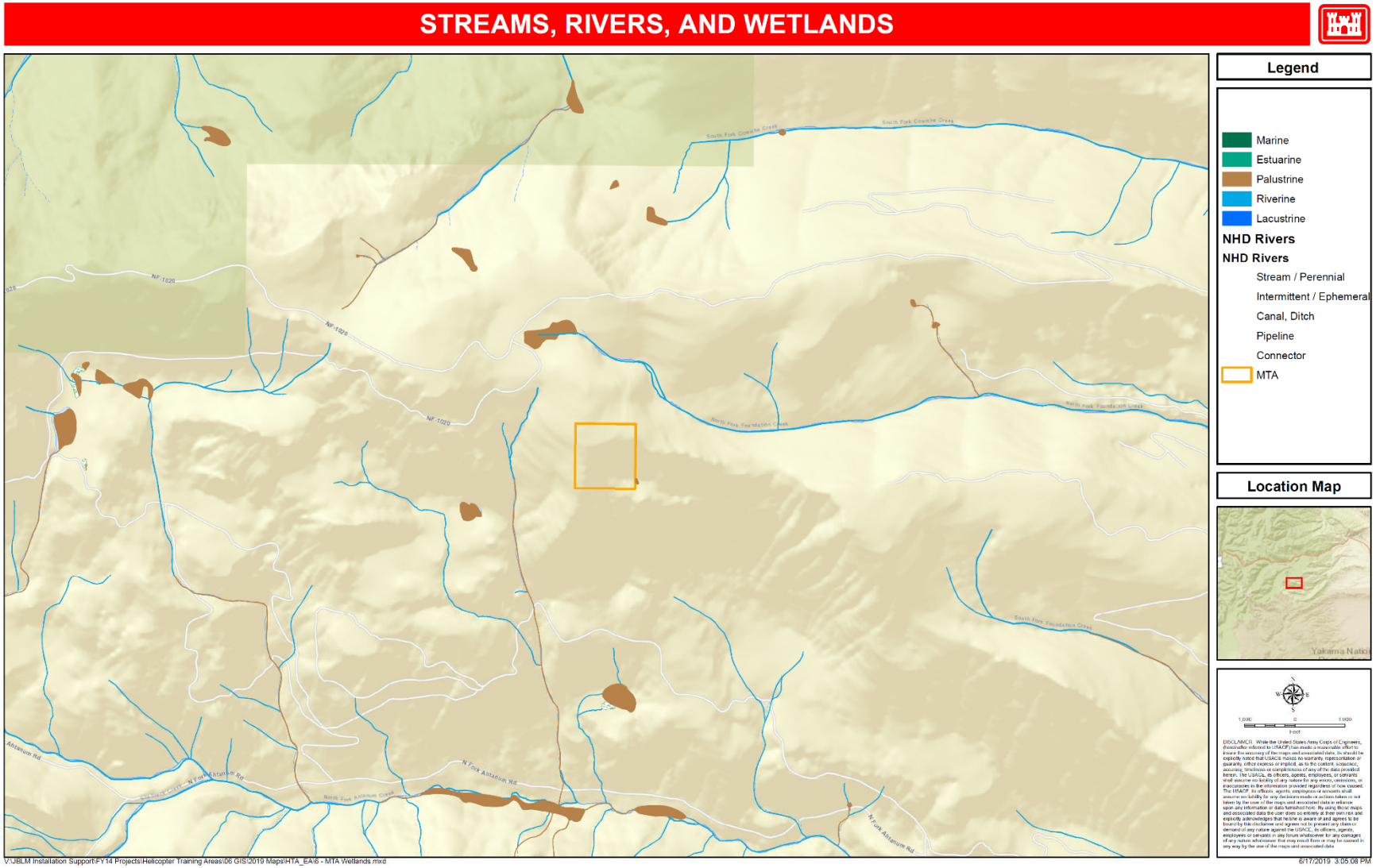


Figure 3-7. Wetlands, Rivers and Streams within the MTA.

Groundwater in the project area is typically contained in unconsolidated alluvial deposits of sand and gravel, and less commonly in eolian, glacial, and volcanic deposits (Whitehead 1994). Aquifers are often situated along present-day or ancestral stream valleys, or in lowland areas associated with structural or erosional basins. Much of the groundwater is in relatively shallow aquifers less than 200 feet thick.

3.7.2 **Water Quality**

Water quality in the project area is generally good. However, areas that support substantial amounts of agriculture and/or livestock grazing tend to have degraded surface water quality, which includes elevated levels of nitrates, phosphates, and other nutrients. According to the 2016 USEPA-approved Washington State water quality assessment, a common impairment of rivers and streams in the HTAs is elevated temperature. The concentration of dissolved solids in groundwater is naturally low in the region, and because most of the training areas are sparsely populated by humans, little groundwater contamination has occurred (Whitehead 1994). The closest waterbody with an impairment to the MTA is the South Fork Tieton River which approximately 5 miles northwest (Category 5 – temperature) (WDOE 2016).

3.7.3 **Wetlands**

Wetlands are important resources in the project area that provide hydrologic functions (e.g., flood attenuation, erosion and storm-damage reduction, groundwater recharge, and water quality maintenance); wildlife habitat (e.g., for waterfowl and shorebirds, anadromous fish, and numerous threatened and endangered species); and other values (e.g., recreation opportunities). Wetlands cover approximately 2 percent of Washington, and the same proportion of the project area (Dahl 1990). Wetlands throughout the project area are commonly associated with lakes, rivers, other water courses, and glacial depressions in the land surface.

Wetlands occur along river channels throughout the project area, in areas that are occasionally, to permanently flooded. These areas are non-vegetated or vegetated by submersed and non-persistent emergent aquatic plants. These wetlands include river bars, gravel bars, and unconsolidated shorelines. River floodplains are generally flat areas that are exposed to periodic flooding; they are often associated with extensive wetland habitats.

Wetlands are scattered throughout the mountainous regions near the MTA. They occur near seeps and springs, in and along rivers, and in lakes and small depressions. There are no wetlands within the proposed MTA. In the Cascade Range, glacial lakes support wetlands along their shorelines and in their shallow zones. Other mountain lakes and associated wetlands have been formed by lava dams and beaver dams. Wider mountain valleys and intermountain basins support marshes, wet prairies, and wet meadows.

Most wetlands in the arid regions east of the Cascade crest are associated with surface water bodies or glacial depressions. Many of the wetlands in this region have been affected by drainage for agricultural development.

Threshold Criteria

Impacts to water resources and water quality would be considered significant if Army actions resulted in 1) an increase in sediment loading in exceedance of state or federal water quality standards; 2) long-term water quality degradation from pollutants; or 3) degradation of drinking water quantity or quality to below state or federal standards.

Impacts to wetlands would be considered significant if training activities resulted in a net loss of wetland area or wetland habitat value.

3.7.4 **Alternative 1**

The No-Action Alternative maintains current training operations which includes JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses. Off-base training would continue to occur as aircraft operate at nearby airfields and other areas within the JBLM local flying area. JBLM aviation units would not conduct off-base high-altitude training operations in Washington. Therefore, no changes to the quality and quantity of water resources or wetlands would occur in the project areas.

3.7.5 **Alternative 2**

Although wetlands and aquatic resources lie beneath the approaches and within the training areas, most of the proposed activities would have no effect on these resources since most flights would take place in the air at altitudes of 500 feet and above. Within the proposed low-level training areas, there are approximately 351 river miles, 36 square miles of wetland, and less than ½ acre of a portion of a lake (HTA 4). There are no waterbodies or wetlands within the MTA. However, since helicopters would not land in aquatic habitats or wetlands and refueling would not occur, risks to these resources would be negligible.

3.8 Recreation and Visual Resources

Recreation opportunities exist both within the proposed training areas and in the surrounding areas. The SULMAs shown in Figures 3-3 and 3-4 provide excellent opportunities for outdoor recreation, including camping, hiking, fishing, boating, cross-country skiing, and other outdoor activities. Other opportunities for recreation exist throughout the project area as well (e.g., national forests, WDNR managed lands), with outdoor activities the most likely to be affected by helicopter training activities. Adjacent to the MTA, the Ahtanum State Forest operates the green dot road system for motorized recreation (off road vehicles, snowmobiles, four wheel drive vehicles) which was developed with WDNR, the Washington Department of Fish and Wildlife (WDFW) as well as private land owners.

Visual resources in the project area are varied, and include land, water, vegetation, wildlife, and other natural or man-made features. Prominent visual resources include the Cascade and Coast mountain ranges, Puget Sound and associated coastline, freshwater lakes and rivers, and Mount Rainier. Activities occurring on or above land or water in these areas have the potential to impact scenic values.

Threshold Criteria

Impacts to recreation would be considered significant if the action resulted in the permanent loss of a recreation area. Impacts to visual resources would be considered significant if the action impaired visibility for substantial periods.

3.8.1 **Alternative 1**

Under the No-Action Alternative current training operations which includes JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses would continue. Off-base training would continue to occur as aircraft operate at nearby airfields and other areas within the JBLM local flying area. JBLM aviation units would not conduct off-base high-altitude training operations in Washington. There would be no additional effects on recreation or visual resources in the project areas.

3.8.2 **Alternative 2**

The greatest impacts to recreation from Alternative 2 would be noise disturbances to people engaging in outdoor activities. Given that the proposed training areas were chosen to avoid populated areas, and pilots follow the Fly Friendly guidelines flying to and from the training areas, helicopters would instead fly over undeveloped areas, where outdoor recreation might occur. Recreationalists utilizing rural areas for hiking, camping, fishing, or other outdoor activities would likely be bothered by the sounds of helicopters flying overhead or nearby. Noise disturbances would be temporary, lasting only as long as it takes the helicopter to pass through the area. Outdoor recreation could be affected by impacts to wildlife; however the continued use of the training areas would be expected to habituate local wildlife such that impacts would be diminished over time. Effects to recreation would be temporary in nature, and would occur infrequently. Establishment of the proposed training areas would not preclude use of the area for recreation, and effects would not be significant.

Although disturbance of recreation activities (e.g. hiking, biking, etc.) near the HLZs could occur, it would be short-term, consisting of isolated and infrequent landing and takeoffs operations, and of low intensity. On approach to a HLZ pilots would perform clearance passes of each HLZ before landing, and pilots would not land, or attempt to land, if civilians are present. Ground access and travel is not affected by this proposed action. No direct spatial or temporal impacts to availability of recreation opportunities would occur. Because the there is no ground disturbance or permanent alteration of the visual environment, effects to visual resources would be minor. The presence of aircraft in back-country areas could temporarily alter or impede scenic views, but there would be no lasting effect on the visual environment. During nighttime training, helicopter lights could be visible from the ground, particularly during low-level operations. In urban

areas, where nighttime light sources are widespread, the visual impact of helicopter lights would be minimal. In rural and less populated areas, helicopter lights would be more apparent in the night sky, and would cause a temporary visual intrusion. Routine training activities would not be expected to result in permanent alteration of the area's recreation opportunity; therefore, activities would not result in a significant impact to recreation.

Because the proposed training activities would not entail ground disturbance or permanent alteration of the visual environment, effects to visual resources would be minor. The presence of aircraft in remote areas could temporarily alter or impede scenic views, but there would be no lasting effect on the visual environment.

During nighttime flights, helicopter lights could be visible from the ground, particularly during low-level operations. In urban areas, where nighttime light sources are widespread, the visual impact of helicopter lights would be minimal. In rural and less populated areas, helicopter lights would be more apparent in the night sky, and would cause a temporary visual intrusion. Effects would be greatest in the HTAs, where helicopters would fly at low altitudes. Pilots would follow the Fly Friendly guidelines as described in Section 2.5.2. These effects would not be significant.

3.9 Vegetation

The HTAs are located in the Pacific Lowland Mixed Forest Province and the MTA is located in the Cascade Mixed Forest – Coniferous Forest – Alpine Meadow Province both of which are within the Marine Division of the Humid Temperate Domain (as classified in Bailey 1995). Vegetation in the Marine Division is influenced by a damp, humid climate, with mild winters and relatively cool summers. Precipitation is heavily influenced by the coastal mountain ranges. The dominant natural vegetation within this Domain is coniferous forest.

3.9.1 Vegetation Types

A general discussion of the predominant plant communities in the area is provided below. Information comes from *Natural Vegetation of Oregon and Washington* (Franklin and Dyrness 1988).

3.9.1.1 Coniferous Forest

The vegetation type most commonly found en route and within the training areas is coniferous forest. Within the HTAs, coniferous forests are dominated by Sitka spruce, western hemlock, western red cedar, and Douglas-fir. These forests are influenced by a wet, mild, maritime climate. Besides the dominant tree species, overstory composition varies by factors such as climate, soil type, moisture, and elevation. Deciduous tree species, including black cottonwood, Oregon ash, bigleaf maple, and red alder, are common in riparian areas. Shrub and herbaceous layer species vary by moisture; common dominants in these layers include oceanspray, Cascade barberry, swordfern, and redwood-sorrel.

On the slopes of the Cascade Range, forests dominated by Pacific silver fir and western hemlock are prevalent at lower elevations on the west side, forests dominated by ponderosa pine are prevalent at lower elevations on the east side, and forests dominated by mountain hemlock occur in subalpine regions. Plant composition within these forests varies considerably with locale, and is often influenced heavily by logging.

3.9.1.2 Shrub/Scrub

Shrub-steppe communities are found east of the Cascade Range. These communities develop in the arid to semiarid climate of the rain shadow of the mountains. Dominant species in shrub-steppe communities include shrubs (e.g., big sagebrush, antelope bitterbrush, scabland sagebrush, little sagebrush, and shadscale saltbush), large perennial grasses (e.g., bluebunch wheatgrass, Idaho fescue, basin wildrye, and Thurber's needlegrass), and invasive species (e.g., cheatgrass, Kentucky bluegrass, and medusahead). Much of the shrub-steppe habitat has been lost to agriculture or modified by fire and/or grazing.

3.9.1.3 Grassland/Herbaceous

The most significant grassland habitats in the project area are the prairies of the south Puget Sound region (including JBLM) and steppe communities east of the Cascade Range. South Puget Sound prairies are dominated by the bunchgrass Idaho fescue, and various forb species (such as small camas, Nuttall's violet, and deltoid balsamroot), and are being encroached upon by Douglas-fir and Oregon white oak. Grasslands in eastern Washington are similar to the shrub-steppe communities described in the previous paragraph, except that the shrub component is lacking. These communities exist as a mosaic of steppe and shrub-steppe vegetation. In general, grassland habitats in the project area are ecologically important because their coverage is much reduced from past levels, because few native examples of these communities exist, and because they provide habitat for listed and sensitive plant and animal species.

3.9.1.4 Woody Wetlands

Forested wetlands occur throughout the forested habitat in the project area where saturated or inundated soil conditions occur. The most prevalent forested wetland types are cedar and alder swamps, which occur in coniferous forests and are most prevalent on the coastal plains and portions of glacial drift adjacent to Puget Sound. These swamps are dominated by western redcedar and/or red alder, with a variety of understory species, although only one or two understory species are typically dominant. Examples of understory species include American skunk cabbage, slough sedge, deer fern, common lady fern, water parsley, Mexican hedgenettle, miterwort, piggy-back plant, rose spirea, dune willow, and salmonberry.

3.9.1.5 Deciduous Forest

In the South Puget Sound region, oak woodlands occur in a mosaic with prairies and invading conifer forests. Oregon white oak is the overstory dominant in these

woodlands, with the following prominent understory species: Scotch broom, common snowberry, kinnikinnick, Pennsylvania sedge, Roemer's, and woodland strawberry.

3.9.1.6 Emergent Herbaceous Wetland

Herbaceous wetlands occur throughout the project area, but cover a small land area. They are often associated with rivers, lakes, streams, topographic depressions, and groundwater seeps.

The remainder of the undeveloped land in the project area is barren land (rock, sand, or clay).

3.9.2 **Invasive Plant Species**

Invasive plant species occur throughout the project area, in all types of habitats. Noxious weeds are introduced species that are difficult to control and damaging to an area's economy and natural resources. Noxious weed lists are maintained at the state and county level, by weed control boards and programs.

3.9.3 **Federally Listed Species**

Endangered Species Act (ESA) listed plant species that could occur in the HTAs or MTA include four flowering plant species (Kincaid's lupine, Nelson's checker-mallow, golden paintbrush, and water howellia) and one conifer (whitebark pine) (Table 3-7). None of the flowering species are known or likely to occur in the vicinity of the proposed HLZs or MTA. Whitebark pine is discussed in Section 3.11.

Threshold Criteria

Impacts to vegetation would be considered significant if Army actions resulted in 1) long-term loss or degradation of unique or high quality plant communities; 2) take of federally listed species or increased mortality of proposed or candidate plant species; or 3) local extirpation of rare or sensitive species not currently listed under the Endangered Species Act.

3.9.4 **Alternative 1**

The No-Action Alternative maintains current training operations which includes JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses. Off-base training would continue to occur as aircraft operate at nearby airfields and other areas within the JBLM local flying area. JBLM aviation units would not conduct off-base high-altitude training operations in Washington. Under the No Action Alternative, no additional impacts to vegetation on JBLM or off-base in the project area would occur.

3.9.5 **Alternative 2**

Flights consisting of approaches to and from the training areas would not be expected to affect vegetation, since aircraft would be at least 500 feet AGL (or above the highest obstacle) and would take off from and land at Gray Army Airfield at JBLM.

Since helicopters may land anywhere within the MTA and on HLZs within the HTAs, some effects to vegetation are expected. Plants at landing zones could potentially be harmed during the landing process and from the weight of the helicopter. Landings within the HTA would occur on open areas that are rocky outcrops, or which generally support grasses and other low-growing herbaceous vegetation. The vast majority of HLZs within the HTAs would be located on recently logged parcels which have already experienced vegetation disturbance. Many species would be able to withstand some degree of aboveground injury or mortality without suffering extensive long-term effects. Any exposure of bare soil by helicopters during landing could alter plant community composition by providing disturbed soil for colonization by weeds and other early-successional species. Additionally, helicopters would be a potential dispersal mechanism for weed propagules, by transporting seeds and other plant parts between sites on JBLM, and the various HLZs. In order to minimize the potential for colonization of weeds into new areas, the following BMP would be followed:

- Prior to and following use of landing zones in the HTAs and the MTA, helicopters would be thoroughly washed at JBLM to remove all soil and mud to avoid transporting propagules of weed species onto or off of training areas.

During the summer and fall, particularly during periods of drought, wildland fires can occur in forests and grasslands throughout the state. Wildland fire can pose serious risks to ecosystem health depending on the severity of burn. The helicopters proposed for use have exhaust which points skyward rather than towards the ground to reduce risk of fire. During take-offs and landings from the MTA and HLZs within the HTAs, pilots would keep the helicopter engine running to avoid any potential sparking during start-up. Training activities would be suspended during periods of high fire danger based on the following BMP:

- Training flights would not occur during periods of high risk for wildfire as determined by the Northwest Interagency Coordination Center via the Pacific Northwest 7-Day Significant Fire Potential Chart (https://gacc.nifc.gov/nwcc/predict/outlook.aspx).

Provided these BMPs are followed, effects to vegetation from the proposed training activities would be less than significant.

Although four federally listed and one candidate plant species, or potential habitat for these species, may occur within the project area, none occur within the proposed HLZs. Therefore, there would be no direct, on-the-ground impact to any of these plant species as a result of the proposed action. Plants would also not be affected by helicopter overflights. Although whitebark pine may be located near HLZs, there would be no vegetation removal or on-the-ground impacts that would affect this species as a result of the proposed action. A biological assessment prepared to address the impacts of the proposed project on these species found that the proposed project would have no effect

on the four federally listed plant species or their critical habitat and no effect on the candidate species.

3.10 Fish and Wildlife

Fish and other aquatic species occur in freshwater habitats throughout the project area, including numerous rivers and streams of varying sizes, lakes, and wetlands. These aquatic areas serve many habitat functions, including: spawning habitat (the areas where eggs are deposited and fertilized and gravel emergence occurs); rearing habitat (the areas where juvenile fish find food and shelter as they develop into adults); migration habitat (the areas that juvenile and/or adult fish pass through on their way between the ocean and spawning or rearing habitat); and overwintering habitat, where adult fish reside when they are not migrating or spawning. Important aquatic habitats in the project area are discussed in Section 3.7. Wildlife is abundant in all of the habitats represented in the project area, and includes birds, terrestrial mammals, marine mammals, reptiles, amphibians, and invertebrates. This section describes the major types of fish and wildlife, the habitats in which they occur, and the times of the year during which they inhabit the project area.

3.10.1 Fish

The effects of aircraft overflights on fish have not been well researched. Studies of the effects of other noise sources on fish do exist including responses of fish to sonic booms (Rucker 1973), fishing fleet sounds (Schwarz and Greer 1984), and underwater dredging sounds (Konagaya 1980). Those studies have shown that fish exhibit varying degrees of avoidance behavior and startle responses when encountering loud noise. Manci et al. (1988) reported on surveys of field offices, refuges, hatcheries, and research centers which showed that sonic booms, such as from military jets, did not impact eggs but could cause startle and jumping reactions in fish. Popper and Clarke (1976, cited in Manci et al. 1988) found that while salmon are sensitive to substrate-borne sounds, they are unlikely to detect sounds originating in the air unless the source is nearly directly overhead.

3.10.2 Wildlife

Within the MTAs there are a variety of special habitat features and numerous types of wildlife habitat. Wildlife present ranges from white-tailed deer, chuckars, and black-billed magpies at lower elevations to gray jays and mountain goats at upper elevations. White-tailed ptarmigan could occur in the upper elevations of the MTAs during the winter months. Raptor species within the MTAs include the northern goshawk, sharp-shinned hawk, red-tailed hawk, rough-legged hawk, golden eagle, northern harrier, American kestrel and several species of owls. Waterfowl and shorebirds are present along waterbodies within the training areas.

Impacts from helicopters on wildlife include acoustic and visual impacts. Impacts from noise can include physical effects, such as hearing damage or increased stress. Behavioral effects from both noise and visual disturbance include such things as retreating from favorable habitat or reduction of time spent feeding.

Noise studies have shown considerable variability in noise-induced hearing loss, even in a single species in the laboratory (Hamernik et al. 1980). Risk of hearing damage from military training on wildlife is probably greater from exposure to nearby blast noise from bombs and large weapons than from long-lasting exposure to continuous noise or from muzzle blast of small arms fire (Larkin 1996). Potential direct physiological effects of noise on wildlife are difficult to measure; remote measurement of variables such as heart rate are technically feasible but have not been proven as a long-term indicator of health and survival. Serious effects such as decreased reproductive success have been inconclusive, having been documented in certain studies and documented to be lacking in other studies on other species (Larkin 1996).

Behavioral responses to noise on mammals can vary widely. Klein (1973) reviewed the reactions of several northern mammals to aircrafts. Moose showed a much greater indifference to aircraft than caribou both in the open and in partial cover. Grizzly bears, on the other hand, reacted very strongly to the aircraft, often starting to run while the aircraft was still some distance away. Wolves appeared least disturbed by low-flying aircraft of any of the large mammals observed. This was surprising as wolves in the study area were legally hunted from aircraft only four years earlier and, at that time aerial hunters commented on the extreme alarm shown by wolves due to aircraft. Wolves have apparently rapidly adapted to the lack of the threat from this source (Klein 1973).

Bird species have been found to elicit varying responses to noise. Wilson et al. (1991) found that aircraft caused Adelie penguin to panic at distances greater than 0.5 miles and 3 days exposure to a helicopter inhibited birds from returning to their nests. This caused penguin numbers in the colonies to decrease by 15% and produced nest mortality rates of 8 percent. Alternatively, Awbrey and Bowles (1990) found that raptors did not expose their nests for more than 10 minutes after flushing in response to an overflight, causing little chance of death due to overheating or chilling. Whereas some medium-sized raptors flee from approaching helicopters (Andersen, et al. 1989, Platt 1975, Platt and Tull 1977), others refuse to be flushed from the nest (Poole 1989), and larger ones sometimes attack helicopters, presumably in defense against a flying intruder (Mooney 1986, Watson 1993). Watson (1993) found that disturbance rates of adult eagles were not directly related to distance approached in the helicopters. The author attributes the effect to the adult's proximity to their nest, such that eagles nearer to nests were less apt to flush unless helicopters approached very closely. Andersen, et al. (1989) approached 35 nests of red-tailed hawks with an Army UH-1 Huey and found that 40 percent of birds flushed at short line-of-sight distances (ranging from 130 to 360 ft).

Changes in home range size or shape in response to noise generation can be difficult to quantify. Determining the changes to home ranges from any one particular stimulus (such as military training) can be very difficult given the wide variety of stimuli that determine an individual's home range (such as food availability, competition, etc.). For

example, although Gese et al. (1989) found that coyotes' home ranges were affected by military training activity, they were unable to quantify the amount of change due to training maneuvers in light of the wide variety of overall home range changes seen (expansion, retraction, abandonment). Apparent abnormalities in use of habitat by sage grouse were also found to be difficult to substantiate without long-term comparison data in similar conditions (Eberhardt and Hofmann 1991). Such difficulties are amplified when dealing with large, mobile animals (as in Andersen, et al. 1990).

