

# Joint Base Lewis-McChord (JBLM) Joint Land Use Study (JLUS)



## *Executive Summary*



October 2015

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## Attachments

Outreach Plan (July 2014)  
Existing Conditions Report (September 2015)  
Land Use Compatibility Analysis (September 2015)  
Implementation Plan (September 2015)

# Executive Summary

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## 1. Joint Land Use Study Purpose and Background

### Joint Land Use Study Purpose

The Joint Base Lewis-McChord (JBLM) Joint Land Use Study (JLUS) is a collaborative process among local, state, and regional jurisdictions; the public; federal, state, and regional agencies; and military installations within the South Puget Sound region of the State of Washington. The JLUS presents recommendations for consideration by local and state governments that promote development compatible with military presence and protecting public health, safety, and welfare while also protecting the ability of the military to accomplish its vital training and operational missions presently and over the long-term. The study is designed to create dialogue around complex issues such as land use, economic development, infrastructure, environmental sustainability, and the operational demands and mission changes of military entities. The intent of the study is to highlight common interests such as economic growth, more efficient infrastructure, healthier environments, improved quality of life, and the protection of Department of Defense (DoD) and civilian investments and missions.

The JLUS process emphasizes coordination and communication as a way to strengthen the relationship among the study area partners and to build a framework for successful implementation and monitoring of recommendations around shared goals. The Final JLUS Report provides a series of recommendations to guide future decisions and policy actions by public agencies, military installations, and other partners. Recommendations are not binding, but participants are asked to make a good faith effort to implement those recommendations.

The 2006 OEA Joint Land Use Study Program Guidance Manual (OEA 2006) notes that the “JLUS is produced by and for the local jurisdiction(s). It is intended to benefit both the local community and the military installation...”

The Guidance Manual further defines JLUS program objectives as twofold:

- *“To encourage cooperative land use planning between military installations and the surrounding communities so that future civilian growth and development are compatible with the training or operational missions of the installation; and*
- *To seek ways to reduce the operational impacts on adjacent land.”*

The JBLM JLUS is a strategic plan that provides specific implementation actions to ensure compatible civilian growth and development. The JLUS presents recommendations for consideration by local and state governments that promote compatible development and protect public health, safety, and welfare while also protecting the ability of the military to accomplish its vital training and operational missions currently and over the long term.

## Study partners/process

The JBLM JLUS was made possible through a grant from the DoD Office of Economic Adjustment (OEA) to the City of Lakewood and coordinated by the SSMCP. The study area is a geographically large and diverse region, featuring a complex pattern of land tenure statuses combined with varied economic and resource interests, and multiple operational and mission needs.

To reflect the complexity of the study area, a wide array of partners are involved in the study process, including but not limited to:

- DoD OEA
- JBLM Headquarters and staff
- Washington State Department of Commerce
- Nisqually Indian Tribe
- Thurston Regional Planning Council (TRPC)
- Pierce County
- Thurston County
- City of DuPont
- City of Lacey
- City of Lakewood
- City of Rainier
- City of Roy
- Town of Steilacoom
- City of Tacoma
- Tacoma-Pierce County Chamber
- Tacoma-Pierce County Health Department
- City of Yelm

The JLUS is an inclusive, community-driven process designed to engage residents, local businesses, landowners, and others beyond the list of formal study participants. The JLUS was conducted to identify strategies that enable meaningful input from the broadest possible cross-section of stakeholders and affected communities.

## *JLUS Committees*

JLUS stakeholders are organized into three levels of formal engagement, as follows: the JLUS Subcommittee (Subcommittee) of the SSMCP, the Technical Working Group (TWG), and the Elected Officials Council (EOC). The JLUS was prepared with the input and guidance of these groups.

## *Stakeholder and Public Engagement*

In addition to the input gathered during committee meetings, information was solicited from various stakeholders, Subject Matter Experts (SMEs), and the general public. Individual



interviews were conducted with stakeholders and SMEs, a small group meeting was held with the Nisqually Indian Tribe, and six public open houses were held.

### Study Area

The JLUS study area is defined as the area within 2 miles of the JBLM installation boundary, as shown in Figure 1. The 2-mile study area encompasses the communities of Tacoma, Lakewood, University Place, Steilacoom, DuPont, and unincorporated areas within Pierce County; Lacey, Yelm, Rainier, Roy, and unincorporated areas within Thurston County; and the Nisqually Indian Reservation. Camp Murray, which is home to the Washington National Guard, is within the study area as well. The Yakima Training Center (YTC), which is under the administration of JBLM, is not considered within the study area.

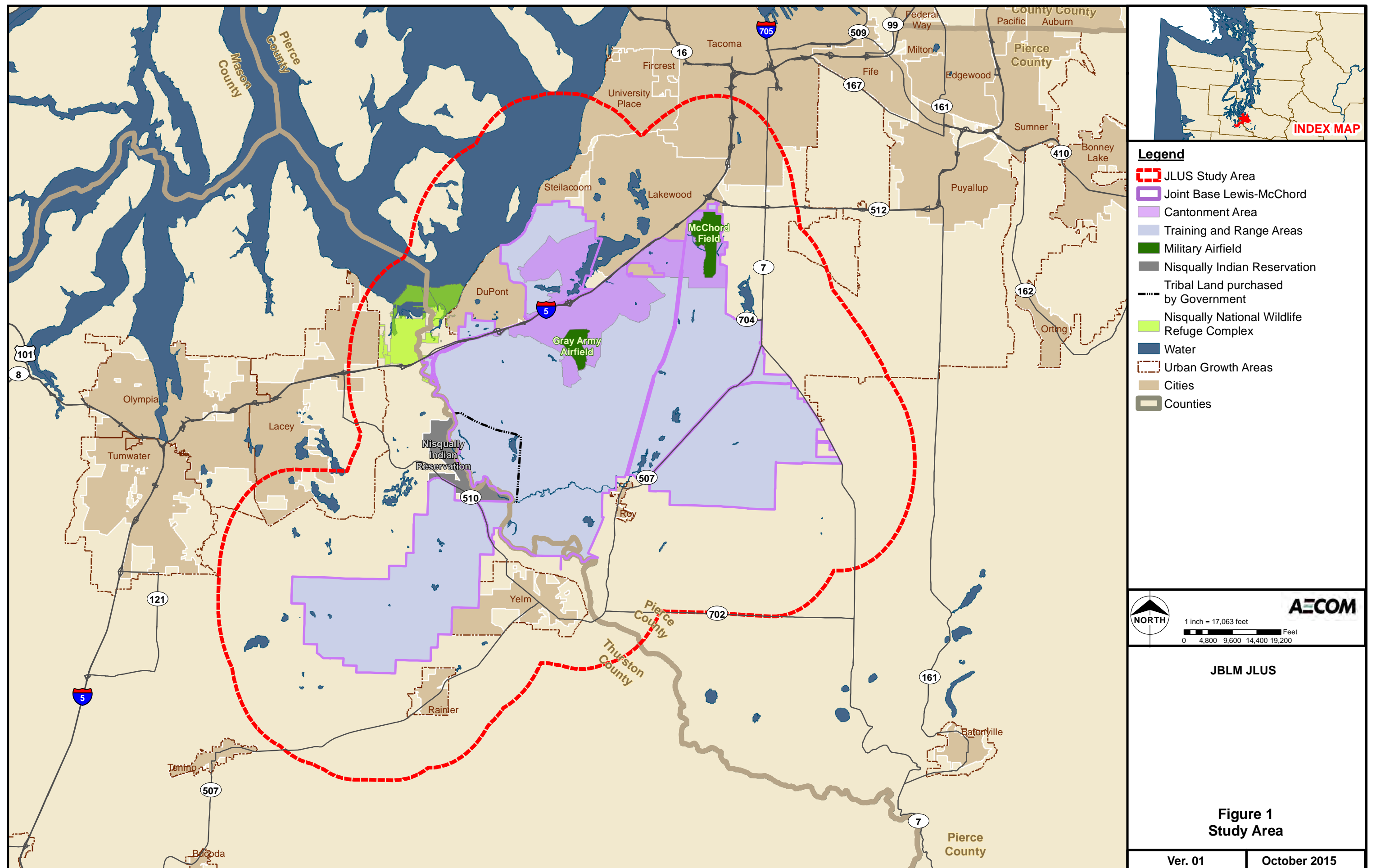
The JLUS study area is situated within the south Puget Sound region and encompasses a diverse geographic area. The study area is bisected by I-5, the major transportation corridor in western Washington. The western portion of the study area is characterized by a high degree of urbanization and population density. The eastern and southern portions of the study area contain rural areas, including agricultural and residential areas, forested and prairie land, several small urban areas, and the Nisqually Indian Reservation. A diversity of natural areas exists throughout the study area, including Puget Sound itself, and the Nisqually National Wildlife Refuge.

### Joint Base Lewis-McChord Profile

JBLM is the largest military installation on the west coast, encompassing over 90,000 acres including the main cantonment area (approximately 10,000 acres) and close-in training ranges (approximately 80,000 acres). JBLM was formally established in 2010, combining Fort Lewis and McChord Air Force Base into a single administrative unit. JBLM is home to the U.S. Army I Corps and 7th Infantry Division, the U.S. Air Force 62nd Airlift Wing, Madigan Army Medical Center, 1st Special Forces Group, U.S. Navy and U.S. Marine Corps elements, and other commands and tenant organizations. JBLM is a major economic engine in Washington State and, as of 2012, is the second largest employer in the state and the largest employer in Pierce County. As of March 2015, the installation serves over 150,000 people on a regular basis, including:

- 40,976 military service members
- 17,521 DoD civilians
- 47,303 military family members
- 32,064 local retirees

JBLM is a premier power projection platform with many strategic advantages, including its location on the Pacific Rim, home to the I Corps and its historical Asia/Pacific focus, deep water port access, global airlift capabilities, and extensive training ranges.



## 2. Land Use Compatibility

The JLUS for JBLM is a strategic plan that provides specific implementation actions to ensure compatible civilian growth and development in the vicinity of JBLM. The JLUS presents recommendations for consideration by local and state governments that promote compatible development and to protect public health, safety, and welfare while also protecting the ability of the military to accomplish its vital training and operational missions both now and over the long term.

This JLUS, in part, builds upon the results of prior studies, including the 2010 JBLM Growth Coordination Plan (GCP) and the 1992 McChord Air Force Base (AFB) and Fort Lewis Joint Land Use Study. Since the 1992 JLUS was completed, the two installations have been combined into a joint base and grown considerably, missions have changed, and significant urban growth has occurred adjacent to or near JBLM. While some specific compatibility issues identified in the previous (1992) JLUS have been resolved and some others are no longer relevant, several persistent issues remain that are being addressed in the 2015 JLUS.

Most current land uses around JBLM do not have negative impacts on military capabilities; however, some ongoing and potential new or future areas of concern were identified through the current JLUS process. Continued collaboration is needed between local jurisdictions and JBLM to develop and implement regional solutions to these issues, and to support the military's ability to carry out its mission requirements today and in the future.

The purpose of the Land Use Compatibility Analysis report is twofold:

- To conduct quantitative and qualitative analyses to identify existing or potential incompatible land uses between nearby communities and JBLM.
- To identify preliminary strategies to address the incompatibilities identified in the analysis.

The Land Use Compatibility Analysis is structured around the following issues:

- Urban growth
- Aircraft safety
- Noise from military operations
- Threatened and endangered prairie species and habitat
- Regional transportation impacts
- Trespass and unauthorized access to JBLM range and training lands
- Communication and coordination

The consultant team developed a five-prong definition of compatibility, based on OEA JLUS guidance, to guide this land use compatibility analysis for the JLUS. For the purposes of the JBLM JLUS, compatible uses are defined as land uses that:

- Do not interfere with military training and operations.
- Include civilian and JBLM land uses that exist harmoniously alongside each other.
- Do not expose people to undue safety risks or nuisance.
- Maintain quality of life.
- Balance safety, growth, and development.

Compatibility issues arise when land uses do not reflect this definition. Compatibility issues can vary depending on types of land uses and exposures, and may evolve over time. The land uses listed below may be incompatible when located near military training and operational activities.

- Noise-sensitive uses, such as housing, schools, medical facilities or places of worship, and uses that cannot be readily sound-attenuated, such as manufactured housing.
- Uses that concentrate people (certain higher residential densities, schools, theaters).
- Uses that can interfere with safe air navigation, such as tall structures; activities that emit electrical currents that may impair aircraft equipment; or activities that throw off excessive light, smoke, or dust and may impair pilot vision.
- Uses that attract birds and other wildlife that can interfere with safe aviation.

The tables below represent a high-level summary of detailed federal guidelines. Decisions about land use compatibility are not always “black and white,” and there are some grey areas where compatibility is influenced by community context, site conditions, or other factors. Federal guidelines referenced in this analysis are advisory. It is the responsibility of local jurisdictions to make policy and regulatory decisions regarding land uses under their jurisdiction.

Table 1 shows the compatibility of various types of land uses in areas where there is risk of aircraft accident, and Table 2 shows the same for areas where there is risk of public nuisance complaint due to noise exposure. Land uses shown in red are categorized as incompatible within the given zones, meaning that they are not recommended based on federal compatibility guidance, and their impacts are significant enough that mitigation may not be effective. Uses depicted in yellow are categorized as conditionally compatible and may warrant mitigation measures, such as noise attenuation or real estate disclosure, to reduce conflicts. Land uses shown in green are categorized as compatible with nearby military operations and training activities.

**Table 1. Land Use Compatibility Summary: Aircraft Safety.**

Land Use	Clear Zone (CZ)	Accident Potential Zone I (APZ I)	Accident Potential Zone II (APZ II)
Single-family Detached	Incompatible	Incompatible	Conditionally Compatible
All Other Residential	Incompatible	Incompatible	Incompatible
Mixed-Use Center	Incompatible	Incompatible	Conditionally Compatible
Light Commercial	Incompatible	Conditionally Compatible	Compatible
Heavy Commercial	Incompatible	Incompatible	Compatible
Light Industrial	Incompatible	Compatible	Compatible
Heavy Industrial	Incompatible	Incompatible	Compatible
Institutional/Public Use	Incompatible	Incompatible	Incompatible

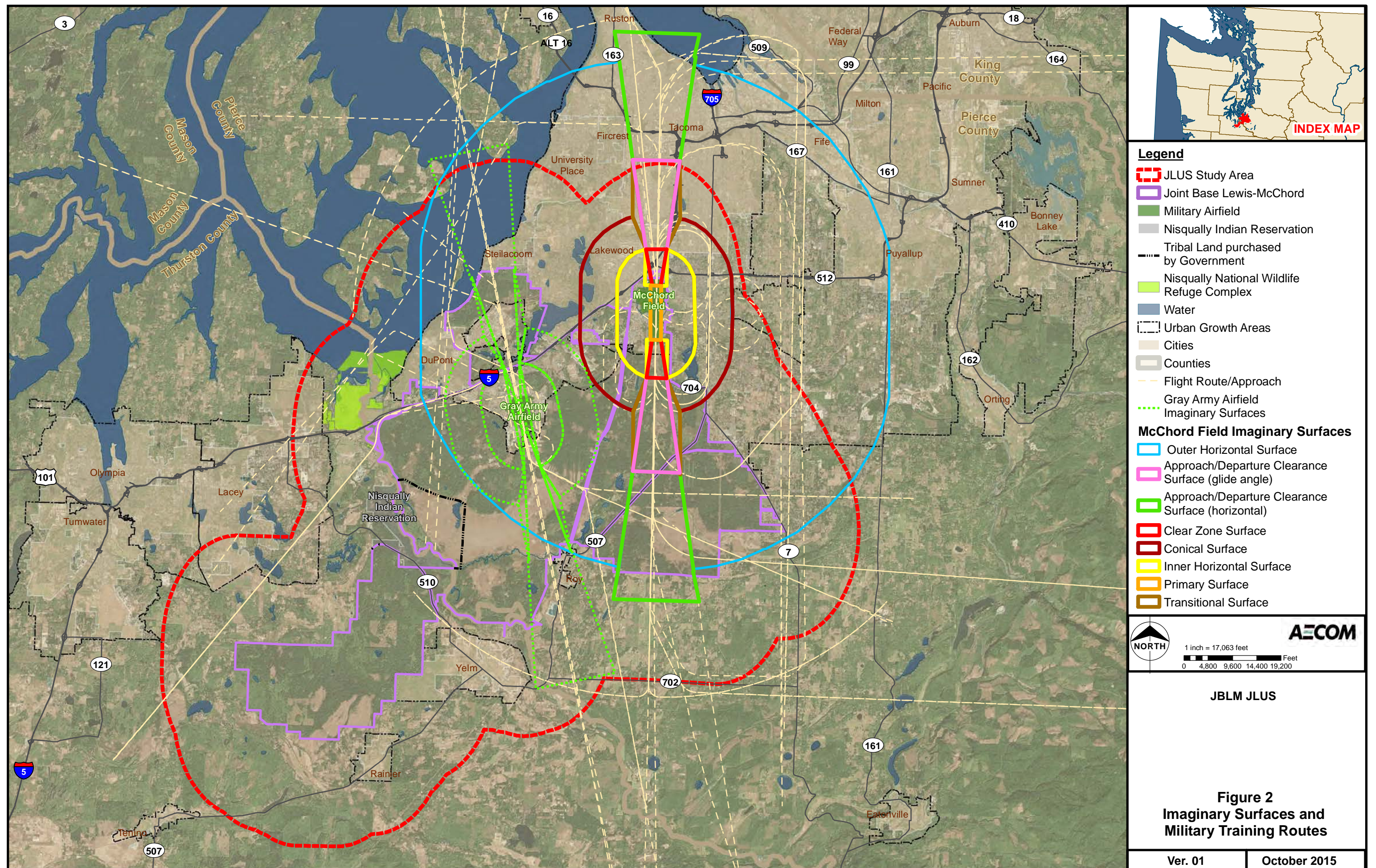
Source: This table summarizes land use compatibility guidance from the Land Use Compatibility Guidelines for APZs (DoD 1977), Department of Defense Instruction 4165.57, Air Installations Compatible Use Zones, The Air Force Handbook 32- 7084 AICUZ Program Manager's Guide (DoD 1999) and UFC 3-260-01.

**Table 2. Land Use Compatibility Summary: Military Operational Noise.**

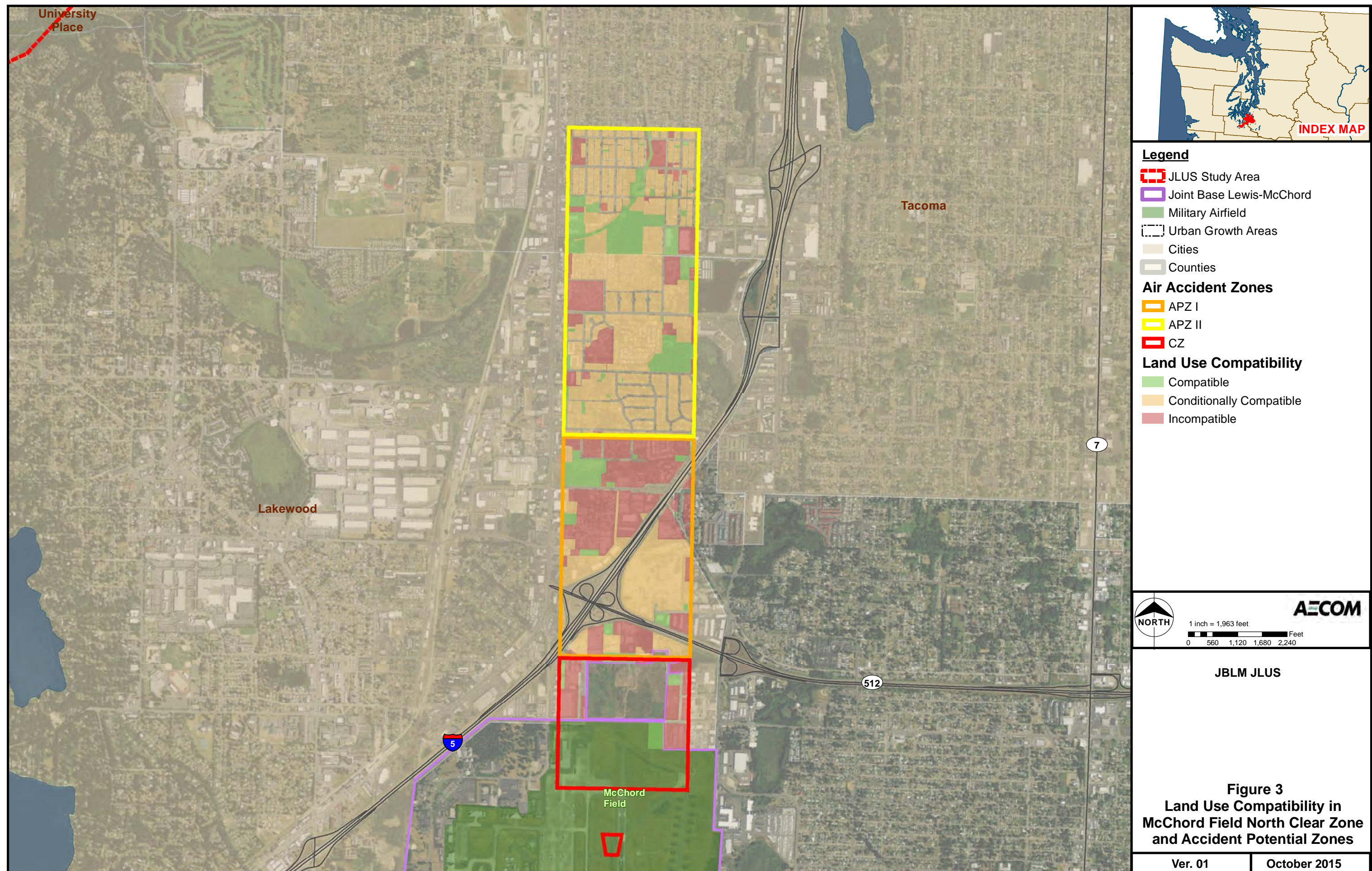
Land Use	Aircraft Noise Zone III: >75 DNL dBA (Not recommended w/ any noise-sensitive uses)	Aircraft Noise Zone II: 65-75 DNL dBA (Normally not recommended with noise-sensitive uses)	Aircraft Noise Zone I: <65 DNL dBA (Generally acceptable with any noise-sensitive uses)	Large Weapon CDNL Noise Zone III: >70 CDNL dBC (Incompatible with noise sensitive uses)	Large Weapon CDNL Noise Zone II: 62-70 CDNL dBC (Normally incompatible with noise-sensitive uses)	Large Weapon CDNL Noise Zone I: <62 CDNL dBC (Compatible with most noise-sensitive uses)	JBLM Firing Range Large Weapon PK15(met) Noise Zone: 115-130 dBP (Noise-sensitive uses are discouraged)	JBLM Firing Range Large Weapon PK15(met) Noise Zone: >130 dBP (Noise-sensitive uses are strongly discouraged)
All Residential	Incompatible	Incompatible	Conditionally compatible	Incompatible	Incompatible	Conditionally Compatible	Incompatible	Incompatible
Commercial	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible
Industrial	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible
Institutional /Public Use	Incompatible	Incompatible	Conditionally compatible	Incompatible	Incompatible	Conditionally Compatible	Incompatible	Incompatible

Source: This table summarizes land use compatibility guidance from several sources, including The Federal Interagency Committee on Urban Noise Guidelines for Considering Noise in Land Use Planning (FICUN 1980), the Land Use Compatibility Guidelines for APZs (DoD 1977), the Air Force Handbook 32- 7084 AICUZ Program Manager's Guide (DoD 1999), and Army Regulation 200-1 (DoD 2007).