Decreased responsiveness after repeated noises is frequently observed and usually attributed to habituation. Habituation is well-known throughout the animal kingdom (Peeke and Petrinovich 1984). Responses to distant helicopters are documented; however, the response and the degree to which such a response may decrease with habituation varies greatly (Larkin 1996). Military training situations in which similar noise-producing exercises are carried out in the same habitat at frequent intervals may affect local wildlife less than infrequent or less-predictable activities (Larkin 1996).

Seasons and the reproductive cycle also affect noise related behavioral responses in wildlife. Field experiments by Platt (1977) found that gyrfalcons flee from helicopter overflights much more readily when nesting than during winter, although this is potentially due to the energy cost of flight during the extreme Yukon winter. For red-tailed hawks, Andersen et al. (1989) found diminished tendency to flee from a helicopter at later stages as opposed to earlier in the nesting cycle. Alaskan caribou also showed some seasonal differences to overflights (Klein 1973), with decreased responses in summer, potentially due to "preoccupation of the animals with [biting] insects." Similarly, desert bighorn sheep reacted to overflights by recreational helicopters differently in different seasons (Stockwell and Bateman 1987, Stockwell, et al. 1991).

Threshold Criteria

Impacts to fish and wildlife would be considered significant if the proposed training resulted in creation of a barrier that would prevent migration.

3.10.3 **Alternative 1**

The No-Action Alternative maintains current training operations which includes JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses. Off-base training would continue to occur as aircraft operate at nearby airfields and other areas within the JBLM local flying area. JBLM aviation units would not conduct off-base high-altitude training operations in Washington. No impacts to fish and wildlife would be expected.

3.10.4 **Alternative 2**

3.10.4.1 Fish

Although helicopters could fly at low altitudes above fish habitat, each 4-hour training event would be infrequent; noise impacts to fish would be negligible throughout the project area. Aircraft produce shadows that might be interpreted by fish as predators, potentially causing fish to seek cover, which could have energetic costs if it occurs

frequently. This phenomenon is largely unstudied, and it is unknown how much helicopters passing over waterbodies would alter the behavior of listed salmonids. Aircraft would fly high enough that shadow effects would be highly unlikely. Flying altitudes would also be sufficiently high to avoid any concerns of potentially stirring up soil through rotor wash and causing sedimentation or turbidity. No significant impacts to fish would result from the proposed action.

3.10.4.2 Wildlife

Potential impacts to wildlife from the proposed training would include: 1) impacts from noise/visual disturbance; 2) impacts from collisions with aircraft; and 3) impacts from accidental releases of fuel (although these risks would be very small). The likelihood and severity of these impacts would depend on factors such as aircraft type, flight altitude, overflight frequency, time of day and year of training, species sensitivity, and the characteristics of the surrounding environment.

3.11 Proposed, Threatened, and Endangered Species

In accordance with Section 7(a)(2) of the ESA, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species and designated critical habitat. A Biological Assessment (BA) was developed to evaluate how the proposed project may affect listed species and designated critical habitat. Consultation with the U.S. Fish and Wildlife Service (USFWS) is ongoing.

Table 3-7. ESA-listed Species Potentially Occurring in the Project Area

Species	Scientific Name	Listing Status	Critical Habitat
Amphibians			
Oregon Spotted Frog	*Rana pretiosa*	Threatened	Designated
Fish			
Coastal/Puget Sound Bull Trout	*Salvelinus confluentus*	Threatened	Designated
Puget Sound Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened	Designated
Puget Sound Steelhead	*Oncorhynchus mykiss*	Threatened	Designated
Hood Canal Chum Salmon	*Oncorhynchus keta*	Threatened	Designated
Birds			
Marbled Murrelet	*Brachyramphus marmoratus*	Threatened	Designated
Northern Spotted Owl	*Strix occidentalis caurina*	Threatened	Designated
Short-tailed Albatross	*Phoebastria (=diomedea) albatrus*	Endangered	Not designated
Streaked Horned Lark	*Eremophila alpestris strigata*	Threatened	Designated

Western Snowy Plover	*Charadrius nivosus ssp. nivosus*	Threatened	Designated
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened	Proposed
Mammals			
Canada Lynx	*Lynx canadensis*	Threatened	Designated
Gray Wolf	*Canis lupus*	Endangered	Designated, not in WA
North American Wolverine	*Gulo luscus*	Proposed Threatened	
Fisher	*Pekania pennanti*	Proposed Threatened	
Columbian White-tailed Deer	*Odocoileus virginianus leucurus*	Endangered	Not designated
Flowering Plants			
Kincaid's Lupine	*Lupinus sulphureus ssp. kincaidii*	Threatened	Designated
Nelson's Checker-mallow	*Sidalcea nelsoniana*	Threatened	Not designated
Golden Paintbrush	*Castilleja levisecta*	Threatened	Not designated
Water Howellia	*Howellia aquatilis*	Threatened	Not designated
Conifers and Cycads			
Whitebark Pine	*Pinus albicaulis*	Candidate	

Several of the species in Table 3-7 may occur, or may have historically occurred within the proposed training areas; however, have no potential to be affected by the proposed action. The proposed actions will have "no effect" on the following species and their designated critical habitat (CH) due to their specialized habitat requirements (which are not found in the action area), their lack of tolerance for human development or activities (which would preclude their presence in the action area), or both.

The Oregon spotted frog is the most aquatic native frog in the Pacific Northwest. Typically, they are found in or near a perennial body of water that includes zones of shallow water and abundant emergent or floating aquatic plants (USFWS 2014a). Helicopter overflights would not be expected to disturb any waterbodies where Oregon spotted frogs may be located. Overall, no impact to Oregon spotted frog is expected.

Fish species including those listed in Table 3-7 are present in a variety of stream and lake habitats beneath the proposed training areas. Potential impacts to listed fish and their designated CH in the project area include noise disturbance, shadow effects from aircraft passing over streams, siltation of aquatic habitat due to rotor wash, and release of fuel as a result of a catastrophic crash, as discussed above in Section 3.3.1.

Overall, the impact to listed salmonids is expected to be negligible. No effect to salmonids or salmonid CH is expected.

The short-tailed albatross once ranged over the North Pacific Ocean and Bering Sea. Historically, breeding colonies were found on numerous isolated islands off of Japan and Taiwan, yet today they are only found on two Japanese islands. There are no breeding populations of short-tailed albatrosses in the United States, but several have been regularly observed during the breeding season on Midway Atoll in the northwestern Hawaiian Islands (USFWS 2000). Short-tailed albatross feed in nearshore and coastal waters of the North Pacific. Short-tailed albatross are not expected to occur in the study area as it does not contain suitable breeding or foraging habitat, therefore the proposed action would have no effect on this species.

Streaked horned lark could be present in the HTAs; however, it is unlikely that any suitable nesting habitat exists. In the event that larks are present within the proposed training areas, they are habituated to aircraft noise. In Washington known breeding areas are grasslands and sparsely vegetated areas at airports including JBLM, sandy islands and coastal spits (WDFW 2012b). The proposed action would have no effect on streaked horned lark or their designated CH.

The yellow-billed cuckoo is a migratory bird which formerly had a range across much of North America, but is now limited primarily to the eastern and central United States with a few populations in the West. The preferred breeding habitat is open lowland deciduous woodlands with clearings and shrubby vegetation, especially near rivers and streams with nests in willows and cottonwoods that make up long contiguous riparian zones. Yellow-billed cuckoos are not expected to occur in the study area as there have only been four sightings in western Washington between the years 1950 to 2000 and they no longer breed in Washington State (WDFW 2017). No effect to yellow-billed cuckoo or its proposed CH is expected.

In Washington, western snowy plovers nest on coastal beaches in open areas with general absence of vegetation or driftwood. Since 2002, the Willapa National Wildlife Refuge has restored native coastal habitat at Leadbetter Point to create suitable nesting areas for snowy plover. Western snowy plovers are not expected to occur in the study area since the boundaries of HTAs 2 and 3 do not extend over ocean beaches along the Washington coast. No effect to western snowy plover or its CH is expected.

Numerous surveys and research efforts have been conducted throughout the historical range of the Canada lynx since it was listed as a federally and state threatened species in 2000 and 2001, respectively. These survey and research efforts indicate that a single resident population occurs in Washington and is restricted mainly to western Okanogan County in the Northeastern Cascades (Lewis 2016). The contraction of the lynx range to western Okanogan County is likely due to many factors, including the loss and fragmentation of habitat as a result of large wildfires over the past 20 years.

Canada lynx are not expected to occur in the project area, thus there would be no effect to lynx or lynx CH from the proposed action.

Columbian white-tailed deer are unlikely to be present in the project area, but were present historically. Currently only two distinct populations exist, in Douglas County, Oregon, and along the lower Columbia River (WDFW 2012a) in Washington and Oregon. To the south of HTA 3 in Wahkiakum County, Washington, and Clatsop and Columbia Counties, Oregon, is the Julia Butler Hansen Refuge for the Columbian white-tailed deer. The 6,000 acre USFWS refuge was established in 1971 specifically to protect and manage the endangered Columbia white-tailed deer. Any overflights over the wildlife refuge would follow protocols in the Army's "fly-friendly" program. There would be no effect to Columbian white-tailed deer as a result of the proposed action.

Of the four flowering plant species listed in Table 3-7, none are known or likely to occur in the vicinity of the proposed HLZs or MTA. Plants would not be affected by helicopter overflights. Therefore, there would be no direct, on-the-ground impacts to any of these plant species as a result of the proposed action.

Whitebark pine is classified as a stone pine, which is typically found at high elevations in Washington. Whitebark pine has a key role in maintaining snowpack and regulating runoff and are often the first species to establish after disturbance such as wildfire (USFWS 2014b). Roughly 44 percent of the species' range occurs in the western United States (Wyoming, Montana, Idaho, Nevada, California, Oregon, and Washington), and the remaining 56 percent in Canada (USFWS 2011). Whitebark pine may be located within the MTA given the elevation ranging from 6,000 to 6,500 feet. However, there would be no vegetation removal or on-the-ground impacts that would affect this species as a result of the proposed action. Additionally, whitebark pine can withstand near hurricane-force winds (Fryer 2002). With this high wind resistance, it is unlikely that there would be any impacts from rotor wash during take-offs and landings in the MTA if whitebark pine are present. Therefore, there would be no effect to whitebark pine as a result of the proposed action.

There are numerous pelagic marine species listed within the counties underlying HTAs 2 and 3; however, no overflights would occur over marine waters. Therefore, these species are not included in the BA or the analysis or this EA.

3.11.1 **Marbled Murrelet**

Marbled murrelet are small marine birds that forage in near-shore environments from northern California up through Alaska and are year round residents on coastal waters. Marbled murrelets can nest up to 55 miles (89 km) inland in Washington. This area is divided into two zones: Zone 1 extends approximately 40 miles (64 km) from the coast, and Zone 2 extends approximately 55 miles (89 km) from the coast. Figure 3-8 shows occupied areas for marbled murrelet within the proposed HTAs. Occupied areas include designated critical habitat and areas where marbled murrelet have been detected (detection sections). . There are approximately 119,917 acres (48,529 ha) of

CH within HTA 3. No CH is located within HTAs 2 or 4. There are no detection sections within HTA 4. Numerous detection sections are located within both HTAs 2 and 3, with the large majority of detections in the western half of each training area. Therefore, it should be assumed that marbled murrelets nest, or could potentially nest, within the HTAs 2 and 3, and could be adversely affected by low-level training within the area of potential murrelet habitat. Training restrictions within specific areas of HTAs 2 and 3 are necessary during the breeding season to avoid adverse impacts to marbled murrelets.

Figure 3-8. Marbled Murrelet Occupied Areas within the HTAs.

3.11.2 **Northern Spotted Owl**

The northern spotted owl is one of three subspecies of the spotted owl, a nocturnal bird of old-growth forest habitats. There is no designated CH within the HTAs or MTA; however, spotted owls have been documented within all proposed training areas (Figure 3-9). Aircraft traveling between JBLM and the proposed training areas could also potentially pass over suitable spotted owl habitat, depending on the route taken. The large majority of the project area contains early successional forests largely due to timber harvesting; however, some stands of mature late-successional forest are present.

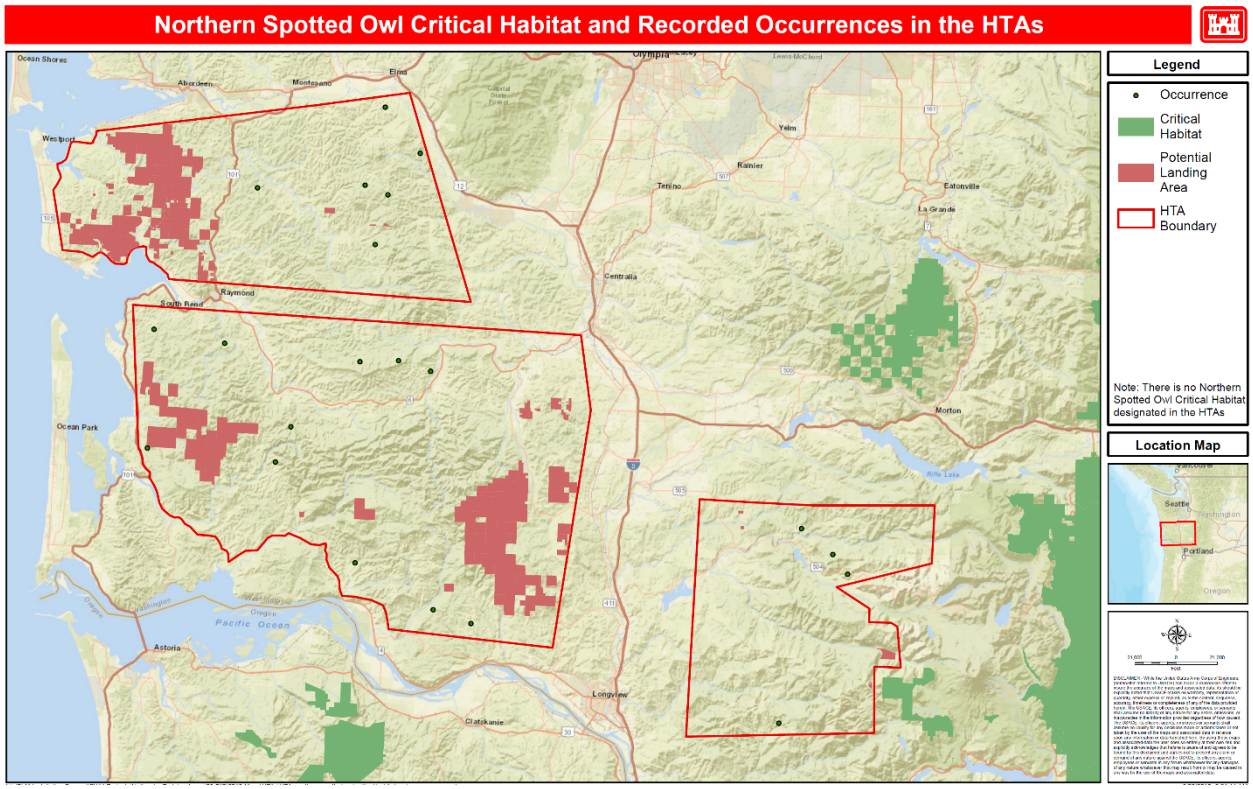


Figure 3-9. Northern Spotted Owl Occurrences within the HTAs and Designated Critical Habitat Located Outside of the HTAs.

3.11.3 **Gray Wolf**

Gray wolves are the largest wild members of the dog family. The species historically occurred across most of North America, Europe, and Asia. In North America, wolves occurred from the northern reaches of Alaska, Canada, and Greenland to the central mountains and the high interior plateau of southern Mexico. According to WDFW, in 2018 there were 27 active wolf packs containing at least 126 wolves in Washington, with the number of individuals increasing by 2 percent and packs increasing 23 percent over 2017 population data (WDFW 2019). There are no known packs in the South Cascades and Northwest Coast recovery area, which contains the project area yet occurrences have been recorded near the project area (Figure 3-10).

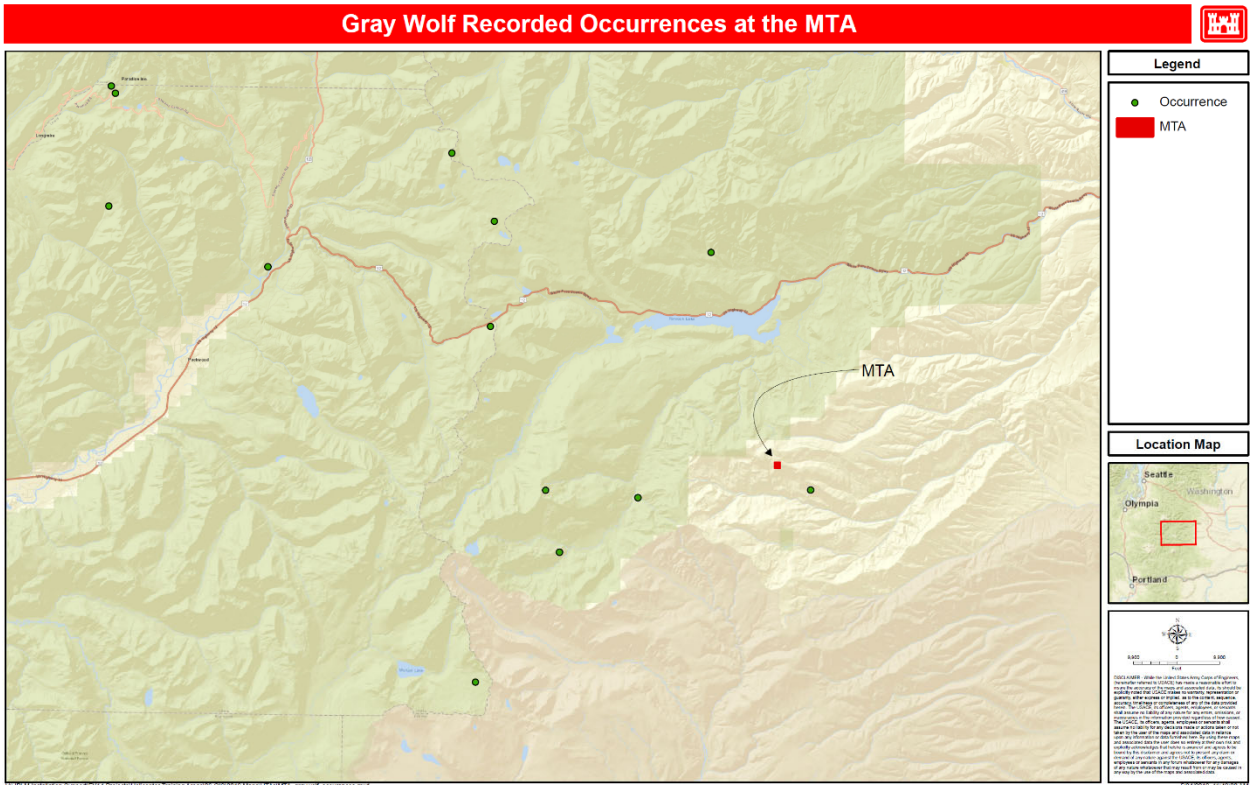


Figure 3-10. Documented gray wolf occurrences near the MTA in years 1991, 1992, and 2015.

3.11.4 **North American Wolverine**

The wolverine is the largest terrestrial member of the weasel family, with females weighing 18-27 pounds and males weighing 26-44 pounds. They inhabit areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season (Copeland et al. 2010). Deep, persistent, and reliable spring snow cover (April 15 to May 14) is the best overall predictor of wolverine occurrence in the contiguous United States (Aubry et al. 2007, Copeland et al. 2010). In Washington, wolverines occupy alpine and subalpine forest habitats, especially within North Cascades National Park and the wilderness areas of Okanogan-Wenatchee National

Forest. Wolverine are not known to occur in the HTAs or the MTA; however, WDFW data shows recorded occurrences at higher elevations near the MTA from 1978 to 2012 (Figure 3-11).

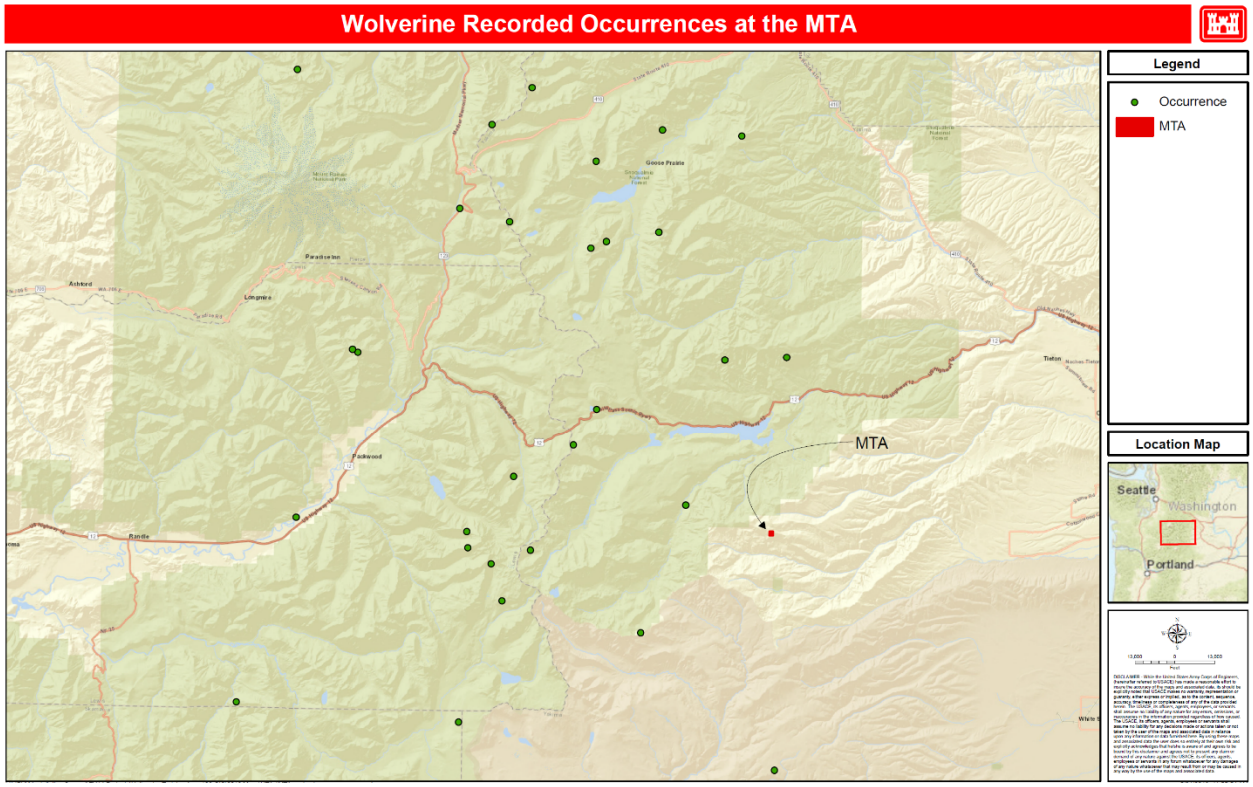


Figure 3-11. Documented wolverine occurrences near the MTA in years 1978-2012.

3.11.5 **Fisher**

Fishers are mid-sized carnivores (4.4 to 13 pounds) in the weasel family that use forested habitats with dense canopy closure, large diameter live trees (conifers and hardwoods), snags with cavities and other deformities, large diameter downed wood, and multiple canopy layers. The physical structure of the forest (abundant structures for den and rest sites, complexity and diversity of trees and shrubs) and prey associated with these forest conditions are thought to be the critical features that explain fisher habitat use, rather than specific forest types. Fishers once occurred throughout the forested areas of western, northeastern, and southeastern Washington, but were eliminated from the state by the mid-1900s mainly as a result of over-trapping. In Washington State, fishers have been reintroduced to the Olympic Peninsula and the Cascades. According to WDFW data, there do not appear to be any fishers present in the HTAs or MTA; however, there are occurrences recorded near the MTA (Figure 3-12).

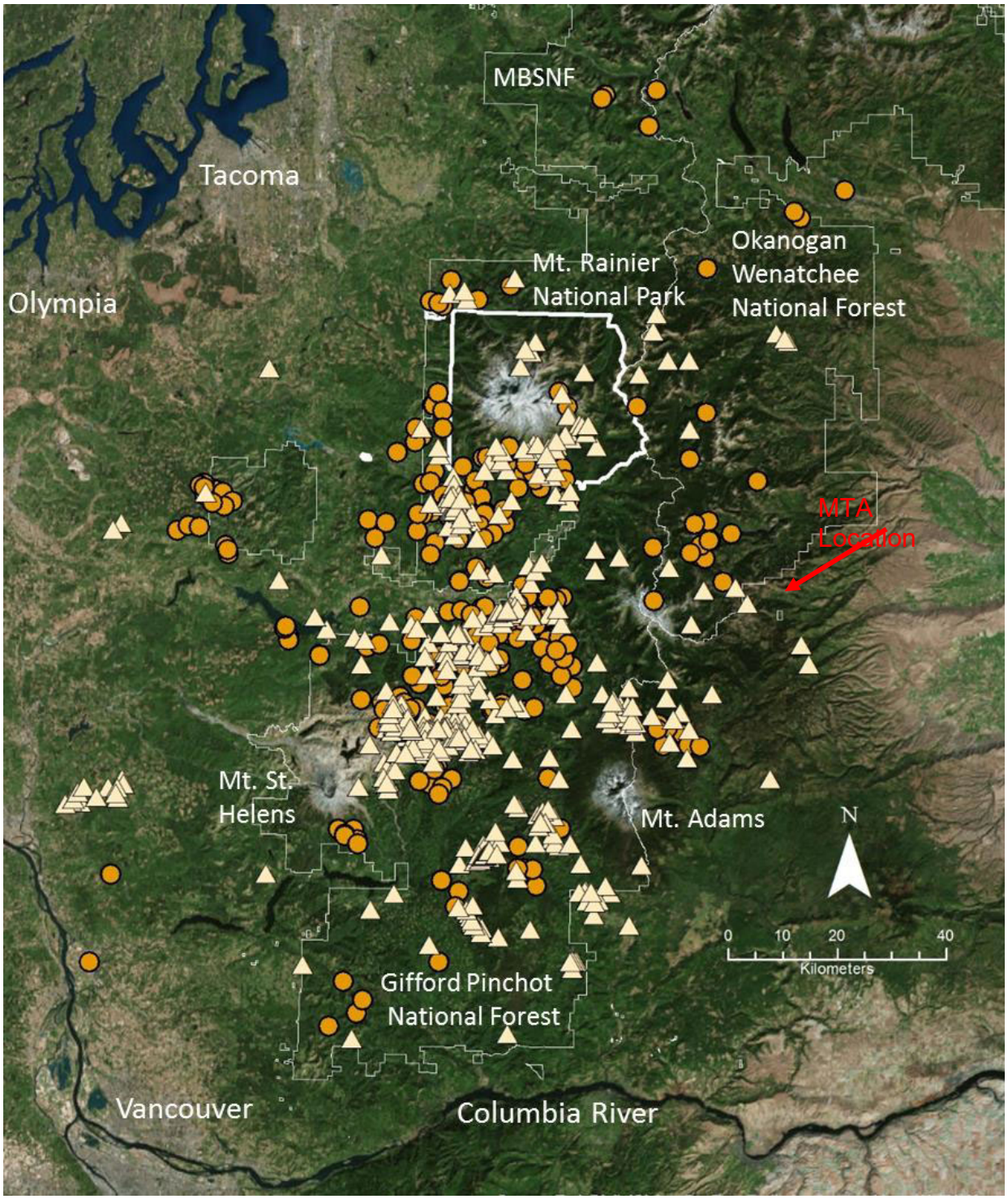


Figure 3-12. Documented fisher occurrences near the MTA from December 2015 to February 2018. Telemetry locations (n=776; 484 F [white triangles], 292 M [orange circles]) for fishers released in the southern portion of the Cascade Fisher Recovery Area in Washington (Figure from Lewis et al. 2018).

3.11.6 **Alternative 1**

The No-Action Alternative maintains current training operations which includes JBLM and JBLM-YTC existing training areas, which are designed and zoned to support these uses. Off-base training would continue to occur as aircraft operate at nearby airfields and other areas within the JBLM local flying area. JBLM aviation units would not conduct off-base high-altitude training operations in Washington. No impacts to threatened or endangered species would be expected.

3.11.7 **Alternative 2**

3.11.7.1 Marbled Murrelet

Potential effects from the proposed training include disturbance from helicopter noise and bird strikes. Information about noise disturbance on marbled murrelets indicates that responses to noise by marbled murrelets vary, and in some cases may affect reproductive success (Raphael et al. 2008, USFWS 2009). However, nestlings appear unaffected by disturbances near nests, and adults at nests in general do not appear to be affected by vehicular traffic or most loud noises (Raphael et al. 2008). Past studies have observed little to no response by murrelets to vehicles on nearby logging roads (Chinnici, unpublished data in Long and Ralph 1998). There is also evidence that marbled murrelets have minimal response to long and prolonged noises without visual cues, including logging activities at as close as 0.5 miles (0.8 km; Long and Ralph 1998). Responses by marbled murrelets to aircraft predominantly have been observed at low altitudes, including chicks lying flat in their nest (Kerns 1994 in Long and Ralph 1998). The USFWS has established a threshold of 92 dBA as the point at which marbled murrelets are likely to show signs of disturbance such as flushing (Harke, personal comm. cited in FORSCOM 2011). Noise modeling data for similar aircraft (Table 3-4) indicate that MH/UH-47 Chinook and AH-64 Apache helicopters would exceed this noise threshold at an altitude of approximately 200 feet (61 meters) above marbled murrelets. MH/UH-60 Blackhawk helicopters would exceed this threshold at an altitude slightly above 100 feet (30.5 meters) above marbled murrelets.

Helicopters traveling between JBLM and the training areas would fly at minimum altitudes of 500 feet AGL (152 meters) which is height above treetop level. At these altitudes, noise levels would be below 92 dBA, and adverse effects to marbled murrelets should not occur. Noise levels associated with the proposed training activities would have the potential to exceed the threshold level of 92 dBA within the training areas, where helicopters would fly below 500 feet (152 meters) AGL. Since marbled murrelet nests are difficult to find and observe, it is not well known what types of behavioral responses nesting murrelets might make to noise levels of 92 dBA or greater. However, it is assumed that during the breeding period, responses could include behaviors that would reduce productivity or survival of marbled murrelets, which would constitute harassment-level effects. As noted above, nestlings appear unaffected by noise disturbances near nests, and adults at nests in general do not appear to be affected by vehicular traffic or most loud noises (Raphael et al. 2008). Thus, although adult murrelets could abandon nests in response to low-altitude helicopter flights, they would likely return to nests after training ceased. However,

eggs, hatchlings, and younger murrelet chicks may not be able to survive exposure to weather during periods of parental abandonment.

Bird strikes involving murrelets are possible within the project area, and would be most likely to occur by helicopters flying at low altitudes within HTAs, and when flying between JBLM and the proposed routes/training area at altitudes close to 500 feet (152 meters) AGL. Maneuvers within HTAs 2 and 3 could occur in close proximity to marbled murrelet nesting sites. Murrelets could potentially collide with aircraft, and nests could be physically damaged by helicopter-generated winds. It is possible that murrelets could fly at higher altitudes while transiting between coastal feeding grounds and inland nesting sites, but the rarity of the marbled murrelet makes bird strikes unlikely (Harke, personal comm. cited in FORSCOM 2011). FAA bird strike records for civilian aircraft do not show any recorded marbled murrelet strikes in Washington or Oregon between 1990 and 2019 (FAA 2019). Because reporting strikes is voluntary and some birds are not identified, it is not known whether this information provides an accurate assessment of risk to marbled murrelets. According to data from the USAF, murrelets are not on the list of the top 50 wildlife strikes by count (less than 202 strikes) through 2016 (USAF Safety Center 2019). However, it is not expected that a rare species would be found on this list.

The following conservation measure would be implemented to avoid adverse effects to marbled murrelets in the project area:

- Between 1 April and 23 September, helicopters would fly at a minimum altitude of 400 feet (122 meters) over marbled murrelet critical habitat and over the detection sections, shown in Figure 3-13.
- Flights during the summer would occur from 7 a.m. to 2 a.m; however, between 1 April to 23 September pilots would avoid helicopter flights during the 2 hours before and after sunrise within the murrelet occupied areas shown on Figure 3-13.
- JBLM will not pursue designating HLZs on or immediately adjacent to WDNR land, especially near the critical habitat and murrelet detections near the coast. Pilots will not land on or adjacent to WDNR land.

The term of the ESA consultation on the proposed action is 10 years.
Risks to marbled murrelets associated with bird strikes are expected to be low. Within the proposed low-level training area in HTAs 2 and 3, helicopters would fly at altitudes low enough to exceed noise thresholds of 92 dBA at any nests that may be present within these areas, potentially causing behavioral responses that lead to reduced productivity or survival. These potential effects would be prevented by the recommended conservation measures, presented above, limiting operations within specified areas of HTAs 2 and 3 during the marbled murrelet breeding period, limiting flights during the entire nesting season to two hours before and after sunrise in occupied areas, removing WDNR lands from potential HLZ parcels, and limiting the term of the ESA consultation to 10 years. Without these conservation measures in place, the proposed action ***may affect, is likely to adversely affect*** the marbled murrelet, but is ***not likely to adversely affect*** designated CH. Provided these conservation

measures are enacted and enforced, the proposed training *may affect, is not likely to adversely affect* the marbled murrelet or designated CH.

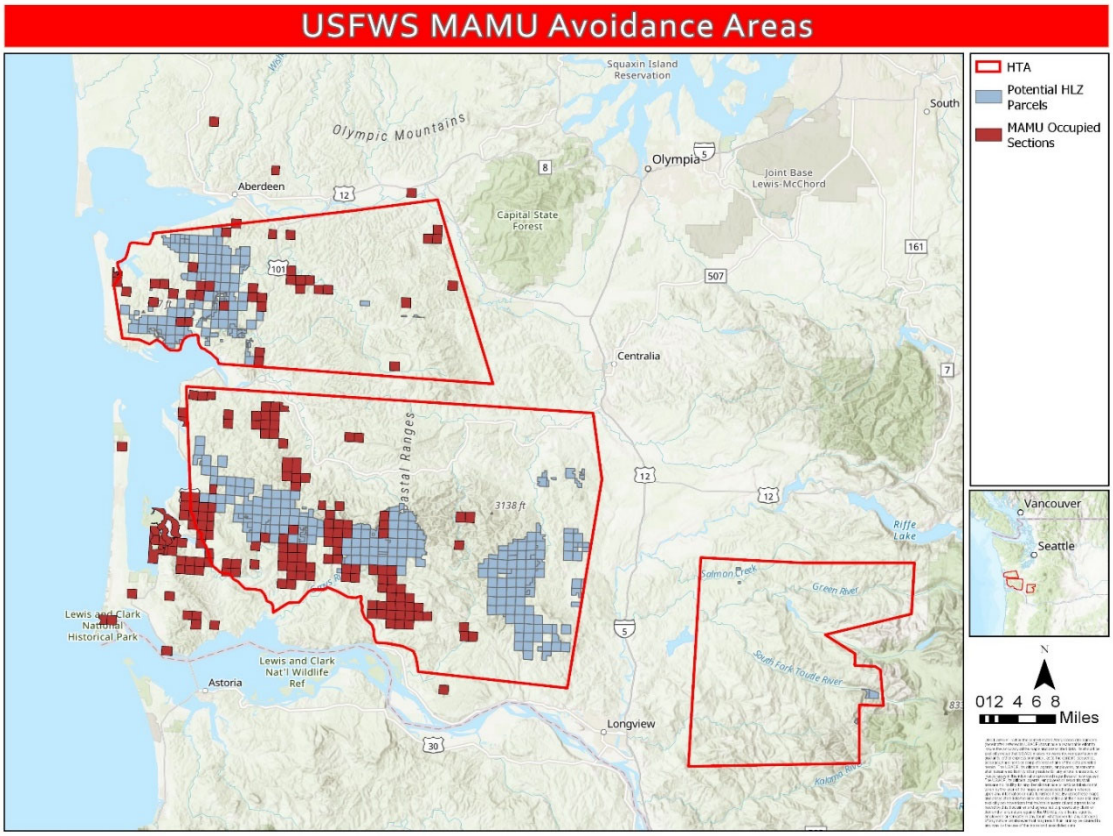


Figure 3-13. Seasonally Restricted Areas for Marbled Murrelet within the HTAs.

3.11.7.2 Northern Spotted Owl

Potential effects from the proposed training include disturbance from helicopter noise and bird strikes. The USFWS has established a threshold of 92 dBA as the point at which spotted owls are likely to show signs of disturbance such as flushing (Harke, personal comm. cited in FORSCOM 2011). Noise modeling data for similar aircraft (Table 3-4) indicate that MH/UH-47 Chinook and AH-64 Apache helicopters would exceed this noise threshold at an altitude of approximately 200 feet (61 meters) above northern spotted owl centers during the breeding season. MH/UH-60 Blackhawk helicopters would exceed this threshold at an altitude slightly above 100 feet (30.5 meters) above northern spotted owl centers during the breeding season.

Although spotted owls could be disturbed by noise, behavioral responses would be minor, such as avoiding the sound by hiding or delaying a feeding. Additionally, aircraft would pass through the area quickly, and the frequency of passes over a given area would be low. Helicopters traveling between JBLM and the training areas would fly at minimum altitudes of 500 feet (152 meters) AGL (which is the height above treetop

level). At these altitudes, noise levels would be below 92 dBA, and adverse effects to spotted owls should not occur.

Noise levels associated with proposed training activities would have the potential to exceed 92 dBA within the HTAs and around HLZs, where helicopters would fly below 200 feet (152 meters) AGL. At these levels, aircraft could cause birds to flush from nests or abort feeding visits, leading to reduced productivity or survival (USFWS 2006). These harassment-level effects would only occur during the breeding period. Suitable habitat for northern spotted owl is found throughout the Cascade Range forests. No CH is located within the proposed HTAs or MTA, and no spotted owl centers have been documented in the HTAs since 2006.

Based on data from the WDFW (2019), few spotted owl centers have been recorded in the HTAs in years 1992-2006. Habitat conditions for spotted owls have degraded due in large part to competition with barred owls, logging, and large wildfire complexes, which have reduced spotted owl populations. Training activities at flight altitudes from 0 to 500 feet (152 meters) above treetop level during the breeding season could potentially disturb northern spotted owls enough to cause harassment-level effects; however, no spotted owl centers have been documented in the HTAs since 2006.

Bird strikes involving spotted owls are possible within the project area. However, spotted owls typically remain at canopy level or lower when flying, so the risk of a bird strike anywhere outside of the low-level training area is extremely low (Harke, personal comm. cited in FORSCOM 2011). Maneuvers within the low-level training area could place helicopters in close proximity to spotted owl nesting sites. Owls could potentially collide with aircraft, and nests could be physically damaged by helicopter-generated winds. According to FAA data, there were 141 recorded owl strikes by civilian aircraft in Washington from 1990 through 2019 (FAA 2019). No spotted owl strikes were recorded during this time period. According to data from the USAF, no owls are on the list of top 50 wildlife strikes by count, which means that the total number of recorded owl strikes (all species) from 1995 through 2016 was less than 169 (USAF Safety Center 2019). It is not known whether these data provide an accurate picture of the risk to northern spotted owls from aircraft strikes within the proposed low-level training area. However, it is not expected that a rare species would be found on this list.

Over the majority of the project area, suitable spotted owl habitat does not exist. However, owls could be present within the HTAs and MTA, and spotted owls could be harassed by low-altitude helicopter flights that exceed noise levels that exceed 92 dBA causing behavioral responses that lead to reduced productivity or survival. Overall, the proposed training ***may affect, but is not likely to adversely affect*** the northern spotted owl and would have no effect to designated CH.

3.11.7.3 Gray Wolf

Although there is anecdotal evidence of wolves avoiding low-flying aircraft, there have also been several recorded instances of wolves tolerating noise disturbance at close

range; wolves have been observed denning 2,624 feet (0.8 km) from a helicopter logging operation, as well as rendezvousing within 984 feet (0.5 km) of a military training facility and within 328 feet (0.1 km) of an active gravel pit (Thiel et al. 1998). Additionally, wolves are highly mobile animals that are easily capable of traveling away from training areas to avoid disturbance. Klein (1973) found that of the large mammals observed, wolves appeared the least disturbed by low-flying aircraft.

Lone gray wolves may be present in the project area, as there are no known packs in the South Cascades and Northwest Coast recovery area. Wolves are highly mobile and would be capable of moving away from the limited-duration, infrequent disturbances caused by aircraft training activities. Therefore, the proposed project ***may affect, is not likely to adversely affect*** gray wolves, and would have no effect on their designated CH.

3.11.7.4 North American Wolverine

The MTA may include suitable wolverine habitat. During training activities within the MTA it is possible that wolverine could be present and disturbed by aircraft noise. Fisher et al. (2013) found that wolverines prefer topographically rugged terrain, such as what is contained in the MTA, and select for sites with a low anthropogenic footprint (avoidance of roads and human development). Anthropogenic influences including habitat alteration may affect the occurrence of late-onset reproduction, rates of reproduction, juvenile survival, and population growth rates (Fisher et al. 2013). The potential for disturbance, should a wolverine be present, would be much greater during helicopter landings, as aircraft would fly at low altitudes and/or land on the ground. Wolverines are highly mobile animals that are easily capable of traveling away from training areas to avoid short- duration disturbance from training.

Wolverines may be present near or within the project area. Wolverine would be capable of moving away from the limited-duration, infrequent disturbances caused by aircraft training activities. Overall, the proposed action ***may affect, is not likely to adversely affect*** wolverine.

3.11.7.5 Fisher

The MTA may include suitable fisher habitat. During training activities within the MTA it is possible that fishers could be present and disturbed by aircraft noise. The potential for disturbance, should a fisher be present, would be much greater during helicopter landings, as aircraft would fly at low altitudes and/or land on the ground. Fishers are highly mobile animals that are easily capable of traveling away from training areas to avoid short- duration disturbance from training.

Fishers may be present near the MTA; however highly suitable habitat is lacking. If present, it is expected that a fisher would be capable of moving away from the limited-duration, infrequent disturbances caused by aircraft training activities. The proposed action ***may affect, is not likely to adversely affect*** fisher.

3.11.7.6 Summary of Effects Determinations

Table 3-8 summarizes the effect determinations made for each of the species potentially occurring in the project vicinity.

Table 3-8.Summary of Effects Determinations

Species	Effect Determination	Critical Habitat Determination
Amphibians		
Oregon Spotted Frog	No effect	No effect
Fish		
Coastal/Puget Sound Bull Trout	No effect	No effect
Puget Sound Chinook Salmon	No effect	No effect
Puget Sound Steelhead	No effect	No effect
Hood Canal Chum Salmon	No effect	No effect
Birds		
Marbled Murrelet	Not likely to adversely affect	No effect
Northern Spotted Owl	Not likely to adversely affect	No effect
Short-tailed Albatross	No effect	N/A
Streaked Horned Lark	No effect	No effect
Western Snowy Plover	No effect	No effect
Yellow-billed Cuckoo	No effect	NA
Mammals		
Canada Lynx	No effect	No effect
Gray Wolf	Not likely to adversely affect	No effect
Wolverine	Not likely to adversely affect	N/A
Fisher	Not likely to adversely affect	N/A
Columbian White-tailed Deer	No effect	N/A
Plants		
Kincaid’s Lupine	No effect	N/A
Nelson’s Checker-mallow	No effect	N/A
Golden Paintbrush	No effect	N/A
Water Howellia	No effect	N/A
Conifers and Cycads		
Whitebark Pine	No effect	N/A

3.12 Unavoidable Adverse Effects

Unavoidable adverse effects associated with this project include: (1) risks inherent in aviation operations minimized by adherence to safety procedures, (2) bird aircraft strikes inherent during all aviation operations, (3) short-duration increases in noise from helicopter training flights, (4) short-duration visual intrusions from individual helicopter flights, (5) a potential for minimal, but not consequential impacts to the National Register potential of *unevaluated historic* properties. The inherent risks of aviation would be minimized by adherence to safety procedures. The noise impacts and visual disturbance to persons on the ground would be minimized by the BMPs as outlined in Section 2.5.1. These unavoidable impacts are not considered significant.

3.13 Mitigation

The proposed action minimizes impacts through the implementation of BMPs as described in Section 2.5.1. In addition to BMPs several measures have been implemented to minimize adverse effects of the proposed action.

The following conservation measures would be implemented to avoid adverse effects to marbled murrelets in the project area, as detailed in Section 3.11.7.1:

- Between 1 April and 23 September, helicopters would fly at a minimum altitude of 400 feet (122 meters) over marbled murrelet critical habitat and over the detection sections, shown in Figure 3-13.
- Flights during the summer would occur from 7 a.m. to 2 a.m; however, between 1 April to 23 September pilots would avoid helicopter flights during the 2 hours before and after sunrise within the murrelet occupied areas shown on Figure 3-13.
- JBLM will not pursue designating HLZs on or immediately adjacent to WDNR land, especially near the critical habitat and murrelet detections near the coast. Pilots will not land on or adjacent to WDNR land.
- The term of the ESA consultation on the proposed action is 10 years.

In order to minimize the potential for colonization of weeds into new areas, the following BMP would be followed:

- Prior to and following use of landing zones in the HTA 2 and the MTA, helicopters would be thoroughly washed at JBLM washracks to remove all soil and mud to avoid transporting propagules of weed species onto or off of training areas.

3.14 Cumulative Effects

Cumulative effects include effects resulting from future Federal, State, tribal, local or private actions that are reasonably foreseeable to occur in the project area. Cumulative effects can result from actions that occur over a period of time which are insignificant when considered individually, but which are significant when viewed collectively.

Key actions that will be considered in this analysis include: (1) use of the proposed training areas by additional military units after they are established, (2) use of airspace within the project area by other aircraft (civilian and military) creating increases in air

traffic, and (3) noise sources within the project area which contribute to overall noise levels and disturbances such as commercial facilities and construction noise.

The preferred alternative (Alternative 2) is not anticipated to generate adverse cumulative impacts to any of the resources evaluated, when considered in conjunction with other past and present actions, and future proposals

3.14.1 **Airspace Use and Safety**

Aircraft traffic in the project area has increased in recent decades. Numerous aircraft fly into and out of two major airports in the region (Seattle-Tacoma International Airport [Sea-Tac] and Portland International Airport [PDX]), as well as several smaller regional airports. Annually, more than 340,748 aircraft operations occur at Sea-Tac (Port of Seattle 2014), with thousands of additional operations at the smaller airports. As traffic in urban areas within the region increases, helicopter tours and news helicopters are more common sights. Additionally, the region supports aircraft military training by aircraft associated with military bases such as JBLM, the Yakima Training Center, and the Naval Air Station on Whidbey Island. The proposed training areas and associated training would be cumulative to other aircraft operations in the project area, particularly where Military Operation Areas and MTRs currently exist. Additionally, publishing the training areas would potentially increase air traffic within these training areas in the future, should other military units utilize them. The cumulative increases in airspace use and air traffic would increase the potential for airspace use conflicts and the risks of mid-air collisions, bird strikes, and other accidents. Adherence to established protocols for scheduling flights for airspace use, as well as flight safety protocols to minimize accident risks, would allow the region to safely support the increased air traffic.

3.14.2 **Noise**

The cumulative sources of aircraft, discussed in Section 3.4.5 above, would contribute to cumulative aviation-related noise, particularly in areas near airports and established MTRs. Noise from aircraft would be cumulative to other noises in the project area, which continues to increase as the population grows, traffic increases, development continues, highways are expanded, and more roads are built in rural areas. In developed areas, notable sources of noise include motor vehicles, construction equipment, and industrial facilities.

In residential areas, notable sources of noise include motor vehicles, lawnmowers, and power tools. On large water bodies, boats, seaplanes, jet skis, and other vessels contribute to the noise generated. In rural areas, ambient noise levels continue to increase as new roads continue to be built and more people drive to remote areas for recreation. In some areas, increased use of loud recreational equipment such as snowmobiles and off-highway vehicles continues to contribute to noise disturbance. Additionally, as residential areas expand and the size and density of existing residential areas continues to increase, the number of noise-sensitive receptors continues to grow. Finally, a lack of funding for noise programs at all levels of government continually reduces the opportunities to regulate noise within the project area. Cumulative noise

effects of the proposed aviation operations would be greatest in quiet residential areas and rural areas, where added noise is more apparent and the expansion of noise-producing activities is most prominent. Added noise from aircraft would be offset to some degree by noise abatement programs at airports, military installations, and other noise-producing entities. Additionally, new motor vehicles, aircraft, and other noise emission sources are typically quieter than their older counterparts, which has helped offset the increased number of noise sources being produced. Testing programs also exist that require motors and to meet certain regulatory noise thresholds.

4 COMPLIANCE WITH LAWS, REGULATIONS, AND EXECUTIVE ORDERS

4.1 Federal Statutes

4.1.1 American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1978 (AIRFA) (42 U.S.C. 1996) establishes protection and preservation of Native Americans' rights of freedom of belief, expression, and exercise of traditional religions. Courts have interpreted AIRFA to mean that public officials must consider Native Americans' interests before undertaking actions that might impact their religious practices, including impact on sacred sites. There are no tribal reservations within the proposed training areas. No Indian sacred sites have been identified within the proposed training areas in the vicinity of any of the HLZs. The proposed action would not have any effect on known Indian sacred sites or on Indians' ability to access sacred sites currently used by the tribes. It is anticipated that the preferred alternative would not impact the religious practices, including Native American sacred sites.