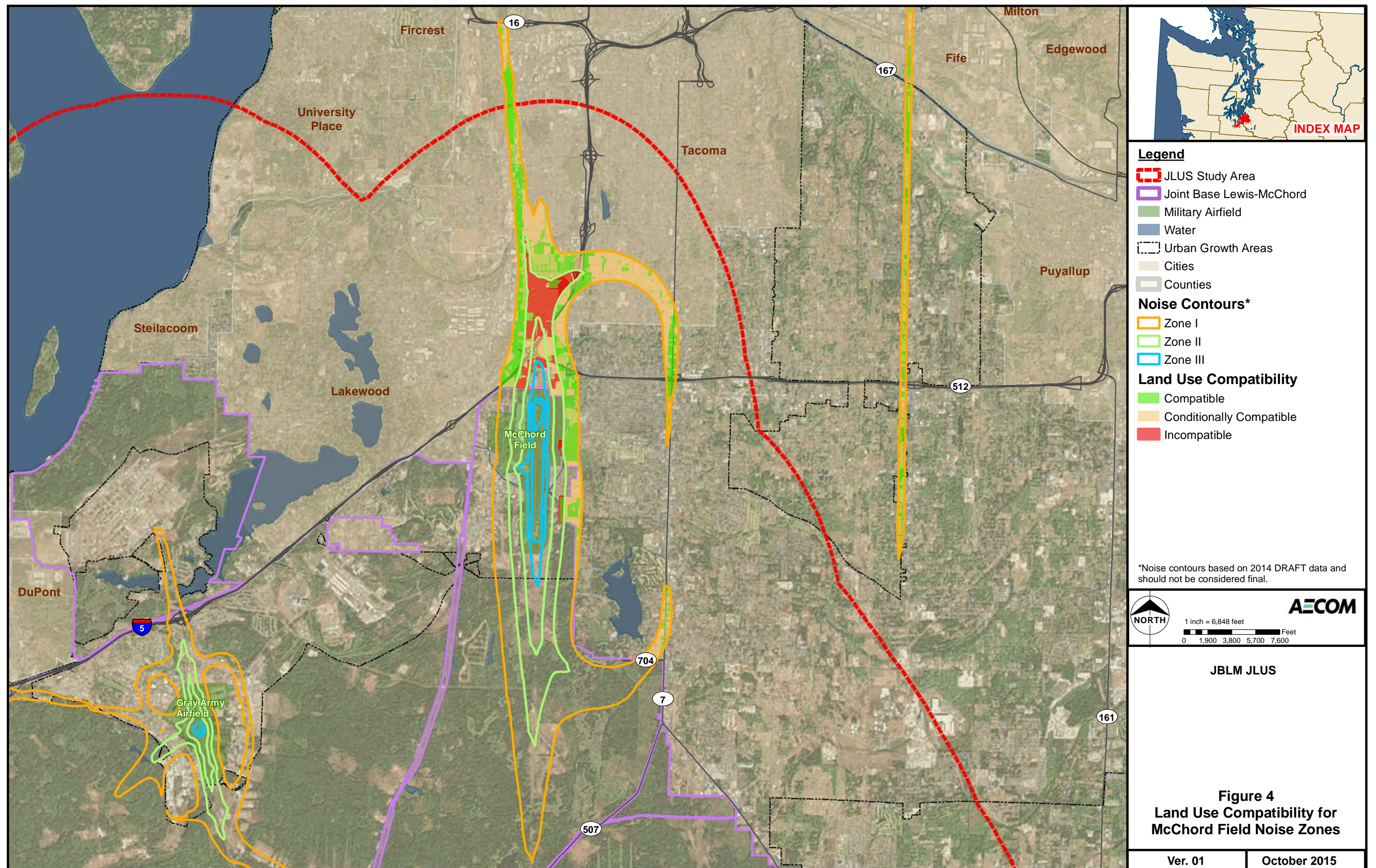




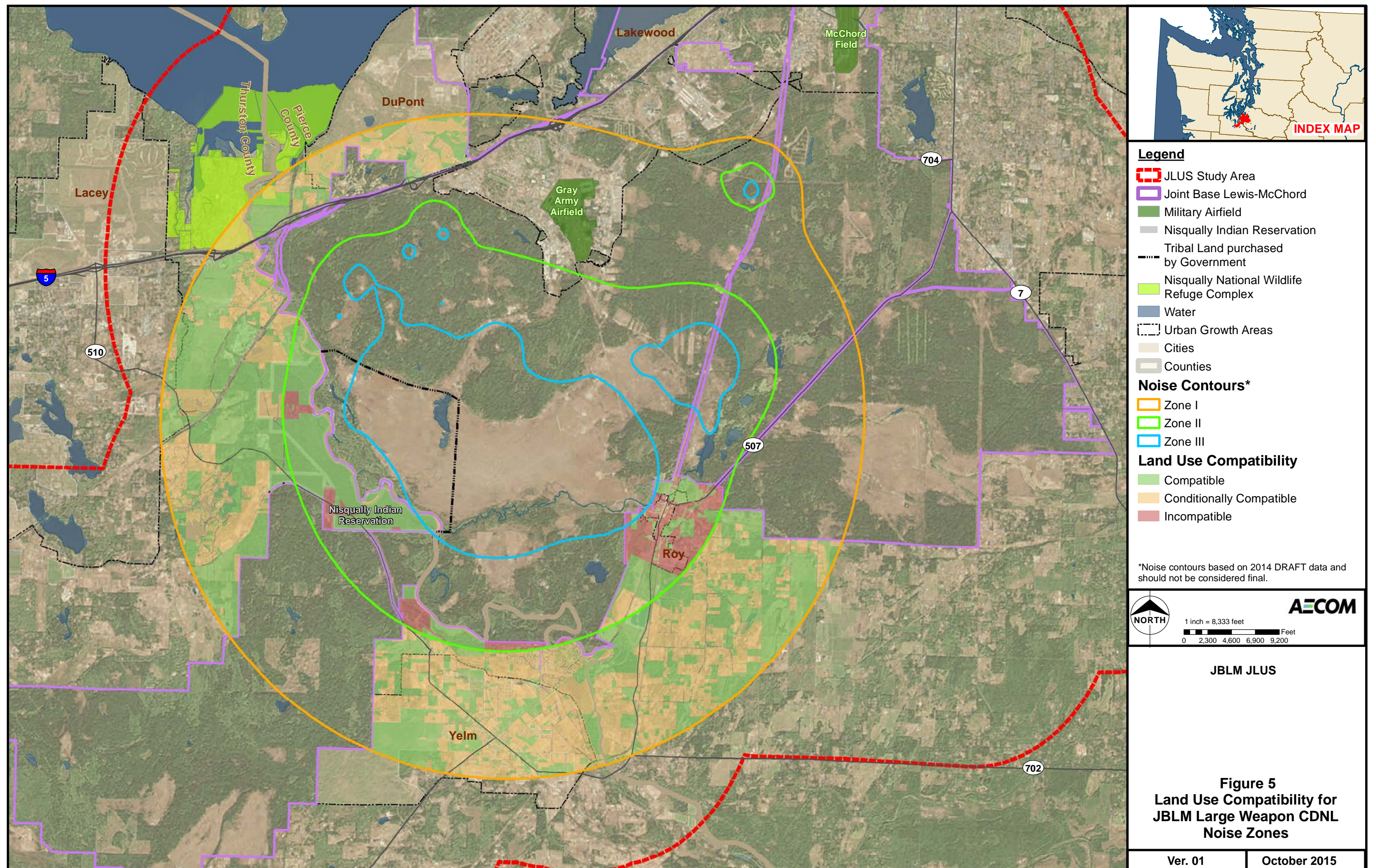




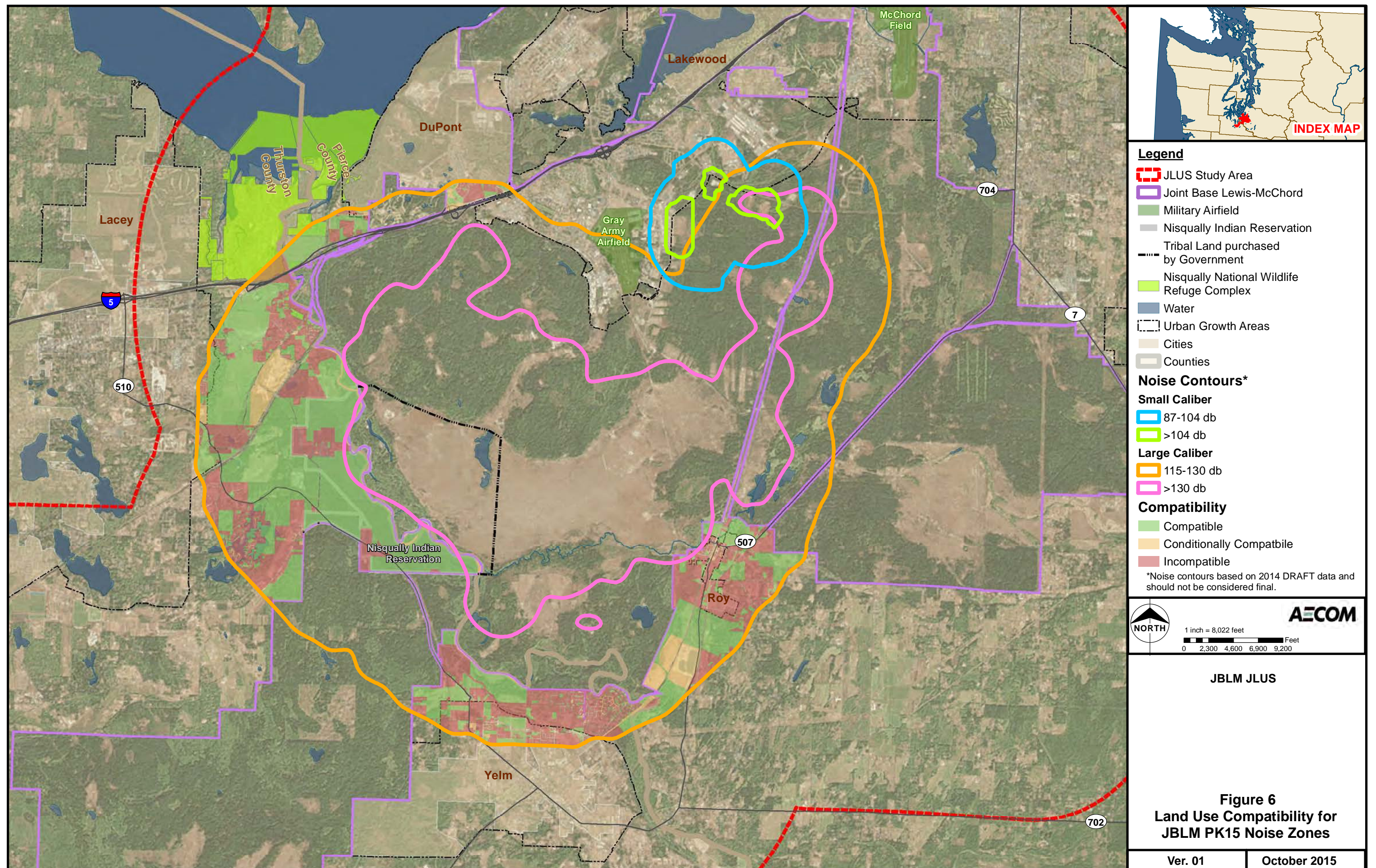




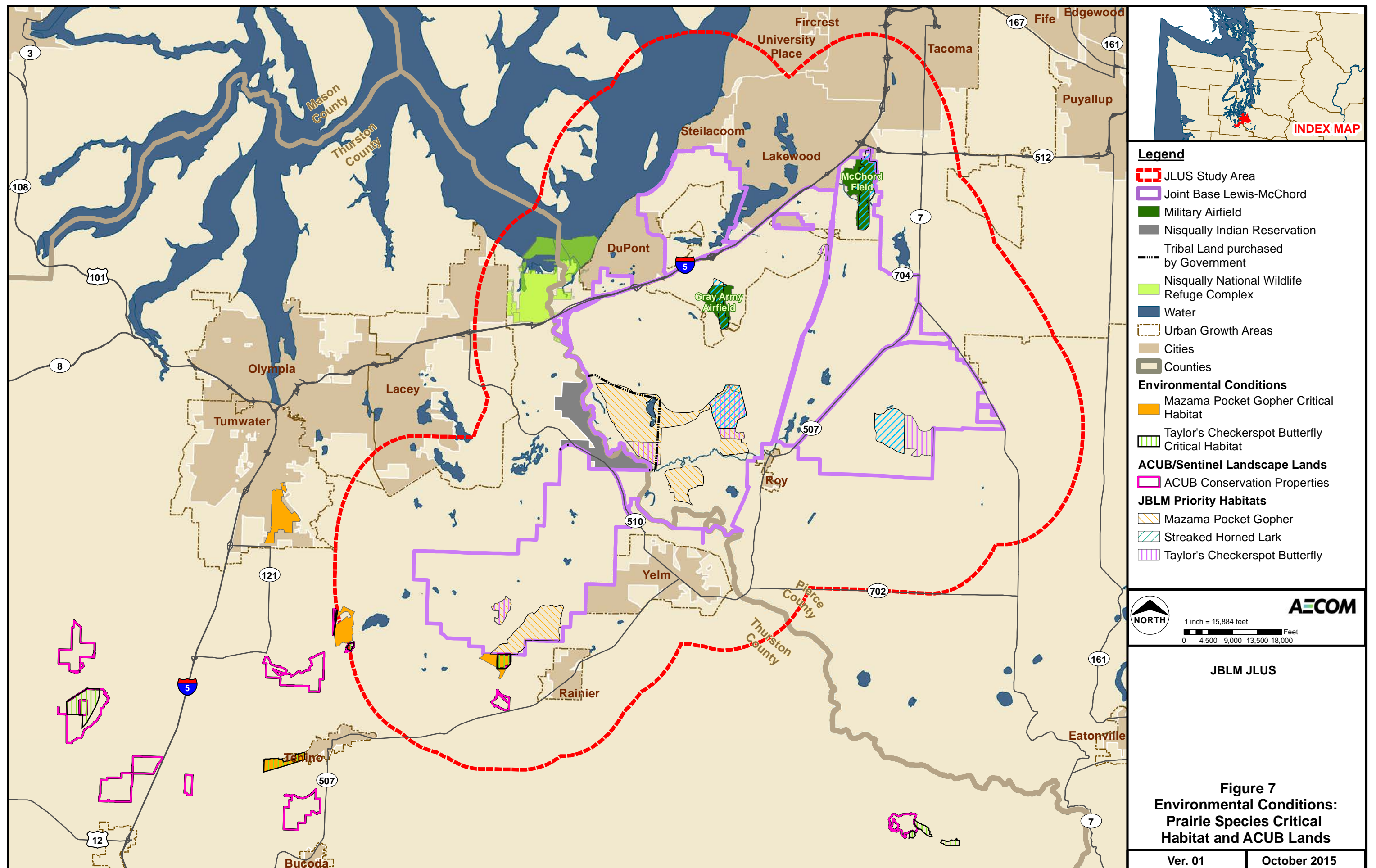












## General Conclusions

Most current land uses around JBLM do not have negative impacts on military capabilities; however, some ongoing and potential new or future areas of concern were identified through the current JLUS process. Continued collaboration is needed between local jurisdictions and JBLM to develop and implement regional solutions to these issues and to support the military's ability to carry out its mission requirements today and in the future. Based on this analysis, several conclusions are drawn and are summarized in Table 3.

**Table 3. Summary of Conclusions.**

Compatibility Issue	Conclusions
Urban Growth	<ul style="list-style-type: none"> <li>Additional urban growth within the McChord Field North CZ should be prohibited.</li> <li>Urban growth should be directed away from high noise areas and APZs, where feasible.</li> <li>Significant growth capacity in the Thurston Highlands Master Planned Community represents potential incompatibility.</li> </ul>
Aircraft Safety	<ul style="list-style-type: none"> <li>Existing non-conforming incompatible uses in the McChord Field north CZ represent the most critical encroachment issue facing JBLM.</li> <li>JBLM should seek federal, state, and local funding to resume property acquisition efforts in the McChord north CZ.</li> <li>In APZ II, medium and high density residential uses in Tacoma and recreational uses in Lakewood are categorized as incompatible.</li> <li>Jurisdictions should seek to phase out incompatible uses in APZs through zoning, property acquisition, and public facility siting decisions.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>Areas in Lakewood and Tacoma near I-5 are zoned for residential, mixed use, and recreational uses categorized as incompatible or conditionally compatible.</li> <li>Incompatible or conditionally compatible land uses in the JBLM large weapon noise zones include Roy, parts of Yelm and DuPont, the Nisqually Indian Reservation, and parts of the urban growth area in unincorporated Thurston County near Lacey.</li> </ul>
Endangered and Threatened Species and Habitat	<ul style="list-style-type: none"> <li>Listed species requirements limit the scope of training on JBLM training lands.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>Continuation of current and exploration of new solutions for JBLM-related and other traffic are needed, particularly as it affects local road networks.</li> </ul>
Trespass and Unauthorized Access to JBLM Range and Training Lands	<ul style="list-style-type: none"> <li>The continuing management of access to training lands will limit trespass and competition for access to military training lands while maintaining legitimate compatible recreational uses.</li> </ul>
Communication and Coordination	<ul style="list-style-type: none"> <li>Communication and coordination among JLUS partners are critical for the implementation of compatibility recommendations.</li> </ul>

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### 3. Implementation

Based on the review and guidance of the TWG and SSMCP JLUS Subcommittee, a preliminary list of implementation strategies was developed, refined, and prioritized, resulting in an actionable Implementation Plan. The Implementation Plan contains details such as the timing, order of magnitude costs, potential funding sources, lead and partner jurisdictions/agencies/organizations, and supporting background information such as model ordinances.

The Implementation Plan is intended as a series of tools that the local jurisdictions and JBLM can choose to adopt during the implementation phase of the JLUS process. All of the entities participating in the JLUS retain the responsibility of selecting those compatibility tools that best reflect the specific issues, concerns, and needs of each stakeholder.

A variety of strategies could be employed to mitigate the existing or potential land use incompatibilities noted in the preceding analysis. The tables that follow contain a preliminary set of possible strategies that mitigate for existing incompatibility and ensure compatible future development.

Table 4 summarizes the set of implementation strategies and includes action steps and examples; identification of lead and partner organizations, phasing (near-, mid-, and long-term), order of magnitude cost, and any background documents contained in the appendices. The strategies are ordered according to phasing.

The phasing contained in this Implementation Plan is broken down as follows:

- Near:** Less than 1 year from JLUS adoption
- Mid:** 1 to 3 years from JLUS adoption
- Long:** 3 to 5 years or longer from JLUS adoption

For the purposes of this Implementation Plan, the order of magnitude costs are defined as follows:

- \$ -** Generally requires staff time, minor budget impacts, and/or use of existing funding sources.
- \$\$ -** More substantial or new funding required, such as to hire a consultant to complete a study.
- \$\$\$ -** Significant and/or ongoing investment for endowments, property acquisition, or capital projects.

Table 4. Implementation Strategy Summary.

					Affected Jurisdictions															Compatibility Issue							
Strategy #	Strategy	Lead/Partners	Timeframe	Order of Magnitude Cost	JBLM	Nisqually Indian Reservation	State of Washington	WSDOT	PSRC	PCRC	TRPC	Pierce County	Thurston County	DuPont	Lacey	Lakewood	Roy	Steilacoom	Tacoma	Yelm	Aircraft Safety	Military Operational Noise	Communication and Coordination	Threatened and Endangered Species and Habitat	Transportation	Urban Growth	Tresspass and Unauthorized Use of JBLM Training Land
1	Establish an ongoing JLUS implementation entity	Lead : SSMCP Steering Committee	Near	\$	X	X			X	X	X	X	X	X	X	X	X	X	X	X			X				
2	Incorporate compatibility in updates of local Comprehensive Plans	Lead : Nisqually Tribe; Cities and Counties in	Near	\$\$	X	X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	Analyze local transportation impacts	Lead : SSMCP	Near	\$	X	X		X	X		X	X	X	X	X	X	X	X	X	X					X		
4	Increase outreach by military partners in the community	Lead : JBLM Partners : SSMCP	Near	\$\$	X																		X				
5	Share information about JBLM and activities among internal and external stakeholders	Lead: SSMCP Partners: JBLM;	Near	\$\$	X	X			X	X	X	X	X	X	X	X	X	X	X	X			X				
6	Enhance system of notification and communication with public stakeholders to prevent unauthorized use and improve communications on authorized uses	Lead : JBLM	Near	\$	X																						X
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	Lead : SSMCP Partners : JBLM; Nisqually Tribe; Local, County, and Regional	Mid	\$	X	X			X	X	X	X	X	X	X	X	X	X	X	X			X			X	
8	Maximize use of existing financial incentives to encourage preservation of open space and working lands	Lead : Thurston County, Pierce County	Mid	\$			X					X	X											X			



Table 4. Implementation Strategy Summary (continued).

Strategy #	Strategy	Lead/Partners	Timeframe	Order of Magnitude Cost	Affected Jurisdictions															Compatibility Issue						
					JBLM	Nisqually Indian Reservation	State of Washington	WSDOT	PSRC	PCRC	TRPC	Pierce County	Thurston County	DuPont	Lacey	Lakewood	Roy	Steilacoom	Tacoma	Yelm	Aircraft Safety	Military Operational Noise	Communication and Coordination	Threatened and Endangered Species and Habitat	Transportation	Urban Growth
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	Lead : Nisqually Tribe; Local, County, and Regional governments	Mid	\$\$		X						X	X	X	X	X	X	X	X	X	X		X		X	
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	Lead : SSMCP Partners : JBLM; Nisqually Tribe; Local, County, and Regional	Mid	\$\$	X	X						X	X	X	X	X	X	X	X	X						
11	Pursue additional conservation partnering opportunities through Readiness and Environmental Protection Initiative (REPI)/Army Compatible Use Buffer (ACUB), and the Sentinel Landscapes partnership	Lead : JBLM Partners: Thurston County	Mid	\$	X								X									X				
12	Expand the federal role in habitat conservation efforts	Lead: JBLM Partners: Thurston	Mid	\$\$	X								X										X			
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings	Lead : SSMCP Partners : Nisqually Tribe; Local, County, and	Mid	\$		X						X	X	X	X	X	X	X	X		X				X	
14	Support state designations of an area of Regional Military Influence (RMI) or Area of Critical State/Local Concern and Interest	Lead : SSMCP Partners : State of Washington	Mid	\$			X														X					

Table 4. Implementation Strategy Summary (continued).

					Affected Jurisdictions															Compatibility Issue							
Strategy #	Strategy	Lead/Partners	Timeframe	Order of Magnitude Cost	JBLM	Nisqually Indian Reservation	State of Washington	WSDOT	PSRC	PCRC	TRPC	Pierce County	Thurston County	DuPont	Lacey	Lakewood	Roy	Steilacoom	Tacoma	Yelm	Aircraft Safety	Military Operational Noise	Communication and Coordination	Threatened and Endangered Species and Habitat	Transportation	Urban Growth	Trespass and Unauthorized Use of JBLM Training Land
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	Lead: SSMCP Partners: JBLM; Nisqually Tribe; Local, County, and Regional governments	Mid	\$\$	X	X			X		X	X	X	X	X	X	X	X	X	X						X	
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	Lead: SSMCP Partners: JBLM	Mid	\$	X	X			X	X	X	X	X	X	X	X	X	X	X	X						X	
17	Pursue federal or state funding for resolution of encroachment issues	Lead: SSMCP, JBLM Partners: State of Washington, OEA, DoD	Mid	\$\$\$			X														X					X	
18	Real estate tools - disclosures, deed restrictions, hold harmless agreements	Lead: SSMCP Partners: Master Builders Associations	Long	\$					X	X	X										X	X				X	
19	Avoid overflight of noise sensitive areas and residential areas, when feasible	Lead: JBLM	Long	\$	X																X	X				X	
20	Enact or amend state-level legislation to promote land use compatibility around military installations	Lead: SSMCP Partners: State of Washington	Long	\$			X																X			X	
21	Promote analysis of military economic impact in state-wide planning processes	Lead: SSMCP Partners: State of Washington	Long	\$			X																X				
22	Expand conservation banking through Thurston County.	Lead: Thurston County Partners: JBLM	Long	\$\$	X								X											X			



# Joint Base Lewis McChord Joint Land Use Study

## *Project Overview*

### A. Joint Base Lewis-McChord (JBLM) Profile

JBLM is the largest military installation on the west coast, encompassing over 90,000 acres, including the main cantonment area and close-in training ranges. JBLM was formally established in 2010, combining Fort Lewis and McChord Air Force Base into a single administrative unit. JBLM is home to the U.S. Army I Corps and 7<sup>th</sup> Infantry Division, the U.S. Air Force 62<sup>nd</sup> Airlift Wing, Madigan Army Medical Center, 1<sup>st</sup> Special Forces Group, U.S. Navy and U.S. Marine Corps elements, and other commands and tenant organizations. JBLM is a major economic engine in Washington State and, as of 2012, is the second largest employer in the state. As of March 2015, the installation served over 150,000 people on a regular basis, including:

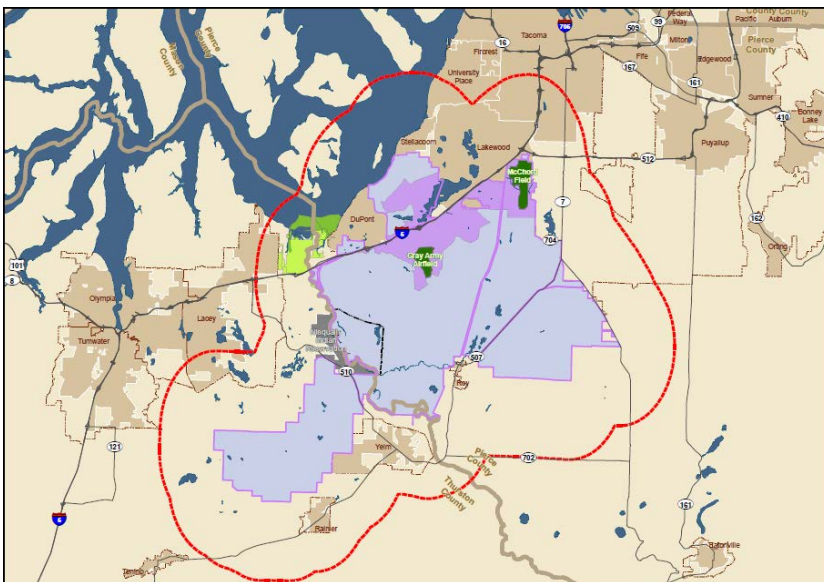
- 40,976 military service members
- 17,521 DoD civilians
- 47,303 military family members
- 32,064 local retirees

JBLM, with its historical Asia/Pacific focus, is a premier power projection platform with many strategic advantages, including its location on the Pacific Rim, deep water port access, global airlift capabilities, and extensive training ranges.

### B. The JLUS Study Area

The 2015 JLUS study area was defined as the area within 2 miles of the JBLM installation boundary, as shown in the map below. The 2-mile study area encompassed the communities of Tacoma, Lakewood, University Place, Steilacoom, DuPont, and unincorporated areas within Pierce County; Lacey, Yelm, Rainier, Roy, and unincorporated areas within Thurston County; and the Nisqually Indian Reservation.

Camp Murray, which is home to the Washington National Guard, was within the study area as well.



**Joint Base Lewis McChord Joint Land Use Study  
Study Area Map**

Situated within the South Puget Sound region, the study area encompasses a diverse geographic area. The area is also bisected by I-5, the major transportation corridor in western Washington. The western portion of the area is characterized by a high degree of urbanization and population density. The eastern and southern portions of the study area contain rural areas, including agricultural and residential areas, forested and prairie land, several

small urban areas, and the Nisqually Indian Reservation. A diversity of natural habitats exists throughout the study area, including Puget Sound itself, and the Nisqually National Wildlife Refuge.

### **C. JLUS Committee Organization Structure**

Joint Base Lewis McChord JLUS stakeholders were organized into three levels of formal engagement to provide input and guidance throughout the 2-year Joint Land Use Study.

#### **The JLUS Policy Subcommittee of the South Sound Military & Communities Partnership**

This small committee of policy members provided input on the policy history, statutory framework, and feasibility of recommendations. City Managers and staff from the following jurisdictions participated in the study:

- City of DuPont
- City of Lacey
- City of Lakewood
- City of Lakewood
- City of Tacoma
- City of Tacoma
- City of Yelm
- JBLM
- Nisqually Indian Tribe
- Nisqually Indian Tribe
- Pierce County
- Tacoma Pierce County Chamber
- Thurston Regional Planning Council
- Town of Steilacoom

#### **The JLUS Technical Working Group**

This group was composed of land use planning officials or comparable personnel from the jurisdictions below. The participants vetted the land use conclusions made in the JLUS reports and provided suggestions for compatibility solutions.

- City of DuPont
- City of Lacey
- City of Lacey
- City of Lakewood
- City of Tacoma
- City of Yelm
- JBLM - 62nd Airlift Wing
- JBLM – Dept. of Public Works Ecology
- JBLM – Dept. of Public Works – Master Planner
- JBLM HQ
- Pierce County
- Tacoma Pierce County Health Department
- Tacoma-Pierce County Chamber
- Thurston County
- Thurston Regional Planning Council
- Thurston Regional Planning Council
- Town of Steilacoom
- Nisqually Indian Tribe
- WA State Dept. of Commerce
- Washington National Guard
- Washington National Guard
- JBLM – Directorate of Plans, Training, Mobilization, and Security

#### **The Elected Officials Council**

This council consisted of the elected officials of Thurston and Pierce Counties, the two counties that border Joint Base Lewis McChord. The group, briefed on the Joint Land Use Study twice per year, provided higher-level input and guidance.

#### **Stakeholder and Public Engagement**

In addition to the input gathered during committee meetings, information was solicited from various stakeholders, Subject Matter Experts (SMEs), and the general public. Individual interviews were conducted with stakeholders and SMEs, a small group meeting was held with the Nisqually Indian Tribe and six public open houses were conducted in various cities of the study area.

## D. Land Use Compatibility Issues Identified by Joint Base Lewis McChord JLUS

The JBLM JLUS, which kicked off in April 2014, was completed on time and under-budget in November of 2015. Most current land uses around JBLM were not found to have negative impacts on military capabilities; however, some ongoing and potential new or future areas of concern were identified through the JLUS process. Continued collaboration is needed between local jurisdictions and JBLM to develop and implement regional solutions to these issues and to support the military's ability to carry out its mission requirements today and in the future.

Compatibility Issue	Conclusions
Urban Growth	<ul style="list-style-type: none"><li>• Additional urban growth within the McChord Field North CZ should be prohibited.</li><li>• Urban growth should be directed away from high noise areas and APZs, where feasible.</li><li>• Significant growth capacity in the Thurston Highlands Master Planned Community represents potential incompatibility.</li></ul>
Aircraft Safety	<ul style="list-style-type: none"><li>• Existing non-conforming incompatible uses in the McChord Field north CZ represent the most critical encroachment issue facing JBLM.</li><li>• JBLM should seek federal, state, and local funding to resume property acquisition efforts in the McChord north CZ.</li><li>• In APZ II, medium and high density residential uses in Tacoma and recreational uses in Lakewood are categorized as incompatible.</li><li>• Jurisdictions should seek to phase out incompatible uses in APZs through zoning, property acquisition, and public facility siting decisions.</li></ul>
Noise	<ul style="list-style-type: none"><li>• Areas in Lakewood and Tacoma near I-5 are zoned for residential, mixed use, and recreational uses categorized as incompatible or conditionally compatible.</li><li>• Incompatible or conditionally compatible land uses in the JBLM large weapon noise zones include Roy, parts of Yelm and DuPont, the Nisqually Indian Reservation, and parts of the urban growth area in unincorporated Thurston County near Lacey.</li></ul>
Endangered and Threatened Species and Habitat	<ul style="list-style-type: none"><li>• Listed species requirements limit the scope of training on JBLM training lands.</li></ul>
Transportation	<ul style="list-style-type: none"><li>• Continuation of current and exploration of new solutions for JBLM-related and other traffic are needed, particularly as it affects local road networks.</li></ul>
Trespass and Unauthorized Access to JBLM Range and Training Lands	<ul style="list-style-type: none"><li>• The continuing management of access to training lands will limit trespass and competition for access to military training lands while maintaining legitimate compatible recreational uses.</li></ul>
Communication and Coordination	<ul style="list-style-type: none"><li>• Communication and coordination among JLUS partners are critical for the implementation of compatibility recommendations.</li></ul>

## **E. Highlights of the JBLM JLUS Recommendations**

Based on the review and guidance of the TWG and SSMCP JLUS Subcommittee, a preliminary list of implementation strategies was developed, refined, and prioritized, resulting in an actionable Implementation Plan presented in November 2015. The Implementation Plan contains details such as the timing, order of magnitude costs, potential funding sources, lead and partner jurisdictions/agencies/organizations, and supporting background information such as model ordinances.

The Implementation Plan is intended as a series of tools that the local jurisdictions and JBLM can choose to adopt during the implementation phase of the JLUS process. All of the entities participating in the JLUS retain the responsibility of selecting those compatibility tools that best reflect the specific issues, concerns, and needs of each stakeholder. Major tasks that emerged as vital to address during implementation include:

### **1. Establish an Ongoing JLUS implementation Entity**

In 2016 and future years, the South Sound Military & Communities Partnership will continue to convene community partners to carry out the recommendations of the 2015 JBLM JLUS.

### **2. Clear Zone Encroachment Resolution**

The South Sound Military & Communities Partnership, as well as affected jurisdictions, will work to address development in the North McChord Field Clear Zone, as well as the Accident Potential Zones in order to:

- reduce any effects on military operations; and
- protect people and property from the potential adverse effects of aircraft and range noise and operations

### **3. Incorporate Compatibility in Updates of local Comprehensive Plans, Local Zoning Codes, and Ordinances**

The purpose of this task is to ensure that communities adjacent to the base are administering Growth Management Act policies and regulations in an orderly and coordinated manner that considers the needs of the military facilities. In spite of long-term efforts to address JBLM in local planning, large geographic areas remain that only partially address military-civilian compatibility issues.

The 2015 JBLM JLUS Implementation Plan includes tables outlining existing compatible use standards/regulations by community and zoning district. SSMCP staff and South Sound communities will use these tables, as well as draft language in the Plan, to carry out the task of fully updating Comprehensive Plans, zoning codes, ordinances, and regional reports and profiles.

### **4. Increase Communication between Military and Civilian Communities**

This includes the subtasks of:

- Create a Memorandum of Understanding for joint consultation and information sharing among decision-makers.
- Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions.