4.1.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) prohibits the taking, possession or commerce of bald and golden eagles, except under certain circumstances. Amendments in 1972 added to penalties for violations of the act or related regulations.

Flight restrictions exist on-base to avoid impacts to known eagle nests as detailed in JBLM's 95-1 regulations. These restrictions include a surface to 1200 feet no-fly zone within 1300 feet of the nesting site from December 1 through August 31. This restriction would be extended to include known nesting areas within the training areas. With this restriction in place no impacts to bald or golden eagles are expected and the project is in compliance with this Act.

4.1.3 Clean Air Act

The Clean Air Act (CAA) (42 U.S.C. 7401 et seq.), amended in 1977 and 1990, was established "to protect and enhance the quality of the nation's air resources so as to promote public health and welfare and the productive capacity of its population." The CAA authorizes the USEPA to establish the National Ambient Air Quality Standards to protect public health and the environment. The CAA establishes emission standards for stationary sources, volatile organic compound emissions, hazardous air pollutants, and

vehicles and other mobile sources. The CAA requires the states to develop implementation plans applicable to particular industrial sources.

This EA analyzes effects on air quality from the proposed project individually and cumulatively, see Section 3.5. Although the proposed project increases greenhouse gas emissions, the increase is negligible in the context of all anthropogenic sources of greenhouse gasses, and does not constitute a significant contribution of greenhouse gasses.

4.1.4 **Coastal Zone Management Act**

Under the Coastal Zone Management Act (CZMA) of 1972 (16 USCA 1451-1465), Sec. 307(c)(1)(A), "[e]ach Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs."

The Army has prepared a Consistency Determination which will be provided to the Washington Department of Ecology for their review and concurrence (Appendix C).

4.1.5 **Endangered Species Act**

The ESA (16 U.S.C. 1531-1544), amended in 1988, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the habitat upon which they depend. Section 7(a) of the ESA requires that Federal agencies consult with the USFWS and the National Marine Fisheries Service (NMFS), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or to adversely modify or destroy their critical habitats.

Determinations concerning effects on listed species in the project area have been made and will be transmitted to the USFWS in a Biological Assessment. These determinations are summarized in this document in Section 3.11. The Army has determined that the project *may affect, but is not likely to adversely affect* marbled murrelet, Northern spotted owl, gray wolf, North American wolverine, and fisher. The project would have *no effect* on other listed or proposed species or any designated or proposed critical habitat within the proposed training areas.

4.1.6 **Federal Water Pollution Control Act**

The Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) is more commonly referred to as the Clean Water Act (CWA). This act is the primary legislative vehicle for Federal water pollution control programs and the basic structure for regulating discharges of pollutants into waters of the United States. The CWA was established to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The CWA sets goals to eliminate discharges of pollutants into navigable waters, protect fish and wildlife, and prohibit the discharge of toxic pollutants in quantities that could adversely affect the environment.

The Army concludes that the project is not subject to regulation under the Clean Water Act because there is no intent to discharge a pollutant from a point source into the navigable waters of the United States. Therefore, the proposed action does not require a 404(b)(1) evaluation or a 401 water quality certification.

4.1.7 **Magnuson-Stevens Fishery Conservation and Management Act**

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires all Federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). Section 3(10) of the Magnuson-Stevens Act defines EFH as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. Though primarily focused on marine species, anadromous fishes like the Pacific salmon have EFH that can occupy freshwater habitats critical to their life cycle. As discussed above in Section 3.10.4.1, no significant impacts to fish would result from the proposed action. Thus, no adverse impacts to EFH for federally managed fisheries in Washington waters would result from the proposed alternative.

4.1.8 **Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA) of 1918 implemented the 1916 convention between the United States and Great Britain for the protection of birds migrating between the U.S. and Canada. Similar conventions between the United States and Mexico (1936), Japan (1972) and the Union of Soviet Socialist Republics (1976) further expanded the scope of international protection of migratory birds. In total 836 bird species are protected by this act which makes it illegal to hunt, pursue, wound, kill, possess or transport any migratory bird, nest, egg, or part thereof.

Bird aircraft strikes are an inherent risk with aviation operations. Bird aircraft strike risk information is available in Section 3.3.2. The project area is within the Pacific Flyway, which follows the west coast along Washington, Oregon and California. As discussed in Section 3.3.4.2, the risk of bird strikes in all of the proposed training areas would generally be low to moderate, with the greatest risks from early October to mid-April. The rest of the year, risk would be low or moderate, and would be low at night from late April to late September. Overall, risks associated with proposed training activities would not represent a significant impact, provided pilots remain aware of the hazard, focused on their surroundings, and are knowledgeable of areas where birds tend to congregate.

4.1.9 **National Environmental Policy Act**

NEPA (42 U.S.C. 4321 et seq.) requires that Federal agencies consider the environmental effects of their actions. It requires that an EIS be included in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. The EIS must provide detailed information regarding the proposed action and alternatives, the environmental impacts of the alternatives, appropriate mitigation measures, and any adverse

environmental impacts that cannot be avoided if the proposal is implemented. Agencies are required to demonstrate that these factors have been considered by decision makers prior to undertaking actions. Major Federal actions determined not to have a significant effect on the quality of the human environment are evaluated through an EA.

This EA has been prepared pursuant to CEQ regulations that implement NEPA in 40 CFR Part 1500-1508 and Army NEPA implementing regulations in 32 CFR 651. Impacts to the human environment as a result of the proposed project are anticipated to be less than significant. However, if any information is found that indicates significant impacts to the human environment may result from the project, the NEPA process would be revisited and an EIS would be prepared as appropriate.

4.1.10 **National Historic Preservation Act**

Section 106 of the NHPA (16 U.S.C. § 470), 1966 as amended through 2000 (Public Law 102-575) requires Federal agencies to account for effects of their undertakings on Historic Properties (i.e., archaeological sites, Traditional cultural properties, buildings, structures, objects, districts, and landscapes listed in or considered eligible for inclusion in the National Register of Historic Places). Section 106 and its implementing regulations in 36 C.F.R. § 800 establish procedures for Federal agencies to follow in identifying Historic Properties and assessing and resolving effects of their undertaking on historic properties in consultation with SHPO, Indian tribes, Native Hawaiians, and the Advisory Council for Historic Preservation, as appropriate.

JBLM is currently consulting with SHPO, and the following tribes:

- Confederated Tribes of the Chehalis Reservation
- Cowlitz Indian Tribe
- Confederated Tribes of Grand Ronde
- Hoh Indian Tribe
- Nisqually Indian Tribe
- Quileute Nation
- Quinault Indian Nation
- Shoalwater Bay Tribe
- Confederated Tribes of the Umatilla Indian Reservation
- Confederated Tribes and Bands of the Yakama Nation

4.1.11 **Wild and Scenic Rivers Act**

The Wild and Scenic Rivers Act (16 U.S.C. 1271-1278) of 1968 requires Federal agencies to protect the free-flowing condition and other values of designated rivers and consult with the federal agency charged with administering the Act. None of the rivers running through the proposed training areas are designated as wild, scenic, or recreational under this Act. In Washington, only portions of the Skagit, Middle Fork of the Snoqualmie, Pratt, and White Salmon Rivers are protected under this Act. Therefore the Wild and Scenic Rivers Act does not apply.

4.1.12 Wilderness Act

Under the Wilderness Act of 1964, wilderness areas are preserved and protected in their natural condition, as places unaltered by human influence. These areas offer outstanding opportunities for solitude or primitive, unconfined recreation. They may also contain ecological, geological, or other features that have scientific, scenic, or historical value. In the vicinity of the project area, wilderness areas are primarily located in the Cascade Range of Washington. There are no designated wilderness areas within the proposed training areas. All pilots would follow friendly flying rules (Section 2.5.2) which avoid flying over wilderness areas and when conditions require overflights it is recommended that pilots fly 2,000 feet AGL to minimize noise disturbance.

4.2 Executive Orders

4.2.1 Executive Order 11988, Protection of Floodplains

Executive Order 11988 requires Federal agencies to avoid, to the extent possible, the long-term and short-term adverse impacts associated with the occupancy of the floodplain, and to avoid direct and indirect support of floodplain development where there is a practicable alternative. In accomplishing this objective, “each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by flood plains.” The proposed action would not affect floodplains because the proposed HLZs are located outside of the floodplain and all other training activities would be limited to flight operations with no ground contact.

4.2.2 Executive Order 11990, Protection of Wetlands

Executive Order 11990 encourages Federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands when undertaking Federal activities and programs. No wetlands would be negatively impacted as a result of this project. The establishment of three HTAs and one MTA as proposed is consistent with Executive Order 11990, because no net loss of wetlands would occur. There are no wetlands at or adjacent to any of the HLZs and all other training activities would be flight operations with no ground contact. A remote possibility of fuel spill could impact wetlands and water bodies although a spill would only occur as a result of a catastrophic crash.

4.2.3 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898, dated February 11, 1994, requires Federal agencies to consider and address environmental justice by identifying and assessing whether agency actions may have disproportionately high and adverse human health or environmental effects on minority or low-income populations. Disproportionately high and adverse effects are those effects that are predominantly borne by minority and/or low-income populations and are appreciably more severe or greater in magnitude than the effects on non-minority or non-low income populations. As discussed in Section 3.0, there are not anticipated to be any disproportionate adverse effects to minority and/or low-income populations as a result of the proposed action.

4.2.4 Executive Order 13007, Indian Sacred Sites

EO 13007 addresses Native American religious practices, and sacred sites. Practices and places protected under AIRFA and EO 13007 may require conditions such as a quiet environment, or access to specific places on public lands for the gathering of traditional plant/animal resources at specific times of the year. JBLM is consulting with the tribes listed below in Section 4.2.6 to identify potential impacts to traditional cultural properties, sacred sites, or other tribal cultural resources. The proposed action will have minimal ground disturbance to areas within the MTA and the HLZs. Any areas identified by Tribes as containing Indian sacred sites would be removed from consideration as potential HLZs.

4.2.5 Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks

Executive Order 13045, requires Federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children and ensure that policies, programs, activities and standards address disproportionate risks to children that result from environmental health or safety risks. Places that children generally gather include schools, parks, recreational facilities and day care centers. These facilities exist within the proposed training areas, however the concentration of the facilities in the project area is not expected to be greater than surrounding areas outside of the project area, because the training areas have been selected to avoid populated areas. Pilots must follow the Fly Friendly guidelines to avoid noise sensitive areas as described in Section 2.5.2.

4.2.6 Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

Executive Order 13175, requires Federal agencies to be guided by three fundamental principles: 1) uphold the unique legal relationship with Indian tribal governments as set forth in the U.S. Constitution, treaties, statutes, Executive Orders and court decisions, 2) recognize the right of Indian tribes to self-government and continue to work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self-government, tribal trust resources and Indian tribal treaty rights, 3) recognize the right of Indian tribes to self-government and support tribal sovereignty and self-determination.

JBLM has coordinated with the following tribes on the proposed project.

- Confederated Tribes of the Colville Reservation
- Confederated Tribes of the Chehalis Reservation
- Cowlitz Indian Tribe
- Confederated Tribes of Grand Ronde
- Hoh Indian Tribe
- Nisqually Indian Tribe
- Nooksack Indian Tribe
- Quileute Nation

- Quinault Indian Nation
- Sauk-Suiattle Indian Tribe
- Shoalwater Bay Tribe
- Spokane Tribe of Indians
- Confederated Tribes of the Umatilla Indian Reservation
- Upper Skagit Indian Tribe
- Confederated Tribes and Bands of the Yakama Nation

The EA will be submitted to the Tribes for their comments on the proposed action.

4.3 Treaties

In the mid-1850s, the United States entered into treaties with nearly all of the Native American tribes in the territory that would become Washington State. These treaties guaranteed the signatory tribes the right to "take fish at usual and accustomed grounds and stations... in common with all citizens of the territory" [U.S. v. Washington, 384 F. Supp. 312 at 332 (WDWA 1974)]. In U.S. v. Washington, 384 F. Supp. 312 at 343 - 344, the court resolved that the Treaty tribes had the right to take up to 50 percent of the harvestable anadromous fish runs passing through those grounds, as needed to provide them with a moderate standard of living (Fair Share). Over the years, the courts have held that this right comprehends certain subsidiary rights, such as access to their "usual and accustomed" fishing grounds. More than *de minimis* impacts to access the usual and accustomed fishing area violates this treaty right [Northwest Sea Farms v. United States Army Corps of Engineers, 931 F. Supp. 1515 at 1522 (WDWA1996)]. In U.S. v. Washington, 759 F.2d 1353 (9th Cir 1985) the court indicated that the obligation to prevent degradation of the fish habitat would be determined on a case-by-case basis. The establishment of off-base helicopter training areas as proposed, would not negatively impact any of these tribal treaty rights, as interpreted by the courts.

5 COORDINATION

The NEPA scoping process is described above in Section 1.6 and in more detail in Appendix B. Coordination has occurred or is on-going with the following agencies and stakeholders:

- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Washington Department of Ecology
- Washington Department of Natural Resources
- Washington State Historic Preservation Officer
- Indian Tribes listed above in Section 4.2.6
- Ahtanum Irrigation District
- Private landowners for HLZ parcel identification

6 CONCLUSION

Based on the evaluations contained in this EA, it has been determined that the proposed action (Alternative 2) to establish three off-base HTAs and one off-base MTA for helicopter crews from JBLM does not represent a major Federal action significantly affecting the quality of the human environment, and therefore does not require preparation of an EIS.

7 LIST OF PREPARERS

This Environmental Assessment has been prepared for JBLM, with contractual assistance from the U.S. Army Corps of Engineers, Seattle District. The following personnel in Table 7-1 contributed to the preparation of this document.

Table 7-1. List of Preparers

Name	Education	Years of Experience	Area of Expertise
Goetz, Fred	Ph.D. – Fish Biology	30	Fisheries, ESA
Kanaby, Kara	M.A. – Anthropology/ Archaeology	15	Cultural Resources
Leslie, Melissa	M.S. – Biology	12	Wildlife and Terrestrial Biology
McCasland, Elizabeth	B.S. – Wildlife Management	25	NEPA, wildlife ecology
Ogden, Amanda	M.S. – Forest Soils	12	NEPA and Terrestrial Biology
Wilson, Zachary	B.S. – Ecology	8	GIS

8 REFERENCES

Air Force Safety Center. 2019. Top 50 USAF Wildlife Strikes by Count (FY1995 – FY2016). Online at: http://www.afsec.af.mil/shared/media/document/AFD-141209-036.pdf. Accessed on 16 May 2019.

Amrein, B.E. and T.R. Letowski. 2012. High Level Impulse Sounds and Human Hearing: Standards, Physiology, Quantification. Army Research Laboratory, ARL-TR-6017.

Andersen, D., E., Rongstad, O., J., and Mytton, W., R. 1989. Response of nesting Red-tailed Hawks to helicopter overflights. Condor, 91:296-299.

Andersen, D. E., Rongstad, O. J., and Mytton, W. R. 1990. Home-range changes of raptors exposed to increased human activity levels in southeastern Colorado. Wildlife Society Bulletin, 18:134-142.

Aubry, K. B., K. S. McKelvey, and J. P. Copeland. 2007. Distribution and broadscale habitat relations of the wolverine in the contiguous United States. Journal of Wildlife Management 71:2147–2158.

Avian Hazard Advisory System (AHAS). 2015. Google Earth BAM Images. Online at: http://www.usahas.com/downloads.html. Accessed on 17 July 2019.

Awbrey, F. T. and Bowles, A. E. 1990. The effects of aircraft noise and sonic booms on raptors: A preliminary model and a synthesis of the literature on disturbance (NSBIT Technical Operating Report #12): Noise and Sonic Boom Impact Technology. Advanced Development Program Office, Wright-Patterson AFB, Ohio.

Bailey, R.G. 1995. Descriptions of the Ecoregions of the United States. USDA Forest Service Department of Agriculture Miscellaneous Publication Number 1391. Washington D.C.

Copeland, J.P.; McKelvey, K.S.; Aubry, K.B.; Landa, A.; Persson, J.; Inman, R.M.; Krebs, J.; Lofroth, E.; Golden, H.; Squires, J.R.; Magoun, A.; Schwartz, M.K.; Wilmot, J.; Copeland, C.L.; Yates, R.E.; Kojola, I.; May, R. 2010. The bioclimatic envelope of the wolverine (Gulo gulo): do climatic constraints limit its geographic distribution? Canadian Journal of Zoology 88: 233-246.

Dahl, T.E. 1990. Wetland Losses in the United States 1780's to 1980's. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 13pp.

Department of the Army (Army). 2014. Draft Joint Base Lewis-McChord Installation Operational Noise Management Plan. Prepared by the U.S. Army Corps of Engineers and Michel Baker Jr., Inc. – AECOM Joint Venture. Fort Lewis, Washington.

Eberhardt, L. E. and Hofmann, L. A. 1991. Sage grouse on the Yakima Training Center: A summary of studies conducted during 1989 and 1990 (PNL-7647): Battelle Pacific Northwest Labs., Richland, WA.

Federal Aviation Administration (FAA). 2004. Advisory Circular: Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas, No. 91-36D. Online at: http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC91-36d.pdf. Accessed on 16 July 2019.

FAA. 2014. FAA Wildlife Strike Database. Online at: http://wildlife.faa.gov/database.aspx. Accessed on 4 May 2015.

FAA. 2016. Pilot's Handbook of Aeronautical Knowledge, Chapter 15: Airspace. US Department of Transportation, Federal Aviation Administration, Publication Number FAA-H-8083-25B.

FAA. 2017. Aeronautical Information Manual: Official Guide to Basic Flight Information and ATC Procedures. Online at: https://www.faa.gov/air_traffic/publications/media/AIM_Basic_dtd_10-12-17.pdf. Accessed on 16 July 2019.

FAA. 2019. Wildlife Strikes to Civil Aircraft in the United States 1990-2017. Federal Aviation Administration National Wildlife Strike Database Serial Report Number 24. Online at: https://wildlife.faa.gov/downloads/Wildlife-Strike-Report-1990-2017.pdf. Accessed on 18 July 2019.

Finegold, L.S., C.S. Harris, H.E. von Gierke. 1994. Community Annoyance and Sleep Disturbance: Updated Criteria for Assessing the Impacts of General Transportation Noise on People. Noise Control Engineering Journal. 42 (1) Jan-Feb.

Fisher, J. T., S. Bradbury, B. Anholt, L. Nolan, L. Roy, J. P. Volpe, and M. Wheatley. 2013. Wolverines (*Gulo gulo luscus*) on the Rocky Mountain slopes : natural heterogeneity and landscape alteration as predictors of distribution. Canadian Journal of Zoology 91:706–716.

Franklin, J.F., and C.T. Dyrness. 1988. Natural Vegetation of Oregon and Washington. Oregon State University Press, Corvallis, Oregon.

Fryer, Janet L. 2002. Pinus albicaulis. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: https://www.fs.fed.us/database/feis/plants/tree/pinalb/all.html. Accessed on 21 August 2019.

Gese, E. M., Rongstad, O. J., and Mytton, W. R. 1989. Changes in coyote movements due to military activity. Journal of Wildlife Management, 53:334-339.

Hamernik R. P., Henderson D., Coling D., Slepecky N. 1980. The interaction of whole body vibration and impulse noise. Journal of the Acoustical Society of America; 67: 928.

Joint Base Lewis-McChord (JBLM). 2012. DRAFT Joint Base Lewis-McChord Master Plan, Part 3: Air Installation Compatible Use Zone Study. 112pp.

Klein, D.R. 1973. The Reaction of Some Northern Mammals to Aircraft Disturbance. 11th International Congress of Game Biologists; Stockholm, Sweden.

Konagaya, T. 1980. The Sound Field of Lake Biwa and the Effects of the Constructing Sound on the Behavior of the Fish. (English summary). Bulletin of the Japanese Society of Scientific Fisheries 46(2):129-132.

Larkin, R.P. 1996. Effects of military noise on wildlife: A literature review. Center for Wildlife and Plant Ecology, Illinois Natural History Survey. Online at: http://nhsbig.inhs.uiuc.edu/bioacoustics/noise_and_wildlife.txt. Accessed on 2 July 2015.

Lewis, J. C. 2016. Periodic status review for the Lynx in Washington. Washington Department of Fish and Wildlife, Olympia, Washington. 17 + iii pp

Lewis, J.C., T. Chestnut, J.I. Ransom, and D.O. Werntz. 2018. Cascades Fisher Reintroduction Project: Progress Report for March 2017 to February 2018. Washington Department of Fish and Wildlife, National Park Service, and Conservation Northwest, unpublished progress report. Washington Department of Fish and Wildlife, Olympia, WA. 20 pp.

Long, L.L., and C.J. Ralph. 1998. Regulation and Observations of Human Disturbance near Nesting Marbled Murrelets. U.S.D.A. Forest Service Pacific Southwest Research Station, Redwood Sciences Laboratory, Arcata, California.

Manci, K.M., D.N. Gladwin, R. Villela, and M.G. Cavendish. 1988. Effects of aircraft noise and sonic booms on domestic animals and wildlife: a literature synthesis. U.S. Fish and Wildlife Service. National Ecology Research Center, Ft. Collins, CO. NERC-88/29. 88 pp.

Mooney, N. 1986. Reactions of raptors to aircraft. Australasian Raptor Association News, 7(4).

Parker, P.L., and T.F. King. 1998. *National Register Bulletin—Guidelines for Evaluating and Documenting Traditional Cultural Properties*. Originally published 1990 (revised 1992), U.S. Department of the Interior, National Park Service, Washington, D.C.

Peeke, H. V. S. and Petrinovich, L. (Eds.). 1984. Habituation, sensitization, and behavior. New York: Academic Press.471 pp. Peterson, A. P. G. 1980a. Handbook of noise measurement, 9th ed. Concord, Mass.: GenRad. 394 pp.

Platt, J. B. 1975. A study of diurnal raptors that nest on the Yukon North Slope with special emphasis on the behavior of gyrfalcons during experimental overflights by aircraft (Arctic Gas Biological Report Series, Volume 30, Chapter Two): Canadian Arctic Gas Study Ltd. and Alaskan Arctic Gas Study Company.

Platt, J. B. 1977. The breeding behavior of wild and captive gyrfalcons, in relation to their environment and human disturbance. Ph.D. Dissertation, Cornell University, Ithaca, New York. 173 pp.

Platt, J. B. and Tull, C. E. 1977. A study of wintering and nesting gyrfalcons on the Yukon North Slope during 1975 with emphasis on their behavior during experimental

overflights by helicopters. Arctic Gas Biological Report Series, Volume 35, Chapter 1: Canadian Arctic Gas Study Ltd. and Alaskan Arctic Gas Study Company.

Poole, A. F. 1989. Ospreys, A natural and unnatural history. Cambridge University Press. 161- 164 pp.

Port of Seattle. 2014. Airport Statistics – 2014 Airport Activity Highlights. Online at: https://www.portseattle.org/About/Publications/Statistics/Airport-Statistics/Pages/default.aspx. Accessed on 4 May 2015.

Raphael, M.G., S.K. Nelson, P. Swedeen, M. Ostwald, K. Flotlin, S. Desimone, S. Horton, P. Harrison, D. Prenzlow Escene, and W. Jarosse. 2008. Recommendations and Supporting Analysis of Conservation Opportunities for the Marbled Murrelet Long-term Conservation Strategy. Washington State Department of Natural Resources, Olympia, Washington.

Rucker, R.R. 1973. Effect of Sonic Boom on Fish. Department of Transportation, Federal Aviation Administration, Washington, D.C. Report No. FAA-RD-73-29.

Schultz, T. J. 1978. Synthesis of Social Surveys on Noise Annoyance. Journal of the Acoustical Society of America, 64(2), 377-405. August 1978.

Schwarz, A.L., and G.L. Greer. 1984. Responses of Pacific Herring, Clupea harengus pallasi, to Some Underwater Sounds. Canadian Journal of Fisheries and Aquatic Sciences 41:l183-l192.

Stockwell, C. A. and Bateman, G. C. 1987. The impact of helicopter overflights on the foraging behavior of desert bighorn sheep, (*Ovis canadensis nelsoni*) at Grand Canyon Natl Park, final report. National Park Service, United States Department of the Interior.

Stockwell, C. A., Bateman, G. C., and Berger, J. 1991. Conflicts in national parks - a case study of helicopters and bighorn sheep time budgets at the Grand Canyon. Biological Conservation, 56:317-328.

Thiel, Richard P., Samuel Merrill, and L. David Mech. 1998. Tolerance by denning Wolves, *Canis lupus*, to human disturbance. Canadian Field-Naturalist 122(2): 340-342.

U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM). 2009. Operational Noise Consultation. NO. 52-ON-0BE1-09, Grow The Army Noise Contours, Fort Lewis.

US Army Special Forces Command (FORSCOM). 2011. Final Biological Assessment –Northwest Aviation Operations 160th Special Operations Aviation Regiment, Joint Base Lewis-McChord, Washington. 257pp.

U.S. Environmental Protection Agency (USEPA). 1978. Protective Noise Levels. November 1978, EPA 550/9-79-100.