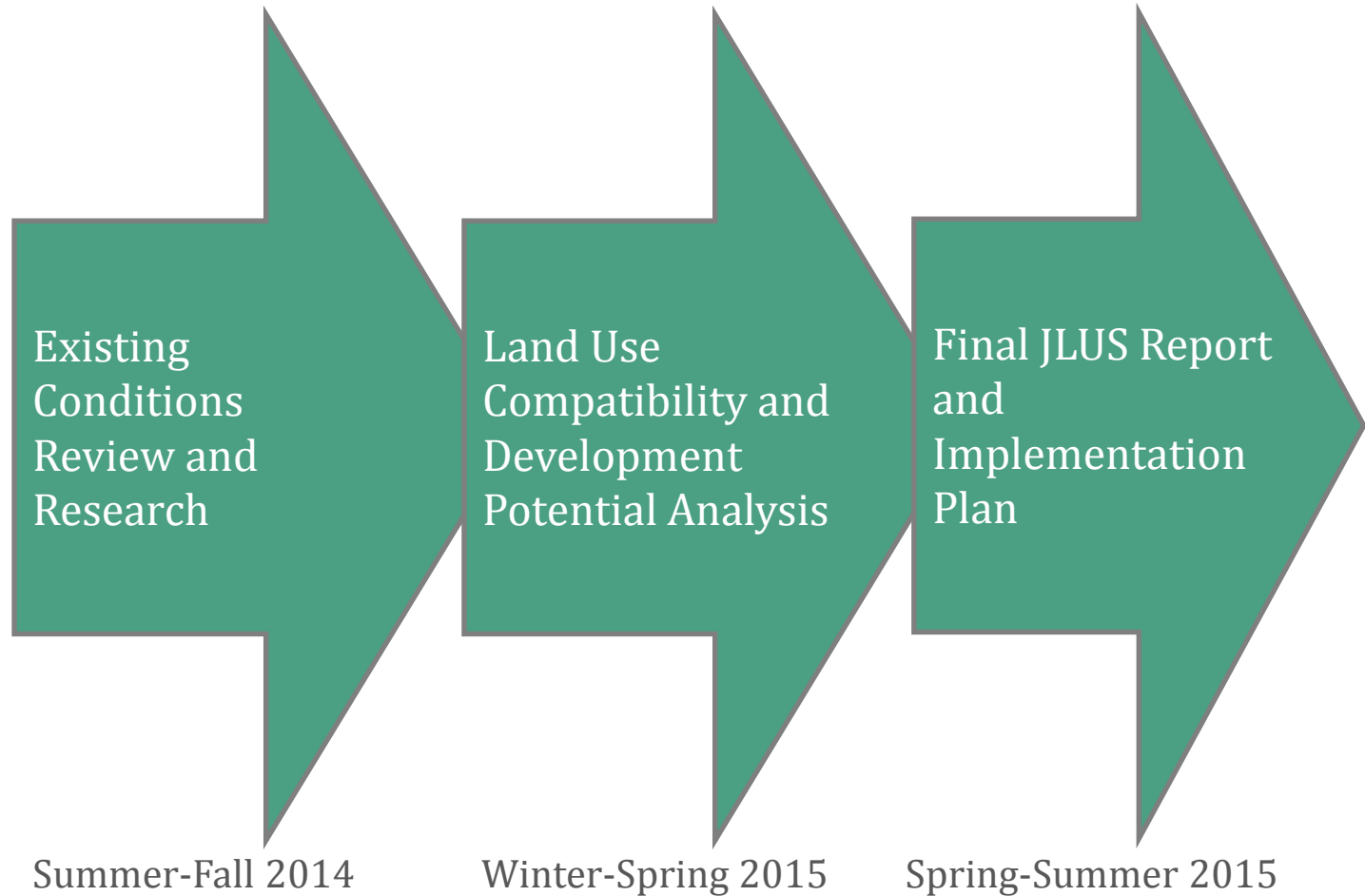


# LAND USE COMPATIBILITY ANALYSIS

25 February| 2015

1. Project Status and Schedule
2. Compatibility Analysis Purpose and Scope
3. Analysis of Land Use Impacts
4. Menu of Compatibility Strategies
5. Next Steps

# Project Status and Schedule



# Compatibility Analysis Purpose and Scope

## Meeting Outcomes

- Are the study areas/areas of concern appropriate?
- Are there other areas we should be focusing on?
- Do we have the appropriate or most up-to-date data for our analyses?
- What compatibility strategies should we prioritize?
- Are there additional compatibility strategies that we should consider?



## Definition of Compatibility

- Civilian and JBLM land uses that exist harmoniously alongside each other
- Compatible uses do not expose people to undue safety risks or nuisance
- Compatible uses do not result in interference with military exercises

## Compatibility Issues

- Vary depending on types of land uses and exposures
- May change over time
- Weapons firing and aviation activities at military bases raise compatibility issues when near the following land uses:
  - Noise sensitive uses (housing, schools, medical facilities)
  - Uses that concentrate people
  - Uses that can interfere with safe air navigation
    - Height
    - Electrical currents
    - Visual obstructions (light, dust, smoke)
    - Bird-attracting

# Compatibility Analysis Purpose and Scope

## Initial Compatibility Issues Identified for JLUS

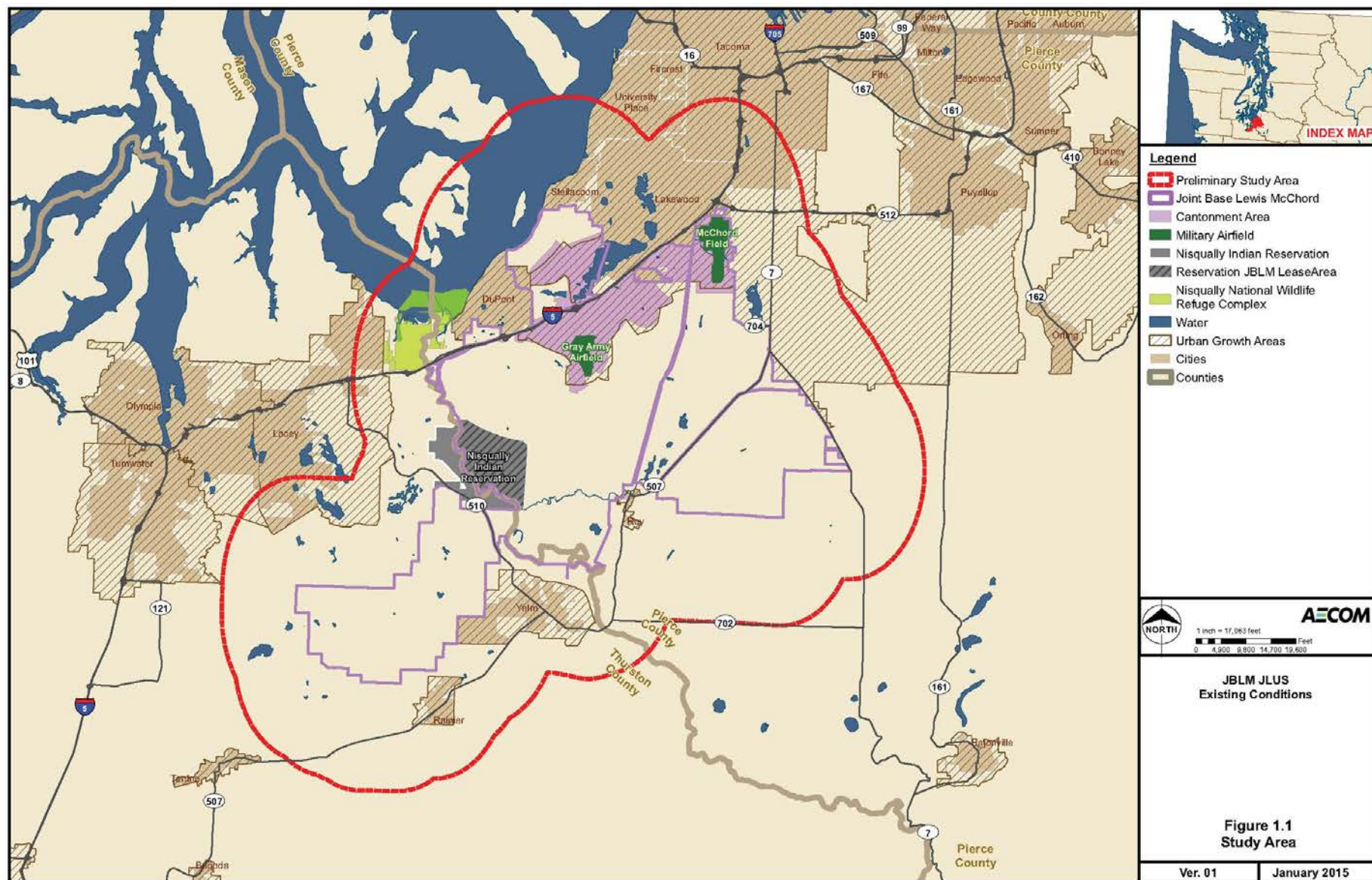
Issue
Noise impacts from aircraft and training operations.
Incompatible existing land uses in McChord Field north Clear Zone and Accident Potential Zones (APZs).
Federally listed threatened and endangered prairie species and habitat on and off installation.
Future urban growth (planned or projected) near the installation boundaries.
Regional transportation impacts.
Recreational access to JBLM training ranges.
Need to maintain and increase communication among JBLM and communities.

# Compatibility Analysis Purpose and Scope

## Study Areas

- Three study area types
  1. JLUS study area
    - 2 mile buffer around base (preliminary)
  2. Military influence areas (defined using Federal guidance)
    - Clear Zone, Accident Potential Zones for McChord Airfield
    - Aircraft Noise Zones for McChord Airfield
    - Large Weapon CDNL Noise Zones for JBLM Firing Ranges
    - Large Weapon PK15 Noise Zones for JBLM Firing Ranges
  3. Areas of concern (defined via Growth Coordination Plan and JLUS process)
    - Thurston Highlands Master Planned Community, Yelm
    - Potential Land Swap at I-5 & Murray Road SW
    - CalPortland Mine Reclamation and Future Use, Du Pont

# JLUS Study Area



## Evaluating Compatibility in Study Areas - Approach

- JLUS study area
  - Use buildable lands data to determine areas where growth is projected to occur in the next 20 years
  - Identify potential future compatibility issues
- Military areas of influence
  - Use established guidance on the compatibility of civilian land uses with specific types of military areas of influence
  - Identify potential current incompatible uses
- Areas of concern
  - Use qualitative analysis to evaluate compatibility issues, including stakeholder conversations and review of land use policies and regulations
  - Identify potential future compatibility issues

## Evaluating Compatibility in Study Areas

- Methodology draws guidance from several resources
  - JBLM Installation Operational Noise Management Plan
  - JBLM Air Installation Compatible Use Zone Study
  - DoD Instruction 4165.57 (2011)
  - Army Regulation 200-1 (2007)
  - Air Force AICUZ Handbook 32-7084 (1999)
  - Federal Interagency Committee on Urban Noise Guidelines for Considering Noise in Land Use Planning (1980)
  - DoD Land Use Compatibility Guidelines for APZs (1977)
- These resources provide
  - Specific guidance for military areas of influence
  - General guidance for the JLUS study area and areas of concern

## Evaluating Compatibility in Study Areas

Designation	What it Means?
Compatible	No action required; use does not trigger any compatibility concerns
Conditionally Compatible	Some action to mitigate impacts may be warranted such as sound attenuation or real estate disclosure
Incompatible	Use is not recommended based on compatibility guidance; impacts are significant enough that mitigation may not be effective

Note: GIS Analysis based on zoning, which may not identify incompatibilities associated with nonconforming uses (i.e., development in North Clear Zone). Subsequent maps will correct for these discrepancies.

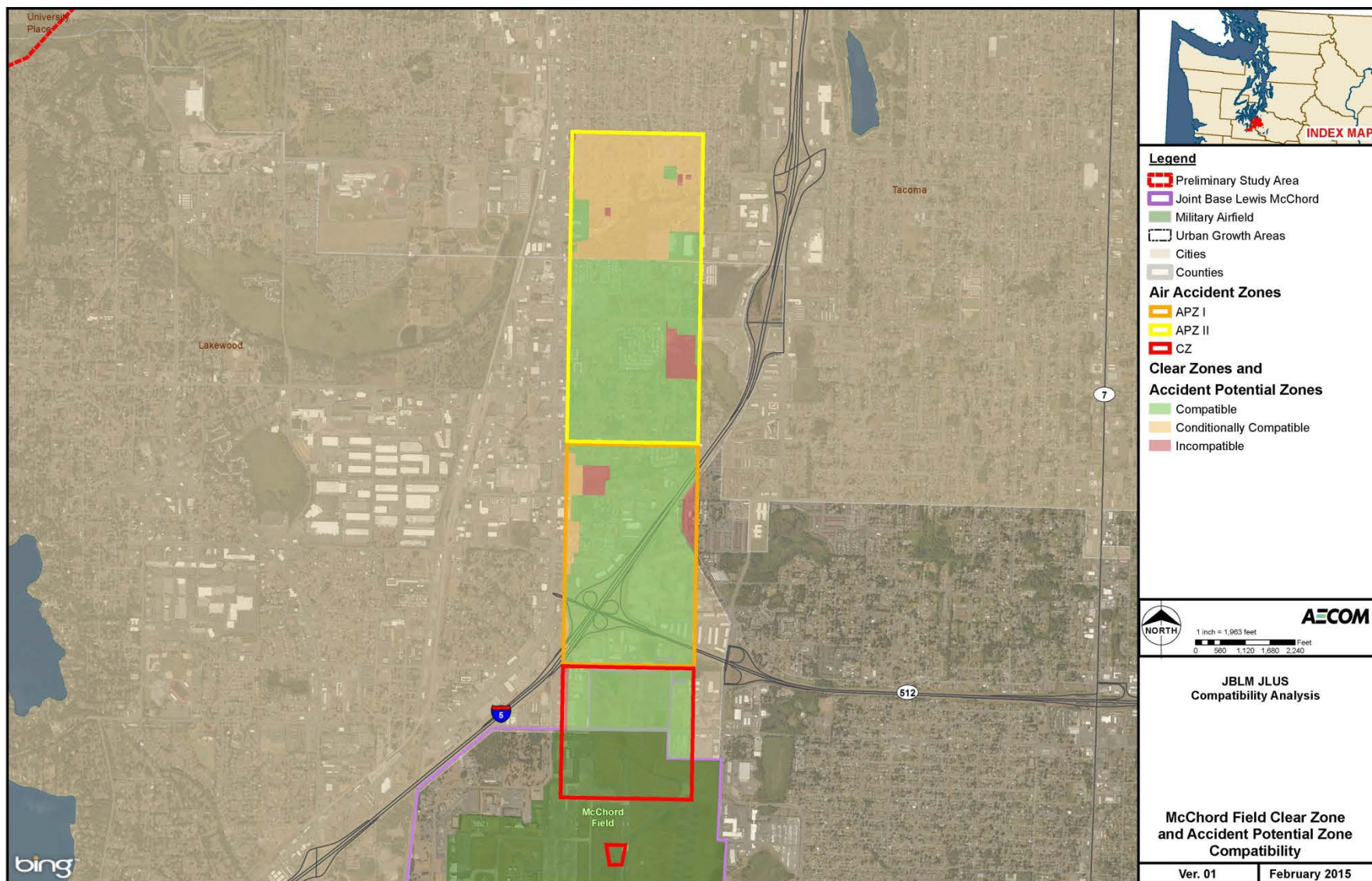


# Clear Zone, Accident Potential Zones

## Compatibility Guidance

Noise Contour	Land Use Guidance	Compatible	Conditionally Compatible	Incompatible
<b>Clear Zones and Accident Potential Zones</b>				
<b>Clear Zone (CZ)</b>	Any uses other than vacant land are incompatible with the safety criteria established for a CZ			All land uses other than vacant land
<b>Accident Potential Zone I (APZ I)</b>	Residential and public institutional uses are incompatible. Commercial compatibility is dependent upon type of use. Industrial and open lands are compatible.	- Light industrial	- Light commercial (smaller scale)	- All residential - All mixed use centers - Heavy industrial - Heavy commercial (large scale) - Institutional/public use
<b>Accident Potential Zone II (APZ II)</b>	Most land uses are compatible, except for certain densities of residential, commercial and recreational uses.	- All industrial - All commercial	- Single family detached residential (or very low density)	- All other residential - Institutional/public use

# Clear Zone, Accident Potential Zones



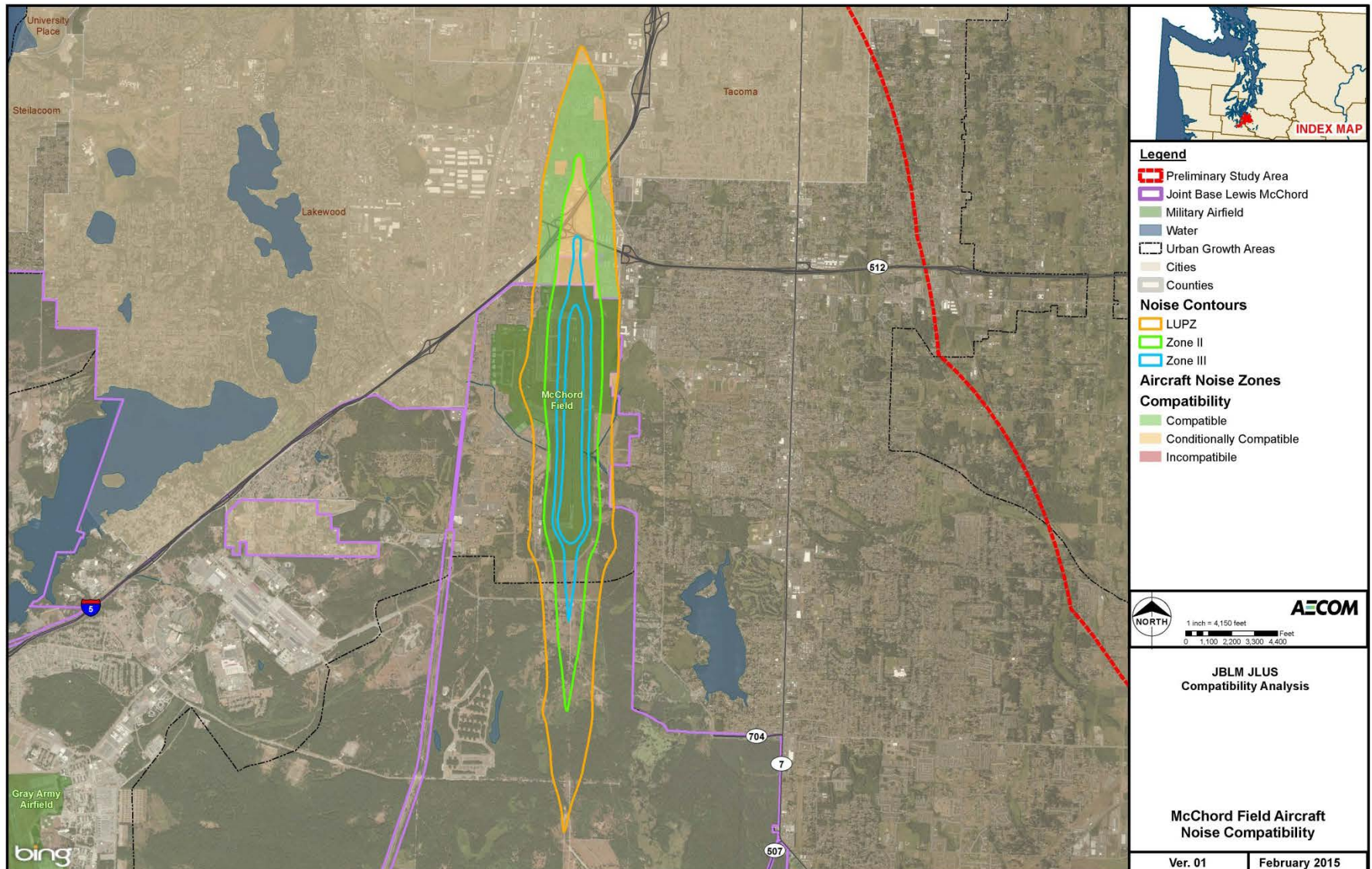
## Compatibility Guidance

Noise Contour	Land Use Guidance	Compatible	Conditionally Compatible	Incompatible
<b>Aircraft Noise Zones</b>				
<b>Noise Zone III: &gt;75 DNL dBA</b>	Not recommended with any noise sensitive uses <sup>1</sup>		- Industrial - Commercial	- All residential - Institutional/public use
<b>Noise Zone II: 65-75 DNL dBA</b>	Normally not recommended with noise-sensitive uses		- Industrial - Commercial	- All residential - Institutional/public use
<b>Noise Zone I: &lt;65 DNL dBA</b>	Generally acceptable with any noise-sensitive uses	- Industrial - Commercial	- All residential - Institutional/public use	

*Note 1: Noise sensitive uses include residential uses and uses that concentrate people such as schools, hospitals and churches.*



# Aircraft Noise Zones



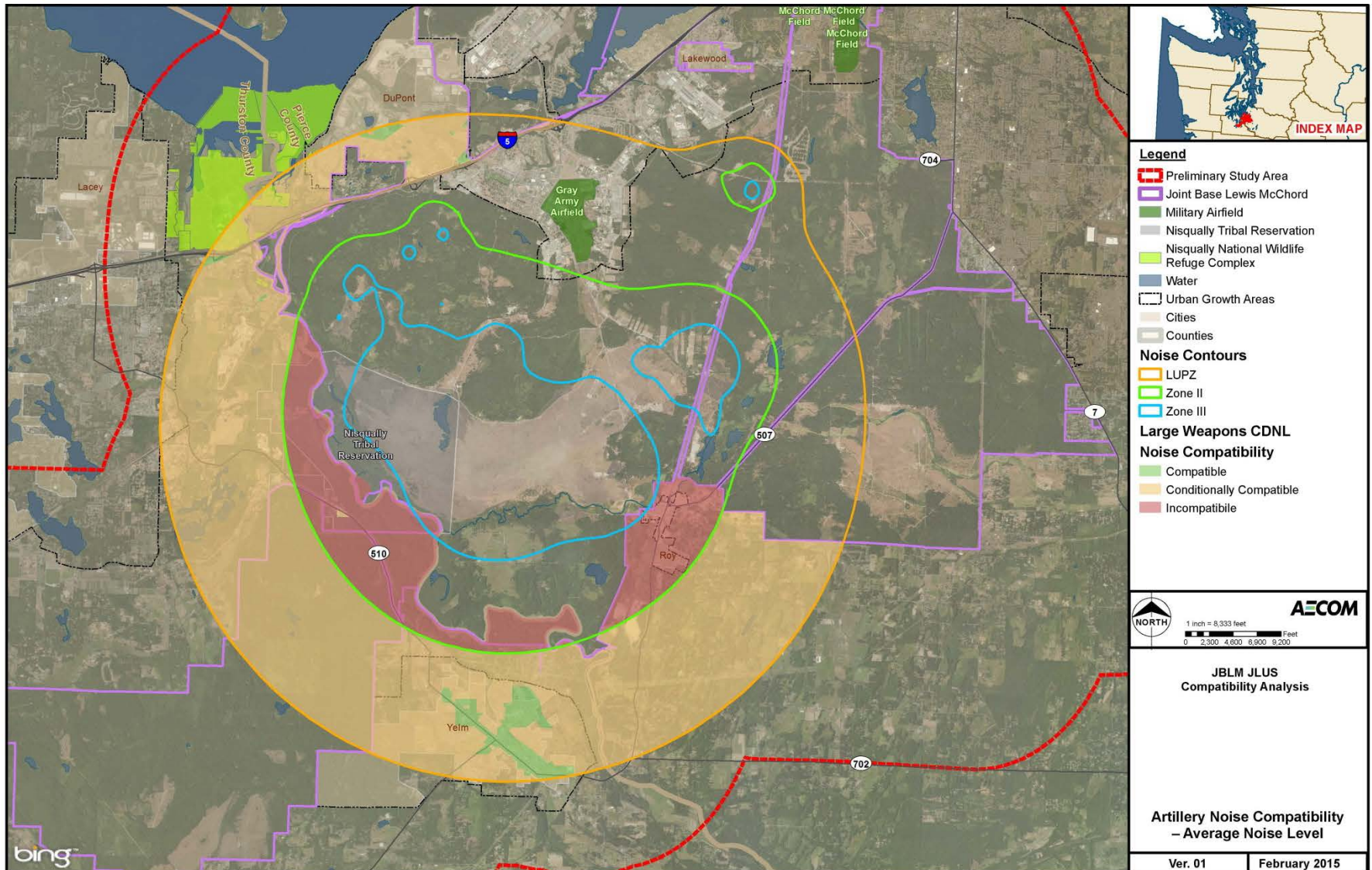
# Large Weapon CDNL Noise Zones

## Compatibility Guidance

Noise Contour	Land Use Guidance	Compatible	Conditionally Compatible	Incompatible
<b>Large Weapon CDNL Noise Zones</b>				
<b>Noise Zone III: &gt;70 CDNL dBC</b>	Incompatible with noise sensitive uses		- Industrial - Commercial	- All residential - Institutional/public use
<b>Noise Zone II: 62-70 CDNL dBC</b>	Normally incompatible with noise-sensitive uses		- Industrial - Commercial	- All residential - Institutional/public use
<b>Noise Zone I: &lt;62 CDNL dBC</b>	Compatible with most noise-sensitive uses	- Industrial - Commercial	- All residential - Institutional/public use	



# Large Weapon CDNL Noise Zones



# Large Weapon PK15 Noise Zones

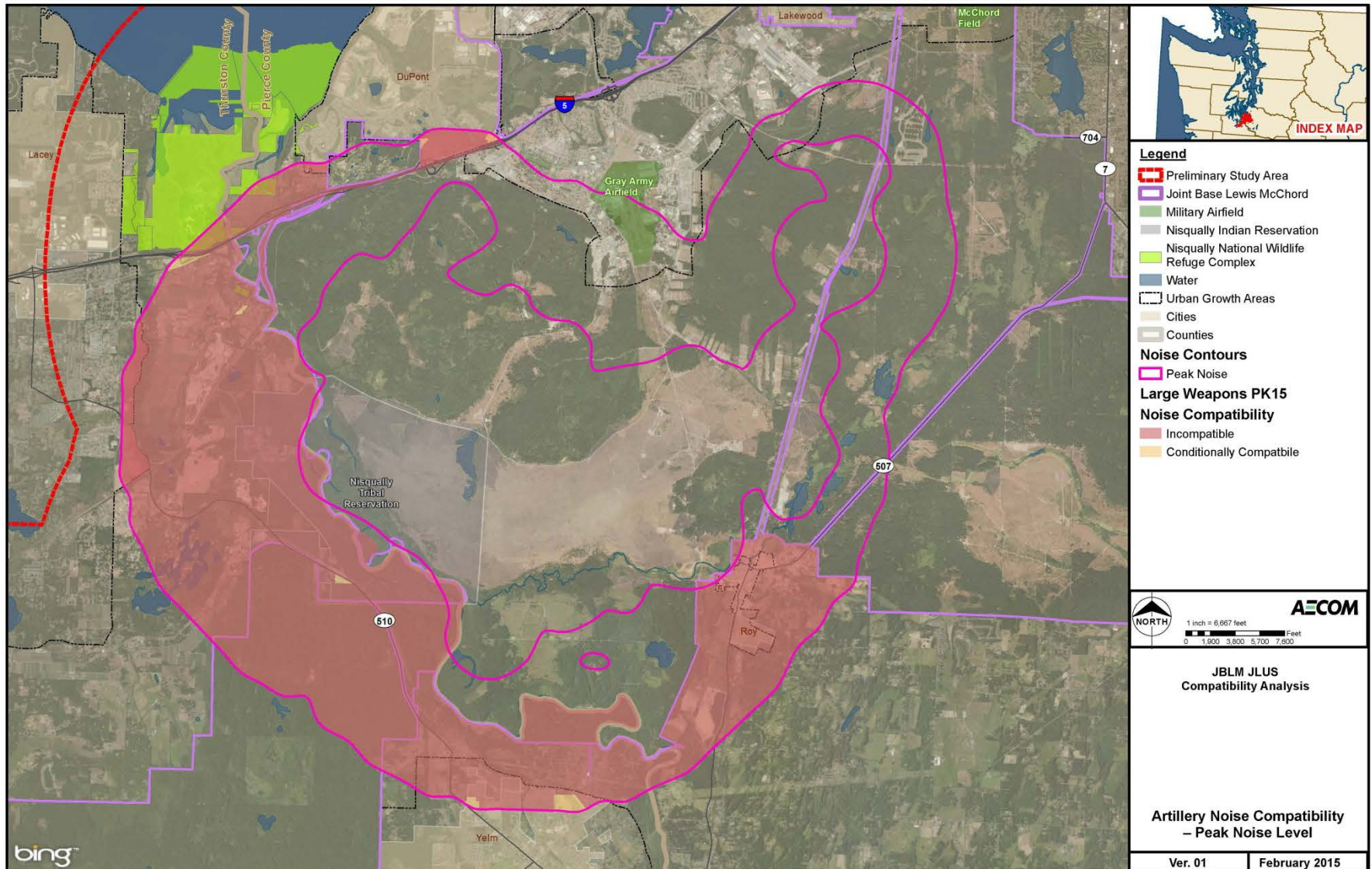
## Compatibility Guidance

Noise Contour	Land Use Guidance	Compatible	Conditionally Compatible	Incompatible
<b>Large Weapon PK15 Noise Zones for JBLM Firing Ranges<sup>2</sup></b>				
<b>PK 15(met): 115-130 dBP</b>	Noise sensitive uses are discouraged		- Industrial - Commercial	- All residential - Institutional/public use
<b>PK 15(met): &gt;130 dBP</b>	Noise sensitive uses are strongly discouraged		- Industrial - Commercial	- All residential - Institutional/public use

*Note 2: For infrequent noise events, installations should determine if land use compatibility within these areas is necessary for mission protection, or if public communications can suffice.*