USEPA. 2019. Green Book – Counties Designated "Nonattainment" for Clean Air Act's National Ambient Air Quality Standards (NAAQS). Online at: https://www3.epa.gov/airquality/greenbook/mapnpoll.html. Accessed on 15 August 2019.

U.S. Fish and Wildlife Service (USFWS). 2000. Final Rule to List the Short-Tailed Albatross as Endangered in the United States. Federal Register 65(147): 46643-46654.

USFWS. 2006. Oregon Fish and Wildlife Office, USFWS, Harassment Analysis and Distance Threshold Notes. Portland, Oregon.

USFWS. 2009. Marbled Murrelet (Brachyramphus marmoratus) 5-Year Review. Washington Fish and Wildlife Office. Lacey, WA.

USFWS. 2011. News Release – Whitebark Pine to be Designated a Candidate for Endangered Species Protection. 18 July 2011. 3pp.

USFWS. 2014a. Species Fact Sheet – Oregon Spotted Frog. Online at: http://www.fws.gov/oregonfwo/Species/Data/OregonSpottedFrog/. Accessed on 15 August 2019.

USFWS. 2014b. Whitebark Pine. Online at: https://www.fws.gov/mountain-prairie/es/whitebarkPine.php. Accessed on 24 July 2019.

U.S. Geological Survey (USGS). 2011. Land Use and Land Cover Digital Data. Reston, Virginia.

Watson, J.W. 1993. Responses of Nesting Bald Eagles to Helicopter Surveys. Wildlife Society Bulletin 21(2): 171-178.

Washington Department of Ecology (WDOE). 2016. Washington State Water Quality Atlas. Online at: https://fortress.wa.gov/ecy/waterqualityatlas/StartPage.aspx. Accessed on 31 July 2019.

WDOE. 2019a. Determining if areas in Washington meet national air quality standards. Online at: https://ecology.wa.gov/Regulations-Permits/Plans-policies/Areas-meeting-and-not-meeting-air-standards. Accessed on 14 August 2019.

WDOE. 2019b. Plans for maintaining air quality. Online at: https://ecology.wa.gov/Regulations-Permits/Plans-policies/State-implementation-plans/Maintenance-SIPs. Accessed on 14 August 2019.

Washington Department of Fish and Wildlife (WDFW). 2012a. Columbian White-Tailed Deer Annual Report. Online at: https://wdfw.wa.gov/species-habitats/species/odocoileus-virginianus-leucurus. Accessed on 15 May 2019.

WDFW. 2012b. Streaked Horned Lark Annual Report. Online at: https://wdfw.wa.gov/species-habitats/species/eremophila-alpestris-strigata#conservation. Accessed on 20 May 2019.

WDFW. 2015. Priority Habitats and Species Database. Online at: http://wdfw.wa.gov/conservation/phs/. Accessed on 16 May 2019.

WDFW. 2017. Yellow-billed Cukcoo Annual Report. Online at: https://wdfw.wa.gov/publications/01881. Accessed on 16 May 2019.

WDFW. 2019. Priority Habitats and Species Database. Online at: http://wdfw.wa.gov/conservation/phs/. Accessed May 2019.

Washington Department of Natural Resources (DNR). 2010. Ahtanum State Forest Recreation Plan. January 2010, 45pp.

Whitehead, R.L. 1994. Ground Water Atlas of the United States. U.S. Geological Survey, HA 730-H.

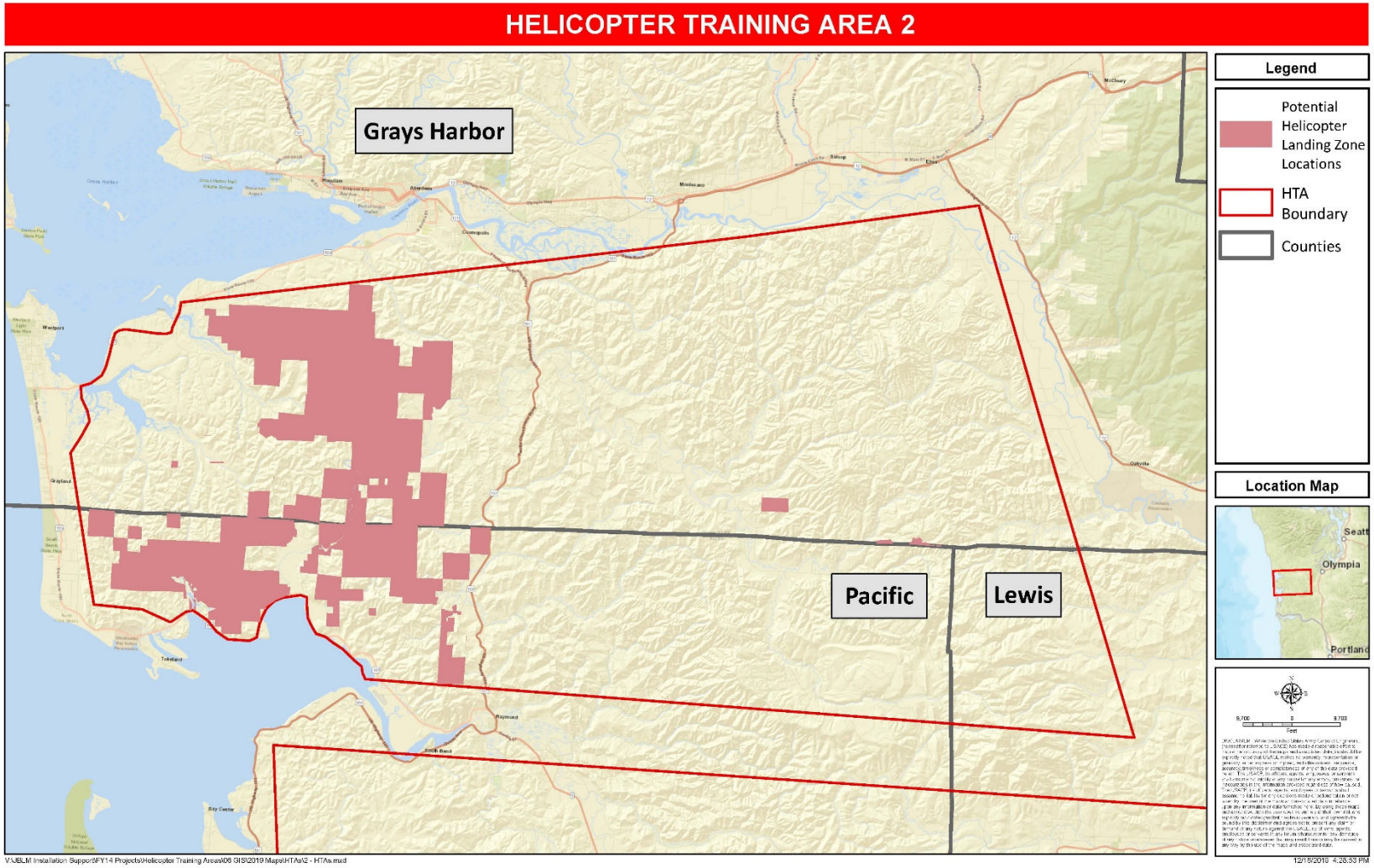
Wilson, R. P., Culik, B., Danfeld, R., and Adelung, D. 1991. People in Antarctica - how much do Adélie penguins, *pygoscelis adeliae,* care? Polar Biology, 11:363-370.

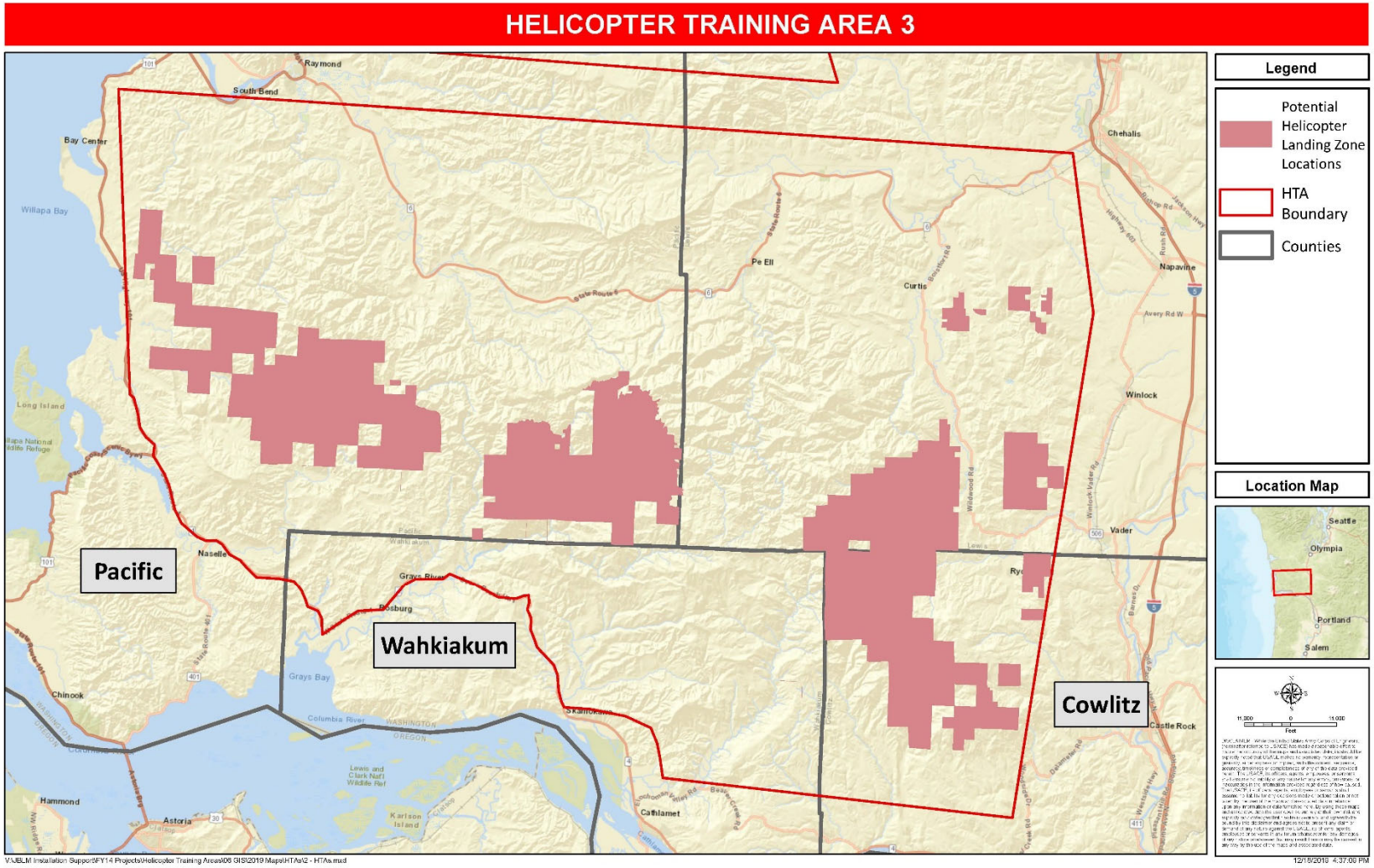
9 DISTRIBUTION LIST

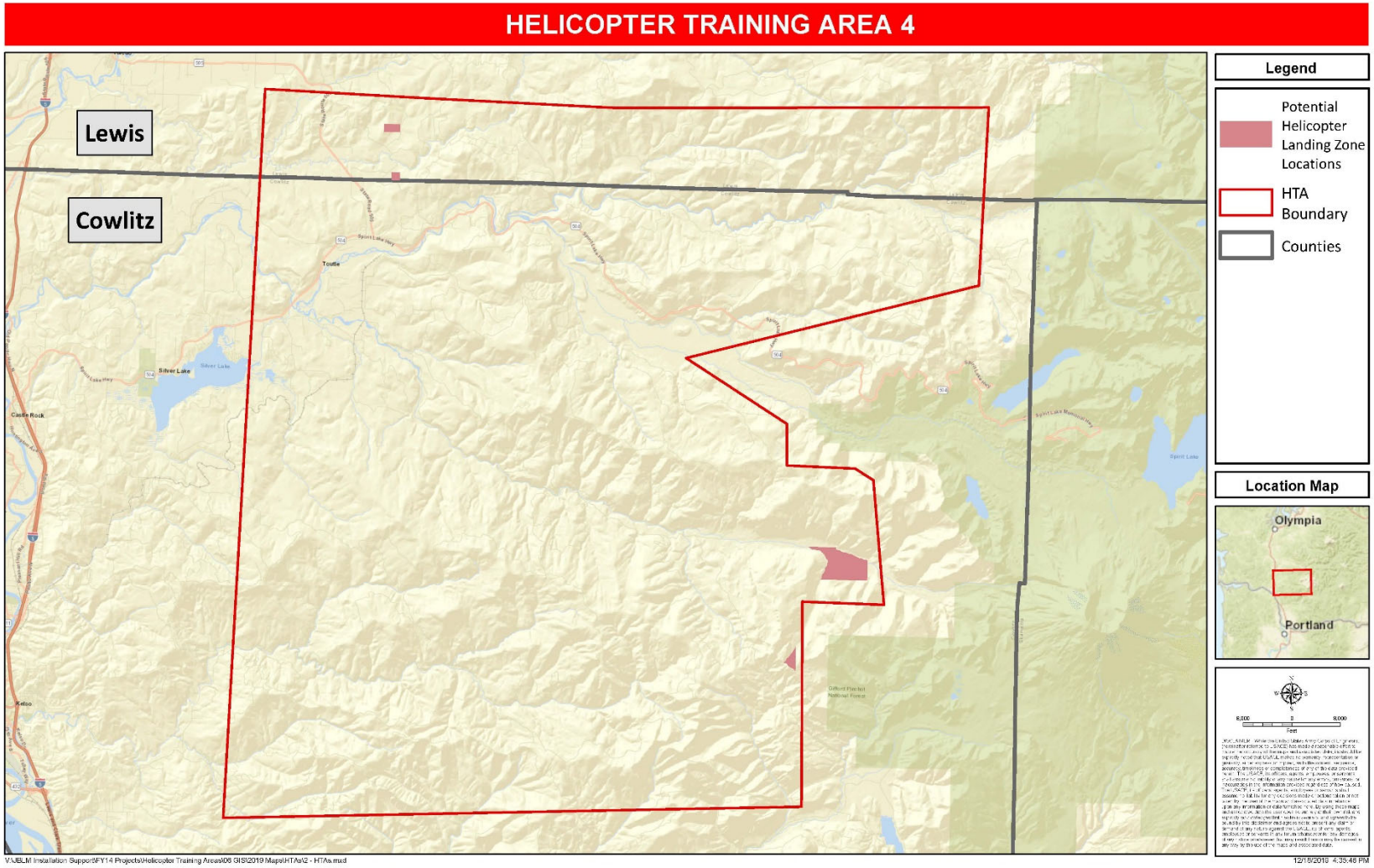
The EA will be made available for public comment and distributed to the following stakeholders:

- All agencies and tribes identified in Section 5.0,
- Local media via published newspaper display ads,
- Individuals and organizations that provided comments during the 2015 scoping process,
- All private landowners with potentially suitable HLZ parcels.

Appendix A: Helicopter Training Area Maps


HELICOPTER TRAINING AREA 2
Grays Harbor
Pacific
Lewis
Legend
Potential Helicopter Landing Zone Locations
HTA Boundary
Counties
Location Map
Olympia
Portland


HELICOPTER TRAINING AREA 3
Legend
Potential Helicopter Landing Zone Locations
HTA Boundary
Counties
Location Map
Pacific
Wahkiakum
Cowlitz
Raymond
South Bend
Bay Center
Willapa Bay
Chehalis
Napavine
Pe Ell
Curtis
Winlock
Vader
Long Island
Nasella
Grays River
Rosburg
Chinook
Grays Bay
Columbia River
Skamokawa
Castle Rock
Hammond
Astoria
Cathlamet
Seattle
Olympia
Portland
Salem


HELICOPTER TRAINING AREA 4
Lewis
Cowlitz
Legend
Potential Helicopter Landing Zone Locations
HTA Boundary
Counties
Location Map
Olympia
Portland
Feet
V:\JBLM Installation Support\FY14 Projects\Helicopter Training Areas\06 GIS\2019 Maps\HTAs\2 - HTAs.mxd
12/19/2019 4:35:48 PM

Appendix B: NEPA Scoping Report

Department of the Army

Joint Base Lewis-McChord, Washington

SCOPING REPORT

Northwest Aviation Operations
Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington

January 2016

This page intentionally left blank.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF ACRONYMS

AGL	above ground level
BMP	best management practice
CAB	Combat Aviation Brigade
CCDR	Combatant Commander
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CONUS	Contiguous United States
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statements
EO	Executive Order
FAA	Federal Aviation Administration
FNSI	Finding of No Significant Impact
FORSCOM	US Army Forces Command
HAMET	High-Altitude Mountain Environmental Training
HLZ	Helicopter Landing Zone
HTA	Helicopter Training Area
IFR	Instrument Flight Rules
JBLM	Joint Base Lewis-McChord
MOA	Military Operations Area
MTA	Mountain Training Area
MTR	Military Training Route
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NM	nautical mile
NOA	Notice of Availability
PTSD	Post-Traumatic Stress Disorder
SOP	Standing Operating Procedure
VFR	Visual Flight Rules
VMC	Visual-Meteorological Conditions
VR	Visual Route
YTC	Yakima Training Center

This page intentionally left blank.

1.0 INTRODUCTION

The Aviation Division within the Directorate of Plans, Training, Mobilization, and Security at Joint Base Lewis-McChord (JBLM) proposes to establish three off-base helicopter training areas (HTAs) and one mountain training area (MTA) (Figure 1-1). The U.S. Army is the lead Federal agency for compliance with the National Environmental Policy Act (NEPA) per compliance requirements of the Council on Environmental Quality (CEQ) regulations implementing NEPA at 40 Code of Federal Regulations (CFR) Part 1500-1508 as well as Army NEPA implementing regulations at 32 CFR 651. The proposed training areas would support training operations stationed out of JBLM, but would be located off-base within Washington State. Training operations would be conducted using aircraft to include the MH/UH-60 Black Hawk, AH-64 Apache, and MH/CH-47 Chinook. The training areas would be available for use day and night, 24 hours a day, 365 days a year, with the exception of Federal holidays.

Under NEPA regulations (40 CFR Part 1500-1508) and the Army NEPA implementing regulation at 32 CFR 651, the Army must conduct an environmental impact analysis to inform decision-makers and the public of the potential environmental consequences of proposed Army actions. The Army intends to prepare an Environmental Assessment (EA) that evaluates the potential effects of the proposed aviation operations in Washington.

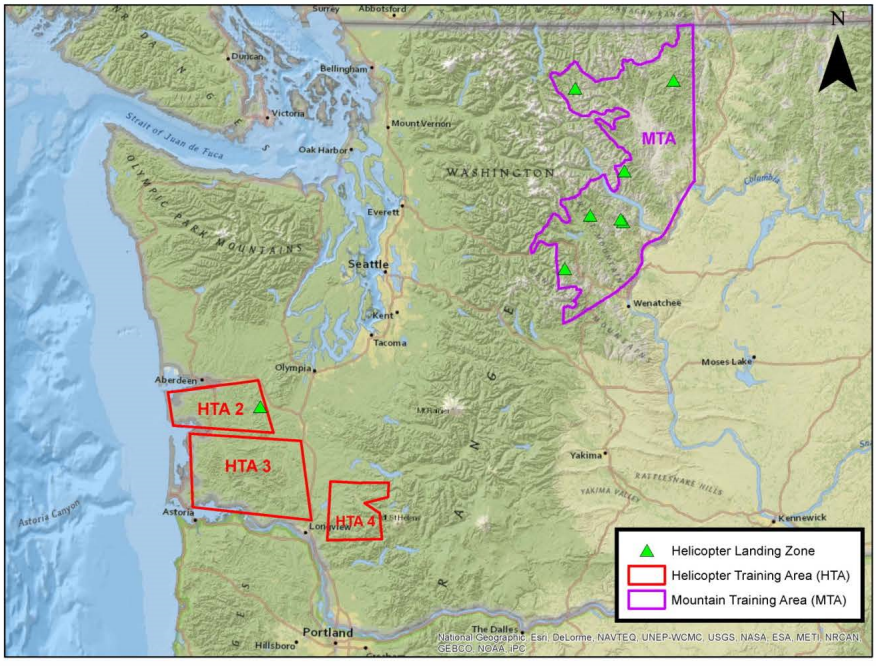


Figure 1-1. General Location Map of Proposed Training Areas

2.0 PURPOSE AND NEED FOR THE ACTION

2.1 Purpose of the Proposed Action

The *purpose* of the proposed action is for the Army to conduct the necessary type, level, and duration of aircraft movements through the National Airspace System, so aircrews can attain and maintain flying proficiency and be ready for immediate deployment world-wide in support of the National Defense Mission.

2.1.1 High Altitude Training Operations

The proposed high altitude training area would provide JBLM aviation units with mandatory high-altitude flight operations training, while recognizing Army environmental and social stewardship responsibilities within the affected region.

2.1.2 Low Level Training Operations

The proposed low-level training areas would provide JBLM aviation units with low-level training areas off JBLM to eliminate training conflicts between JBLM aviation units and other units training at JBLM.

2.2 Need for the Proposed Action

The following sections identify the *need* for the proposed action. JBLM on-base training areas are currently limited due to a reduction in density as a result of 2011 regulation changes (JBLM Regulation 95-1) and scheduling conflicts with other units, particularly ground-based operations for low-level flight operations. High Altitude Mountainous Environment Training (HAMET) is currently limited to a select number of sites in the contiguous United States (CONUS) which all require extensive travel time, scheduling difficulties and cost.

2.2.1 High Altitude Training Operations

It is vitally important to conduct High-Altitude Mountain Environmental Training (HAMET) in order to prepare Army aircrews. This training is critical to save the lives of aviators and the Soldiers they transport. The need for well-prepared aviation brigades to conduct combat operations in Afghanistan led the US Army Forces Command (FORSCOM) to prioritize the development of standardized training for high-altitude (up to 14,000 ft [4,267 m]) mountainous conditions. HAMET was developed to ready pilots for success in combat operations. HAMET adapts the National Guard's school for individual mountain helicopter training taught in Gypsum, Colorado.

High altitudes and mountainous terrain pose several challenges to Army helicopter pilots. High altitudes are associated with high wind, high-density altitude (i.e. pressure altitude that is corrected for temperature and humidity), turbulence and atmospheric instability. These factors greatly affect the performance of a helicopter engine and the handling characteristics of an aircraft. For example, an increased density altitude decreases the effectiveness of the rotor blades in providing both overall lift and thrust power to the tail rotor for directional control (i.e.

increasing density altitude increases "drag"). Thus, an increased angle of attack and increased power are required to offset the increased drag. Simultaneously, the engine is less capable of producing power in the thinner air of higher altitudes, and the higher the altitude, the greater these effects have on the aircraft. As such it is imperative that pilots master performance planning, power management, and high-altitude flight techniques to compensate for decreased aircraft performance in high-altitude, mountainous environments.

2.2.2 Low Level Training Operations

Opportunities for low-level training by JBLM aviation units are limited by the available on-base airspace. JBLM aviation regulations were changed in 2011 to reduce the allowable aircraft density in the training areas (JBLM Regulation 95-1, See Section 3.4 below). In addition, low-level training conflicts with training activities by other units, including ground-based activities by Brigade Combat Teams, who are given priority of usage. Due to the limited airspace and the density of indirect fire weapon systems, JBLM requires dedicated off-base HTAs which would allow all assigned units and missions to meet the Aircrew Training Program requirements for Full Spectrum day and night training. Approved low-level training areas off-base would alleviate land-use conflicts that are occurring now and to allow for future growth of the crews training at JBLM.

3.0 SCOPING

This section describes the purpose of the scoping process and identifies the techniques that were used to notify the public about the opportunity to be involved in scoping.

3.1 Purpose of Scoping

Scoping is the process used to identify issues, concerns, and opportunities for enhancement or mitigation associated with a proposed action. According to NEPA, the process should be conducted early in the planning stage of the project. The purposes of the scoping process are as follows:

- invite participation of federal, state and local resource agencies, Indian tribes, non-governmental organizations (NGOs), and the public to identify significant issues related to the proposed project;
- determine the resource issues, depth of analysis, and significance of issues to be addressed in the EA;
- identify how the project would or would not contribute to cumulative effects in the project area;
- identify reasonable alternatives to the proposed action that should be evaluated in the EA;
- solicit, from participants, available information on the resources at issue; and
- determine the resource areas and potential issues that do not require detailed analysis during review of the project.