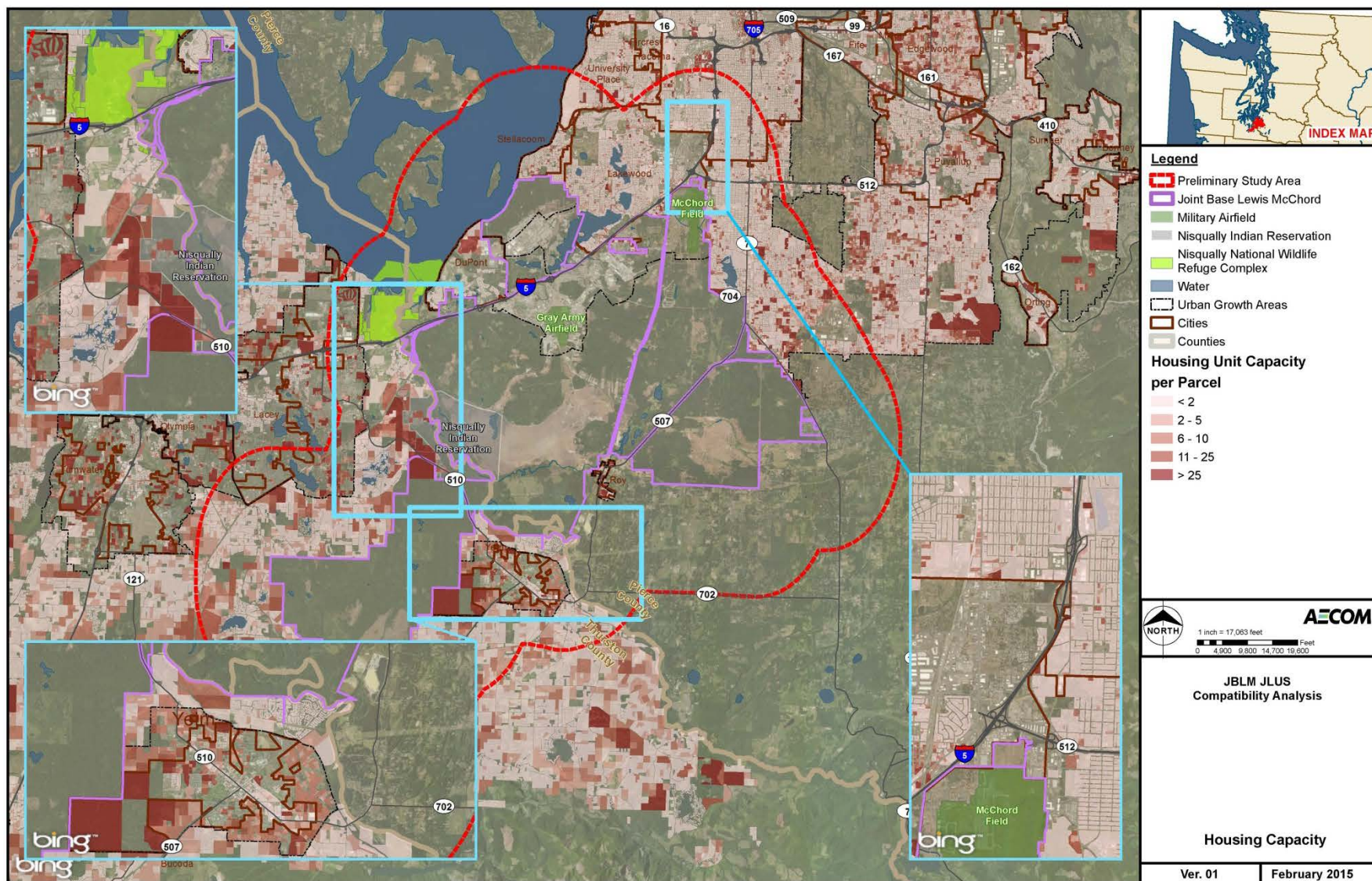


# Large Weapon PK15 Noise Zones



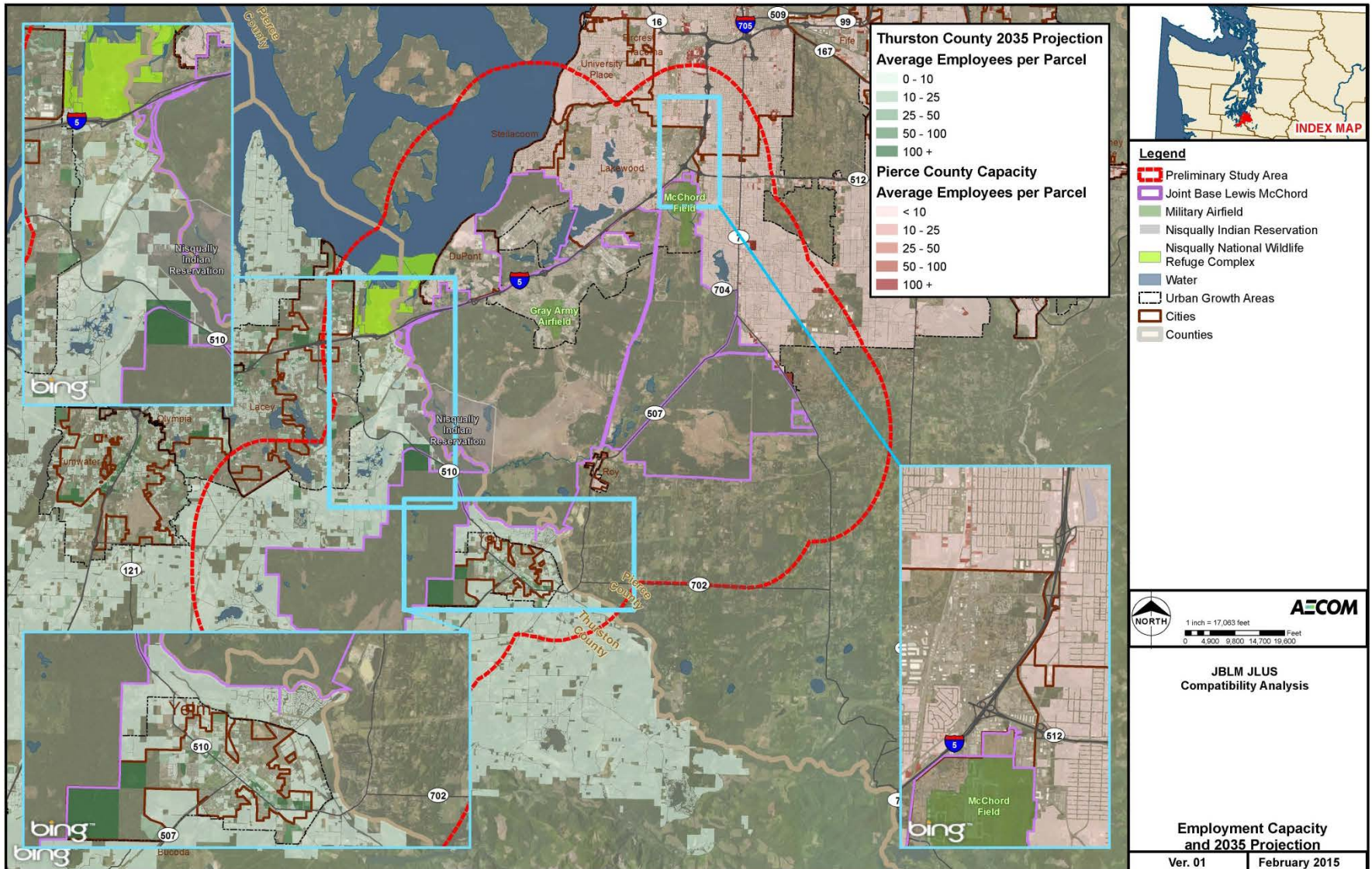


# Housing Capacity





# Employment Capacity



# Thurston Highlands Master Planned Community

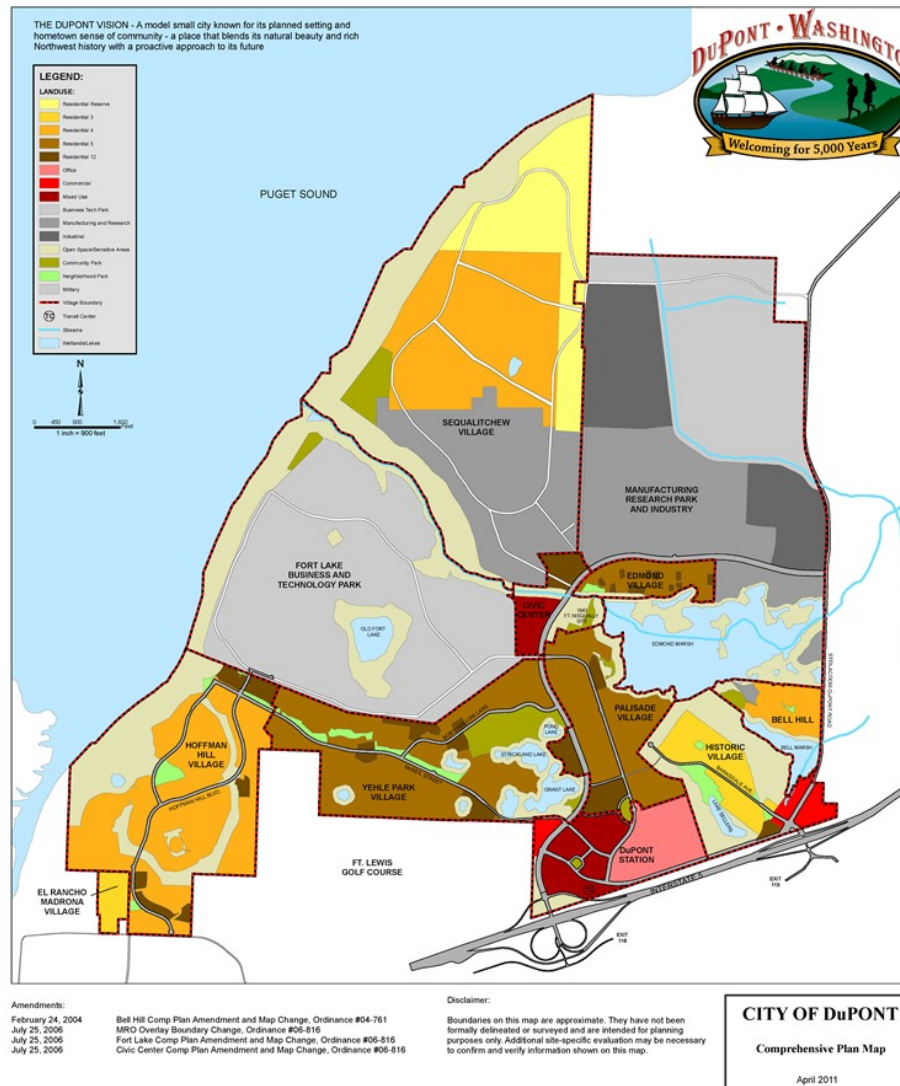




# Potential Land Swap at I-5 & Murray Road SW



# CalPortland Mine Reclamation and Future Use



# Land Use Compatibility – Initial Observations

## JLUS Study Area

- Growth projected to occur inside of Urban Growth Areas
- Areas with high capacity for housing and employment growth
  - Dupont (\*housing only)
  - Area around Nisqually Tribal Reservation
  - Yelm
  - Roy
  - Area around Highway 7

## Clear Zone & Accident Potential Zones

- Incompatible existing land uses in North Clear Zone
- Small areas of incompatible uses, including west edge of Clear Zone
- Majority of land uses are compatible, some are conditionally compatible

## Aircraft Noise Zones for McChord Airfield

- No incompatible uses
- Conditionally compatible uses close to McChord Field

# Land Use Compatibility – Initial Observations

## Large Weapon CDNL Noise Zones for JBLM Firing Ranges

- Large area with incompatible uses, including:
  - Roy
  - Area around Nisqually Tribal Reservation
- Large area with conditionally compatible uses, including:
  - Most of Yelm
  - Areas along I-5
- Few compatible uses

## Large Weapon PK15 Noise Zones for JBLM Firing Ranges

- Large area of incompatible uses
  - Overlaps with CDNL Noise Zones
  - Roy
  - Area around Nisqually Tribal Reservation
  - Areas along I-5

# Land Use Compatibility – Initial Observations

## **Thurston Highlands Master Planned Community, Yelm**

- Housing and employment growth potential
- Partly inside of Large Weapon CDNL Noise Zones
- Likely need to mitigate for noise impacts

## **Potential Land Swap at I-5 & Murray Road SW**

- Outside of current Military Influence Areas
- Compatibility conflicts resulting from existing development in North Clear Zone

## **CalPortland Mine Reclamation and Future Use, Du Pont**

- Outside of current Military Influence Areas
- Generally considered low risk for compatibility conflicts, but may be subject to small arms range noise



## Purpose of the Compatibility Strategy Menu

- Compatibility strategy menu is a toolkit of strategies and tools
- This is a broad range of options to consider further
- Each study partner adopts those strategies that are the best fit for their local context
- We will add detail on implementation as we confirm and prioritize the list

## Your input on the menu today:

- Are there strategies or tools that should not move forward for further consideration?
- What additional actions or examples could apply to our study area?
- What other strategies would you add?
- What strategies would you remove?

# Initial Compatibility Issues Identified for JLUS

Issue
Noise impacts from aircraft and training operations.
Incompatible existing land uses in McChord Field north Clear Zone and Accident Potential Zones (APZs).
Federally listed threatened and endangered prairie species and habitat on and off installation.
Future urban growth (planned or projected) near the installation boundaries.
Regional transportation impacts.
Recreational access to JBLM training ranges.
Need to maintain and increase communication among JBLM and communities.

# Menu of Compatibility Strategies

## Noise Management/Avoidance

Strategy	Actions/Examples
<b>Promote sound attenuation building standards and/or energy efficiency practices</b>	<ul style="list-style-type: none"> <li>• Encourage the adoption of more energy efficient development as a means to achieve complementary indoor sound reduction in new construction</li> <li>• Many of the requirements to increase energy efficiency outlined in the 2012 International Energy Conservation Code, for example, align with recognized sound attenuation requirements</li> <li>• Identify any additional building design and construction practices to reduce the level of noise that penetrates habitable indoor space</li> <li>• Increase awareness among homeowners and builders of sound attenuation and related energy efficiency methods through educational materials</li> </ul> <p><i>(Need to check State building code – IECC may have been adopted as part of code)</i></p>
<b>Assist homeowners with the retrofit of windows and other sound attenuation measures to achieve indoor sound level reduction</b>	<ul style="list-style-type: none"> <li>• Explore funding opportunities to retrofit existing structures with sound attenuation elements</li> </ul>
<b>Avoid overflight of sensitive locations and residential areas, when feasible</b>	<ul style="list-style-type: none"> <li>• Consider feasibility of re-evaluating and adjusting existing military flight patterns and training routes to reduce noise exposure on local communities and sensitive locations</li> <li>• Decide on process and criteria for selecting noise sensitive locations and compatible noise levels</li> </ul> <p><i>(Flight routes currently located to avoid sensitive areas)</i></p>
<b>Limit residential development in the higher noise impact areas?</b>	



# Menu of Compatibility Strategies

## Conservation/Swap/Disposal/Purchase

Strategy	Actions/Examples
Partner with state, regional, or local conservation groups to encourage conservation and open space efforts in areas of mutual benefit to the military and community	<ul style="list-style-type: none"> <li>Leverages local or regional planning for biological, natural resources, and cultural resources</li> <li>Efforts may not necessarily involve DoD funds to secure easements but achieve a outcome comparable to REPI by creating protected open spaces in areas affected by military operations</li> </ul>
Pursue additional conservation partnering opportunities through Readiness and Environmental Protection Initiative (REPI)/Army Compatible Use Buffer (ACUB), and the Sentinel Landscapes partnership	<ul style="list-style-type: none"> <li>Enables the military to enter into agreements with non-federal entities and land owners to secure conservation easements on property near a military installation or military airspace</li> </ul> <p><i>(ACUB &amp; Sentinel Landscape programs currently underway)</i></p>
Establish a working lands conservation partnership for the region or partner with existing working land trusts to identify priority areas for conservation efforts	<ul style="list-style-type: none"> <li>Formal partnership to identify areas of interest for conservation planning</li> </ul> <p><i>(Some working agricultural lands currently being managed for prairie habitat conservation)</i></p>
Explore federal or state legislation to initiate transfer/sale of land between DoD and other federal or state entities . Alternatively, local jurisdiction may facilitate, enable or organize such actions.	<ul style="list-style-type: none"> <li>Exchange of lands to permit more intensive use or development on lands unaffected by military operations and, in turn, create an open space buffer or compatible low impact uses on lands subject to military impacts</li> <li>Use acquisition techniques as corrective or preventative measure for land use compatibility. Usually implemented as fee simple acquisition or acquisition of easement, transfer of development rights or land swap</li> </ul>
Explore use of purchase of development rights to promote compatibility	<ul style="list-style-type: none"> <li>Transaction separates development rights from the land in exchange for compensation</li> <li>Land remains in a low intensity use, therefore maintaining compatibility</li> <li>Acquisition of development rights associated with agricultural lands is one of the most common types purchases</li> <li>REPI is one funding mechanism to achieve purchase of rights; or establish Military Installation Fund (MIF)</li> </ul> <p><i>(Conservation easements have been acquired for prairie habitat conservation)</i></p>

# Menu of Compatibility Strategies

## Conservation/Swap/Disposal/Purchase

Strategy	Actions/Examples
Explore the feasibility of fee simple acquisition of land to promote compatibility	<ul style="list-style-type: none"><li>• Acquisition in fee of property within a designated transitional or buffer area near a military installation</li><li>• Most expensive option available to government</li></ul> <p><i>(Some fee simple land acquisition has occurred under ACUB program)</i></p>
Other land conservation/swap/disposal/purchase strategies?	<ul style="list-style-type: none"><li>• Potential for conservation banking through Thurston County.</li></ul>

# Menu of Compatibility Strategies

## Land Use Plans and Policies

Strategy	Actions/Examples
<b>Incorporate compatibility in updates of local Comprehensive Plans</b>	<ul style="list-style-type: none"><li>• Include references to compatibility with installations, maps, recommendations, and strategies resulting from JLUS</li><li>• Define and establish Areas of Influence to form the basis of overlay districts</li><li>• Regulations would specify development characteristics, such as land use type, density, height etc.. as appropriate to maintain compatibility with the operational impacts experienced in the designated area</li><li>• Often used in conjunction with specific and defined planning zones, such as noise contours or airport accident potential zones</li><li>• Can be broadly defined as a Military Influence Area Overlay that combines other communication and performance-based standards, such as real estate disclosure and joint consultation procedures or sound attenuation of buildings and airport hazard related standards</li></ul>
<b>Ensure that the military is aware of and encouraged to participate in major plan updates and amendments</b>	<ul style="list-style-type: none"><li>• Examples include Comprehensive Plans, neighborhood or sector plans in areas of sensitivity, and transportation, infrastructure and natural resource plans</li></ul>
<b>Conduct a more detailed small area plans within the local communities</b>	<ul style="list-style-type: none"><li>• Establishes more specific land use vision and development framework for areas of sensitivity in advance of emerging development activity</li><li>• Most appropriate for specific, well-defined areas experiencing military operational impacts such as noise or traffic/transportation/gate access issues</li></ul>



# Menu of Compatibility Strategies

## Land Use Plans and Policies

Strategy	Actions/Examples
<b>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</b>	<ul style="list-style-type: none"><li>• Include references to compatibility with installations, maps, recommendations, and strategies resulting from JLUS</li></ul>
<b>Establish and promote use of Conservation Subdivision Design Ordinance</b>	<ul style="list-style-type: none"><li>• Establishes by-right access to alternative subdivision layout that condenses lot sizes on most buildable portion of site and requires dedicated open space on remainder of parcel</li><li>• Uses buffers in the form of preserved open space as part of site development and creates natural mitigation of noise</li></ul>
<b>Evaluate policy and zoning options to promote infill development to guide denser growth into established centers and away from sensitive areas</b>	<ul style="list-style-type: none"><li>• Used to guide or incentivize growth away from peripheral areas that are likelier to experience military operational impacts due to proximity to installations</li></ul>
<b>Establish or strengthen permitting process for structures that could pose risks to aviation operations</b>	<ul style="list-style-type: none"><li>• Permitting and/or notification process to coordinate or guide placement and design of structures such as renewable energy and telecommunications infrastructure</li><li>• Encourage collocation of cellular towers</li><li>• Incorporate height/marking standards for structures in MTRs</li><li>• Work to ensure that infrastructure below 200 feet in height are adequately marked for air traffic safety</li></ul>

# Menu of Compatibility Strategies

## Land Use Plans and Policies

<b>Promote site planning and design guidelines to reduce Bird Aircraft Strike Hazard (BASH)</b>	<ul style="list-style-type: none"><li>• Develop standards to minimize the attraction of birds near the airfield environs or in low-level flight corridors</li><li>• Typically includes standards for uses that can attract birds, such as detention ponds, sanitary landfills, crops etc...</li><li>• Coordinate with state and federal entities on aviation impacts to bird species at wildlife refuges and other natural areas in the region</li></ul>
<b>Explore use of capital improvement planning and infrastructure system requirements to guide growth away from sensitive areas</b>	<ul style="list-style-type: none"><li>• Since infrastructure (water, wastewater, roadways) tends to attract growth and enable denser land use patterns, coordinated planning on the extension of public service systems or permitting can promote more compatible development activity in areas exposed to military operational impacts</li></ul>
<b>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</b>	<ul style="list-style-type: none"><li>• Define and establish Areas of Influence to form the basis of overlay districts</li><li>• Regulations would specify development characteristics, such as land use type, density, height etc.. as appropriate to maintain compatibility with the operational impacts experienced in the designated area</li><li>• Often used in conjunction with specific and defined planning zones, such as noise contours or airport accident potential zones</li><li>• Can be broadly defined as a Military Influence Area Overlay that combines other communication and performance-based standards, such as real estate disclosure and joint consultation procedures or sound attenuation of buildings and airport hazard related standards</li></ul>

# Menu of Compatibility Strategies

## Land Use Plans and Policies

<b>Address compatibility issues in joint City/County planning within unincorporated Urban Growth Areas (UGAs)</b>	<ul style="list-style-type: none"><li>• Enables more robust compatibility planning in unincorporated areas outside of municipal boundaries</li><li>• Address compatibility issues during regular comprehensive plan and UGA updates (i.e., 10 year comp plan updates, annual docket)</li></ul>
<b>Update Air Installation Compatible Use Zone (AICUZ) study</b>	<ul style="list-style-type: none"><li>• Update AICUZ</li><li>• Work with local planners on implementing AICUZ recommendations</li></ul>
<b>Other land use regulations/permitting strategies?</b>	



# Menu of Compatibility Strategies

## Real Estate Tools

Strategy	Actions/Examples
<b>Record a formal note indicating proximity of parcel or tract of land to a military installation</b>	<ul style="list-style-type: none"><li>Require the recording of a note regarding the location of a parcel/tract within any designated airspace, noise or safety zone Note appears on title to real property as part of any discretionary development permit, approval, or property transfer</li></ul>
<b>Adopt or promote real estate disclosure in sensitive areas</b>	<ul style="list-style-type: none"><li>Release of information on possible impacts (noise/vibration, air safety zones) to prospective buyers or renters as part of real estate transactions for properties close to test/training impacts</li><li>Can be mandatory or voluntary disclosure</li><li>Can be implemented through a local or state-wide mechanism</li><li>Cal Portland mine redevelopment, Thurston Highlands master planned community</li></ul>
<b>Explore use of hold harmless agreements</b>	<ul style="list-style-type: none"><li>Legal document between property owner and installation that is recorded with the property title</li></ul>
<b>Explore use of covenants, easements, and other deed restrictions to promote compatibility</b>	<ul style="list-style-type: none"><li>Easements are conditions voluntarily accepted by property owners or purchased by agencies to secure the rights to allow or limit specific property uses or development</li><li>Avigation easements, for example, are tailored to impacts associated with aircraft overflight and any attendant noise, dust, vibration, etc.</li><li>These actions are referred to as “less than fee simple” purchase</li><li>Could also be explored as a condition of subdivision approval</li></ul>
<b>Other real estate strategies?</b>	

# Menu of Compatibility Strategies

## State-Wide and Regional Policy/Legislative Initiatives

Strategy	Actions/Examples
<b>Pursue designation as Area of Critical State/Local Concern and Interest</b>	<ul style="list-style-type: none"><li>An Area of Critical State Concern is similar to the Regional Military Influence, but more limited and can be designated by either state or local government</li></ul> <p><i>(PSRC and the Growth Management Policy Board are currently considering whether military facilities should be regionally recognized employment centers in the Vision 2040 and Transportation 2040 frameworks)</i></p>
<b>Support state designations of an area of Regional Military Influence (RMI)</b>	<ul style="list-style-type: none"><li>A RMI designates a geographic area to recognize the interdependence of military installations, missions, operating areas and training venues</li><li>Emphasizes the need for coordinated planning beyond obvious interrelationships between military installations and immediately adjoining neighbors</li></ul>
<b>Promote analysis of military economic impact in state-wide planning processes</b>	<ul style="list-style-type: none"><li>Promote inclusion of cost-benefit analysis of military impacts in state-wide planning processes that establish high level priorities for revenue, jobs, and local community economic health and are used to evaluate project proposals and initiatives</li></ul> <p><i>(The Governor recently established the Washington State Military &amp; Defense Industry Sector to coalesce and communicate the sector and address challenges and opportunities for growth with focus on base realignment and closure)</i></p>

# Menu of Compatibility Strategies

## State-Wide and Regional Policy/Legislative Initiatives

State-level legislation to promote land use compatibility around military installations	<ul style="list-style-type: none"><li>Can be used to mandate real estate disclosure and joint consultation procedures for certain development or land use change actions in specific areas around military installations</li></ul> <p><i>The Growth Management Act requires that cities and counties not allow incompatible land uses around military installations and requires consultation with installation commanders prior to land use actions – RCW 36.70A.530)</i></p>
Advocate for state-wide web-based tool to assist with property searches in sensitive areas	<ul style="list-style-type: none"><li>Alternative platform to a locally-hosted web-based tool</li></ul>
Explore use of property tax incentives to encourage preservation of open space and working lands	<ul style="list-style-type: none"><li>Examples at the state-level include the Williamson Act in California that enable local governments to enter into contracts with private landowners for the purpose of restricting land to agricultural or related open space use in return for lower property tax assessments Can also be enacted locally</li></ul>
Other statewide or regional initiatives?	



# Menu of Compatibility Strategies

## Transportation Management

Strategy	Actions/Examples
Strengthen process to address regional transportation impacts	
Other transportation strategies?	

# Menu of Compatibility Strategies

## Communications/Coordination

Strategy	Actions/Examples
<b>Increase outreach by military partners in the community to promote understanding of military mission, operations, and benefits to community and build support for compatibility strategies and increased cooperation</b>	<ul style="list-style-type: none"><li>• Build on outreach efforts of the SSMCP</li><li>• Use of web sites, brochures, briefings, and other media to increase awareness of military activities, mission, and economic impacts</li><li>• Conduct additional community outreach on military operations and mission to promote visibility of the military</li><li>• Publication of training schedules or advanced notice of operations when feasible</li><li>• Conduct quarterly or semi-annual briefings by military representatives at city or at city council/county commission meetings</li><li>• Other examples are: briefings to community groups; on-installation visits and “field trips” for the public; periodic press releases or media events about mission and economic impacts; testing and training demonstrations for the public</li></ul>
<b>Promote pre-planning and review of major new proposals among JLUS internal stakeholders</b>	<ul style="list-style-type: none"><li>• Includes DoD, local, regional, state, and federal projects</li><li>• Must set criteria for the scale or type of action warranting referral</li><li>• Includes referral of local development and subdivision applications to military installation for advisory review/comment</li></ul>

# Menu of Compatibility Strategies

## Communications/Coordination

Promote formal participation of military representatives on local planning boards and commissions	<ul style="list-style-type: none"><li>• Military representatives participate as non-voting member of community planning advisory bodies such as Planning and Zoning Commissions</li></ul>
Enhance system of notification and communication with public stakeholders on recreational use of range lands	<ul style="list-style-type: none"><li>• Enhance notification system for recreational users accessing range lands</li><li>• Increase awareness through better signage, mapping and public education strategies</li><li>• Provide for periodic outreach to recreational user groups to explain access management process and current status</li><li>• Encourage informal “eyes and ears” by users to keep training lands free of garbage or illegal uses via communication with Range Control</li></ul>
Participate in a Memorandum of Understanding for joint consultation and information sharing among decision-makers	<ul style="list-style-type: none"><li>• Formalizes and expands existing procedures regarding notification and consultation/coordination between military, community, local governments, land owners and land managers on projects, policies, and activities</li><li>• Establishes clear points of contact in local, state, federal and DoD agencies</li></ul>
Establish an ongoing JLUS implementation entity	<ul style="list-style-type: none"><li>• Build on current SSMCP structure and ongoing regional outreach partnerships</li><li>• Create an implementation body to advocate for adoption of recommended compatibility measures and promote continued dialogue</li><li>• Umbrella organization chartered, empowered and funded to support multi-jurisdictional, regional land use planning and track progress on JLUS actions</li></ul> <p><i>(JLUS Subcommittee of SSMCP Steering Committee currently directing JLUS study)</i></p>



# Menu of Compatibility Strategies

## Communications/Coordination

<b>Share information among internal stakeholders for improved coordination</b>	<ul style="list-style-type: none"><li>• Develop an internal web-based tool to facilitate project/plan review among internal stakeholders</li><li>• Internal data clearinghouse that enables GIS sharing, data upload, and comment of posted projects and initiatives</li><li>• May also include additional information on mission activities, such as training schedules or other updates</li><li>• Designate an entity to main and monitor site</li></ul>
<b>Provide information about military installations and activities to property owners and external stakeholders</b>	<ul style="list-style-type: none"><li>• Develop and maintain an updated database of points of contact (POC) by entity</li><li>• Compile comprehensive notification lists and expand methods to reach a wider range of affected parties about noise or other mission-related events, including fliers, social media, and texting</li><li>• Develop online and printed information to highlight military activities, missions, and economic impacts</li><li>• Create a web-based feature linked to available GIS to enable parcel- or lot- specific searches that identify if a property falls within a sensitive area, such as a noise zone or APZ</li></ul>
<b>Other communication/coordination strategies?</b>	<ul style="list-style-type: none"><li>• Create and maintain a guidebook that identifies points of contact on JBLM and within local communities.</li><li>• Reinforce SSMCP's role as liaison between JBLM and communities.</li></ul>

# Menu of Compatibility Strategies

## Other Possible Strategies

<b>Coordinate airspace issues and management to provide for safe and efficient use of Special Use Airspace (SUA) and maximize the capacity of SUA</b>	<ul style="list-style-type: none"><li>• Evaluate key areas of congestion or interface between civilian and military aircraft and develop a management plan for these areas</li><li>• Build on the regional organizational structure to manage and coordinate/schedule special use airspace use</li></ul>
<b>Strengthen coordination on the delivery of community services needed to accommodate military-related growth</b>	<ul style="list-style-type: none"><li>• Build on existing efforts to anticipate and meet community growth demands related to military mission change, such as housing, schools, etc...</li><li>• Form a current baseline of demographic and socio-economic conditions and related public service delivery needs to assist in evaluating the impacts of changes in the military mission</li></ul>
<b>Explore or strengthen joint service agreements between the DoD and local communities</b>	<ul style="list-style-type: none"><li>• Existing agreements in areas such as public safety and emergency response</li><li>• Could expand to include use of recreational and educational facilities on installations and in communities</li></ul>
<b>Explore public-private funding partnerships to support economic or infrastructure development in local communities</b>	<ul style="list-style-type: none"><li>• Public-public partnerships between military installations and local agencies that enable the military to collaborate with communities to provide for services such as housing; energy; transportation; municipal services (e.g., water, waste management, recreation); health services; facilities; work force; or education</li></ul>

# Menu of Compatibility Strategies

## Other Possible Strategies

<b>Adopt and enforce local dark-sky ordinances</b>	<ul style="list-style-type: none"><li>• Reduce the light pollution interference with training activities by requiring the use of fully shielded, cut-off outdoor lighting applications</li><li>• Down-lighting at all airports and airfields and outdoor stadiums and sport parks</li><li>• Can be required for major new developments (e.g. commercial, industrial uses) Retrofitting can be encouraged</li></ul>
<b>Adopt on-installation policies to install dark-sky lighting</b>	<ul style="list-style-type: none"><li>• Use of fully shielded, cut-off outdoor lighting applications for on-installations areas, including ramp lights Intended to minimize light pollution issues affecting regional observatories</li></ul>
<b>Frequency Spectrum Management</b>	
<b>Strengthen Anti-Terrorism/Force Protection (AT/FP) measures</b>	<ul style="list-style-type: none"><li>• Develop an outreach program that provides local law enforcement and other government agencies information and guidance regarding coordination and response actions to terrorist threats</li><li>• Develop regional security guidelines for military and national energy infrastructures</li></ul>
<b>Better define or secure physical boundaries around installations and training areas to minimize trespass</b>	<ul style="list-style-type: none"><li>• Selectively secure physical boundaries of installations, training areas and important infrastructure to minimize trespass, intrusion, or inadvertent access by members of the public</li></ul>



- Continue data collection, GIS analysis, and mapping
- Refine and flesh out preferred set of compatibility strategies
- Draft Compatibility Report in **April**
- Joint TWG/JLUS Subcommittee meeting in **late April**
- Final Compatibility Report and Recommended Compatibility Strategies in **May**
- Public meetings **May-June**
- Develop Implementation Plan and Final JLUS Report **July-September**



# LAND USE COMPATIBILITY ANALYSIS

25 February| 2015

# Joint Base Lewis-McChord (JBLM) Joint Land Use Study (JLUS)



## *Land Use Compatibility Analysis Final*



October 2015



## Executive Summary

The Joint Land Use Study (JLUS) for Joint Base Lewis-McChord (JBLM) is a strategic plan that provides specific implementation actions to ensure compatible civilian growth and development in the vicinity of JBLM. The JLUS presents recommendations for consideration by local and state governments that promote compatible development and to protect public health, safety, and welfare while also protecting the ability of the military to accomplish its vital training and operational missions both now and over the long term. To be developed as part of the JLUS process, an Implementation Plan will contain details such as the timing, order of magnitude costs, potential funding sources, lead and partner jurisdictions/ agencies/ organizations, and supporting background information such as model ordinances. The final JLUS Report will comprise the results of the Existing Conditions Report, the Land Use Compatibility Analysis (this report), and the Implementation Plan.

The JBLM JLUS is made possible through a grant from the Department of Defense (DoD) Office of Economic Adjustment (OEA) to the City of Lakewood and coordinated by the South Sound Military and Communities Partnership (SSMCP). A consultant team of AECOM, 3 Square Blocks, and Transpo Group prepared this report for the City of Lakewood. Additionally, a wide array of partners is involved in the study process, including but not limited to:

- DoD OEA
- JBLM Headquarters and staff
- Washington State Department of Commerce
- Nisqually Indian Tribe
- Thurston Regional Planning Council (TRPC)
- Pierce County
- Thurston County
- City of DuPont
- City of Lacey
- City of Lakewood
- City of Rainier
- City of Roy
- Town of Steilacoom
- City of Tacoma
- Tacoma-Pierce County Chamber
- Tacoma-Pierce County Health Department
- City of Yelm

A JLUS study area was established early in the JLUS process to ensure that stakeholders and any potential impacts were identified, and as a preliminary means to account for base security and anti-terrorism/force protection. It extends roughly 2 miles outside the entire JBLM installation boundaries, and includes the following extensions: north into Tacoma to include the Accident Potential Zones (APZs) of McChord Field, and routes to the Port of Tacoma; south to include all

of the cities of Yelm and Rainier; southwest to include all of the Nisqually National Wildlife Refuge and the Nisqually Indian Reservation; the eastern portion of Olympia/Lacey, and routes to the Port of Olympia; and west to include the Town of Steilacoom.

This JLUS, in part, builds upon the results of prior studies, including the 2010 JBLM Growth Coordination Plan (GCP) and the 1992 McChord Air Force Base (AFB) and Fort Lewis Joint Land Use Study. Since the 1992 JLUS was completed, the two installations have been combined into a joint base and grown considerably, missions have changed, and significant urban growth has occurred adjacent to or near JBLM. While some specific compatibility issues identified in the previous (1992) JLUS have been resolved and some others are no longer relevant, several persistent issues remain that are being addressed in the 2015 JLUS.

Most current land uses around JBLM do not have negative impacts on military capabilities; however, some ongoing and potential new or future areas of concern were identified through the current JLUS process. Continued collaboration is needed between local jurisdictions and JBLM to develop and implement regional solutions to these issues, and to support the military's ability to carry out its mission requirements today and in the future.

This report presents the findings of the Land Use Compatibility Analysis. It contains a summary of the current land use context; a summary of relevant land use compatibility guidance; a description of the compatibility analysis methodology; geographic information system (GIS) mapping and analysis of land use and military impacts; conclusions; and a preliminary list of compatibility strategies.

This Land Use Compatibility Analysis report also proposes a menu of strategies intended to mitigate existing incompatible land uses, and to ensure future compatible development. The menu of strategies is organized around the seven compatibility issues analyzed in this report and is found in Section 6.

The purpose of the Land Use Compatibility Analysis report is twofold:

- To conduct quantitative and qualitative analyses to identify existing or potential incompatible land uses between nearby communities and JBLM.
- To identify preliminary strategies to address the incompatibilities identified in the analysis.

The Land Use Compatibility Analysis is structured around the following issues:

- Urban growth
- Aircraft safety
- Noise from military operations
- Threatened and endangered prairie species and habitat
- Regional transportation impacts
- Trespass and unauthorized access to JBLM range and training lands

- Communication and coordination

The consultant team developed a five-prong definition of compatibility, based on OEA JLUS guidance, to guide this land use compatibility analysis for the JLUS. For the purposes of the JBLM JLUS, compatible uses are defined as land uses that:

- Do not interfere with military training and operations.
- Include civilian and JBLM land uses that exist harmoniously alongside each other.
- Do not expose people to undue safety risks or nuisance.
- Maintain quality of life.
- Balance safety, growth, and development.

Compatibility issues arise when land uses do not reflect this definition. Compatibility issues can vary depending on types of land uses and exposures, and may evolve over time. The land uses listed below may be incompatible when located near military training and operational activities.

- Noise-sensitive uses, such as housing, schools, medical facilities or places of worship, and uses that cannot be readily sound-attenuated, such as manufactured housing.
- Uses that concentrate people (certain higher residential densities, schools, theaters).
- Uses that can interfere with safe air navigation, such as tall structures; activities that emit electrical currents that may impair aircraft equipment; or activities that throw off excessive light, smoke, or dust and may impair pilot vision.
- Uses that attract birds and other wildlife that can interfere with safe aviation.

The tables below represent a high-level summary of detailed federal guidelines. Decisions about land use compatibility are not always “black and white,” and there are some grey areas where compatibility is influenced by community context, site conditions, or other factors. Federal guidelines referenced in this analysis are advisory. It is the responsibility of local jurisdictions to make policy and regulatory decisions regarding land uses under their jurisdiction.

Table ES-1 shows the compatibility of various types of land uses in areas where there is risk of aircraft accident, and Table ES-2 shows the same for areas where there is risk of public nuisance complaint due to noise exposure. Land uses shown in red are categorized as incompatible within the given zones, meaning that they are not recommended based on federal compatibility guidance, and their impacts are significant enough that mitigation may not be effective. Uses depicted in yellow are categorized as conditionally compatible and may warrant mitigation measures, such as noise attenuation or real estate disclosure, to reduce conflicts. Land uses shown in green are categorized as compatible with nearby military operations and training activities.



**Table ES-1. Land Use Compatibility Summary: Aircraft Safety.**

Land Use	Clear Zone (CZ)	Accident Potential Zone I (APZ I)	Accident Potential Zone II (APZ II)
Single-family Detached	Incompatible	Incompatible	Conditionally Compatible
All Other Residential	Incompatible	Incompatible	Incompatible
Mixed-Use Center	Incompatible	Incompatible	Conditionally Compatible
Light Commercial	Incompatible	Conditionally Compatible	Compatible
Heavy Commercial	Incompatible	Incompatible	Compatible
Light Industrial	Incompatible	Compatible	Compatible
Heavy Industrial	Incompatible	Incompatible	Compatible
Institutional/Public Use	Incompatible	Incompatible	Incompatible

Source: This table summarizes land use compatibility guidance from the Land Use Compatibility Guidelines for APZs (DoD 1977), Department of Defense Instruction 4165.57, Air Installations Compatible Use Zones, The Air Force Handbook 32- 7084 AICUZ Program Manager's Guide (DoD 1999) and UFC 3-260-01.

**Table ES-2. Land Use Compatibility Summary: Military Operational Noise.**

Land Use	Aircraft Noise Zone III: >75 DNL dBA (Not recommended w/ any noise-sensitive uses)	Aircraft Noise Zone II: 65-75 DNL dBA (Normally not recommended with noise-sensitive uses)	Aircraft Noise Zone I: <65 DNL dBA (Generally acceptable with any noise-sensitive uses)	Large Weapon CDNL Noise Zone III: >70 CDNL dBC (Incompatible with noise sensitive uses)	Large Weapon CDNL Noise Zone II: 62-70 CDNL dBC (Normally incompatible with noise-sensitive uses)	Large Weapon CDNL Noise Zone I: <62 CDNL dBC (Compatible with most noise-sensitive uses)	JBLM Firing Range Large Weapon PK15(met) Noise Zone: 115-130 dBP (Noise-sensitive uses are discouraged)	JBLM Firing Range Large Weapon PK15(met) Noise Zone: >130 dBP (Noise-sensitive uses are strongly discouraged)
All Residential	Incompatible	Incompatible	Conditionally compatible	Incompatible	Incompatible	Conditionally Compatible	Incompatible	Incompatible
Commercial	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible
Industrial	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible
Institutional /Public Use	Incompatible	Incompatible	Conditionally compatible	Incompatible	Incompatible	Conditionally Compatible	Incompatible	Incompatible

Source: This table summarizes land use compatibility guidance from several sources, including The Federal Interagency Committee on Urban Noise Guidelines for Considering Noise in Land Use Planning (FICUN 1980), the Land Use Compatibility Guidelines for APZs (DoD 1977), the Air Force Handbook 32- 7084 AICUZ Program Manager's Guide (DoD 1999), and Army Regulation 200-1 (DoD 2007).

## General Conclusions

Most current land uses around JBLM do not have negative impacts on military capabilities; however, some ongoing and potential new or future areas of concern were identified through the current JLUS process. Continued collaboration is needed between local jurisdictions and JBLM to develop and implement regional solutions to these issues and to support the military's ability to carry out its mission requirements today and in the future. Based on the analysis contained in this report, several conclusions are drawn and are summarized in Table ES-3.

**Table ES-3. Summary of Conclusions.**

<b>Compatibility Issue</b>	<b>Conclusions</b>
Urban Growth	<ul style="list-style-type: none"> <li>• Additional urban growth within the McChord Field North CZ should be prohibited.</li> <li>• Urban growth should be directed away from high noise areas and APZs, where feasible.</li> <li>• Significant growth capacity in the Thurston Highlands Master Planned Community represents potential incompatibility.</li> </ul>
Aircraft Safety	<ul style="list-style-type: none"> <li>• Existing non-conforming incompatible uses in the McChord Field north CZ represent the most critical encroachment issue facing JBLM.</li> <li>• JBLM should seek federal, state, and local funding to resume property acquisition efforts in the McChord north CZ.</li> <li>• In APZ II, medium and high density residential uses in Tacoma and recreational uses in Lakewood are categorized as incompatible.</li> <li>• Jurisdictions should seek to phase out incompatible uses in APZs through zoning, property acquisition, and public facility siting decisions.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Areas in Lakewood and Tacoma near I-5 are zoned for residential, mixed use, and recreational uses categorized as incompatible or conditionally compatible.</li> <li>• Incompatible or conditionally compatible land uses in the JBLM large weapon noise zones include Roy, parts of Yelm and DuPont, the Nisqually Indian Reservation, and parts of the urban growth area in unincorporated Thurston County near Lacey.</li> </ul>
Endangered and Threatened Species and Habitat	<ul style="list-style-type: none"> <li>• Listed species requirements limit the scope of training on JBLM training lands.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Continuation of current and exploration of new solutions for JBLM-related and other traffic are needed, particularly as it affects local road networks.</li> </ul>
Trespass and Unauthorized Access to JBLM Range and Training Lands	<ul style="list-style-type: none"> <li>• The continuing management of access to training lands will limit trespass and competition for access to military training lands while maintaining legitimate compatible recreational uses.</li> </ul>
Communication and Coordination	<ul style="list-style-type: none"> <li>• Communication and coordination among JLUS partners are critical for the implementation of compatibility recommendations.</li> </ul>

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## Acronyms and Abbreviations

ACP	Access Control Point
ACUB	Army Compatible Use Buffer
ADU	Accessory Dwelling Unit
AFB	Air Force Base
AICUZ	Air Installation Compatibility Use Zone
APZ	Accident Potential Zone
AT/FP	anti-terrorism/force protection
BRAC	Base Realignment and Closure
CDNL	C-weighted Day-Night Level
CFR	Code of Federal Regulations
CNLM	Center for Natural Lands Management
CZ	Clear Zone
dBA	Decibels, A-weighted
dBc	Decibels, C-weighted
DoD	Department of Defense
DPTMS	Directorate of Plans, Training, Mobilization, and Security
DSHS	Department of Social and Health Services
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FICUN	Federal Interagency Committee on Urban Noise
FY	Fiscal Year
GCP	Growth Coordination Plan
GIS	geographic information system
GMA	Growth Management Act
GMCC	Growth Management Coordination Committee
HOV	High Occupancy Vehicle
I-5	Interstate 5
IJR	Interchange Justification Report
IONMP	Installation Operational Noise Management Plan
JBLM	Joint Base Lewis-McChord
JLUS	Joint Land Use Study
MIF	Military Installation Fund
MTRs	Military training routes
MWR	Morale, Welfare, and Recreation
NGO	non-governmental organization
NRCS	Natural Resources Conservation Service
OEA	Office of Economic Adjustment
PK15	Peak Noise Level
PSRC	Puget Sound Regional Council
RCW	Revised Code of Washington
REPI	Readiness and Environmental Protection Initiative
RFP	Request for Proposals
RMI	Regional Military Influence
ROW	right-of-way
SPP	Sustainability in Prisons Program
SSMCP	South Sound Military and Communities Partnership

TDM	transportation demand management
TRPC	Thurston Regional Planning Council
TWG	Technical Working Group
UGA	Urban Growth Area
USDA	U.S. Department of Agriculture
USDOl	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WSDOT	Washington State Department of Transportation

# Land Use Compatibility Analysis

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## 1. Introduction

The Joint Land Use Study (JLUS) for Joint Base Lewis-McChord (JBLM) is a collaborative process among local, regional, state, federal, and tribal partners that is designed to create dialogue around complex land use issues related to JBLM. The Department of Defense (DoD) Office of Economic Adjustment (OEA) administers the JLUS program and provides funding and guidance to local communities. The JBLM JLUS is made possible through a grant from the DoD OEA to the City of Lakewood and coordinated by the South Sound Military and Communities Partnership (SSMCP).

A JLUS study area was established early in the JLUS process to ensure that stakeholders and any potential impacts were identified, and as a preliminary means to account for base security and anti-terrorism/force protection (AT/FP). The JLUS study area extends approximately 2 miles outside the entire JBLM installation boundaries, and includes the following extensions: north into Tacoma to include the Accident Potential Zones (APZs) of McChord Field, and routes to the Port of Tacoma; south to include all of the cities of Yelm and Rainier; southwest to include all of the Nisqually National Wildlife Refuge and the Nisqually Indian Reservation; the eastern portion of Olympia/Lacey, and routes to the Port of Olympia; and west to include the Town of Steilacoom. See Figure 1.

To reflect the complexity of the study area, a wide array of partners are involved in the study process, including but not limited to:

- DoD OEA
- JBLM Headquarters and staff
- Washington State Department of Commerce
- Nisqually Indian Tribe
- Thurston Regional Planning Council (TRPC)
- Pierce County
- Thurston County
- City of DuPont
- City of Lacey
- City of Lakewood
- City of Rainier
- City of Roy
- Town of Steilacoom
- City of Tacoma
- Tacoma-Pierce County Chamber
- Tacoma-Pierce County Health Department
- City of Yelm



The 2006 *OEA Joint Land Use Study Program Guidance Manual* (OEA 2006) notes that the “JLUS is produced by and for the local jurisdiction(s). It is intended to benefit both the local community and the military installation...”

The Guidance Manual further defines JLUS program objectives as twofold:

- *“To encourage cooperative land use planning between military installations and the surrounding communities so that future civilian growth and development are compatible with the training or operational missions of the installation; and*
- *To seek ways to reduce the operational impacts on adjacent land.”*

The JBLM JLUS is a strategic plan that provides specific implementation actions to ensure compatible civilian growth and development. The JLUS presents recommendations for consideration by local and state governments that promote compatible development and protect public health, safety, and welfare while also protecting the ability of the military to accomplish its vital training and operational missions currently and over the long term.

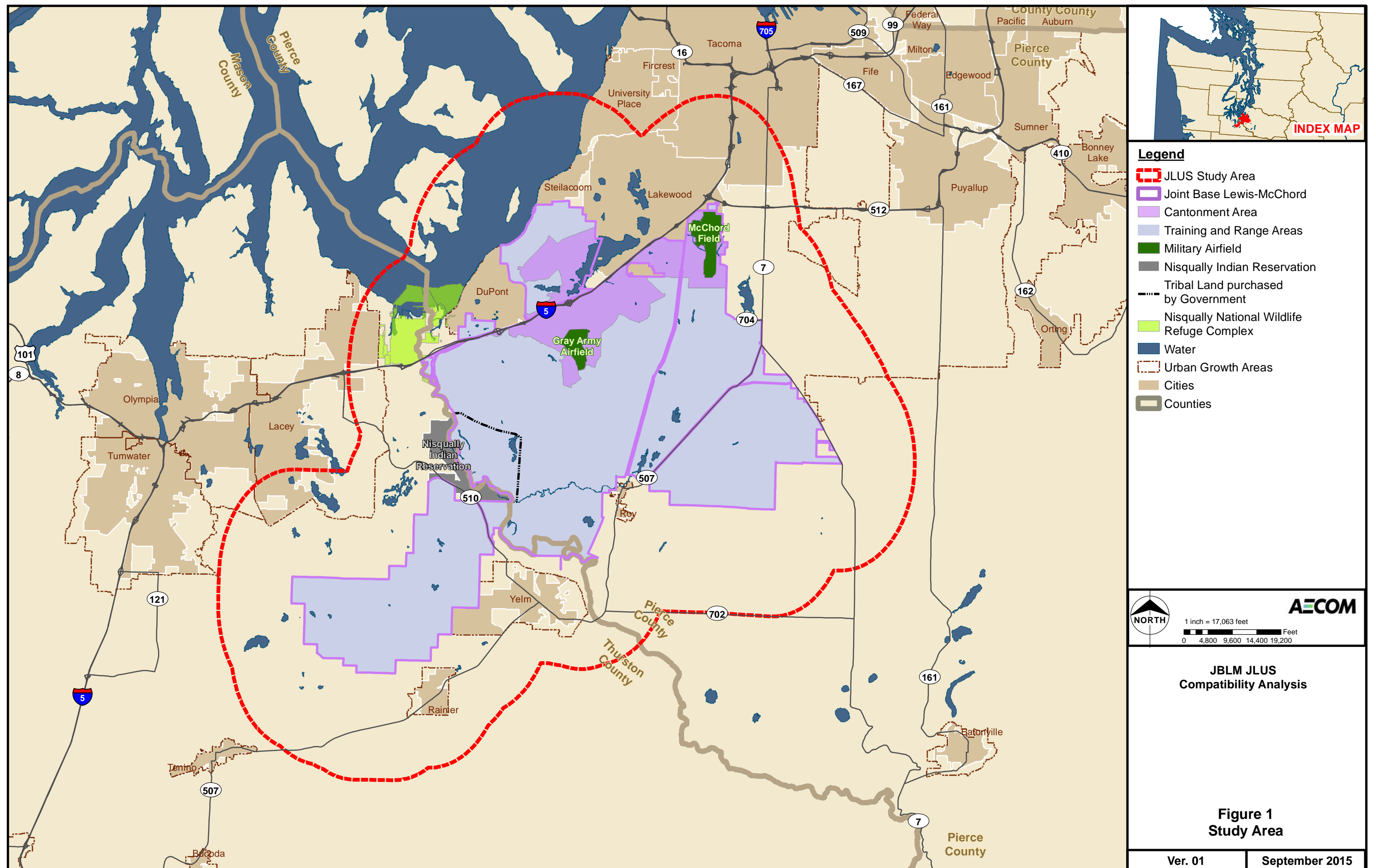
A consultant team of AECOM, 3 Square Blocks, and Transpo Group has prepared this Land Use Compatibility Analysis Report, which is one component of the overall JLUS process. Its purpose is to identify existing and potential future incompatible land uses around the base, and to identify preliminary recommendations to ensure the ability of the military to accomplish its training and operational missions while protecting public health, safety, and welfare in the communities surrounding the military installation

The Land Use Compatibility Analysis builds on the findings of the Existing Conditions Report (AECOM et al. 2015). It identifies existing and potential incompatible land uses. It proposes a preliminary list of strategies to mitigate for existing incompatibility and ensure compatible future development.

Based on the review and guidance of the JBLM JLUS Technical Working Group (TWG) and the SSMCP JLUS Subcommittee, this preliminary list of strategies will be refined and prioritized, resulting in an actionable Implementation Plan. The Implementation Plan will contain details including the timing, order of magnitude costs, potential funding sources, lead and partner jurisdictions/agencies/organizations, and supporting background information such as model ordinances. The final JLUS Report will comprise the results of the Existing Conditions Report, the Land Use Compatibility Analysis, and the Implementation Plan.

The purpose of the Land Use Compatibility Analysis Report is twofold:

- To conduct quantitative and qualitative analysis to identify existing or potential incompatible land uses between nearby communities and JBLM.
- To propose preliminary strategies that address the incompatibilities identified in the analysis.



The Existing Conditions Report identified and described seven initial compatibility issues to address during the JLUS process. These issues provided the starting point for the compatibility analysis. The analysis is structured around the issues of:

- Urban growth
- Aircraft safety
- Noise from military operations
- Threatened and endangered prairie species and habitat
- Regional transportation impacts
- Trespass and unauthorized access to JBLM range and training lands
- Communication and coordination

This report presents the findings of the Land Use Compatibility Analysis. It contains a summary of the current land use context; a summary of relevant land use compatibility guidance; a description of the compatibility analysis methodology; geographic information system (GIS) mapping and analysis of land use and military impacts; conclusions; and a preliminary list of compatibility strategies.

## 2. Current Context

This JLUS, in part, builds upon the results of prior studies, including the 2010 JBLM Growth Coordination Plan (GCP) (City of Lakewood. 2010) and the 1992 McChord Air Force Base (AFB) and Fort Lewis Joint Land Use Study (McChord AFB and Fort Lewis 1992). The 1992 JLUS and the GCP represent strong relationships and coordination among surrounding communities and the U.S. DoD. Numerous ongoing coordination activities strengthen military-civilian relationships, and go a long way in ensuring compatibility of military and civilian activities.

During the JBLM Growth Coordination process, however, stakeholders suggested that a revised JLUS was needed to address the changing nature of land uses associated with both JBLM and surrounding jurisdictions. Detailed recommendations about the need for this JLUS are contained in the GCP and Land Use Appendix to the GCP and are summarized here to provide context.

As a result of the 2005 Base Realignment and Closure (BRAC) process, the two military installations were combined into JBLM. Military missions have changed and significant urban growth has occurred in the region since the 1992 JLUS. The population of Pierce County increased 13.5 percent from 700,818 in 2000 to 795,225 in 2010. Thurston County's population increased 21.7 percent from 207,335 in 2000 to 252,264 in 2010. The JBLM population has fluctuated over that time due to changing missions, conflicts overseas, deployment and redeployment cycles, and currently, Army downsizing. The U.S. Census indicated that in 2000, the on-base population of JBLM was 19,089. JBLM reports that, as of June 2015, the on-base population stands at 23,700. Region-wide, the JBLM-supported population, which includes full-time military, family members, and dependents; DoD employees; and civilian contractors; living on base and in neighboring communities, stands at more than 130,000.

The 1992 JLUS resulted in several successful implementation actions. Most significantly, both Pierce County and the City of Lakewood have addressed land use impacts related to JBLM within their comprehensive plans and development regulations, particularly with regard to land uses in the McChord Field north Clear Zone (CZ) and Accident Potential Zones (APZs).

Property acquisition by the U.S. Air Force, using federal and state funding and funding from Pierce County, City of Tacoma, and City of Lakewood, within the north CZ and APZs has occurred to remove some incompatible land uses. Funding for property acquisition was provided, in part, through the Readiness and Environmental Integration (REPI) program. Congress authorized REPI in 2003 to address a variety of encroachment issues, including incompatible land uses within CZs. Current DoD policy has, however, precluded the use of REPI funds for the acquisition of property in a CZ. DoD policy requires that installations have control over land within their CZs and that any efforts to acquire property for this purpose should be funded by the service, not the REPI program. Because REPI funding for property acquisition is no longer available, and because not all property owners within the McChord north CZ are willing sellers, efforts to remove incompatible land uses in the CZ have reached an impasse. Unless and until DoD REPI funding policy changes, JBLM will need to seek alternate funding



sources for future property acquisition. Such funding sources may include OEA, state, or contributing funds from local jurisdictions.

While some specific compatibility issues identified in the previous study have been resolved and some others are no longer relevant, several persistent issues remain that will be addressed in this 2015 JLUS. However, land uses categorized as incompatible still exist within the north CZ and APZs, regional transportation impacts continue to pose a significant challenge, and noise impacts remain as missions have evolved.

### 3. Evaluation of Land Use Compatibility

The following section describes the overall approach to the Land Use Compatibility Analysis. This section:

- Defines compatibility.
- Summarizes relevant federal and other compatibility guidance.
- Provides a brief overview of the compatibility issues being analyzed.
- Describes the applicable geographic extent, or study area, within which each issue applies.

For purposes of evaluating compatibility of land uses around JBLM, the JLUS draws guidance from several federal level sources, including The Federal Interagency Committee on Urban Noise Guidelines for Considering Noise in Land Use Planning (FICUN 1980), the Land Use Compatibility Guidelines for APZs (DoD 1977), Department of Defense Instruction 4165.57, Air Installations Compatible Use Zones, The Air Force Handbook 32- 7084 AICUZ Program Manager's Guide (DoD 1999), Army Regulation 200-1 (DoD 2007), and Unified Facilities Criteria (UFC) 3-260-01 for airfield and heliport planning. These publications include suggested guidelines for whether various types of land uses within airfield safety zones and noise zones should be considered incompatible, conditionally compatible or compatible with military installations.

The guidelines listed above are advisory in nature and are intended to convey exposure to impacts generated by military training and operations in order to inform community decisions regarding land use. Only local governments have the authority to determine allowable land uses on private lands within their jurisdiction.

The analysis presented in this report, as well as the recommendations resulting from this JLUS, seek to strike a balance between the consistent application of federal guidance for the purposes of data analysis and mapping, and real-world policy implications. In the analysis sections that follow, land uses are categorized as compatible, conditionally compatible, or incompatible, based on the application of the guidance cited above. However, the policy recommendations that are made to address the findings of the compatibility analysis consider other factors such as the extent or severity of certain incompatible uses (recognizing that limited areas of uses categorized as incompatible may be consider *de minimus*) and the practicability of implementation. Policy recommendations are intended to be forward-looking, with a focus on preventing additional incompatible uses (e.g., preventing upzoning) rather than creating large areas of non-conforming uses through downzoning.

#### 3.1. Definition of Compatibility

The consultant team developed a five-prong definition of compatibility, based on OEA JLUS guidance (OEA 2006), to guide this land use compatibility analysis for the JLUS. For the purposes of the JBLM JLUS, compatible uses are defined as land uses that:

- Do not interfere with military training and operations.
- Include civilian and JBLM land uses that exist harmoniously alongside each other.
- Do not expose people to undue safety risks or nuisance.
- Maintain quality of life.
- Balance safety, growth, and development.