3.2 Scoping Comments

During the scoping process, the Army requested federal, state, and local resource agencies, Indian tribes, NGOs, and the public to forward any information that would assist us in conducting an accurate and thorough analysis of the project-specific and cumulative effects associated with the proposed project. The types of information requested included, but were not limited to:

- information, quantitative data, or professional opinions that may help define the geographic and temporal scope of the analysis (both site-specific and cumulative effects), and that helps identify significant environmental issues;
- identification of, and information from, any other EA, Environmental Impact Statement (EIS), or similar environmental study (previous, on-going, or planned) relevant to the proposed project;
- existing information and any data that would help to describe the past and present actions and effects of the proposed project and other developmental activities on environmental and socioeconomic resources;
- information that would help characterize the existing environmental conditions and habitats;
- the identification of any federal, state, or local resource plans, and any future project proposals in the affected resource area (e.g., military training proposals, recreation areas, timber harvest activities, or development proposals) along with any implementation schedules;
- documentation that the proposed project would or would not contribute to cumulative adverse or beneficial effects on any resources. Documentation can include, but need not be limited to, how the project would interact with other projects in the area and other developmental activities; study results; resource management policies; and reports from federal and state agencies, local agencies, Indian tribes, NGOs, and the public; and
- documentation showing why any resources should be excluded from further study or consideration.

The official scoping period for the proposed action was from July 1, 2015 through July 30, 2015. Due to the high level of public interest, scoping was extended through November 3, 2015.

3.3 Scoping Distribution

A project distribution list was used to disseminate the scoping notice to the public. The Army obtained distribution lists from the US Forest Service specific to the Okanogan-Wenatchee National Forest. In total the project distribution list contained approximately 4,500 contacts. A copy of the scoping postcard is included in Appendix A.

3.3.1 Media Releases

JBLM prepared a press release and display advertisement to introduce the project and provide the project website location and address to submit comments. The scoping display advertisements are included in Appendix B. The following list provides the newspapers that printed the display ad during the initial scoping release and extensions of scoping period.

- Battle Ground Reflector
- Chelan Mirror
- The Chronicle
- Colville Statesman Examiner
- The Daily Record
- The Daily World
- Grays Harbor Herald
- Leavenworth Echo
- Methow Valley News
- North Kittitas County Tribune
- Okanogan Valley Gazette-Tribune
- The Olympian
- Omak-Okanogan Chronicle
- Town Crier
- Wenatchee World
- Willapa Harbor Herald

3.3.2 Agency Coordination

As of the date of this report, contact has been made with the following agencies and Tribes:

- US Forest Service
- National Park Service, North Cascades National Park
- Washington Department of Natural Resources
- Upper Skagit Tribe
- The Confederated Tribes of the Colville Reservation
- Cowlitz Indian Tribe

4.0 COMMENT SUMMARY

For this scoping report, comments received following the release of the scoping notice on July 1, 2015, have been considered and analyzed. During scoping, JBLM received 2,350 comment letters, emails and comment forms. The comment form posted on the JBLM website during scoping is included in Appendix C.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

4.1 Comment Compilation

Comments were organized, reviewed and analyzed to identify the preliminary issues that will be addressed during the preparation of the EA. The comment letters and each comment were entered into a comment matrix that allowed for sorting of the comments based on key areas of concern.

The majority of comments were submitted electronically. Of the 2,350 comments received, 1,176 (about 50 percent of all submittals) were submitted through some variety of form letter. Form letters are standardized and duplicated letters which contain the same text or portions of text and comments. Typically, the letter is used by a number of respondents who then fill in their name, date and address separately and may include individual specific information. A total of 12 different form letters were identified during the scoping period. All form letters were read in their entirety and any comments unique and supplemental to the form letter were also extracted and analyzed. Copies of the form letters are included in Appendix D.

A total of 1,174 respondents provided unique comments not derived from a form letter (about 50 percent of all submittals). From all the respondents (including form letters), 11,909 comments were identified that pertained to individual and unique issues.

If comments were received multiple times or via multiple formats (e.g. hard copy and e-mail), the earlier response with the author's signature was retained for the public record.

The names of the agencies and other organizations that submitted comments are listed below:

Federal Agencies

- Bureau of Land Management
- US Environmental Protection Agency
- US Forest Service, Okanogan-Wenatchee National Forest
- US Navy
- US Senator Patty Murray
- National Park Service
- Julia Butler Hansen National Wildlife Refuge for the Columbian White-Tailed Deer
- Lewis and Clark National Wildlife Refuge

Tribal Governments

- Cowlitz Indian Tribe

State Agencies

- Washington Department of Ecology
- Washington Department of Fish and Wildlife
- Washington Department of Natural Resources
- Washington 12th Legislative District

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

- Washington 34th Legislative District

Local Agencies

- Chelan County
- City of Olympia

Organizations and Interest Groups

- Access Entiat Committee
- Access Fund
- Alpine Lakes Protection Society
- American Whitewater
- Audubon Washington
- Chelan-Douglas Land Trust
- Conservation Northwest
- Conservation Wild
- Conservatives for Responsible Stewardship
- El Sendero Backcountry Ski and Snowshoe Club
- Evergreen Mountain Bike Alliance
- Forest Service Employees for Environmental Ethics
- Friends of Grays Harbor
- Gifford Pinchot Task Force
- Grays Harbor Audubon Society
- Izaak Walton League, Seattle Chapter
- Kettle Range Conservation Group
- The Lands Council
- Leavenworth Chamber of Commerce
- Methow Conservancy
- Methow Trails
- Methow Valley Backcountry Horsemen
- Methow Valley Citizens' Council
- Mount Baker Club
- The Mountaineers
- Murrelet Survival Project
- National Parks Conservation Association
- North Cascades Audubon Society
- North Cascades Conservation Council
- North Central Washington Audubon Society
- Northern Kittitas County Tribune
- Northwest Outward Bound School
- Northwest Watershed Institute

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

- Okanogan Highlands Alliance
- Olympic Forest Coalition
- Olympic Park Associates
- Pacific Crest Trail Association
- Pacific Crest Trail Program
- Peaceful Skies Coalition
- Polly Dyer Cascadia Broadband (Old Broads for Wilderness)
- Public Interest Coalition
- Sierra Club
- Sierra Club – Washington Chapter
- Skagit Audubon Society
- Skagit Environmental Endowment Commission
- Washington Bikes
- Washington Climbers Coalition
- Washington Forest Law Center (on behalf of Olympic Forest Coalition)
- Washington Outdoor Alliance
- Washington Trails Association
- Washington Trust for Historic Preservation
- Washington Wild
- Wenatchee Outdoors
- West Coast Action Alliance
- Western Lands Project
- Wild Fish Conservancy
- The Wilderness Society
- Wilderness Watch
- Willapa Hills Audubon Society

4.2 Summary of Public Comments

Issues identified were categorized according to three major topic categories: environmental impacts, action and alternatives, and process concerns. Figure 4-1, shows the total comments divided between the three major topic categories: environmental impacts, actions and alternatives, and process concerns. The majority of comments focused on environmental impacts. These three categories were further divided into twenty subordinate categories which are described in the subsections below.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

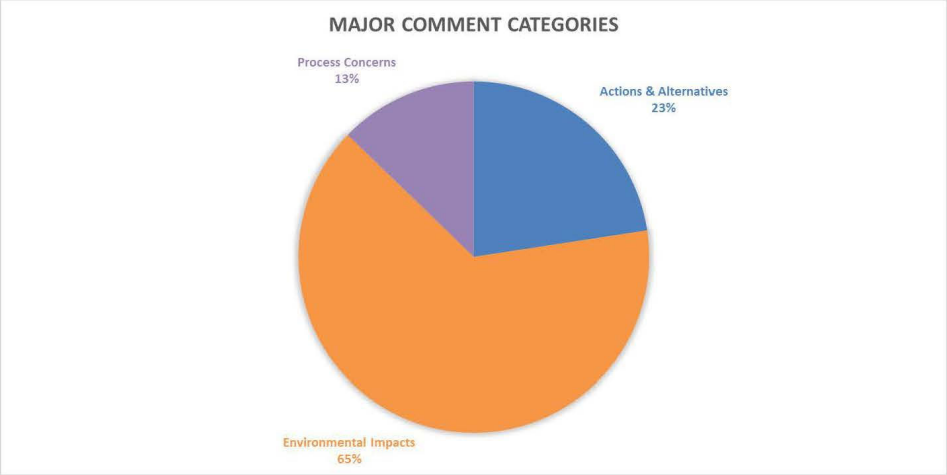


Figure 4-1. Major Comment Categories.

4.2.1 Actions and Alternatives

This category includes comments about the proposed helicopter training activities and concerns about the proposed action that people feel should be considered in the EA. Topic categories include:

- Alternative Description
- Training Frequency & Best Management Practices (BMPs)
- Maps, Locations of Sites, More Information
- Alternative Training Locations
- Fire Danger

4.2.2 Environmental Impacts

Includes comments regarding the proposed action's potential for impacts on resources (natural & human) and about social and economic concerns that people feel should be addressed in the EA. The categories identified include the following:

- Specially designated areas (Wilderness and Primitive Areas, Inventoried Roadless Areas and National Parks)
- Forest and Flora
- Wildlife
- Threatened and Endangered Species
- Noise or Light
- Recreation
- Public Health and Safety
- Economics (tourism, property values)

- Cumulative effects
- Air & Water Quality (pollution)

4.2.3 Process Concerns

Includes comments about the way in which JBLM is conducting the EA process. Process concerns include the following categories:

- NEPA, Appropriate level of analysis (EA vs. EIS), Public Meetings
- Agency Cooperation
- Supportive
- General Opposition
- Out of Scope

A diagram showing the percentage of comments received in each of the twenty categories is shown in Figure 4-2. The number of comments by category are shown in Figure 4-3. The topic area most frequently mentioned is specially designated areas (Wilderness and Primitive Areas, Inventoried Roadless Areas and National Parks), followed closely by recreation.

4.2.4 Non-EA Scoping Comment Issues

Comment concerns listed in Sections 4.2.1-3 above are directly related to the proposed project and would be addressed in the EA. However, comments that are beyond the scope of NEPA, outside of the affected area, or not related to the matter at hand, need not be addressed in the EA.

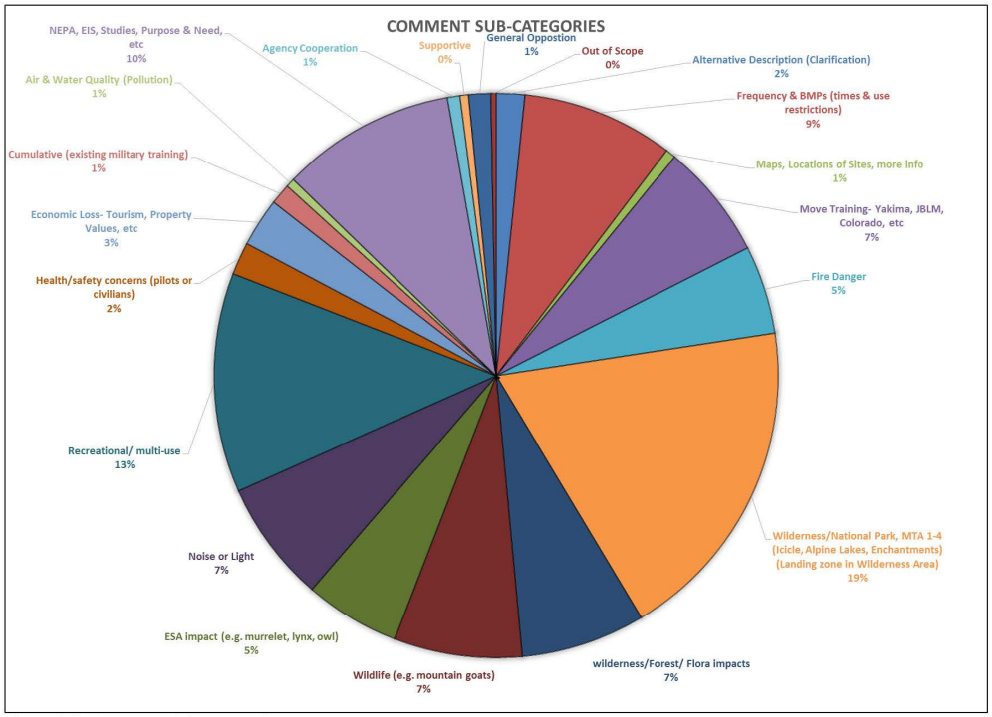


Figure 4-2. Comment Sub-categories.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

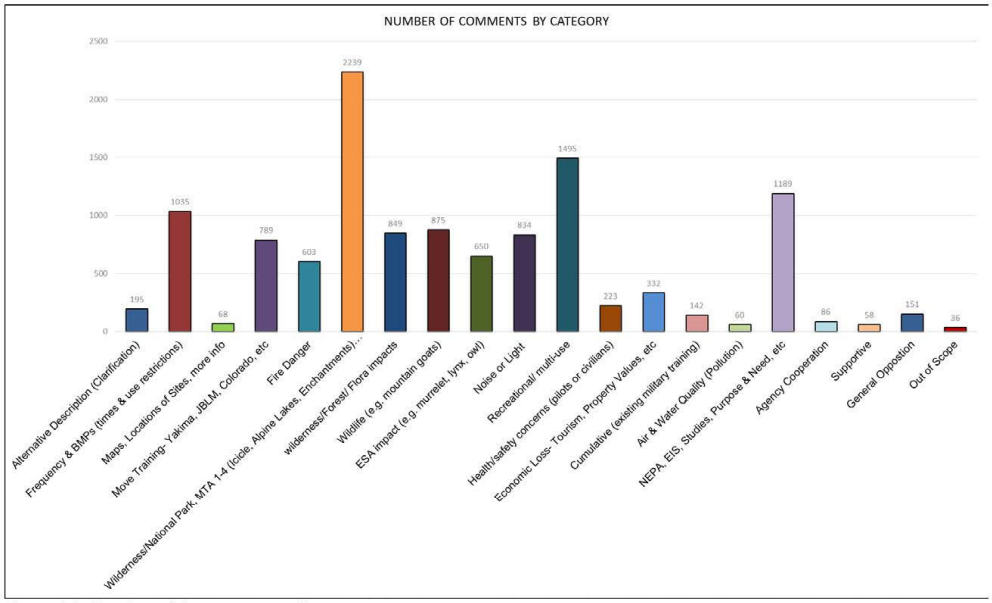


Figure 4-3. Number of Comments per Category.

18

5.0 SUMMARY OF IDENTIFIED ISSUES

A brief summary of each comment category is included in the following sections with representative quotations. Quotations are captured as received in comments, so any spelling or spacing errors have not been corrected.

5.1 Public Comments – Actions and Alternatives

This category includes comments about the proposed helicopter training activities and concerns about the proposed action that people feel should be considered in the EA. Topic categories include:

5.1.1 Alternative Description

Alternative description comments (2%, n=195) centered on greater detail on "where," "when" and "how" pilots would be training within the proposed areas.

Representative Quotations

"Is the proposed HLZ in Southwest Washington on State or private land, and what will the impacts be in that location? Will it require any further infrastructure, such as roads? The HTAs are very large. Where in the HTAs will the training primarily occur? Will there be similar usage at the various HTAs? Which HTAs will be used most extensively, and when? Why is it necessary to have multiple HTAs?"

"While the purpose and need was written quite clearly, I'm not completely clear on several things. a. I see that there would be a value to training in varied mountainous conditions. However it is not clear to me that training at approximately 7,000 feet in elevation is a good surrogate for flying at 14,000 feet once deployed overseas. From my own experience in being around aviation operations, flying at 7,000 feet is not nearly as challenging as flying at 10,000 feet or above. Is it possible that the elevation doesn't matter as much as the terrain features? In fact, Table 4-1 does not even list elevation as a criteria. This would open up more options, including the use of terrain features on the Yakima Training Center."

5.1.2 Frequency & Best Management Practices (BMPs)

Many comments focused on the description in the scoping document that "training areas would be available for use day and night, 24 hours a day, 365 days a year, with the exception of Federal holidays." Questions were raised over the actual usage of the training areas throughout the year. This category was mentioned in 1059 comments (9%). Questions and comments about BMPs included wildlife timing restrictions, particularly bird migration and breeding periods.

Representative Quotations

"It can be expected that the impacts of helicopter overflights on wildlife depend, in part, on their frequency and intensity. The Scoping Document (SD) indicates that activities could occur day and night (although mostly at night), 24 hours/day, 365 days/year (excepting federal holidays);

further, that within Helicopter Landing Zones (HLZs), 10-20 landings, involving up to 7 helicopters, lasting approximately 4 hours, would occur during each training session. It is not clear, however, how often training sessions would actually occur. We recommend that the Department of the Army (DOA) quantify the anticipated level of activity and provide this information so the public can understand the level of potential disturbance."

"One thing that makes the situation tough as a resident is that we could never know if the jets were going to,be flying so we couldn't plan outdoor activities, like family reunions, weddings, etc. because we always had to,assume the jets were flying and the event would be ruined because of,the sound. So, if we had some days and times that we could at least count on some quiet and noise relief, that would be helpful."

"If what you're asking is if we would take issue with 24-7-365 exposure to the noise pollution of military helicopter traffic, then yes, we would have a major problem with having our peace and quiet disturbed at any hour of the day, any day, nearly all year."

5.1.3 Maps, Locations of Sites, More Information

Comments in this category (<1%, n=68) were related primarily to greater details in the maps provided within the scoping document. While coordinates were provided in Table 4-4 of the scoping document, respondents found the maps included in Appendix A of the scoping document unclear.

Representative Quotations

"Are there any maps that identify roads and landmarks more clearly, and will areas/roads adjacent to MTA-5,6 & 7 be closed during training ops?"

"The aerial maps attached to the document make the boundaries of the overall Mountain Training Area and the individual Helicopter Landing Zones impossible to decipher. The EA must clearly superimpose the proposed action on current uses of the area in question, such as recreation areas, hiking trails, primitive and non-primitive campgrounds, known concentrations of wildlife, etc. Mountain landing sites must be identified on topographic maps that show the peaks in question and their relationship to nearby peaks."

5.1.4 Alternative Training Locations

A wide variety of alternative training locations were provided by respondents (7%, n=789). These included utilizing existing training facilities (Alternative 1 – No Action), overwater training grounds, remote locations in other states (Nevada, Texas, New Mexico). Use of existing training facilities included references to JBLM, Yakima Training Center and HAMET training grounds in Colorado.

Representative Quotations
"There are many suitable high altitude sites outside of areas designated by Congress as wilderness and the US Army can use these for the training they must do."

"First and foremost, the scoping document too readily dismisses the high-altitude training sites in Colorado and Texas and therefore fails to consider several, viable, hybrid alternatives to action. Perhaps more information or explanation is needed here, but the Army is clearly using these current MTAs effectively for training now. Although sympathetic to costs and impacts to personnel, the cost of transporting staff from Seattle to Colorado or Texas seems minimal in comparison to the overall cost of these trainings, and overnight travel for many government employees is standard and considered a routine part of the job . Without further explanation as to why these MTAs do not -at all -address the Army's needs for high-elevation training, the Army should consider an alternative that could establish the HTAs in southwestern WA but would continue to use the MTAs in Colorado and Texas for all high- altitude training. This alternative would avoid all impacts to federally designated lands in the North Cascades which have been intentionally set aside and protected by Congress for their natural, cultural, and wilderness qualities."

5.1.5 Fire Danger
Concerns about forest fire risk stem largely from highly susceptible forests and widespread wildfires within the central Cascades over the past several years. Fires have consumed hundreds of thousands of acres of forest land, destroyed property and pose public safety risks. Concerns over helicopters flying in fire-prone forests were raised by multiple people. Additionally, concern was raised on the prospect of helicopter training during active wildland fire-fighting operations. Fire danger comments represent 5% (n=603) of total comments.

Representative Quotations
"From the middle of June through September the fire danger in the entire region would make any training extremely dangerous. Dry conditions here in summer make the slightest ignition source a potential for catastrophic fire. All ones needs to do is review the fire history of the last few years to realize the potential for disaster."

"In times of extreme fire danger, I would suspect operations would be curtailed as a prevention measure "just in case.""

5.2 Public Comments - Environmental Impacts
Includes comments regarding the proposed action's potential for impacts on resources (natural & human) and about social and economic concerns that people feel should be addressed in the EA. The categories identified include the following:

5.2.1 Specially designated areas (Wilderness and Primitive Areas, Inventoried Roadless Areas and National Parks)

The majority of comments received (19%, n=2239) focused on the proposed helicopter landing zone (HLZ) MTA 1-4, which was inadvertently sited within the Alpine Lakes Wilderness Area. Many commenter's noted the Congressional designation for a Wilderness Area and the statutory restrictions that are imposed as a result. Additionally, comments raised concerns over the close proximity and shared border of the proposed MTA to several other designated Wilderness Areas within the central Cascades.

Representative Quotations

"The Alpine Lakes Wilderness area, North Cascades and Pacific Crest Trail are wilderness areas carefully protected from development. They are intended to remain wild for recreation and protection of the environment--a purpose to which the armed forces have in recent years been actively supporting-- and not to be exploited by commercial or military interests."

"The proposal also designates eight areas in the region that the Army would use to practice landing maneuvers—one of those areas lies just within the Alpine Lakes Wilderness Area, west of the town of Leavenworth. Under the 1964 Wilderness Act, most motorized equipment is not allowed in wilderness areas."

"I am writing to relay my objection to any JBLM off-base helicopter training in the Alpine Lakes Wilderness Area (MTA 1-4). The Wilderness Act prohibits landing of aircraft in wilderness. I've visited this high country gem. The Alpine Lake Wilderness Area is a pristine jewel needing sustained protection."

5.2.2 Forest and Flora

Comments in this category (7%, n=849) pertained to forest and plant health not specifically related to specially designated areas covered in Section 5.2.1 above. This includes National Forest land and State managed forests.

Representative Quotations

"As one who respects the wilderness and our native wildlife, I believe the enactment of this proposal would be invasive and endanger our wild ecosystems."

"Assuming open meadows or alpine areas for landing sites I would be concerned about the sensitivity of the sites, especially wetlands and wet meadows. Depending on the timing and numbers of people involved the sites are quite susceptible to long term damage that could result in erosion, damage to sensitive plant species and more."

5.2.3 Wildlife

Concerns for wildlife were largely centered on impacts from noise and visual disturbance from helicopters. Additionally bird migration and nesting seasons were mentioned in relationship to the Pacific coast migration corridor. Wildlife impacts were included in 875 comments (7%).

Representative Quotations

"For wildlife residents of the local mountains, helicopter activities pose a significant disruption and source of stress, particularly during resource / water scarce periods such as our current climate regime."

"The noise and impact of aircraft would affect wildlife adversely. See Pepper, Christopher B., Nascarella, Marc A.; Kendall, Ronald J. 2003, "A review of the effects of aircraft noise on wildlife and humans, current control mechanisms, and the need for further study". [Article] Environmental Management Radle, Lyn Autumn, 1998, " The Effect of Noise on Wildlife: A Literature Review""

"The impact of helicopter noise on animals is of great concern to me, especially bigger fauna like goats, elk, bears."

"Many species of migratory birds use these areas as flyways to and from our mountains. Ravens and other species depend on these high alpine environments for their livelihood."

5.2.4 Threatened and Endangered Species

Comments in this category (5%, n=650) raised impact concerns similar to those above for wildlife, however they were focused on species listed as threatened or endangered under the Endangered Species Act.

Representative Quotations

"The impact of operations in the three Helicopter Training Areas (HTAs) in southwest Washington on the habitat of endangered Spotted Owls and Marble Murrelets must thoroughly evaluated."

"I also demand studies regarding the possible impacts on fauna, particularly the threatened species, such as wolves, grizzly bears, wolverine, lynx and spotted owl. It seems absurd that our federal government would spend so much money and time trying to recover these species, and then turn around and land Army helicopters in their last potential strongholds."

5.2.5 Noise or Light

A majority of comments in this category were focused on noise generated by helicopters. Noise disturbance impacts ranged from disturbance to residences/homes to the natural quiet of being in nature. Light concerns were largely focused on night operations of helicopters,

primarily in relation to residences/homes. Noise and light comments accounted for 834 comments (7%).

Representative Quotations

"I read the scoping notice and I am really not in favor of using this area in this way. For one, additional Blackhawk flights will be very loud. I live in Aberdeen and I can always tell when one of these helicopters flies over. It feels like it is going to lift the roof. This area is really very quiet usually."

"A major disturbance would be the lights – another aspect of wilderness is darkness at night."

"Unless I can see a map of the proposed flight paths I'll have to assume that many people in those areas will see bright lights and loud helicopter noises at night. Most of us who live in rural areas do so for the peace and quiet."

"We know we need a well trained military, but please avoid helicopter or airplane training over wilderness areas. The noise alone would negate the essence of the word "wild". Please be considerate of the animals & of the people who seek the peace & quiet in the wilderness."

5.2.6 Recreation

Recreation concerns were the second most frequently cited category (13%, n=1495). Numerous types of recreation were mentioned including hiking, horseback riding, rock climbing, mountain biking, paragliding, snowshoeing, backcountry skiing, hunting, camping and birdwatching.