Compatibility issues arise when land uses do not reflect this definition. Compatibility issues can vary depending on types of land uses and exposures, and may evolve over time. The land uses listed below may create compatibility concerns when located near military training and operational activities.

- Noise sensitive uses, such as housing, schools, medical facilities, or places of worship and uses that cannot be readily sound attenuated, such as manufactured housing.
- Uses that concentrate people (certain higher residential densities, schools, theaters).
- Uses that can interfere with safe air navigation such as tall structures; activities that emit electrical currents that may impair aircraft equipment; or activities that throw off excessive lighting, smoke, or dust and may impair pilot vision.
- Uses that attract birds or other wildlife that can interfere with safe aviation.

### **3.2. State-Level Compatibility Guidance**

The local governments around JBLM make land use decisions in the context of Washington State law and policy guidance provided by the Puget Sound Regional Council (PSRC). Revised Code of Washington (RCW) 36.70A.530 states that military installations are of particular importance to the economic health of the state of Washington, and it is a priority of the state to protect the land surrounding our military installations from incompatible development; thus, per state law as well as federal guidance, local governments should not allow development in the vicinity of a military installation that is incompatible with the installation's ability to carry out its mission requirements. A city or county may find that an existing comprehensive plan or development regulations are not compatible with the installation's ability to carry out its mission requirements. Local jurisdictions are required to submit comprehensive plans for military installation review and comment. Similarly, policy guidance published in PSRC's regional growth management plan, VISION 2040 (PSRC 2009), calls for jurisdictions in the region to protect military lands from encroachment by incompatible uses.

The tables below represent a high-level summary of detailed federal guidelines. Decisions about land use compatibility are not always black and white and there are some grey areas where compatibility is influenced by community context, site conditions and other factors.

Table 1 identifies the compatibility of various types of land uses in areas where there is risk of aircraft accident. Table 2 shows the same for areas where there is risk of public nuisance complaint due to noise exposure. Land uses shown in red are categorized as incompatible

within the given zones, meaning that they are not recommended based on federal compatibility guidance, and their impacts are significant enough that mitigation may not be effective. Uses depicted in yellow are categorized as conditionally compatible and may warrant mitigation measures, such as noise attenuation or real estate disclosure, to reduce conflicts. Land uses shown in green are considered compatible with nearby military operations and training activities and require no action.

**Table 1. Land Use Compatibility Summary: Aircraft Safety.**

Land Use	Clear Zone (CZ)	Accident Potential Zone I (APZ I)	Accident Potential Zone II (APZ II)
Single-Family Detached	Incompatible	Incompatible	Conditionally Compatible
All Other Residential	Incompatible	Incompatible	Incompatible
Mixed Use Center	Incompatible	Incompatible	Conditionally Compatible
Light Commercial	Incompatible	Conditionally Compatible	Compatible
Heavy Commercial	Incompatible	Incompatible	Compatible
Light Industrial	Incompatible	Compatible	Compatible
Heavy Industrial	Incompatible	Incompatible	Compatible
Institutional/Public Use	Incompatible	Incompatible	Incompatible

Source: This table summarizes land use compatibility guidance from the Land Use Compatibility Guidelines for APZs (DoD 1977), Department of Defense Instruction 4165.57, Air Installations Compatible Use Zones, The Air Force Handbook 32- 7084 AICUZ Program Manager's Guide (DoD 1999), and UFC 3-260-01.

**Table 2. Land Use Compatibility Summary: Military Operational Noise.**

Land Use	Aircraft Noise Zone III: >75 DNL dBA (Not recommended w/ any noise sensitive uses)	Aircraft Noise Zone II: 65-75 DNL dBA (Normally not recommended with noise-sensitive uses)	Aircraft Noise Zone I: <65 DNL dBA (Generally acceptable with any noise-sensitive uses)	Large Weapon CDNL Noise Zone III: >70 CDNL dBC (Incompatible with noise-sensitive uses)	Large Weapon CDNL Noise Zone II: 62-70 CDNL dBC (Normally incompatible with noise-sensitive uses)	Large Weapon CDNL Noise Zone I: <62 CDNL dBC (Compatible with most noise-sensitive uses)	JBLM Firing Range Large Weapon PK15(met) Noise Zone: 115-130 dBP (Noise-sensitive uses are discouraged)	JBLM Firing Range Large Weapon PK15(met) Noise Zone: >130 dBP (Noise-sensitive uses are strongly discouraged)
All Residential	Incompatible	Incompatible	Conditionally compatible	Incompatible	Incompatible	Conditionally Compatible	Incompatible	Incompatible
Commercial	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible
Industrial	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible	Compatible	Conditionally compatible	Conditionally compatible
Institutional /Public Use	Incompatible	Incompatible	Conditionally compatible	Incompatible	Incompatible	Conditionally Compatible	Incompatible	Incompatible

Source: This table summarizes land use compatibility guidance from several sources, including The Federal Interagency Committee on Urban Noise Guidelines for Considering Noise in Land Use Planning (FICUN 1980), the Land Use Compatibility Guidelines for APZs (DoD 1977), the Air Force Handbook 32- 7084 AICUZ Program Manager's Guide (DoD 1999), and Army Regulation 200-1 (DoD 2007).

Housing and certain uses such as health care, schools, churches, and public/institutional uses are generally the most sensitive to noise and safety risks and thus tend to raise the greatest compatibility concerns.



### 3.3. Compatibility Issues

Many factors can affect compatibility, as well as overall quality of life for an installation and surrounding areas. These factors may reflect specific impacts that result from the interaction of military operations and nearby land uses or broader social, economic, and environmental conditions that influence the health and well-being of residents, workers, and communities, including:

- Air Quality
- Alternative Energy Development (could produce glare, EMI, or tall structures)
- Antiterrorism/Force Protection (AT/FP)
- Bird or wildlife air strike hazards
- Competition for Airspace
- Drainage/Stormwater
- Dust
- Economic Development
- Frequency Spectrum
- Ground Transportation
- Growth Pressures/Future Development
- Historic or Cultural Sites
- Housing (lack of adequate off-base private rental housing)
- Infrastructure Capacity
- Interagency and Stakeholder Coordination
- Legislative Initiatives/Authority (either constrains the mission or limits the ability of local governments to manage growth)
- Light and Glare
- Noise
- Public Safety (safety of off-base housing)
- Public Trespassing/Perimeter Security
- Safety Zones (air)
- Safety Zones (training buffers)
- Threatened and Endangered Species (requires protection and could reduce training flexibility)
- Vertical Obstructions
- Vibration
- Water Quality

The consultant team narrowed the range of potential compatibility factors to a core set of issues for detailed study based on four primary sources: the 1992 Fort Lewis and McChord Air Force Base JLUS, the JBLM Growth Coordination Plan, the Request for Proposals (RFP) for preparing the current JLUS, and stakeholder and public engagement feedback provided as part of the current JLUS process. The primary issues identified by these sources are summarized below. While the JLUS focuses on these seven areas of compatibility, other factors, such as

housing adequacy remain significant challenges for JBLM and surrounding communities. The JLUS communication and coordination strategies will reinforce opportunities to address quality of life issues through ongoing regional initiatives, such as the South Sound Military & Communities Partnership (SSMCP).

### **Urban Growth**

There is the potential for urban encroachment around JBLM, given current zoning designations and capacity for future growth. Area-wide growth potential near or within military impact areas, and smaller, geographically specific areas with known incompatibilities or potential incompatibilities are addressed in the compatibility analysis. Additional urban growth within the McChord Field north CZ should be prohibited, and urban growth should be directed away from high noise areas and APZs, where feasible. Within the APZs, jurisdictions should explore options for phasing out incompatible land uses through property acquisition, incremental zoning changes, or siting decisions regarding incompatible public uses like schools or hospitals.

### **Aircraft Safety**

There is a statistical possibility of aircraft accidents in the McChord Field CZ and APZs. Existing development in these areas poses safety risks to people and property, and challenges JBLM's ability to conduct training activities and operations. The presence of incompatible land uses in the CZ and APZs is the most critical encroachment issue from the perspective of the military. The resolution of this issue in a way that minimizes the presence of incompatible land uses will have a significant effect on the long-term viability of JBLM and its power projection and training missions.

### **Military Operational Noise**

Noise from aircraft operations, artillery firing, and other JBLM training activities and operations affects surrounding communities and creates the risk of noise complaints. Civilian nuisance complaints can cause military capabilities to erode over time.

### **Threatened and Endangered Species**

There are federally listed threatened and endangered prairie species and habitat on and around JBLM. Listed species requirements limit the scope of training on JBLM training lands.

### **Transportation**

The I-5 corridor is the primary transportation artery in the region. Traffic circulation and access around the I-5 corridor have been an increasing challenge as both JBLM and surrounding communities have grown over recent years. Transportation issues are being jointly addressed on a regional level by state, military, regional, and local jurisdictions.

### **Trespass and Unauthorized Access to JBLM Range and Training Lands**

Unauthorized recreational use, trespass, and nuisance uses such as illegal dumping, shooting, and off-road vehicle use create safety risks to civilians and JBLM personnel and interfere with

military training. JBLM currently operates a program that authorizes specific types of recreational use of rangelands on specific days and times.

### **Communication and Coordination**

JBLM and surrounding communities have a history of communication and coordination that is important to maintain and enhance.

### **Lack of Adequate Off-Base Private Rental Housing**

JBLM has identified the lack of adequate off-base rental housing for servicemembers as a significant issue. Approximately 70% of JBLM servicemembers live off base. The DoD follows criteria for what is considered adequate private rental housing for servicemembers that take into account factors such as cost, unit square footage, and number of bedrooms. Servicemember rank and family status (i.e., single, married, with children) affect the acceptable ranges for these criteria. Other criteria, such as crime rates affects the adequacy of private rental housing. Given recent decreases in rental availability due to increasing occupancy rates, a significant increase in rental costs, and a rise in crime rates in some areas, the supply of private rental housing DoD deems adequate has decreased and is not sufficient to serve the number of servicemembers in need of such housing.

JBLM is in the process of updating a Housing Market Analysis (HMA), expected to be released in 2015. Regional stakeholders should work with JBLM to address the conclusion of the HMA and identify ways to increase the supply of housing and decrease crime rates in order to provide a more suitable market for rental housing that meets the needs of servicemembers.

## **3.4. Military Areas of Influence**

Military areas of influence are defined by federal guidelines and reflect the results of technical modeling to demonstrate noise and air safety risks associated with military operations. The 2014 Draft JBLM AICUZ Study identifies military influence areas associated with aircraft operations, and the 2014 Draft JBLM Installation Operational Noise Management Plan (IONMP) identifies military influence areas associated with noise-generating operations<sup>1</sup>. Certain military influence areas extend off base and into the surrounding communities, and were considered as part of this analysis. They are listed below and described in greater detail in Section 4.2.

- North CZ and APZs for McChord Field
- Imaginary surfaces for McChord Field
- Military training routes (MTRs)
- Noise zones for McChord Field
- Noise zones for large weapons firing activities at JBLM ranges

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<sup>1</sup> This Land Use Compatibility Analysis contains data from the 2014 Draft JBLM AICUZ Study and the 2014 Draft JBLM Installation Operational Noise Management Plan (IONMP). Both of these documents are in draft form, pending the completion of an Environmental Assessment. These data should therefore not be considered final at this time.

- Noise zones for large weapons “single-event” firing activities at JBLM ranges

The evaluation of land use compatibility in all of the military areas of influence, except for the airfield imaginary surfaces (defined in Section 4.2.1) and MTRs, utilized GIS analysis, zoning data, and the classifications shown in Tables 1 and 2, which reflect suggested federal land use compatibility guidelines<sup>2</sup>. The analysis overlaid existing zoning data for surrounding communities with noise contours and air safety zones. The planning team collapsed detailed zoning classifications into the broader use categories shown in Tables 1 and 2. The analysis then assigned one of three designations to parcels of land based on the overlap of zoning type and guidance:

- **Incompatible:** Use is not recommended based on compatibility guidance; the impacts are significant enough that mitigation may not be effective. (Designated in **red** on Tables 1 and 2.)
- **Conditionally Compatible:** Some actions to mitigate impacts may be warranted, such as sound attenuation or real estate disclosures. (Designated in **yellow** on Tables 1 and 2.)
- **Compatible:** Use does not trigger any compatibility concerns; no action is required. (Designated in **green** on Tables 1 and 2.)

The results of this analysis demonstrate where current zoning regulations ensure compatible land uses. However, there are several specific areas where existing legal non-conforming land uses are incompatible, despite being located in a compatible zoning designation. These specific areas are described in the analysis below.

A different method was used for imaginary surface areas and flight training routes. This method relied on conversations with local stakeholders to identify known compatibility issues.

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<sup>2</sup> Tables 1 and 2 are based on suggested federal guidance from the Federal Interagency Committee on Urban Noise Guidelines for Considering Noise in Land Use Planning (FICUN 1980), the Land Use Compatibility Guidelines for APZs (DoD 1977), The Air Force Handbook 32-7084 AICUZ Program Manager’s Guide (DoD 1999), and Army Regulation 200-1 (DoD 2007).



## 4. Analysis

### 4.1. Urban Growth

Existing land use patterns in the JLUS study area are varied. The northern portion of JBLM is next to the edge of Pierce County's urban growth boundary; lands within this boundary are intended for urban development. The northern and northwestern edges of the base are adjacent to the cities of Lakewood, Steilacoom, and DuPont. The City of Tacoma, one of the state's largest cities, is just north of the base. The northeastern edge of the base is adjacent to an area of unincorporated Pierce County that is developed with urban land use patterns including a mix of residential and commercial uses. For these reasons, land use patterns in the northern part of the JLUS study area are urban in nature.

Other places within the JLUS study area with urban land use patterns include the urban growth areas containing the cities of Roy, Yelm, Rainier, and Lacey; and the Nisqually Indian Reservation. Roy and Yelm touch the southern border of the base. Roy is in a Pierce County urban growth area, and Yelm is in a Thurston County urban growth area. Rainier is located to the south of the base, and Lacey is located to the west of the base. Both cities are in Thurston County urban growth areas; neither touches the base boundary, but they are close. The Nisqually Indian Reservation straddles the western border of JBLM. The Tribal lands outside of JBLM include some urban development.

The eastern portion of the JLUS study area is outside of urban growth areas and Tribal lands. This includes unincorporated portions of Pierce County, including the unincorporated urban areas of Parkland and Spanaway. In general, it has lower levels of development and less intensive types of land uses. Land uses include vacant and undeveloped land, resource lands used for agriculture and forestry, low-density residential and commercial uses, and industrial uses. The Nisqually National Wildlife Refuge is located on the western edge of the base, and is protected from future development.

#### 4.1.1. Approach

Urban growth in general can pose a threat to military capabilities when it occurs near an installation in areas where there may be operational impacts, such as noise or accident potential. More urban development will increase the likelihood of land uses that are categorized as incompatible with safety or noise zones, which may place pressure on the installation to limit or modify training and operations in such a way that overall capabilities are reduced. Urban growth on land adjacent to military training lands may impact training operations more directly, such as by producing light pollution or increasing the potential for trespass or unauthorized access to training lands. Therefore, part of the compatibility analysis is to examine where future growth may occur and identify those areas of potential growth that are adjacent to the installation or that may be affected by noise or other impacts from the installation.

The methodology for evaluating land use compatibility in the JLUS study area used Buildable Lands data supplied by Pierce County and TRPC and GIS analysis to identify areas around JBLM where urban growth could occur in the next 20 years, and whether growth in those areas could pose any future compatibility issues.

Under the State of Washington's Growth Management Act (GMA), Pierce and Thurston counties are required to participate in the Buildable Lands Program and develop data that show the estimated capacity of lands within the county to accommodate housing and employment growth. The processes used to estimate capacity account for such factors as whether lands are vacant or underutilized, and current zoning designations. The purpose of the Buildable Lands data is not to project growth or prescribe where growth should occur, but to identify areas with the capacity to accommodate future housing and employment uses. The data are a forecasting tool that help to predict where growth may occur. The data have certain limitations since factors other than capacity, including market attractiveness, may influence the timing and nature of development. The data are used here to identify areas with development potential that may present compatibility issues, should they develop.

The analysis identified areas around JBLM with significant housing and employment capacity as areas with potential for compatibility issues. Areas with significant housing capacity include Yelm, the Nisqually Indian Reservation, and DuPont. Significant employment capacity exists in Yelm and the Nisqually Indian Reservation. When more people are exposed to the impacts of military training and operations, this increases the risk of nuisance and subsequent complaints from the public, which in turn threatens the erosion of JBLM's military capabilities.

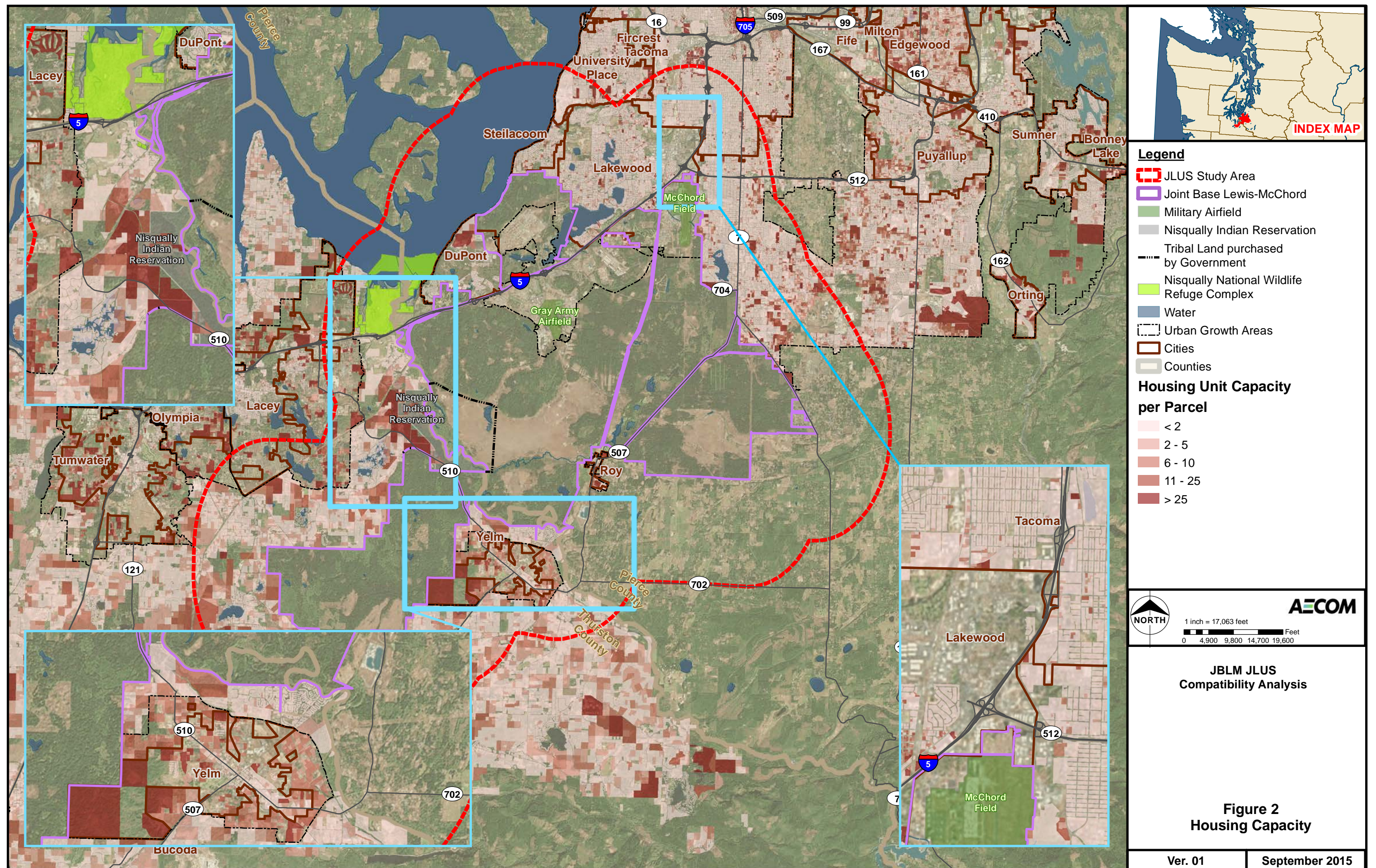
#### **4.1.2. Findings**

Figures 2 and 3 show the projected capacity for new housing units and new jobs around JBLM in the next 20 years. Places within the JLUS study area with high capacity for both housing and employment include the areas around Roy and Yelm and the area of unincorporated Pierce County around State Route 7. Additionally, parts of the City of DuPont have significant capacity for residential growth. The area between Lacey and the Nisqually Indian Reservation, within the Lacey UGA also has some housing development capacity. About 950 acres of agricultural land in this vicinity, outside of the UGA, will remain in agricultural use and not be converted to urban development due to the purchase of development rights by Thurston County. The area of unincorporated Thurston County to the northwest of the Yelm city limits, adjacent to JBLM training lands is zoned UR (Urban Reserve) 1/5. While current allowed land uses are low density rural residential, agriculture, forestry, and conservation, the intention is that this area may accommodate future urban growth. Given its proximity to JBLM training lands, this area could represent future compatibility concerns, depending on the land uses and density allowed and development standards applied.

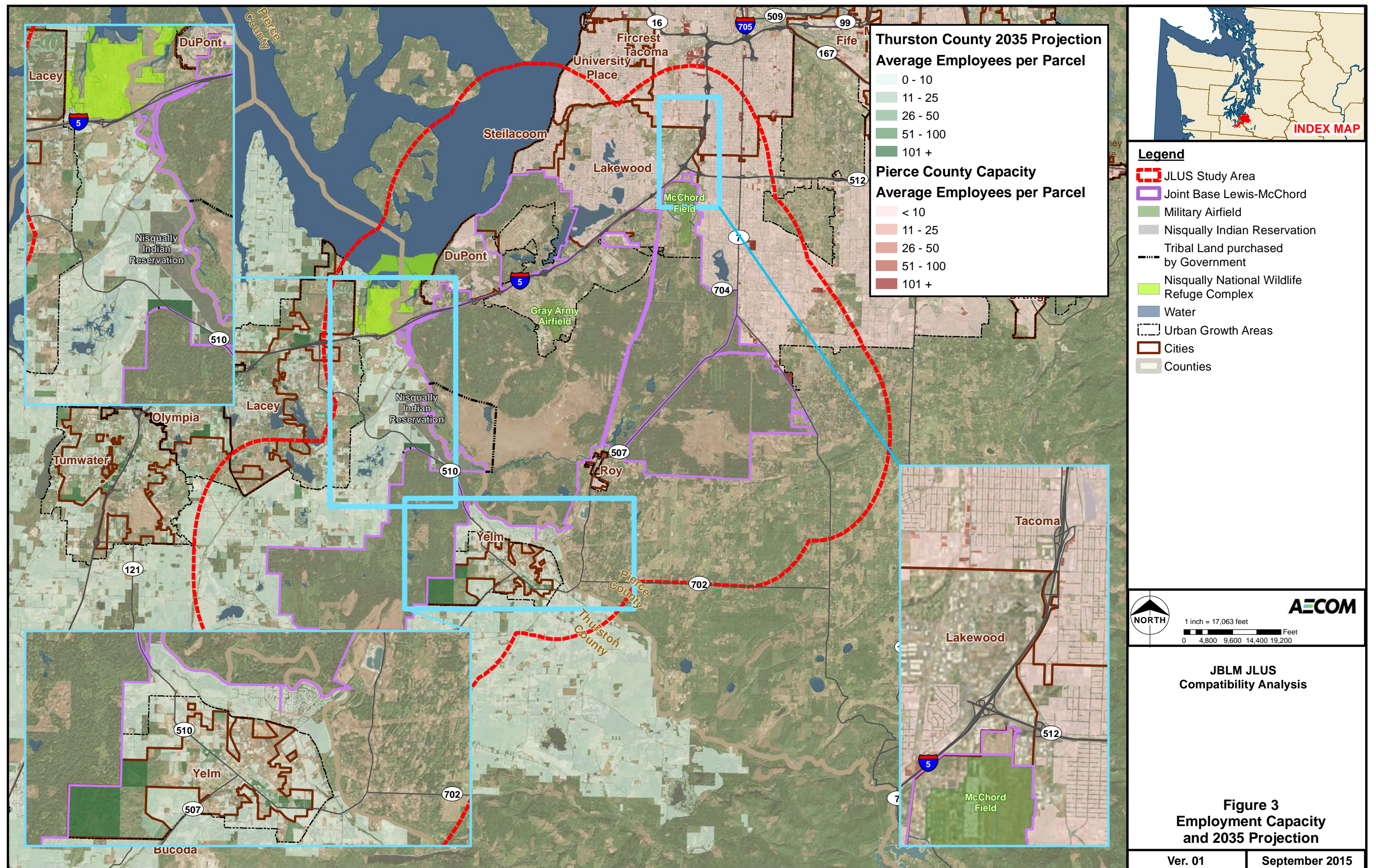
These areas have the potential for future compatibility issues, depending on how they develop and how military and training operations are conducted on the base in coming years. Current military operations provide a useful indication of the areas around the base that are likely to

experience noise and other impacts in the future. These areas are described in the following sections.











### 4.1.3. Site-Specific Areas of Concern

Two specific sites adjacent to the base were identified during the existing conditions analysis as having the potential to hold incompatible land uses in the future, given their potential for significant future growth. The sites were a proposed master planned community in the City of Yelm, and a proposed mine redevelopment in the City of DuPont.

#### Thurston Highlands Master Planned Community

The southwest portion of the City of Yelm is currently undeveloped and abuts the heavily used Rainier Training Area in the southwestern part of JBLM. This area is currently zoned for a master planned community known as the Thurston Highlands (see Figure 4). The master plan includes 5,000 homes, commercial and retail space, open space, a regional sports complex, and schools. Locating sensitive receptors such as suburban housing areas next to military training areas may lead to noise complaints.

The potential for development of the Thurston Highlands Master Planned Community represents an encroachment threat to JBLM, given its location near critical training land. As shown on Figures 2 and 3, Thurston Highlands has the potential for significant housing and job growth. A portion of it is within the C-weighted Day-Night Level (CDNL) noise zones, and is shown to be conditionally compatible. Conceptual land use plans propose residential uses and some higher densities in the northern portion of the site, in areas affected by the CDNL noise contours.

A Final Environmental Impact Statement (FEIS) was published in 2008 for the Thurston Highlands (R.W. Thorpe & Associates, Inc. 2008). The FEIS studied potential impacts such as noise and light from military operations on residents. It found that these could be mitigated and that no significant unavoidable adverse impacts were identified that would affect compatibility between the proposed master planned community and JBLM. However the Thurston Highlands project has the potential to negatively affect training operations due to its immediate proximity to important training land. Urban development at the scale and intensity envisioned for Thurston Highlands has the potential to introduce light pollution that may affect training operations and would increase the potential for trespass or unauthorized access to training lands.

The development has not moved forward since publication of the FEIS, due to economic challenges posed by the recession and due to a lack of sufficient water rights to support this level of urban growth in Yelm. This affords the opportunity to work with the City of Yelm to review the potential impacts of the master planned community on the military training and operations, encourage the redesign of the community to locate sensitive uses away from noise zones, and identify additional mitigation strategies. Potential site design strategies include locating open space and commercial uses and limiting residential uses in those portions of the site affected by the CDNL Noise Zone 1.

## CalPortland Mine Reclamation and Future Use

The CalPortland gravel mine in the City of DuPont contains an active gravel mining area that abuts the base in the Lewis North area (the portion of JBLM that is adjacent to DuPont, north of I-5). A second area of active mining near Greene Park is close to the base, but not directly adjacent. These two areas are identified as future residential uses on the DuPont Future Land Use Map (City of DuPont 2011)(see Figure 5). The first is identified as Residential Reserve. This land is designated as a reserve to be developed if and when the City needs additional land to accommodate future growth. The second area is identified as R4, single family residential development.

The Buildable Lands data reflect these zoning designations, showing high capacity for housing growth in the City (Figure 2). Conversations with City staff indicated that the lands are likely to continue in mining use for 10 years or more, and that the City and community have no concerns about land use compatibility with JBLM or these areas. The lands, although adjacent to JBLM lands, are not located within any military areas of influence. Noise contours associated with firing ranges on Lewis North do not extend beyond the installation boundaries.

### 4.2. Aircraft Safety

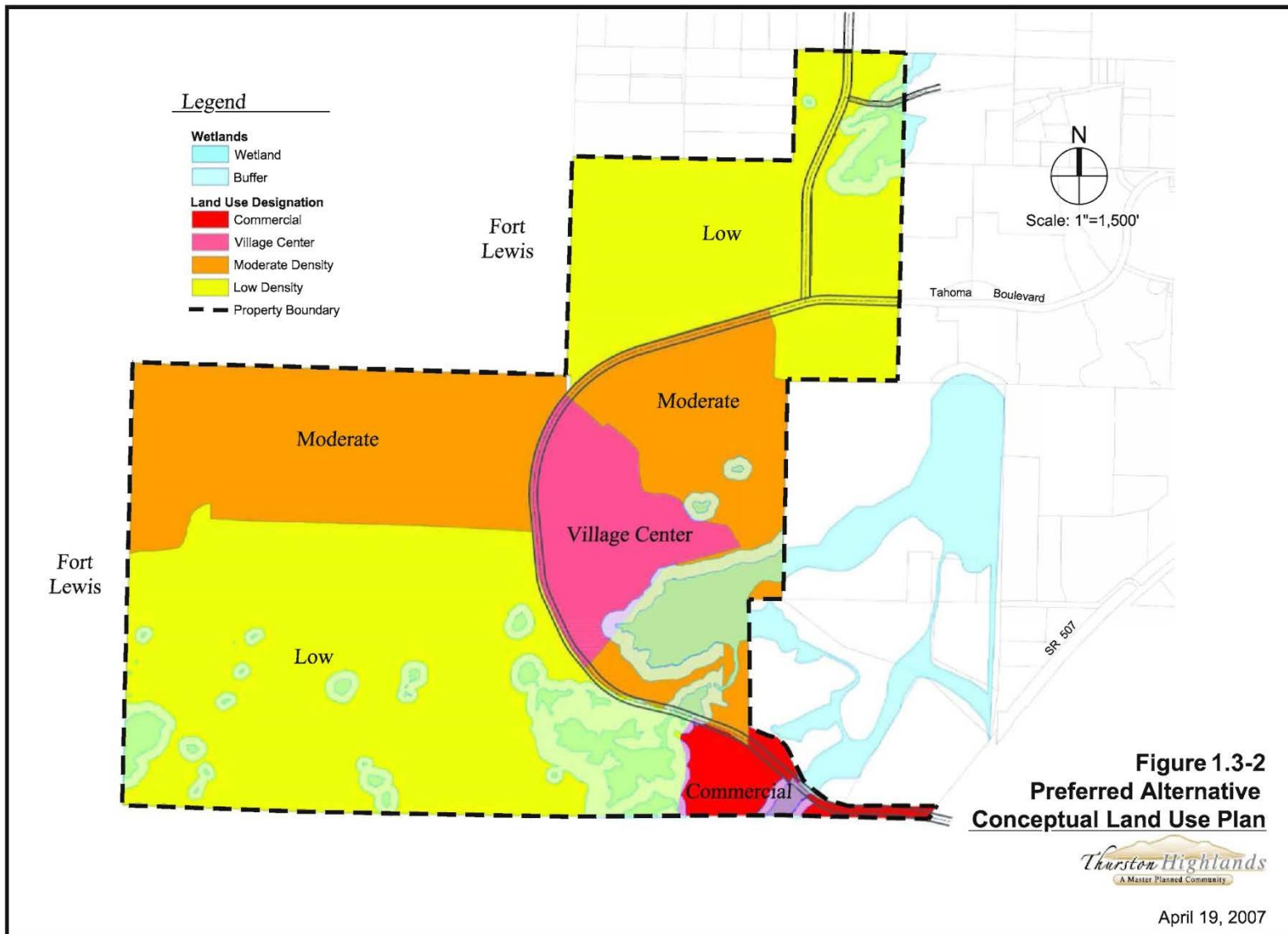
Clear Zones (CZ) and Accident Potential Zones (APZs) are areas where the potential for aircraft accidents has been identified through the Air Installation Compatible Use Zone (AICUZ) program. The CZ is a 3,000 by 3,000 foot zone at the end of the runway where there is the highest statistical possibility of aircraft accidents. Any existing or future development in the CZ is of concern. Development in the CZ increases the likelihood of flight obstructions such as physical structures, smoke, and glare, and challenges the military's ability to safely carry out missions. Development should be prohibited in this zone. Any use other than airfield infrastructure (e.g., approach lighting) is incompatible in the CZ.

The APZ I designation has somewhat lower accident potential than the CZ, but it is high enough that most types of development in this zone are discouraged, including residential uses. The APZ II designation has a lower accident potential, and some compatible uses are appropriate; however, uses that concentrate people in the APZ II, including residential uses at densities greater than 2 dwelling units per acre, are considered incompatible per federal guidance. It should be noted that the 1992 Fort Lewis and McChord AFB JLUS did not define "low density" residential uses. Local jurisdictions have defined low density residential to include densities up to 6 dwelling units per acre. The analysis and mapping contained here uses the federal guideline of 2 dwelling units per acre with the understanding that local existing conditions may justify allowing greater range of residential densities within the APZs.

Figure 6 shows the north CZ and APZs for McChord Field and whether zoning designations within these zones are compatible, conditionally compatible, or incompatible. Figure 6 also includes an overlay showing existing uses that are known to be incompatible with military

activities. Land use categorized as incompatible in the CZ and APZs is of high concern, due to the risks to both civilians and military personnel related to aircraft crashes.

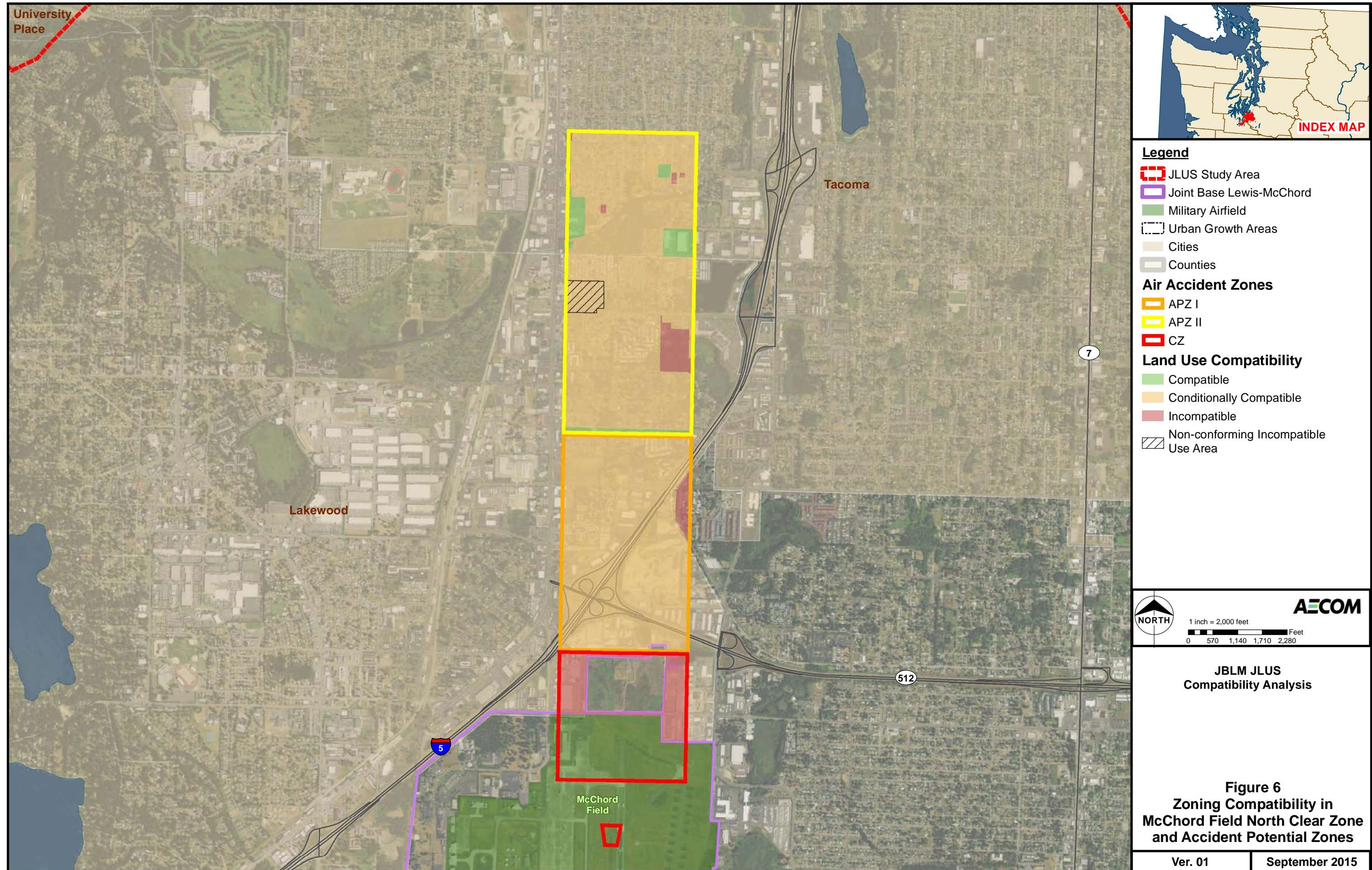




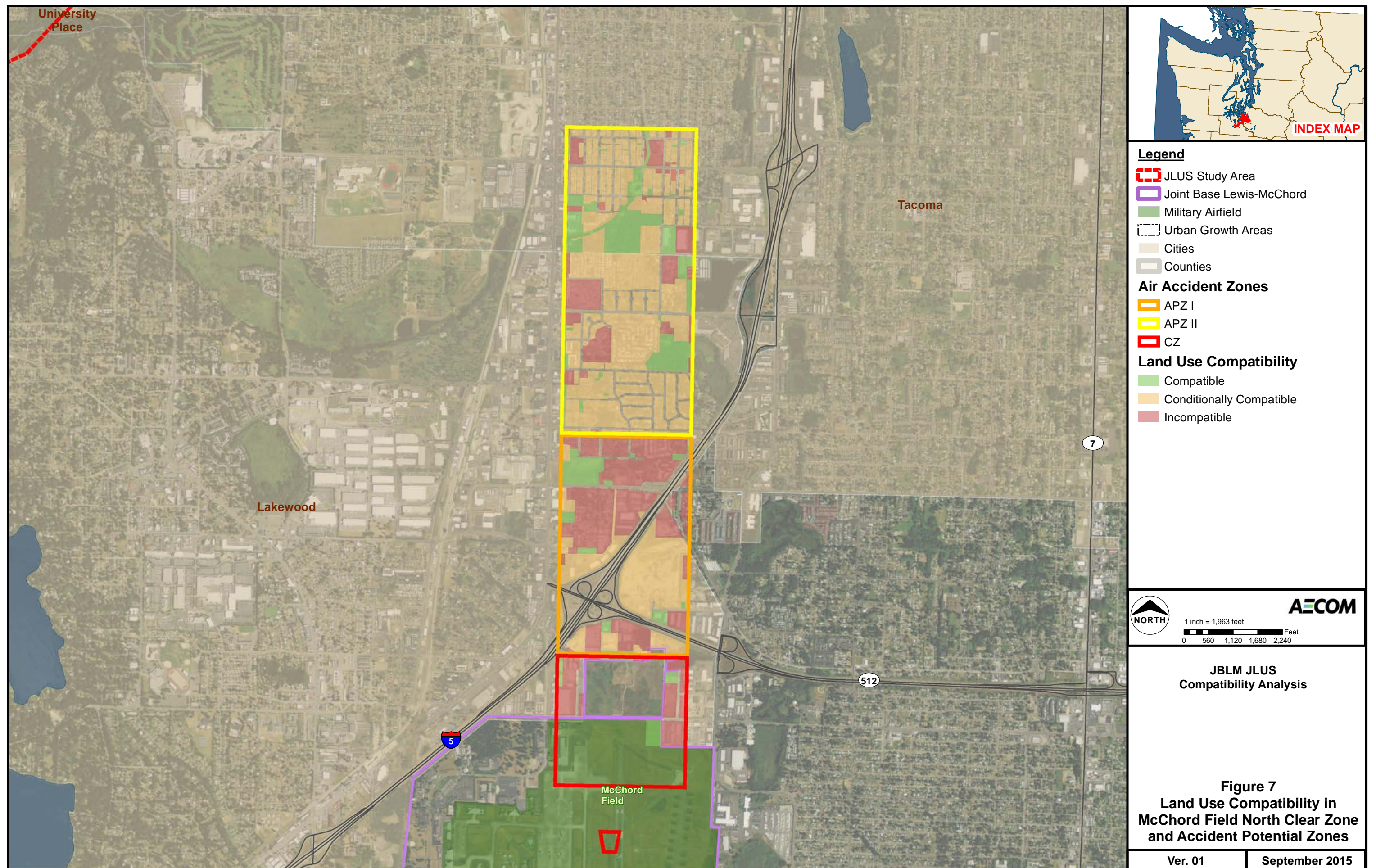
**Figure 4: Thurston Highlands Master Planned Community**  
(reproduced from the Thurston Highlands FEIS, 2008)













Of greatest concern is the presence of incompatible land uses in the CZ. There are existing uses on the western and eastern edges of the CZ that are incompatible, including industrial uses and storage condominium units (individual, privately owned storage units). The majority of these uses are nonconforming uses built before the City of Lakewood adopted a Clear Zone zoning designation in 2001. The Clear Zone zoning designation which prohibits most uses; however, it allows for established non-conforming uses to continue and allows for the potential development of some new land uses. As noted above, any land uses other than airfield infrastructure is incompatible in the CZ.

A small area of land within the City of Lakewood along the western edge of the CZ is zoned industrial. This zoning is incompatible with the CZ. One other issue of concern for the CZ is the presence of two adjacent industrial uses, also within the City of Lakewood, that emit steam plumes located at Steele Street S and 112th Street S, and on the east side of I-5 just north of State Route 512. While not located inside the CZ, these uses could pose aviation hazards.

The presence of incompatible land uses within the CZ is the most critical encroachment issue facing JBLM. All incompatible land uses should be removed from the CZ through, zoning and property acquisition from willing sellers. As noted earlier, JBLM should seek funding from federal, state, and local sources to resume prior property acquisition efforts.

Within APZ I and APZ II, all existing uses and zoning designations are categorized as either conditionally compatible or incompatible.

In APZ II, the Star Lite Swap Meet, located in the City of Lakewood, is a popular weekend destination for the public. There are areas zoned by the City of Tacoma for residential uses and by the City of Lakewood for recreational uses. These existing uses and zoning designations allow for concentrations of people, which increases the safety risks associated with APZ II.

The majority of APZ I and II within the City of Lakewood falls within either the Air Corridor 1 (AC1) or Air Corridor 2 (AC2) zoning designations. These zoning designations were adopted to ensure that future development is compatible with JBLM air operations and contain limits on intensity and development standards such as noise attenuation requirements and prohibitions on uses that emit smoke or dust that would interfere with aircraft operations. These development standards would ensure that land uses listed as conditionally compatible in Table 1 would be developed in a way that is compatible. However, both the AC1 and AC2 zoning designations allow for the continuation of non-conforming uses and allow certain other uses, including some residential uses to continue. Residential uses are not categorized as compatible in APZ I and categorized as compatible in APZ II only at densities less than 2 dwelling units per acre.

Within the City of Tacoma, uses generally categorized as conditionally compatible exist in APZ II, including residential uses at densities over 2 dwelling units per acre. Incompatible uses include several small instances of medium density residential uses (i.e. three duplexes, one 8-plex, and three 6-plexes). Arlington Elementary School, located within a single-family residential zone, is

a use generally categorized as incompatible in APZ II. Tacoma encourages the use of noise reduction techniques to mitigate impacts of aircraft noise and encourages lower density development in APZs. While existing residential development can be expected to continue, “upzoning” that would increase residential densities should be avoided in both APZs. Incremental zoning changes that avoid increasing incompatible land uses should be employed. Local jurisdictions should also seek other ways to remove incompatible uses from the APZs, such as property acquisition, where feasible, and conversion of this property to compatible uses such as open space. Future siting decisions for incompatible public uses, such as schools or hospitals, should avoid siting these uses within the APZs.

### **Accessory Dwelling Units in Lakewood**

The issue of Accessory Dwelling Units (ADUs) in APZ I and II was raised by the TWG. Discussion focused on acknowledgement of the issue and whether any action is needed in the JLUS. The issue relates to whether the additional population density that could potentially result from the development of additional ADUs within the APZs would be a cause for concern, given compatibility criteria that discourage high concentrations of people within the APZs. Discussion with Lakewood planning staff provided the following information.

ADUs are currently allowed under the City of Lakewood zoning code in both APZs I and II as accessory uses to single-family residences. Existing single-family development in these areas is allowed as a pre-existing use. While no new single-family residential development can be built, ADUs have been authorized since 2000. ADUs do not require a permit although they are required to be recorded on deeds.

Lakewood considers the ADUs in these areas to be a minor concern given that they are located in stable single-family neighborhoods that are unlikely to convert to industrial or other uses any time soon. So while additional residential development within APZ I should be discouraged, the potential for significant residential growth resulting from the development of ADUs is low.

Home-based daycare facilities, also permitted as an accessory use in existing single-family areas, are of more concern. The City of Lakewood, in conjunction with the Department of Social and Health Services (DSHS) (which licenses home-based daycares), has denied permits for home-based daycares in APZ I and II based on safety concerns.

Lakewood staff did not see any potential expansion or intensification of ADUs or home-based daycare facilities in APZ I and II. However, any increase in density of residential uses or daycare facilities in the APZs would not be compatible with the compatibility guidance cited in this report and should be discouraged.

#### **4.2.1. Imaginary Surfaces**

Guidance on height limitations related to the imaginary surfaces is provided by 14 Code of Federal Regulations (CFR) 77.28 and UFC 3-260-01. Height restrictions of man-made structures are necessary to ensure that no object interferes with the safe operation of aircraft at military

installations. Imaginary surfaces consisting of horizontal and transitional planes are defined to ensure that land development within the imaginary surfaces does not result in aviation hazards. PART 77 further specifies notification requirements for the construction or alteration of objects that are higher than 200 feet AGL above ground level or exceed an imaginary surface. Based upon the notice received, the FAA determines if the proposed action poses a hazard to air navigation and if any mitigation recommendations, such as marking and lighting can reduce the safety risk. The FAA also notifies the aviation community of the construction or alteration of objects that affect the navigable airspace, including the revision of charts.

The imaginary surfaces surrounding an airfield represent areas that are sensitive to navigational risks. Objects such as trees or towers that protrude through or above imaginary surfaces can interfere with safe aircraft operations. The surfaces rise at varying slopes from the runway so that objects may increase in height farther from the airfield without posing an obstruction.

Imaginary surfaces include:

- **Inner horizontal surface.** An oval plane that is at a height of 150 feet above the airfield.
- **Conical surface.** A surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20:1 for a horizontal distance of 7,000 feet to a height of 500 feet above the airfield.
- **Outer horizontal surface.** A plane that is 500 feet above the airfield, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.
- **Primary surface.** A surface located on the ground, longitudinally centered on each runway, and the same length as the runway. The width of the primary surface for runways is 2,000 feet.
- **Clear-zone surface.** A surface located on the ground at each end of the primary surface. The clear-zone surface is 1,000 feet long and is the same width as the primary surface.
- **Approach/departure-clearance surface.** An inclined plane that is located symmetrical from the extended runway's centerline, beginning 200 feet beyond each end of the primary surface at the centerline elevation of the runway's end and extending for 50,000 feet. The slope of the approach-clearance surface is 50:1 along the extended runway's centerline until it reaches an elevation of 500 feet above the established airport elevation. The surface then continues horizontally at this elevation to a point 50,000 feet from the beginning point. The width of this surface at the runway's end is the same as the primary surface, then it flares uniformly and the width at 50,000 feet is 16,000 feet.
- **Transitional surfaces.** These surfaces connect the primary surfaces, the first 200 feet of the clear-zone surfaces, and the approach/departure-clearance surfaces to the inner horizontal surface, the conical surface, the outer horizontal surface, or other transitional surfaces. The slope of the transitional surface is 7:1 outward and upward at right angles to the runway's centerline.



Figure 8 shows imaginary surfaces for McChord Field. Height restrictions associated with imaginary surfaces related to the runway were addressed through the CZ and APZ analysis. The lowest remaining imaginary shape is the Inner Horizontal Surface, at 150 feet above ground level. Cell towers can reach up to 200 feet, and are often mounted on the top of existing structures. As such, applications for new cell towers in the Inner Horizontal Surface are an issue of potential concern. JBLM has established relationships with Pierce County and City of Lakewood staff and received notification of proposed new towers. The information is forwarded to the Directorate of Plans, Training, Mobilization, and Security (DPTMS). This relationship should be formalized and strengthened by establishing height restrictions related to aircraft imaginary surfaces.

There are also six existing warehouses, trees, and a flagpole that penetrate the imaginary surfaces. JBLM has surveyed and continues to monitor trees within the vicinity of McChord Field. Cooperative efforts with landowners to manage trees by trimming or planting low growing species should be encouraged.

#### **4.2.2. Military Training Routes**

Military Training Routes (MTRs) are aerial corridors that accommodate low-level military aircraft operations (Figure 8). Land uses in areas below MTRs could be exposed to noise from low-flying aircraft such as helicopters. Aircraft flying in the MTRs could be vulnerable to navigational hazards such as tall structures, smoke or glare.

The flight training routes are shown in Figure 7. Past feedback from community members living and working around JBLM indicated low-flying aircraft resulted in noise impacts to surrounding communities. JBLM is working with local communities to improve communications about training activities to reduce the number of noise complaints. Previous community concerns related to helicopter noise have largely been resolved by JBLM through the designation of helicopter flight routes that avoid sensitive residential areas.

### **4.3. Military Operational Noise**

Federal guidelines establish zones for levels of noise generated by different types of military activities, such as aircraft operations and weapons firing, and the types of land uses that are compatible in these zones. The noises for these different types of activities are perceived differently by the human ear, and for this reason are measured using different decibel scales. For instance, weapons training activities generate sounds with high levels of acoustic energy, similar to a clap of thunder, gunshot, or explosion. Residents in nearby communities can both feel and hear this type of sound.

The 2014 Draft JBLM IONMP provides the following summary of relevant noise metrics:

- **A-weighted Scale (dBA)** – 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).

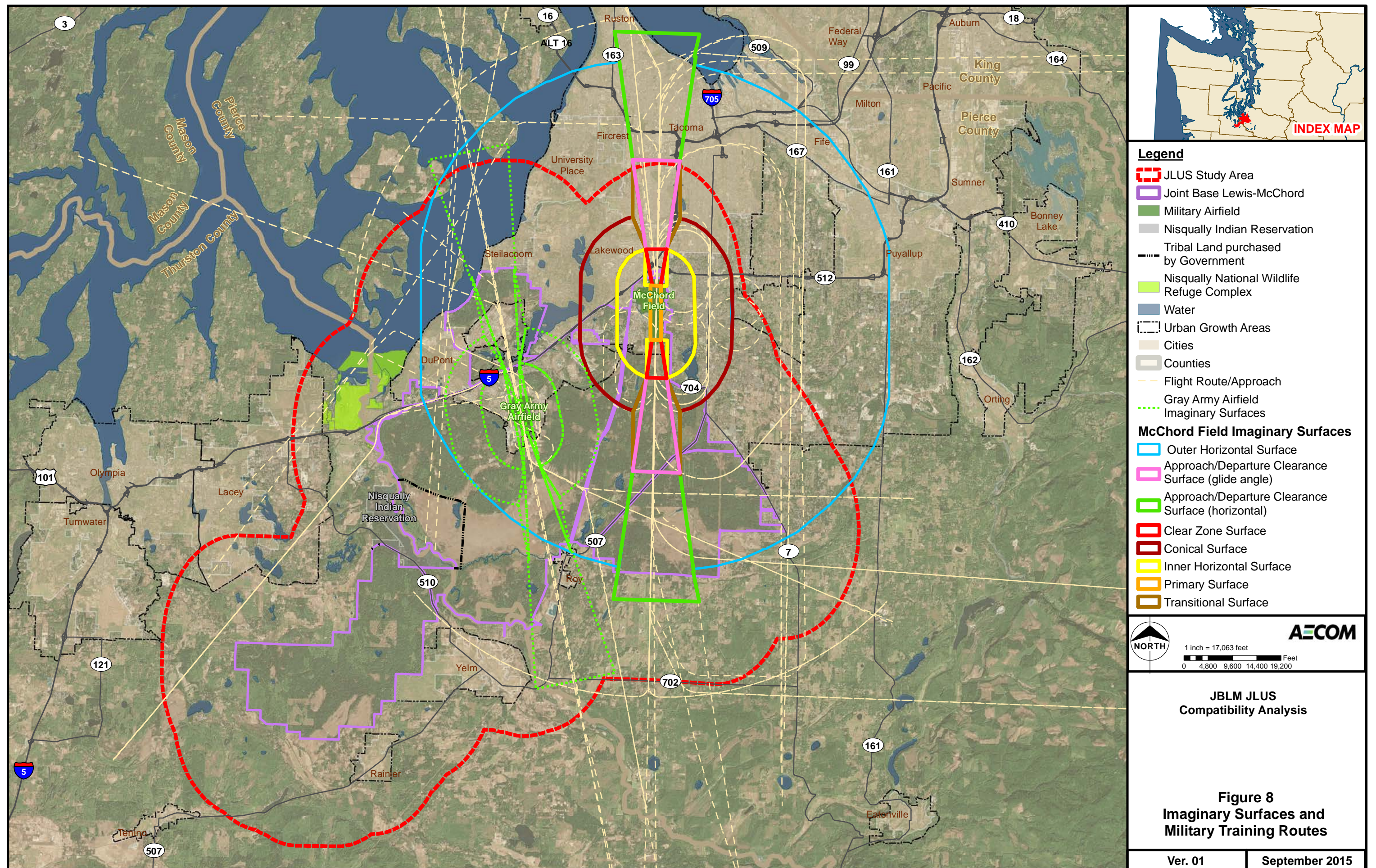
- **C-weighted Scale (dBC)** – The C-weighted scale measures more of the low-frequency components of noise than does the A-weighted scale. This unit, symbolized as dBC, is used for evaluating impulse noise and vibrations generated by heavy weapons such as artillery, mortars, armor (20 mm or greater), and explosive charges.
- **Peak Sound Level (PK15)** – The peak sound level in a flat-weighted scale 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 (DNL)** – The day-night average sound level 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 weighting (penalty) applied to nighttime sound levels. The 10-dB nighttime weighting accounts for the fact that noises at night sound louder because there are usually fewer noises occurring at that time.

It should be noted that noise levels in one scale cannot be added or compared mathematically to levels in another scale.

In the zones for the loudest noise levels, most land uses are discouraged because there is a high probability that people living and working in these areas will complain about noise, which challenges the ability of military installations to carry out missions. In zones for lower noise levels, a variety of land uses may be compatible.

Noise zones for the McChord Field and large weapons firing activities at JBLM ranges were considered as part of the land use analysis. The decibel levels for each zone are shown in Table 3. The land use compatibility guidelines for each zone are summarized in Table 2. There are two different types of noise zones for large weapons firing. The Large Weapon C-weighted Day-Night Level (CDNL) Noise Zones are for regular firing activities, and the Large Weapon PK15 (peak noise level) Noise Zones are for “single events.” Single events occur when significant noise is generated from a single impulse blast. Table 4 contains comparative examples of noise levels, to provide context for the noise zones shown in Table 3. Noise zones for firing ranges at Lewis North were considered for this analysis; however they were not included because they do not extend beyond the borders of JBLM.







**Table 3. Noise Zones**

Noise Zones	Sound Level
<i>Aircraft Noise Zones</i>	
Noise Zone II	>75 DNL dBA
Noise Zone II	65-75 DNL dBA
Noise Zone I	<65 DNL dBA
<i>Large Weapon CDNL Noise Zones for JBLM Firing Ranges</i>	
Noise Zone III	>70 CDNL dBC
Noise Zone II	62-70 CDNL dBC
Noise Zone I	<62 CDNL dBC
<i>Large Weapon PK15 Noise Zones for JBLM Firing Ranges</i>	
PK 15(met)	>130 dBP
PK 15(met)	115-130 dBP

**Table 4. Noise Level Comparative Examples.**

Noise Source	Decibel Level (dB)	Effect to the Unprotected Ear
Jet take-off (at 25 meters)	150	Eardrum rupture
Chainsaw	120	Painful
Live rock music	110	Average human pain threshold
Motorcycle	100	Hearing damage possible after 8 hours of exposure
Vacuum Cleaner	70	Annoyingly loud
Quiet suburban neighborhood	50	Quiet, one-fourth as loud as 70 dB
Quiet rural area	30	Quiet, one-sixteenth as loud at 70 dB

Sources: Temple University 2015; Federal Interagency Committee on Noise 1992.

### 4.3.1. Aircraft Noise Zones for McChord Field

Figures 9 and 10 shows the aircraft noise zones for McChord Field<sup>3</sup>, and whether zoning designations or existing land use within the noise zones are compatible, conditionally compatible, or incompatible. There are a few small areas in Lakewood and Tacoma that are incompatible. Uses in these areas include residential, mixed use, and recreation. People in these areas may complain about exposure to high levels of noise.

Other City of Lakewood, City of Tacoma, and Pierce County zoning designations within the aircraft noise zones for McChord Field are either conditionally compatible or compatible. Future growth in these areas will be consistent with zoning designations, and as such will likely not result in any compatibility issues with JBLM that cannot be mitigated.

<sup>3</sup> Based on draft data contained in the 2014 Draft JBLM AICUZ Study.



### **4.3.2. Large Weapon CDNL Noise Zones for JBLM Firing Ranges**

Figures 11 and 12 shows the Large Weapon CDNL Noise Zones for JBLM firing ranges<sup>4</sup> and zoning or existing land use compatibility. There are large areas of land with incompatible zoning, including most of the City of Roy, most of the Nisqually Indian Reservation, and unincorporated Pierce County. These areas contain established communities that have a history of collaborating with JBLM to support the military's mission and lower the risk for noise complaints. The Buildable Lands data show that these communities have the capacity for new housing and job growth. This demonstrates the need to direct incompatible growth away from areas subject to noise impacts, where feasible, to mitigate noise impacts where new development does occur in the future, and to provide information to residents about potential noise impacts.

Parts of the cities of Yelm and DuPont are included in the Large Weapon CDNL Noise Zones for JBLM firing ranges. Their zoning designations are either conditionally compatible or compatible.

### **4.3.3. Large Weapon PK15 Noise Zones for JBLM Firing Ranges**

Figures 13 and 14 shows the Large Weapon PK15 Noise Zones for JBLM firing ranges<sup>5</sup> and zoning or existing land use compatibility. The Large Weapon PK15 Noise Zones reach farther outside of the base than the Large Weapon CDNL Noise Zones. With few exceptions, all areas within the Large Weapon PK15 Noise Zones are considered incompatible due to the risk that civilian complaints about loud single-event noise will lead to the reduction of JBLM military capabilities over time.