Representative Quotations

"The proposed mountain training area encompasses hundreds of miles of trails, two scenic byways, many miles of rivers and streams and dozens, if not hundreds, of pristine mountain lakes. The region is a mecca for hikers, backpackers, boaters, mountain bikers, anglers, and other recreation enthusiasts. The prospect of Apache, Blackhawk and Chinook military helicopters using the region as a training area "day and night, 24 hours a day, 365 days a year, with the exception of Federal holidays," is wholly incompatible with the values that make the North Cascades such a treasured landscape."

"These areas are used and enjoyed by folks all year long. During the summer and shoulder months many people are in these high mountain areas, particularly guides with strings of horses. Loud noise from a low flying aircraft could spook the horses and cause them to panic, leading to severe injury or death to themselves or riders. Hikers, mountain bikers, hunters, and motorcycle riders would all have to listen to the noise created by these aircraft, most of which would echo and reverberate throughout the woods at all hours of the day and night. The winter months, many of us ski those mountains and low flying aircraft could cause avalanches during their low level flying or peak touch and gos."

"Three, and perhaps more, of the areas proposed by the Army's scoping document for Helicopter Training are in zones that are popular for hikers, backpackers, cyclists, horse-owners riding their mounts and outfitter-guide businesses. Consequently, the proposed 24-7 day and night training would have a real negative impact to the outdoor experience of all recreational users, not to mention the negative and possibly hazardous effect of helicopter noise would have on easily spooked horses and livestock. We ask that you please assess these impacts."

5.2.7 Public Health and Safety

The issue of safety was mentioned in 173 comments (2%). Safety issues included victims of post-traumatic stress disorder (PTSD) and helicopter presence, back county recreationists, and pack animal startle responses. Safety was also mentioned in conjunction with forest fires as mentioned above. Conversely, a number of comments discussed the importance of helicopter training for back county search and rescue operations.

Representative Quotations

"This area appears to meet the demands of high altitude training for helicopter pilots. My only concern would be safety of the pilots training in this remote area if something should go wrong. Hope this has been a taken into consideration."

"The health effects of noise are well-documented; loud noise in any frequency range has deleterious effects across the entire range of human hearing."

"Also, the safety of recreational users will be jeopardized if a helicopter accidentally lands on someone or triggers an avalanche or a rockslide, which could cause injury or death."

"A final concern is for veterans; many veterans of recent wars have found solitude and peace of mind while hiking the Pacific Crest National Scenic Trail. The intrusion of a helicopter at night would be a massive violation of the therapy these wilderness settings provide for those who are casualties of PTSD."

"Many of these areas proposed are frequented by people on horseback, and noise from helicopters can easily spook a horse and lead to death or serious injury."

5.2.8 Economics (tourism, property values)

Concerns were raised regarding the impacts to property values from helicopter activity. Impacts to tourism were discussed in the context of effects on other resources such as wilderness areas and recreation from the proposed action. Economic concerns accounted for 332 comments (3%).

Representative Quotations
"Tourism is the biggest economic driver for the Methow Valley, and most of those tourists come here to recreate in pristine wilderness. It seems to me that helicopter training would have a negative impact on that experience, and hence would have a negative impact on our local economy."

"Communities in the North Cascades depend on recreational use of these lands to bring income to their businesses."

"The economic and social costs to both Chelan and Okanogan Counties could be significant. Many people and businesses are drawn to our area by the unique recreational opportunities provided by the Okanogan-Wenatchee National Forest and its wildernesses. They are an important reason why our area was somewhat insulated from the recent recession. This project could negatively impact the future stability and growth of our economy and its social fabric."

"I need to see a study done on the impact of all of this on the economy of rural communities that are adjacent to the areas under consideration. I live in Twisp. Our economy here is heavily dependent on tourism. That tourism is strongly linked to the wilderness areas that surround us. For example, several hundred visitors are coming in two weeks to participate in an ultra marathon that goes right through the Cooney Lake area that is proposed for Army helicopter training missions. These people will stop coming if these areas are used in such a way."

5.2.9 Cumulative effects
Cumulative effects comments (1%, 142) were focused on the proposed action combined with existing helicopter activity for both search and rescue operations and wildfire response and ongoing military training including fixed wing aircraft flyovers.

Representative Quotations
"I'm also a hiker and hunter and have numerous times been on a ridge as the jets have flown below me near the deck of our pristine valleys. Again below what they claim. It is a beautiful sight but unnecessary. I'm against anymore complete disregard for the citizens. I have lost 3 high school buddies in action and I'm all for our military, but not in my back yard. Nevada has so much area that would be perfect for your exercise and no people. Why do this in a populated area where we already have military practice."

5.2.10 Air & Water Quality (pollution)
A small number of comments (<1%, n=58) highlighted concerns about air pollution and water quality concerns from the proposed action.

Representative Quotations
"I would like to see a study done on air pollution from the helicopters that can accumulate and stagnate in mountain valleys. Mountain valleys are uniquely susceptible to accumulation of

particle pollutants. I would like to see studies done on potential water pollution from leaking fuel and oil from the machines that will be operating in these missions. How much pollution will be released into snow and groundwater?"

5.3 Public Comments – Process Concerns

Includes comments about the process in which JBLM is conducting the NEPA process.

5.3.1 Appropriate level of analysis (EA vs. EIS)

Approximately 1190 (10%) of comments discussed the appropriate level of analysis proposed within the scoping document. This was the third most commented on category. It appears that some commenters assumed that the scoping document would be the only opportunity for public comment, which generated some confusion. Based on comments raised in categories above for resource impacts (e.g. habitat, noise, wildlife) many felt that the appropriate level of analysis should be through preparation of an EIS as opposed to an EA.

Representative Quotations

"Controversial Proposal Requires an EIS
It is the position of the [redacted], that because of the extraordinarily controversial nature of this proposal, the HTA-HAMET will require a full Environmental Impact Statement. Because of the inclusion of National Forests, State Lands, a National Park and a Wilderness Area this scheme requires the highest level of public involvement and analysis of environmental impacts. An EA for this proposal will not satisfy NEPA requirements, neither statutorily nor compliance with settled case law. [redacted] believes that this proposal should be withdrawn because among the other problems with the scoping document, JBLM has failed to establish a need for the project."

"The potential environmental and social impacts warrant evaluating the proposed training areas as an an Environmental Impact Statement (EIS)."

"The Army has stated its intent to complete only an Environmental Assessment (EA) for the proposed action, rather than an Environmental Impact Statement (EIS), stating that if the EA shows the need for an EIS, an EIS will then be prepared. There is, however, no need for an EA to determine whether there are significant environmental impacts of the proposal. The proposed action is clearly a "major federal action significantly affecting the quality of the human environment," and thus requires an EIS rather than an EA."

5.3.2 Agency Cooperation

As part of the overall approval process for the proposed action the Army would need to obtain a Special Use Permit (SUP) from the US Forest Service (USFS). Comments highlighted the need for the SUP and urged coordination with the USFS. Additionally comments suggested coordination with local municipalities and interest groups. Comments in this category totaled 86 (<1%).

Representative Quotations
"We encourage you to consult with the Washington State Department of Fish and Wildlife, the United States Forest Service and the National Park Service to ensure that their most accurate data is being included as part of your NEPA review, so that potentially significant adverse impacts can be avoided."

"The proposal must comply with the management plans of the Okanogan and Wenatchee national forests. Assuming that military training were an allowable use of national forests (which it is not), the Army would be required to obtain a special- use permit from the U.S. Forest Service to land helicopters. The conditions for obtaining special- use permits are specified in the Okanogan National Forest Land and Resource Management Plan (OLRMP) which was adopted in 1989, and in the Wenatchee National Forest Land and Resource Management Plan (WLRMP), which was adopted in 1990."

5.3.3 Supportive
A small number (<1%, n=57) of comments voiced overall support for military training in general and specifically the proposed project.

Representative Quotations
"Helicopter crews need to practice at high elevations in rugged and remote terrain to simulate real world operational conditions. This includes nighttime, winter and summer and otherwise poor flying conditions. Our troops need the most realistic training possible to best prepare them for real operations overseas."

"Please accept this comment as 100% in support of and recommending approval of the new HTA's and MTA's. As a former Senior Army Aviator, I can say that mountain flying, especially at night, is one of the most challenging tasks any aviator can face. Realistic, timely, frequent and challenging training is the primary way to properly prepare. These requirements are very accurately outlined in the scoping document."

"We frequently benefit from the military coming to our aid in putting out wildfires, evacuating injured hikers or climbers and assisting in search and rescue operations and if these crews are to fly in mountainous terrain they must also train in those areas and we should welcome them here."

5.3.4 General Opposition
In addition, there were of comments received that were statements against the project with no additional details on areas of concern. Those comments provided no insight on the scope of the EA. Comments in this category accounted for 1% (n=152) of the total comments received during scoping.

Representative Quotations
"Go elsewhere! We all moved here for pristine environs. Not an invasion by the military!"

"Please do not pursue this new place to train your service members in low flying helicopter use. We are a very rural valley peopled with passionate environmentalists who will not take this new challenge to our peaceful way of life sitting down. I will fight, I vote and I am adamantly opposed to your proposal."

5.3.5 Out of Scope
A very small number of comments (<1%, n=36) were received that were out of scope. Out of scope comments include those that were not related to the project. Comments were received with noise complaints for current aviation operations out of JBLM and other Army proposed actions. Also, comments were provided with feedback for projects proposed by other branches of the military (e.g. US Navy). No representative quotations are provided for this category since they were unrelated to the proposed action.

6.0 EA PREPARATION SCHEDULE

The premise for NEPA is that providing information to the decision-maker and the public would improve the quality of final decisions concerning the environmental effects of federal actions. All persons who have a potential interest in the proposed action, including minority, low-income, and Native American groups, are urged to participate in the Army's environmental impact analysis process conducted under NEPA. At this time, the Army anticipates the need to prepare a draft and final EA.

The formal opportunity to comment involves a 30-day period for public review of the draft EA. The Notice of Availability (NOA) of the draft EA would be mailed electronically and/or hard copy to known stakeholders and interested parties. The NOA would also be publicized on the JBLM website and in local newspapers and libraries. The draft EA would be available for download from the JBLM website (http://www.lewis-mcchord.army.mil/publicworks/sites/envir/eia.aspx). Within the comment period public open houses would occur within or near the proposed training areas. The meeting dates, times and locations would be publicized on the JBLM website and in local newspapers and libraries.

The Army would review comments received during the public comment period to determine whether the proposed action has potentially significant impacts that could not be mitigated to less than significant. If impacts are found to have the potential to be significant after the application of mitigation measures, the Army would be required to publish a notice of intent to prepare an EIS in the *Federal Register*. If the decision-maker selects the proposed action and the EA determines that there would be no significant environmental impacts, a Finding of No Significant Impact (FNSI) would be published. The approved FNSI would be made available to the public prior to initiation of the proposed action, in accordance with 40 CFR 1506.6. The distribution of the FNSI would occur at least 30 days prior to initiation of the proposed action,

with copies sent to any agencies, organizations, and individuals who have expressed interest in the project. A decision on whether to proceed with the proposed action also depends on permission from landowners to utilize the proposed training areas and HLZs. The major milestones, including those for preparing the EA, are shown in Table 6-1.

Table 6-1. EA Milestones

Major Milestone	Target Date
Public Scoping Period	1 July – 30 July 2015
Public Scoping Period Extension	31 July – 3 November 2015
Draft EA Issued	Summer 2016
Public Meetings	Summer 2016
Comments on Draft EA Due	Summer 2016
Final EA Issued	Winter 2016/2017

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Appendix A: Scoping Postcard

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

NOTICE OF PUBLIC SCOPING

NORTHWEST AVIATION OPERATIONS
OFF-BASE HELICOPTER TRAINING AREAS

The Aviation Division within the Directorate of Plans, Training, Mobilization, and Security at Joint Base Lewis-McChord (JBLM) proposes to establish three off-base helicopter training areas and one mountain training area. The U.S. Army is the lead Federal agency for the proposed action. The proposed training areas would support training operations stationed out of JBLM, but would be located off-base within Washington State. Training operations would be conducted using aircraft to include the MH/UH-60 Black Hawk, AH-64 Apache, and MH/CH-47 Chinook. The training areas would be available for use day and night, 24 hours a day, 365 days a year, with the exception of Federal holidays.

The Army has prepared a scoping document which is intended to provide interested parties the proposed scope of the Environmental Assessment and to seek additional information pertinent to this analysis. If you have any information that would assist us in conducting an accurate and thorough analysis of the project-specific and cumulative effects associated with the proposed project, you are encouraged to submit them during the scoping period, July 1, 2015 to July 30, 2015. The scoping document including project maps, and a comment form are located at:

http://www.lewis-mcchord.army.mil/publicworks/sites/envir/eia.aspx

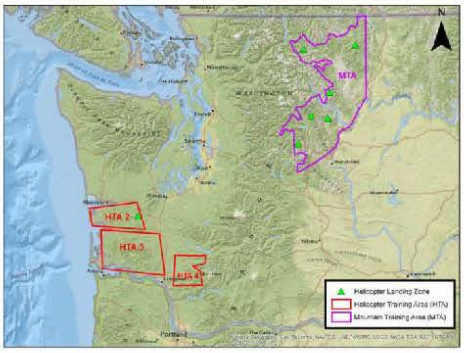
For further information, or to submit comments, send an email to usarmy.jblm.imcom.list.dpw-eis@mail.mil
or write to: **DEPARTMENT OF THE ARMY**
DIRECTORATE OF PUBLIC WORKS
ATTN ENVIRONMENTAL DIVISION (NEPA)
2012 LIGGETT AVE, BOX 339500 MS 17
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

*Comments must be received by **July 30, 2015** to be considered.*

DEPARTMENT OF THE ARMY
PUBLIC WORKS- ENVIRONMENTAL DIVISION
2012 LIGGETT AVE RM 502
BOX 339500 MS 17
JOINT BASE LEWIS-MCCHORD WA 98433-9500

OFFICIAL BUSINESS

Postage Required



32

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

NOTICE OF PUBLIC SCOPING COMMENT PERIOD EXTENSION

NORTHWEST AVIATION OPERATIONS
OFF-BASE HELICOPTER TRAINING AREAS

The Aviation Division within the Directorate of Plans, Training, Mobilization, and Security at Joint Base Lewis-McChord (JBLM) proposes to establish three off-base helicopter training areas and one mountain training area. The U.S. Army is the lead Federal agency for the proposed action. The proposed training areas would support training operations stationed out of JBLM, but would be located off-base within Washington State. Training operations would be conducted using aircraft to include the MH/UH-60 Black Hawk, AH-64 Apache, and MH/CH-47 Chinook. The training areas would be available for use day and night, 24 hours a day, 365 days a year, with the exception of Federal holidays.

The Army has prepared a scoping document which is intended to provide interested parties the proposed scope of the Environmental Assessment and to seek additional information pertinent to this analysis. If you have any information that would assist us in conducting an accurate and thorough analysis of the project-specific and cumulative effects associated with the proposed project, you are encouraged to submit them during the scoping period, which has been extended through September 4, 2015. The scoping document including project maps, and a comment form are located at:

http://www.lewis-mcchord.army.mil/publicworks/sites/envir/eia.aspx

To submit comments, send an email to usarmy.jblm.imcom.list.dpw-eis@mail.mil
or write to:

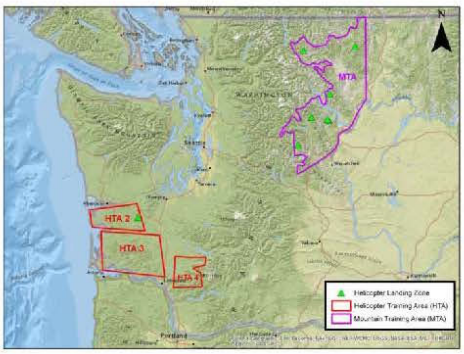
DEPARTMENT OF THE ARMY
DIRECTORATE OF PUBLIC WORKS
ATTN ENVIRONMENTAL DIVISION (NEPA)
2012 LIGGETT AVE, BOX 339500 MS 17
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

*Comments must be received by **September 4, 2015** to be considered.*

DEPARTMENT OF THE ARMY
PUBLIC WORKS- ENVIRONMENTAL DIVISION
2012 LIGGETT AVE RM 332
BOX 339500 MS 17
JOINT BASE LEWIS-MCCHORD WA 98433-9500

OFFICIAL BUSINESS

Postage Required



Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

NOTICE OF PUBLIC SCOPING COMMENT PERIOD EXTENSION

NORTHWEST AVIATION OPERATIONS
OFF-BASE HELICOPTER TRAINING AREAS

The Aviation Division within the Directorate of Plans, Training, Mobilization, and Security at Joint Base Lewis-McChord (JBLM) proposes to establish three off-base helicopter training areas and one mountain training area. The U.S. Army is the lead Federal agency for the proposed action. The proposed training areas would support training operations stationed out of JBLM, but would be located off-base within Washington State. Training operations would be conducted using aircraft to include the MH/UH-60 Black Hawk, AH-64 Apache, and MH/CH-47 Chinook. The training areas would be available for use day and night, 24 hours a day, 365 days a year, with the exception of Federal holidays.

The Army has prepared a scoping document which is intended to provide interested parties the proposed scope of the Environmental Assessment and to seek additional information pertinent to this analysis. If you have any information that would assist us in conducting an accurate and thorough analysis of the project-specific and cumulative effects associated with the proposed project, you are encouraged to submit them during the scoping period, which has been extended through November 3, 2015. The scoping document including project maps, and a comment form are located at:

http://www.lewis-mcchord.army.mil/publicworks/sites/envir/eia.aspx

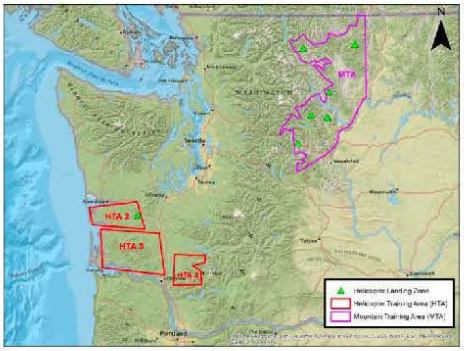
To submit comments, send an email to usarmy.jblm.imcom.list.dpw-eis@mail.mil
or write to: **DEPARTMENT OF THE ARMY**
DIRECTORATE OF PUBLIC WORKS
ATTN ENVIRONMENTAL DIVISION (NEPA)
2012 LIGGETT AVE, BOX 339500 MS 17
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

*Comments must be received by **November 3, 2015** to be considered.*

DEPARTMENT OF THE ARMY
PUBLIC WORKS- ENVIRONMENTAL DIVISION
2012 LIGGETT AVE RM 302
BOX 339500 MS 17
JOINT BASE LEWIS-MCCHORD WA 98433-9500

OFFICIAL BUSINESS

Postage Required



34

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Appendix B: Scoping Newspaper Display Advertisement

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

NOTICE OF PUBLIC SCOPING

NORTHWEST AVIATION OPERATIONS OFF-BASE HELICOPTER TRAINING AREAS

The Aviation Division within the Directorate of Plans, Training, Mobilization, and Security at Joint Base Lewis-McChord (JBLM) proposes to establish three off-base helicopter training areas and one mountain training area. The U.S. Army is the lead Federal agency for the proposed action. The proposed training areas would support training operations stationed out of JBLM, but would be located off-base within Washington State.

The Army has prepared a scoping document which is intended to provide interested parties the proposed scope of the Environmental Assessment and to seek additional information pertinent to this analysis. If you have any information that would assist us in conducting an accurate and thorough analysis of the project-specific and cumulative effects associated with the proposed project, you are encouraged to submit them during the scoping period, **July 1, 2015 to July 30, 2015**. The scoping document including project maps, and a comment form are located at:

http://www.lewis-mcchord.army.mil/publicworks/sites/envir/eia.aspx

For further information, or to submit comments, send an email to **usarmy.jblm.imcom.list.dpw-eis@mail.mil**
or write to: **DEPARTMENT OF THE ARMY**
DIRECTORATE OF PUBLIC WORKS
ATTN ENVIRONMENTAL DIVISION (NEPA)
2012 LIGGETT AVE, BOX 339500 MS 17
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

NOTICE OF PUBLIC SCOPING COMMENT PERIOD EXTENSION
NORTHWEST AVIATION OPERATIONS
OFF-BASE HELICOPTER TRAINING

The Aviation Division within the Directorate of Plans, Training, Mobilization, and Security at Joint Base Lewis-McChord (JBLM) proposes to establish three off-base helicopter training areas and one mountain training area. The U.S. Army is the lead Federal agency for the proposed action. The proposed training areas would support training operations stationed out of JBLM, but would be located off-base within Washington State.

The Army has prepared a scoping document which is intended to provide interested parties the proposed scope of the Environmental Assessment and to seek additional information pertinent to this analysis. If you have any information that would assist us in conducting an accurate and thorough analysis of the project-specific and cumulative effects associated with the proposed project, you are encouraged to submit them during the scoping period, which has been extended through **September 4, 2015**. The scoping document including project maps, and a comment form are located at:

http://www.lewis-mcchord.army.mil/publicworks/sites/envir/eia.aspx

To submit comments, send an email to
usarmy.jblm.imcom.list.dpw-eis@mail.mil
or write to: **DEPARTMENT OF THE ARMY**
DIRECTORATE OF PUBLIC WORKS
ATTN ENVIRONMENTAL DIVISION (NEPA)
2012 LIGGETT AVE, BOX 339500 MS 17
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

NOTICE OF PUBLIC SCOPING COMMENT PERIOD EXTENSION
NORTHWEST AVIATION OPERATIONS
OFF-BASE HELICOPTER TRAINING

The Aviation Division within the Directorate of Plans, Training, Mobilization, and Security at Joint Base Lewis-McChord (JBLM) proposes to establish three off-base helicopter training areas and one mountain training area. The U.S. Army is the lead Federal agency for the proposed action. The proposed training areas would support training operations stationed out of JBLM, but would be located off-base within Washington State.

The Army has prepared a scoping document which is intended to provide interested parties the proposed scope of the Environmental Assessment and to seek additional information pertinent to this analysis. If you have any information that would assist us in conducting an accurate and thorough analysis of the project-specific and cumulative effects associated with the proposed project, you are encouraged to submit them during the scoping period, which has been extended through **November 3, 2015**. The scoping document including project maps, and a comment form are located at:

http://www.lewis-mcchord.army.mil/publicworks/sites/envir/eia.aspx

To submit comments, send an email to
usarmy.jblm.imcom.list.dpw-eis@mail.mil
or write to: **DEPARTMENT OF THE ARMY**
DIRECTORATE OF PUBLIC WORKS
ATTN ENVIRONMENTAL DIVISION (NEPA)
2012 LIGGETT AVE, BOX 339500 MS 17
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

38

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Appendix C: Comment Form

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

PUBLIC COMMENT FORM

Department of the Army
Public Scoping for
NORTHWEST AVIATION OPERATIONS
OFF-BASE HELICOPTER TRAINING AREAS
JOINT BASE LEWIS-McCHORD, WA

Public participation is an important part of the environmental impact analysis process. The Army has prepared a scoping document which is intended to provide the interested parties the proposed scope of the Environmental Assessment and to seek additional information pertinent to this analysis. If you have any information that would assist us in conducting an accurate and thorough analysis of the project-specific and cumulative effects associated with the proposed project, you are encouraged to submit them during the scoping period, July 1, 2015 to July 30, 2015. You may use the space provided below and mail this card to the address specified on the back of this form, or send your comments/questions by email to usarmy.jblm.imcom.list.dpw-eis@mail.mil

Please Print:

Name	Organization (If applicable)		
Street Address	City	State	Zip Code
Daytime Phone Number (optional)	Email address (optional)		

Please indicate any questions or concerns you have about the project on the lines below. If you need more space, include additional page(s).

Thank you for your time and interest in the proposed Off-Base Helicopter Training Areas.

40

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Please fold in thirds, staple, and affix postage.

DEPARTMENT OF THE ARMY
PUBLIC WORKS
ENVIRONMENTAL DIVISION (NEPA)
2012 LIGGETT AVENUE, BOX 339500, MS 17
JOINT BASE LEWIS-McCHORD, WA 98433-9500

Postage required

DEPARTMENT OF THE ARMY
DIRECTORATE OF PUBLIC WORKS
ATTN: ENVIRONMENTAL DIVISION (NEPA)
2012 LIGGETT AVENUE, BOX 339500, MS 17
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

06-024

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Appendix D: Form Letters

Note: Formatting and spacing has been adjusted for readability.

Form Letter #1

The U.S. Army is seeking permission to fly helicopters over a wide and wild stretch of the North Cascades in Washington state, including above congressionally designated wilderness areas. This would be a gross violation of the 1964 Wilderness Act!

The proposed mountain training area encompasses hundreds of miles of trails, two scenic byways, many miles of rivers and streams and dozens, if not hundreds, of pristine mountain lakes. The region is a mecca for hikers, backpackers, boaters, mountain bikers, anglers, and other recreation enthusiasts. The prospect of Apache, Blackhawk and Chinook military helicopters using the region as a training area "day and night, 24 hours a day, 365 days a year, with the exception of Federal holidays," is wholly incompatible with the values that make the North Cascades such a treasured landscape.

The proposal also designates eight areas in the region that the Army would use to practice landing maneuvers—one of those areas lies just within the Alpine Lakes Wilderness Area, west of the town of Leavenworth. Under the 1964 Wilderness Act, most motorized equipment is not allowed in wilderness areas. Another landing site would be located atop a ridge less than a mile from the Pacific Crest Trail.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #2

It's important that the army and other military personal receive excellent training and preparation. However, the Northwest Aviation Operations Off-base Helicopter Training proposal is misguided, risky and inappropriate as currently proposed, with a high potential to negatively impact sensitive ecosystems, threatened or recovering wildlife and human visitors and users in the North Cascades. Please reject this proposal.

Low elevation flights from JBLM may degrade or render inhospitable habitat protected within Late-Successional and Riparian Reserves on the Mount Baker-Snoqualmie, Gifford Pinchot, and Okanogan-Wenatchee national forests, habitat protected within Spotted Owl Emphasis Areas and around spotted nest sites on state forests, critical habitat or recovery areas designated under the Endangered Species Act, lands identified as Priority Habitat by the state, Inventoried Roadless Areas, and suitable mountain goat habitat. These areas are essential to the protection and recovery of Washington's wildlife, and should be avoided by aircraft and excluded from training activities.

As proposed, Mountain Training Areas are located in areas inhabited by Canada lynx and wolverine, and within the North Cascades Grizzly Bear Recovery Area where recovery efforts are underway. These animals use high elevation areas for denning, reproduction, and foraging. Mountain goats, which have declined statewide, also occur and overwinter in these high-elevation environments. Spotted owls inhabit forests adjacent to training areas within travel zones. Disturbance near dens or other habitat areas has been shown to displace or disrupt grizzly bears, wolverines, mountain goats and spotted owls, and should be avoided.

The Helicopter Training Areas in southwest Washington occur on or proximate to DNR-managed state lands that are critical to marbled murrelet recovery. Marbled murrelets are extremely sensitive to human disturbance, and the proposed training would likely disturb marbled murrelets during nesting season. Murrelet populations also face risk of aircraft collision during daily migrations from forest nesting grounds and foraging areas in the Pacific. Marbled murrelet habitat and areas between murrelet nesting and foraging areas should be avoided.

High elevation sub-alpine and alpine areas in the North Cascades are highly sensitive to disturbance, with thin soils and short growing seasons. Intense disturbance from landing and training actions may cause significant and irreversible damage.

We empathize with the need to adequately train our men and woman in uniform. However, the wilderness and wildlands of the North Cascades is not the appropriate place to do it in this manner.

In addition to likely legal violations of The Wilderness Act of 1964, this proposal is controversial and could potentially and significantly harm iconic wildlife. It should be rejected outright or

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

subject to additional public meetings and deeper scrutiny through an Environmental Impact Statement

44

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #3

I just learned today (July 26th) that you are accepting public comment until July 31st. That's not much time. Our community is just learning of your plans to have helicopters flying 365 days a year, often at low altitudes, over our area that is very dependent on tourists and recreational visitors. It is also surrounded by precious wilderness area.

Please consider the following suggestions with regard to your proposed use of Federal land for helicopter training in Eastern Washington.

1. Schedule public meetings in the following communities to present your proposal:
Chelan
Entiat
Leavenworth
Cashmere
Lake Wenatchee/Plain
Wenatchee

2. Helicopters are noisy! They disrupt the serenity of peaceful, tranquil rural communities.

3. This is an area of heavy outdoor recreational use. Have those who use the backcountry had adequate time to respond to your request for comment?

4. Wilderness areas: Has the impact on endangered species been evaluated? How disruptive will the noise be to wolf migration into the area? How will the increase in noise levels and frequency impact owl habitat? A full environmental impact statement should be prepared.

5. Tourist-based economy: The increase in noise level will impact tourist activity in the area and likely cause a decrease in business for those businesses that cater to the tourist trade. What will be the economic impact to these communities?

6. Residents: Living with helicopter noise will likely cause fewer people to consider moving to the area; how will this increased noise level impact real estate values?

7. Helicopters crash; the Army uses explosive weapons; what is the likelihood of increased fire activity in the forests?

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #4

1. The dense part and full-time population within their potential flight corridor, when you combine Plain, Chiwawa Pines, 1000 Trails, Shugart Flats, Fish Lake and Lake Wenatchee properties. Moreover, the Army should consider that this is the primary mountain recreation area for the Seattle area population. Leavenworth, Lake Chelan and Winthrop are all important recreational destinations. These areas depend a great deal upon tourist dollars for their local economies. The threat of constant flight noise in these prime recreational areas will drive tourists to other areas, with negative effects on the economies and the livelihoods of the many people who are employed through the tourist and outdoor recreation economy.

2. The dramatic impact on these residents' "quiet enjoyment" from low-flying helicopters (Apaches, Chinooks, etc.) operating 365 days per year. During winter months, the report states that helicopters would tend to fly at low elevations (500 – 700 feet), thus dramatically affecting the peace and quiet of these neighborhoods and campgrounds. While training exercises are defined as lasting four hours, they could occur at any time of day and they are anticipating night maneuvers.

3. The lack of detail in the project description about potential future use of the landing area for troop training, not just "touch and go" landings.

4. The likely disturbance of wildlife utilizing our lake and stream corridors, which are the likely travel routes for helicopters, including threatened and endangered species. Also, wildlife utilizing the small lake at site MTA 1-3 will be directly and adversely affected in a dry highland area where lakes are scarce.

5. The stated possibility that the airport at Lake Wenatchee would be used for refueling or "emergency" landings, thus bringing a high number of new low elevation flights in close proximity to population areas and intensifying this low-intensity airport.

6. Incompatibility of the proposal with the multi-use policy for our National Forests; Army use/noise would tend to dominate other uses like camping, hiking and wildlife observation.

7. Our property value will be effected.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #5

1. We all support a properly trained and ready military to defend our country when needed. However, we can and should meet that goal without having to sacrifice public investments in Wilderness areas, conservation lands, recreational opportunities and wildlife and their habitat.

2. Remove all areas of the Alpine Lakes' Wilderness from the proposal. Helicopter landing and over flights in designated Wilderness areas is a violation of federal law. Section 4(C) of the Wilderness Act of 1964 clearly states that in a Wilderness area there will be, "no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft..."

3. Remove all helicopter landing sites that are sited on or adjacent to important recreation trails. Of the seven proposed helicopter landing sites proposed in the North Cascades four are located directly on top of established Forest Service recreation trails including Devil's Backbone Trail, Blue Creek Trail and the Martin Creek Trail.

4. Slow down their expedited schedule to ensure that public comments can be incorporated. The Army has suggested a unrealistic approval schedule under the National Environmental Policy Act that would take just four months from initiation to final approval. A normal public process with controversial issues such as this would take at least 8 months to a year to complete.

5. Analyze the impact to Wildlife and their Habitat from Helicopter Training Exercises and Movements. The North Cascades and Southwest Washington are critically important ecosystems for plants and animals in Washington State. Including a number of endangered and threatened species, including the salmon, steelhead and bull trout, northern spotted owl, marbled murrelet, Canada lynx, wolf, and grizzly bear. Noise disruption from aircraft travel, especially from low elevation flight, can disrupt behavior and render habitat unsuitable during critical breeding periods and at other times, increasing mortality risk and threatening viability.

6. Analyze the social and economic impact to local residents and communities. Noise and unpredictability of when training exercises will occur or where helicopters will be flying threaten the quality of life of rural residents that live near the North Cascades proposed training area. Additionally, impacts to recreational opportunities on the Okanogan Wenatchee National Forest threaten to disrupt the economic benefit to local communities from tourism.

7. Potential impacts merit analyzing this proposal as an Environmental Impact Statement (EIS) rather than and Environmental Assessment (EA). This proposal is very controversial as evidenced by initial news stories from a half dozen local papers. The potential impacts to recreational opportunities, long standing conservation laws, critical wildlife habitat and local communities calls for a more in depth analysis under the National Environmental Policy Act - an Environmental Impact Statement.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #6

Environmental Analysis

* The Army has stated its intent to do only an EA, rather than an Environmental Impact Statement (EIS). The proposed action is clearly a "major federal action significantly affecting the quality of the human environment," and thus requires an EIS rather than an EA. Also, the Army should fully consider a range of alternatives, not just the one currently outlined.

Improper use of National Forest Lands

* At no time has Congress authorized generally the use of national forests for military use, nor does any statute specifically authorize the use of the Okanogan or Wenatchee national forests for such purpose.
* Off-Base helicopter training is not a public purpose for which national forests are established and administered.
* The National Forest Management Act ("NFMA") requires that "permits . . . for the use and occupancy of National Forest System lands shall be consistent with the land management plan[s]." The Wenatchee National Forest's 1990 land and resource management plan ("LRMP") requires that "where a [special] use can be accommodated on private or other land, National Forest land will not be used."

The Wenatchee and Okanogan LRMPs preclude issuing a permit because the use can be accommodated on private or other land.

Recreational Users

* At least three of the areas proposed for Helicopter Training are in very popular areas used by hikers, backpackers, bicyclists and people on horseback as well as outfitter-guide businesses.
* Helicopters landing or doing touchdowns, day or night would have a negative impact on the outdoor experience of all recreational user groups.
* Noise from the helicopters, at close range, can especially spook horses and other stock, causing a potentially life threatening situation for the animals and everyone in proximity to them.

Socio-Economic Issues

* The Methow Valley's primary economy is based on tourism. The project would not offer any financial support to the Valley and would possibly deter people from coming to visit and recreate in the National Forest.

Restricting Access

* The scoping document does not discuss restricting access to proposed training areas, nor does it discuss enforcement or safety measures if the proposed exercises take place. Would signage be placed to keep people out of the area? How would enforcement be accomplished? It would appear that there would have to be restrictions for people's safety when helicopter pilots are performing the exercises.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Wildlife
* At least three of the proposed landing zones (MTA 1-5, 1-6 and 1-7) are located in the heart of habitat for federally listed species including Canada Lynx, Wolverine, and Northern Spotted Owl.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #7

An Environmental Impact Statement is appropriate and needed for this large, expansive, extensive use, precedent setting, complex and far reaching proposal known to be an extremely environmentally significant project and to affect the public health, safety, and welfare in the most extreme sense. I request one be done.

The scoping document must include the requirement for an Environment Impact Statement. The "Scope of Analysis" is too vague to be informative, and the document is full of complexity, unfamiliar terminology, technicality, unfamiliar structural composition, complicated and vague explanations, exhaustive acronyms without ready reference, and is not readily understandable by a non-military, non aviation type person. It also contains an obsolete decibel chart, and allows helicopters to fly below the known safe level for them to land in case an emergency landing (minimum Army recommended level is now 700' and higher; (http://idahostatesman.com/2015/03/29/3724242). I request that the scoping document for the Northwest Aviation Operations Off -Base Lewis-McChord, Washington be redone, and that more time be allowed for comments.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #8

It is clear that a full Environmental Impact Statement is needed for the Army to conserve valuable national park and public lands resources while also finding better alternatives for its training needs

Avoid helicopter training around iconic trails, like the Pacific Crest National Scenic Trail, as well as protected areas, like the Alpine Lakes Wilderness and North Cascades National Park.

Use existing training areas as much as possible before considering new places like the North Cascades.

Minimize helicopter overflights of the North Cascades on the way to any training areas

Consider the risk of fire from helicopter accidents and emergency response, especially in rugged mountains at night with inexperienced pilots

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #9
I recommend and support Alternative I: the NO ACTION Alternative !!!

July 2014, Methow Valley and Okanogan County residents endured and barely survived a fierce and violent wildfire that burned and charred 268,764 acres of Washlngton state forests, national forests and private property, including 239 homes and 314 structures valued at $28.SOO.OOO. In addition, hundreds of cattle and thousands wildlife animals were scorched and killed. Damage to roads, water systems and power lines cost $35.000,000 to repair. Suppression of this historic Carlton Complex Fire cost Federal agencies and the Department of Natural Resources $94.400.000.

July 2015, the Methow Valley in Okanogan County is still surrounded by the same 5 . 000. 000 acres of volatile forest lands where very high temperatures, blustery winds, and exceedingly dangerous drought conditions still persist. By selecting this forested Sawtooth Wilderness area for your proposed JBLM Off-Base Helicopter Training Area, you are creating a seriously high risk situation which can readily become another devastating loss of Washington state and national forest lands and personal property, and another $159,000,000 expense to state and national taxpayers.

An out-of-control, raging forest fire can be ignited by one spark from one helicopter, or a carelessly tossed cigarette, or an engine back-fire, or a mechanical failure and a resulting accident.

How will you suppress a forest fire in the middle of the wilderness that bas no road access and is miles from fire- fighting equipment or man power?
How do you "mitigate" the loss of millions of acres of public lands? You can't.
This proposal is not a wise or practical choice.

What safety precautions are you proposing to protect citizens who frequent the forested lands of your proposal?

This proposed Helicopter Trajning Area is used by hikers, backpackers, bicyclists, and people on horseback, all of whom are endangered by this full time training.

Noise from helicopters at close range, can easily spook horses and other stock, causing a potentially life- threatening situation for animals and everyone in the proximity of the training area

This proposal is not a wise or practical choice.
Congress has never authorized generally the use of the national forests for military use, nor does any statute specifically authorize the use of the Okanogan and Wenatchee National forests for such purpose.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

This proposed action is clearly a "major federal action significantly affecting the quality of the human environment," and this requires an EIS rather than an EA.

I request that the Army provides a local public hearing so that you can hear our voices and so that you can clearly understand that this proposal is not a wise or practical choice.

I recommend and support Alternative 1: the NO ACTION Alternative !!!

53

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #10

Site MTA 1-4 (the proposed site within the Alpine Lakes Wilderness) must be removed from further consideration, since it lies within a designated Wilderness. The Wilderness Act prohibits the landing of aircraft in Wilderness.

Further environmental review for this project must thoroughly analyze noise and other impacts on any Wildernesses or National Parks near the other proposed helicopter landings.

Any military training exercise—by air, on land, installing instrumentation, etc.—within designated Wilderness is inappropriate and should be prohibited.

The Army should follow Federal Aviation Administration (FAA) guidelines to protect Wilderness by keeping overflights at least 2,000-feet above ground level.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #11

The fundamental policy question of whether this proposed "Off Base Helicopter Training" should be implemented is addressed by the first point below-the Army & DoD must complete an honest analysis of all existing, additional military bases where this training should be completed – on base!

This analysis should be completed before proceeding with further NEPA compliance on the proposals here Washington. There is no justification for the further militarization of Western Washington civilian areas; the military has enough land for its training and operations. It is therefore an erroneous conclusion for the military to say that for the Scoping Document "only comments i entifying the impacts of the proposed "'Off Base Helicopter Training'" are valid.

In addition, the Scoping Document does not address the distinction between regular Army operations for the "Off Base Helicopter Training" and the operations of Special Forces which apparently also uses JBLM as an operational base. The Scoping Document must be considered as only a portion of the total impact on the training areas since JBLM does not provide direction to Special Operations Helicopter teams. The impacts when the two are combined must also be considered in further NEPA compliance.

In essence, there are many topics that must be addressed with civilians and non-military lands kept in the forefront before adoption of this proposed expanded combat helicopter training.

As the following is reviewed, one important premise is that flight approaches or geographic/populated areas near to the training areas appear to be subject to the same issues as within the training areas- and the addition of Special Operations forces. There is not precise boundary when flying and for example, birds, wildlife, drones do not respect artificial lines.

This proposal:

• Ignores Other Military Bases for Training Sites It would expand militarization of civilian areas in Washington. Rather than using existing military bases for personnel training, this proposal rationalizes that the Army is limited via budget and therefore has to use "off base helicopter training".

IMPACT: JBLM HAS OVER 400,000 ACRES, INCLUDING THE YAKIMA FACILITY. THERE ARE MANY OTHER MILITARY BASES WHERE THE TRAINING COULD BE CONDUCTED, WITHOUT USING CIVILIAN AREAS. EVEN BEFORE THE NEPA IS AUTHORIZED, THE DOD MUST INCLUDE A FULL ANALYSIS OF OTHER CURRENT MILITARY LANDS WHERE HELICOPTER TRAINING CAN BE CONDUCTED.

• Violates the Federal Wilderness Act. Section 4(C) of The Wilderness Act of 1964 clearly states that in a Wilderness area there will be, "no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft..." The air space about the Wilderness areas is an integral part of the Wilderness. There will actually be other violations, including noise and exhaust, of

the Wilderness Act if the Mountain Training Area (MTA) is adopted. IMPACT: THE MTA WOULD BE A "PER SE" VIOLATION AND CANNOT BE MITIGATED-THE MTA MUST BE ELIMINATED!

• Violates Washington State Noise Laws. Allowing flights 24/7 as low as 25' or 3,000' will disturb people and wildlife. Unless above 3,000' the proposal violates Washington's Dept of Ecology (DOE) as well as Thurston County's Maximum Permissible Sound Levels.
IMPACT: THE PROPOSED FLYING ELEVATIONS WOULD BE "PER SE" VIOLATIONS CANNOT BE MITIGATED-IT MUST BE AVOIDED-NO FLIGHTS BELOW 3,000' ELEVATION OVER ACTUAL GROUND!

Violates the Intent of the NEPA. The proposed approval process of four months under the National Environmental Policy Act (NEPA) does not allow for a full analysis of the proposal by communities nor by JBLM. It appears to be an attempt to adopt the expanded areas without adequate legal, environmental or community input. Therefore, it would open the US Army to more expense due to lawsuits from citizens and community groups.

IMPACT: FOR THIS PURPOSE, AN EXPEDITED PROCESS TO COMPLETE A NEPA REPORT VIOLATES NEPA. USE THE STANDARD TIMETABLE.

• Violates the US Constitution, 5th Amendment.
The Fifth Amendment to the Constitution says "nor shall private property be taken for public use, without just compensation." The federal government, the DoD, US Army, nor JBLM have avigation easements for the proposed training areas and the wide approach areas.

• Would Increase Carbon Emissions & Dramatically Contribute to Climate Change These training areas are newly proposed and the number of helicopters stationed at JBLM (both regular and Special Ops) has increased to more than 160 permanently
stationed-not including other h/c designated as classified aircraft and temporary inbound h/c. Thus, during the last couple of years there have been an increased number of flights from JBLM-if this proposal is adopted, even in revised form, there will be a dramatic increase in h/c operations from JBLM over the coming years.

As a result, since the increase, there are increased carbon emissions. What will be the added carbon emissions as a result of a) all the helicopters stationed at JBLM and b) what will be the carbon footprint over the training areas, esp HTA2, HTS3, AND HTA4?

IMPACT: THE SCOPING DOCUMENT DOES NOT ADDRESS IMPACT OF INCREASED CARBON EMISSIONS, THERE IT MUST BE PART OF THE FINAL NEPA REPORT.

• Increases Bird & H/C Accidents; Impact Pacific and Local Flyways Training areas and Flyways don't mix. The proposed training areas will interrupt several flyways, including, but not limited

to, the Pacific Coast Flyway, Lincoln Creek, Chehalis River, Bowerman Basin, Columbia River, and others.

Since the proposed training areas in SW Washington include these significant avian flyways there will many more collisions of h/c and birds. This combined with more drone collisions portend increased danger for h/c crashes in both populated areas in or near the training areas and forest fires during the coming warmer and drier summers.

• Increased Drone Collisions With higher use of drones by individuals, farmers, foresters, based on the FAA rules of allowing a 400' elevation level for drones, with h/c flying under this level, there will be a dramatic increase in possible h/c crashes.

Combined with more bird collisions portend increased danger for h/c crashes in both populated areas in or near the training areas and forest fires during the coming warmer and drier summers.

Increase Risk of Forest & Brush Fires
With NOAA projecting drier and warmer summers in Washington, the increased flights during dry months will increase fire risks from the H/C-especially with more collisions with birds and drones. The proposal does not address how JBLM would decrease or mitigate this risk.

Wildlife Degradation
Loud helicopters flying at low elevations and landing, and must be avoided in wildlife habitat, especially near the Gifford Pinchot NF, Goat Rocks Wilderness, Mt St Helens area, and Mt Adams Wilderness, all the Wildlife Refuges in SW Washington, on the Columbia, Cowlitz, Chehalis, and other rivers, plus Grays & Willapa Harbors. Scientists have demonstrated that wildlife are greatly affected by noise and activity, especially during breeding periods.

• Negatively Impacts Rural and Small Town Communities
In or near the proposed training areas are many small communities, including tribal lands. Violations of noise, flight elevation, are current problems. Since the people in the areas are dramatically disturbed by JBLM h/c now, and will be in the flight approach area next to the training areas, these disturbances will continue to increase under the proposal and are not acceptable!

• Negatively Impacts Tourism & Recreation Tourism will be impacted, with helicopters @ 25' elevation, 24/7. Areas that will be particularly affected include:

- Grays Harbor area, especially Westport to Grayland; Annual bird migrations
- Mt St Helens area including Riffe Lake, Silver Lake, Lakes Merwin and Yale, Lake, and the access to St Helens,

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

- Columbia River from near Longview to Illawco. o Willapa Harbor All these areas as well as many others will be subject to these low flying helicopters, scarring tourists and residents alike.

• Negatively Impacts Real Estate Values
As with a decrease in residential real estate value in flight paths near airports (esp major and regional), values near the proposed training areas will be negatively impacted –especially with 24/7, 25' elevation flights.

Negatively Affects Agriculture
Ranchers livestock will be affected by low flying h/c, limiting growth and therefore the income of ranchers.

Wildlife Impact
SW Washington has unique, but threatened and endangered avian, reptilian, & mammal species. Low flying flights 24/7 violating DOE's noise levels will create breeding problems and contribute to habitat changes.

While the proposal claims sensitivity to eagles, it totally ignores soaring eagles, hawks, ravens, crows, and other species at all times of the year-and up to 1000' elevation, at least in SW Thurston county. It ignores the spotted owl issue.

As well, a critical matter that is not addressed is that during spring and fall migration periods the impact to migrating birds would be even more devastating.

Private lands & WA State Owned Lands
Even if JBLM got permission to use private lands for its off base h/c training, they are spread out and intermingled with different owners, state owned lands, and federal lands. These lands are still subject to many environmental, noise, and wildlife laws/statutes. Getting permission from a large land owner for off base h/c training will not supersede key policy and NEPA policies.

Rogue JBLM Pilots
JBLM has refused to investigate hundreds of citizen complaints about low flying, noisy helicopters. There are many instances of violations of JBLM, DOE noise levels, and other regulations that remain uninvestigated. Some JBLM personnel try to deny the violations or rationalize violations are those by "rogue/cowboy" pilots and therefore there is nothing to be done.

Compliance with JBLM "Fly Friendly" Policies Separate from the "rogue" pilot topic, JBLM h/c continue to ignore its own "Fly Friendly" and DOE noise rules, as well as other

laws/regulations, including not having avigation easements or aviation rights over private property.

Off-base Helicopter Training Areas
Joint Base Lewis-McChord, Washington
Draft Scoping Report January 2016

Form Letter #12

I am against the JBLM Off-base Helicopter Training Areas proposal for conducting military training maneuvers 365 days a year, 24 hours a day (except federal holidays) at ground level to 500', or sometimes higher or lower for fly-overs, in the Methow Valley and Okanogan County. This training should take place on military bases that have necessary controls, procedures, and services for impacts such as pollution containment equipment, emergency medical personnel and hospitals, base ambulances, maintenance and fire containment equipment and sufficient wa ter; rather than in the public sector. The proposed areas are low income, low population areas with inadequate services, and all would needlessly be more than probably adversely affected and in danger of loss of life, lower property values, environmental degradation, pollution, helicopter crashes and fires, loss of the ability to enjoy the peace, quiet, safety and privacy of their homes and property, and loss of the recreational tourism based economy.

Public outcry against conducting simulated live war mission helicopter training in and/or over the public sector has consistently occurred due to the inherently unsafe nature of this type of training that also requires trainee pilots to disregard normal safety rules in order to accomplish their training and to help protect the pilot and helicopter, but provides no tangible safety for the lives of civilians below or for their property. Danger is further increased for this proposal due to a non-set flight route, unenforceable Fly-Friendly and Best Management Practices Rules, flying at unsafe altitudes, and only an Environmental Assessment requirement with unenforceable conditions. Also, fog, snow, ice, fire particulates, sudden storms would increase unsafe training. I reject mitigation and/or compensation as a means to a Finding of No Significant Impact.

I request tha t no Special Use Permit be issued for this proposed activity, and that the proposal be discontinued. In the event that it is not discontinued, I request that a set-flight route, an end-date, safe altitudes, the conditions for which the alternate sites were rejected, and specific enforceable rules and conditions that protect the public health, safety, and welfare and the total environment be included in a full enforceable Environmental Impact Statement. Pertinent public news, INTERNET, other public/private documentation including the Army, articles, and rules, regulations, and laws are incorporated by reference.

Appendix C: Coastal Zone Management Act Coordination

Appendix D: Endangered Species Act Coordination

Appendix E: National Historic Preservation Act Coordination