Areas within the Large Weapon PK15 Noise Zones include Roy, parts of Yelm and DuPont, the Nisqually Indian Reservation, unincorporated Pierce County, and parts of the urban growth area in unincorporated Thurston County near Lacey. The Buildable Lands data shows that these areas have capacity for housing and employment growth.

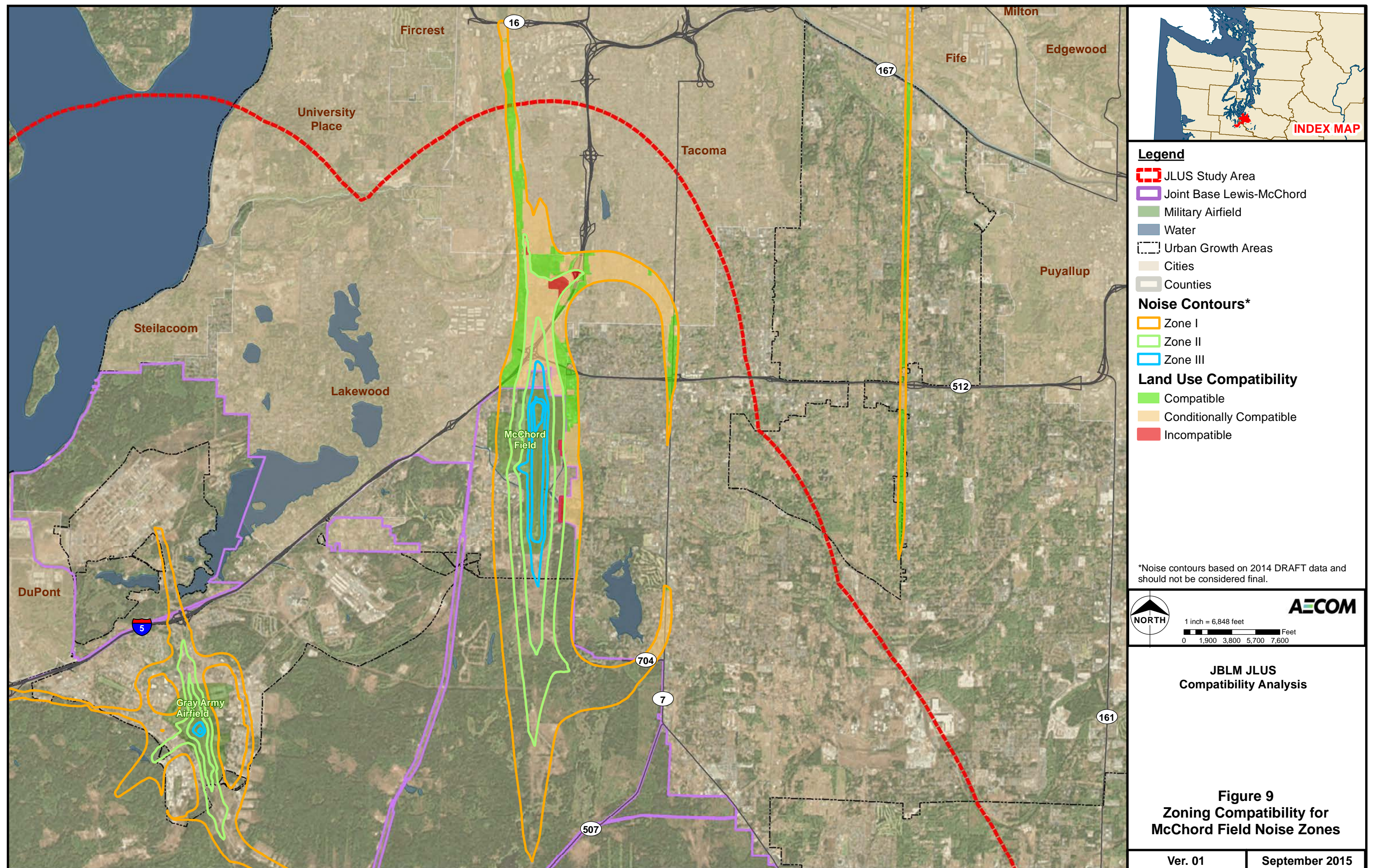
As stated in the prior section, Roy and the Nisqually Indian Tribe have a history of co-existing with JBLM and working to reduce the risk of nuisance complaints. The same is true of Yelm, DuPont, and Thurston County. There is a need for ongoing collaboration between the jurisdictions and JBLM to prevent noise complaints as growth occurs in the region in the coming years.

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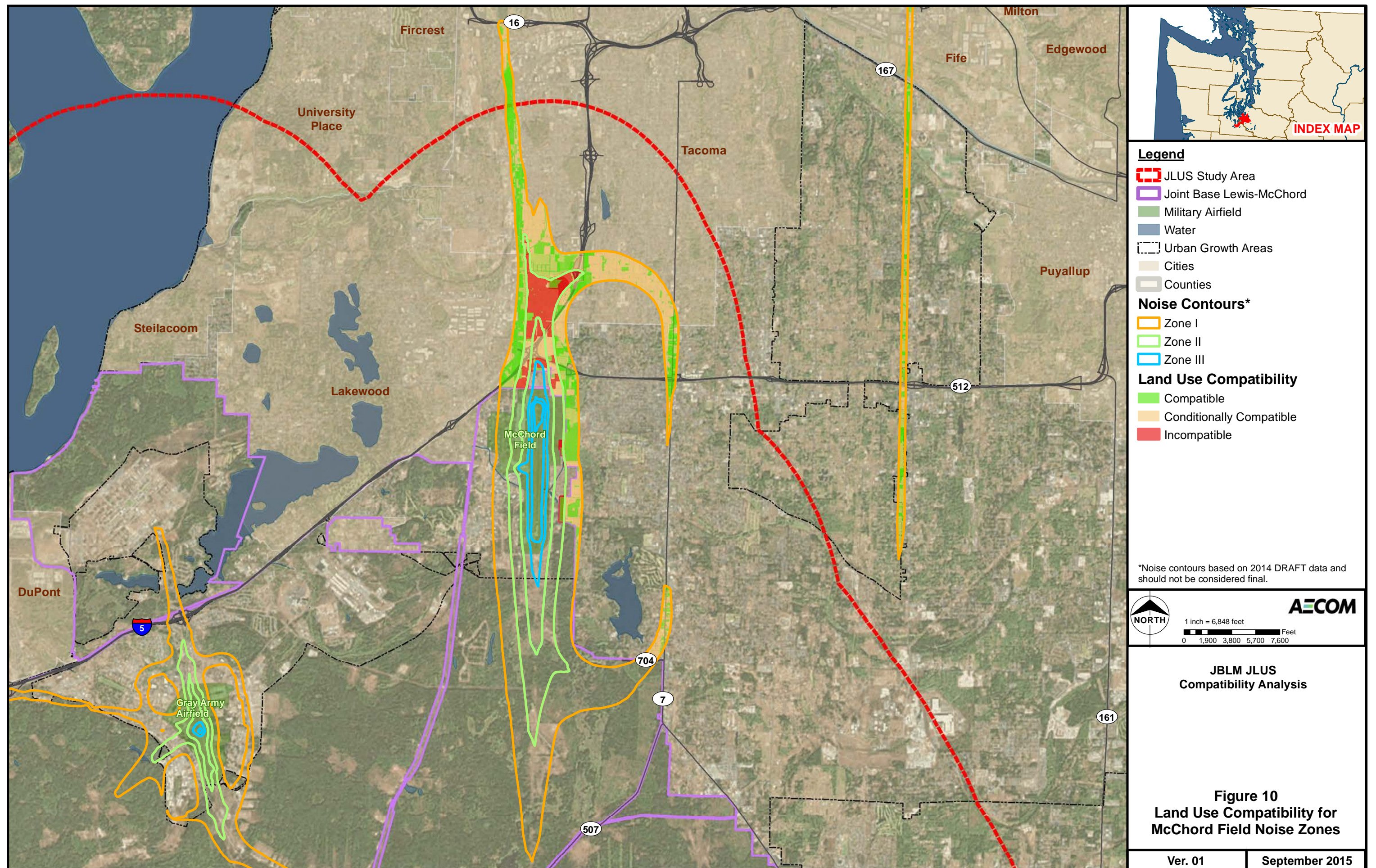
<sup>4</sup> Based on draft data contained in the 2014 Draft JBLM IONMP.

<sup>5</sup> Based on draft data contained in the 2014 Draft JBLM IONMP.

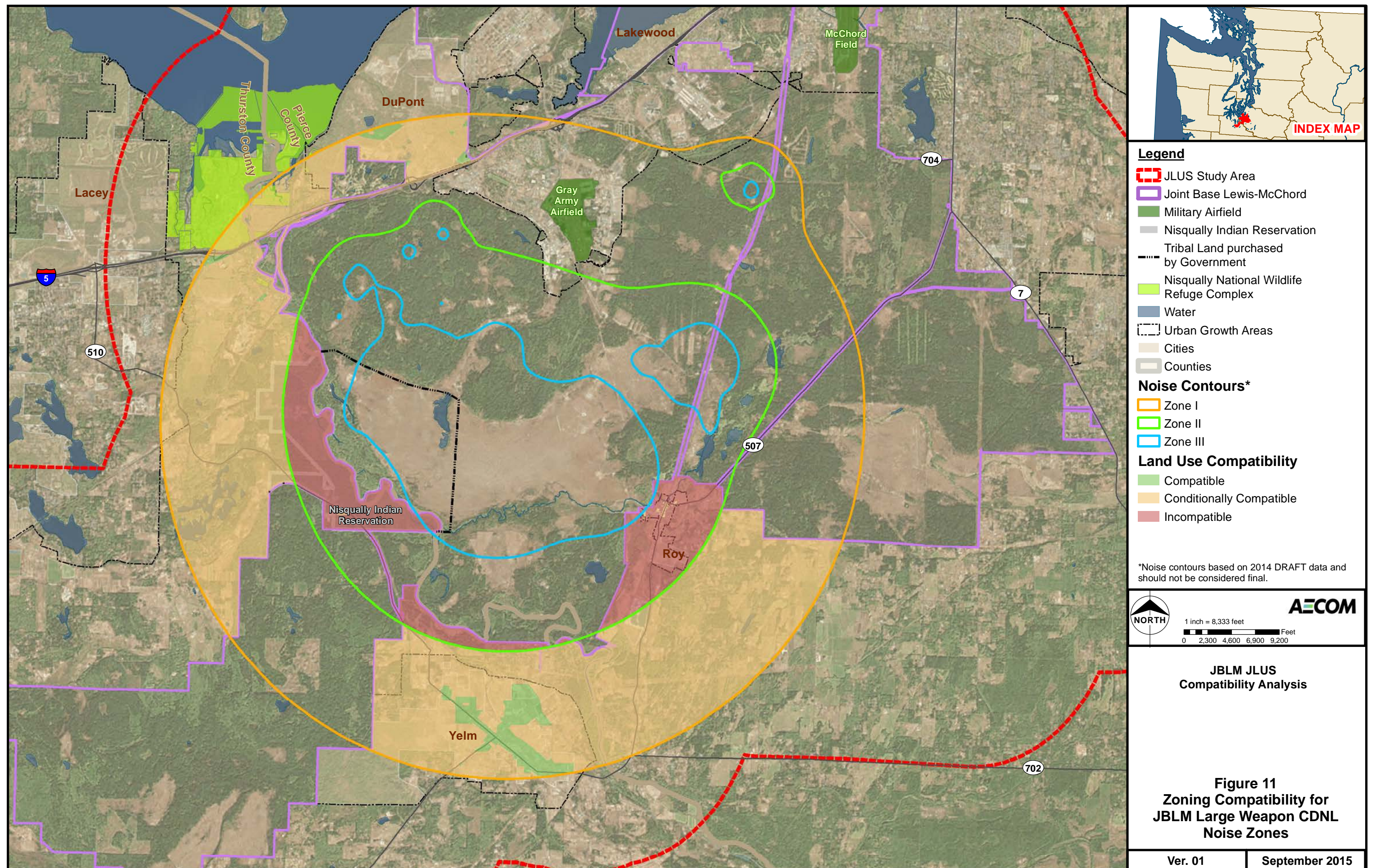




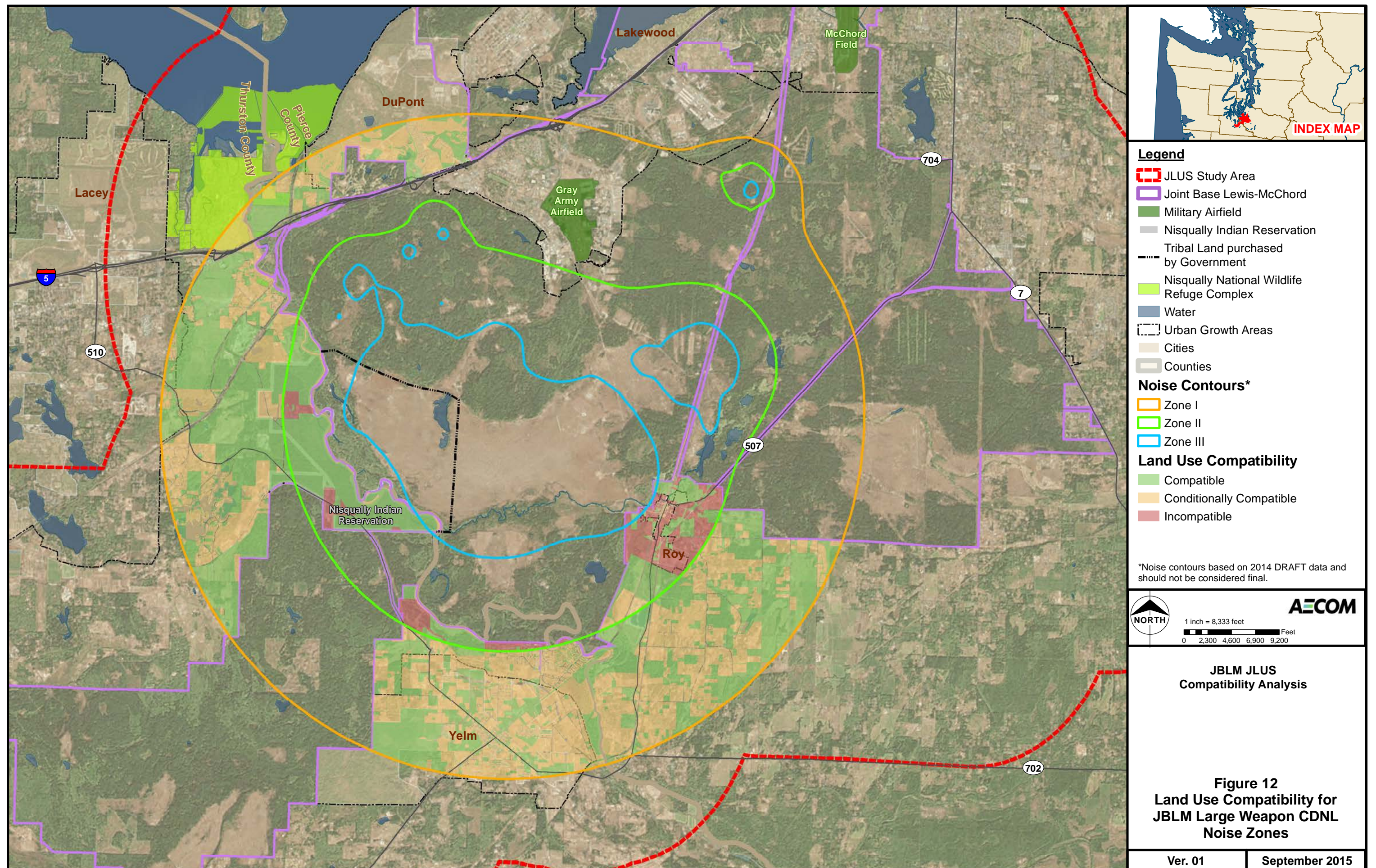




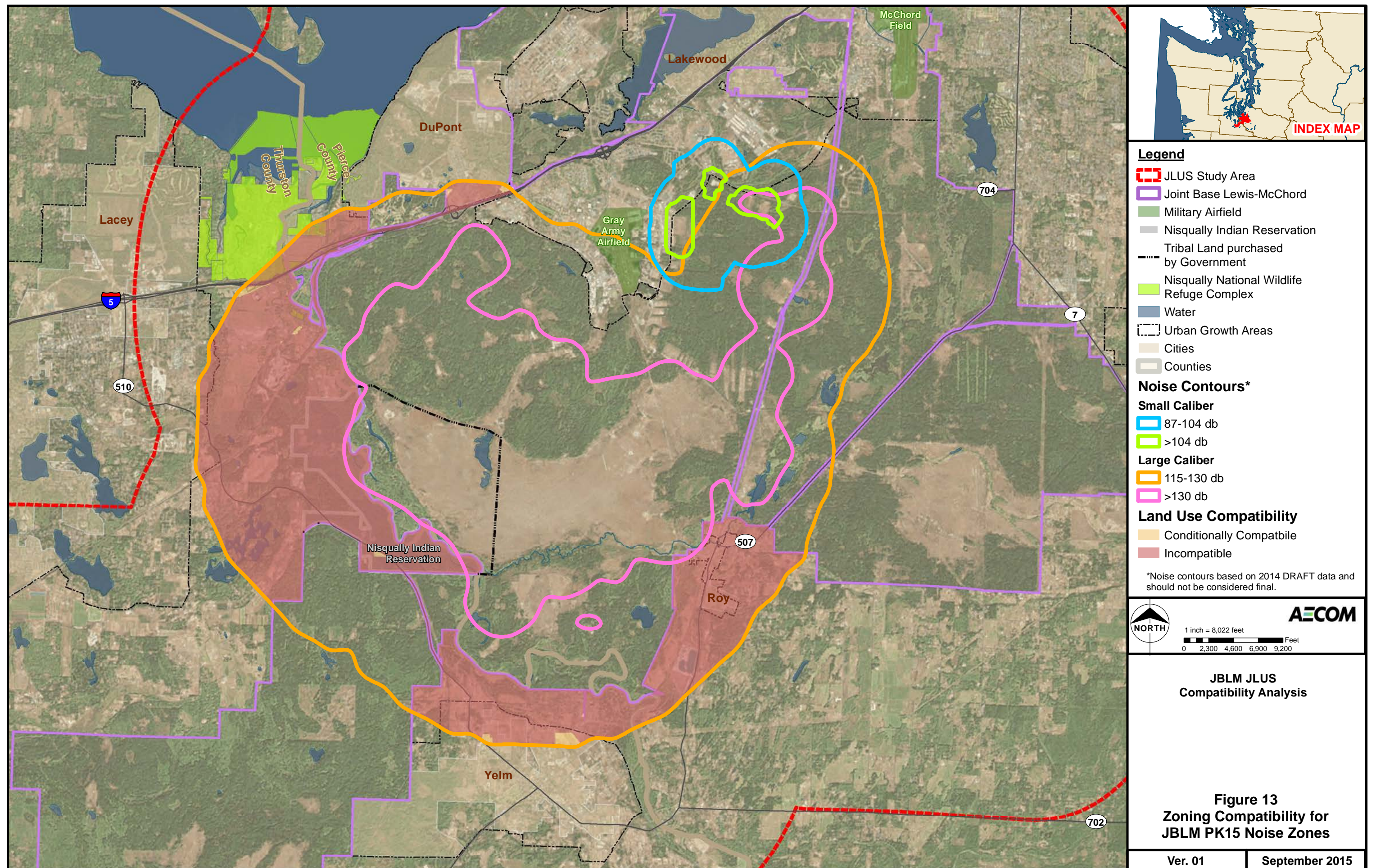




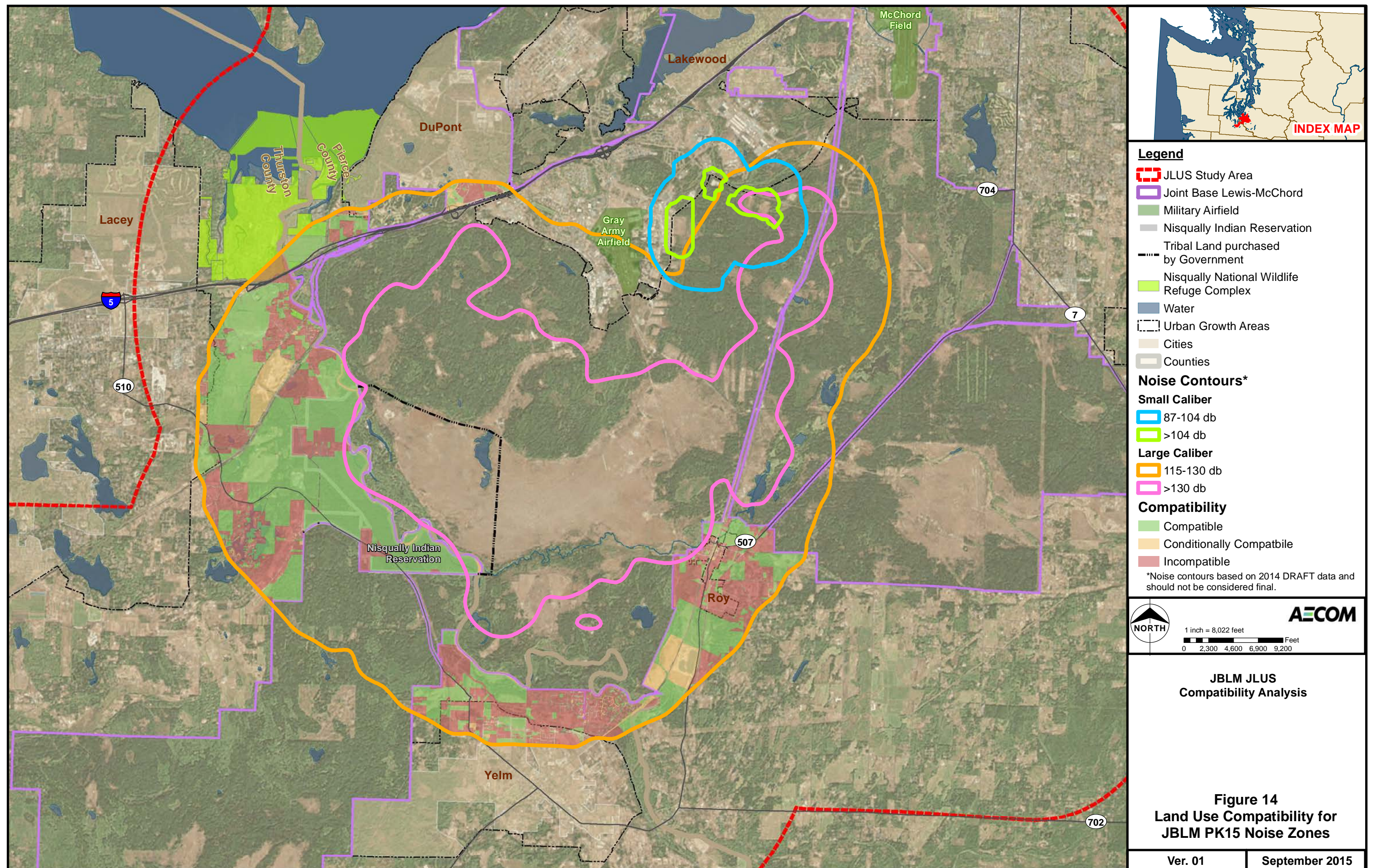














#### 4.4. Transportation

The JBLM Growth Coordination Plan identified the need for regional collaboration to address transportation issues. Since the Growth Coordination Plan was completed, the Washington State Department of Transportation (WSDOT), JBLM, and other partners have undertaken a coordinated effort toward addressing regional transportation issues in the vicinity of JBLM. The summary below, from the *WSDOT I-5 JBLM Vicinity Interchange Justification Report (IJR) and Environmental Documentation, Phase 1 – Corridor Feasibility Study*, January 2014 provides an overview of the issues and primary activities undertaken to implement the Growth Coordination Plan strategy. A subsequent report, the *I-5 JBLM Vicinity Congestion Relief Study, Phase 2 – Multi-modal Alternatives Analysis*, March 2015, reiterates the issues in the Phase 1 document.

I-5 links the key population centers of Vancouver, Olympia, Tacoma, Seattle, Everett, and Bellingham. In the JLUS study area, I-5 also serves a function in national defense by providing access to JBLM. Within south Pierce County, I-5 traffic increased 73 percent between 1986 and 2011 to over 118,000 vehicles per day. The traffic increase in this corridor has been influenced both by population and employment growth, and by increased economic activity including a rapid rise in freight movement. Overall, I-5 has not been widened in the study area since 1975, and is inadequate to meet today's demand. Between 1970 and 2010, the population of Washington State grew by 97 percent, Pierce County grew by 95 percent, and Thurston County grew by 228 percent. Population growth in Pierce and Thurston counties is projected to continue at a similar pace through 2040. The communities of Lakewood, DuPont, and Steilacoom have also grown. Increased residential development has occurred without a commensurate increase in jobs in Thurston County. These changes have resulted in increased through traffic along the I-5 corridor between Olympia and Seattle (and beyond). Increased regional low-density development contributes to the need for widening I-5, which in turn could encroach on JBLM by requiring additional right-of-way and possibly producing impacts to significant cultural resources, such as the Museum and the Family Resource Center, both WWI-era facilities.

While the substantial population growth has affected the corridor, there has also been significant employment growth at JBLM. JBLM has evolved into a strategic military base with more than 75,000 employees, making it the second-largest employer in Washington State. It should be noted, however, that JBLM is the largest employer in the state with employees situated on a single site. Employment on the base has increased substantially since 2006, and JBLM is now the fifth-fastest growing military installation in the United States. Camp Murray, which houses the headquarters of the Washington Military Department and the Washington Air National Guard, has also expanded. Additionally, truck traffic along I-5 in the corridor study area has grown from approximately 8,900 vehicles on a typical weekday in 1986, to over 14,000 in 2011.

There are no existing alternate parallel routes for regional travel through the study area corridor. Using roads other than I-5 requires circuitous routes and extended detours. As a

result, congestion along I-5 through the JBLM vicinity has become a daily occurrence, with heavy through volumes and a large number of vehicles getting on and off the freeway in the study area. Heavy off-ramp traffic backs up along some of the ramps and spills back onto the I-5 mainline. This causes drivers to change lanes to avoid other drivers entering or leaving the highway. All of these lane changes cause traffic to slow, create extended delays, and reduce traffic safety along I-5.

Additionally, the narrowing of I-5 southbound at the Thorne Lane interchange constrains traffic movement. Accommodating traffic growth through the study area is challenging, largely due to the physical constraints along the highway including both the military bases and the presence of an existing rail line paralleling the west side of the freeway.

In 2012, WSDOT undertook an effort to prepare IJR for four interchanges on I-5 through the JBLM area. IJR are required to justify new and/or revised ramps accessing limited access freeways such as I-5. The purpose of these revisions would be to open up opportunities for potential solutions to chronic I-5 congestion in the study area corridor. The I-5 Corridor Study Area, defined by WSDOT, includes nine interchanges running from Mounts Road (Exit 116) on the south to State Route 512 (Exit 127) on the north. Stakeholder participants include the Federal Highway Administration (FHWA); WSDOT; JBLM; Camp Murray; the cities of Lakewood, DuPont, and Lacey; Town of Steilacoom; Pierce County; Nisqually Indian Tribe; SSMCP; Puget Sound Regional Council; Thurston Regional Planning Council; Intercity Transit; Pierce Transit; and Sound Transit.

The Corridor Feasibility Study and the Multi-modal Alternatives Analysis are the guiding document to achieve the following outcomes:

- Create a plan to provide transitional flexibility and guide the preservation of needed right-of-way (ROW), identify program needs for an efficient multi-use/ multimodal corridor such as managed lanes, and improve transit and transportation demand management (TDM).
- Identify and evaluate interchange alternatives that support and enhance cross-circulation for JBLM operations and internal base connectivity to improve interchange operations on I-5, while maintaining the flexibility to consider other alternatives.
- Evaluate the need for and strategic sequencing of additional general purpose lanes.
- Incorporate functional design elements to improve efficiency with the potential to reduce serious and fatal collisions, assess local street and on-base roadway options to improve connectivity within local communities as a means of easing demand on I-5, explore transit priority options and enhanced service opportunities along I-5 and to/from JBLM, and identify a short-list of I-5 mainline scenarios and interchange improvement concepts to be advanced to further phases of analysis and implementation.



The ongoing WSDOT I-5 corridor efforts represent significant steps toward addressing regional JBLM-related transportation impacts. Additional transportation strategies may be needed to address impacts related to the local road network.

#### **4.5. Threatened and Endangered Species and Habitat**

Only 10% of the estimated 150,000 acres of prairie present in the South Puget Sound region at the time of Euro-American settlement remain today, and only 30% of what remains is dominated or partially dominated by native flora. The causes are habitat loss due to conifer forest invasion and agricultural/urban development, and habitat degradation due to absence of fire, invasion of non-native vegetation, and military training. One consequence of this loss of habitat is that some animal and plant species that require prairie habitat are at risk of extinction. Recently, the US Fish and Wildlife Service (USFWS) listed the Taylor's checkerspot butterfly (*Euphydryas editha taylori*) as endangered and the streaked horned lark (*Eremophila alpestris strigata*) and four subspecies of Mazama pocket gopher (*Thomomys mazama*) as threatened under the federal Endangered Species Act (ESA).

About two-thirds of the remaining South Puget Sound prairie is on JBLM, along with the source population for checkerspot captive breeding, two of the remaining five populations of lark, most of the remaining populations of the Yelm pocket gopher, and all of the remaining populations of the Roy pocket gopher. Anticipating possible listings, starting in 2006, the Army increased its conservation actions on behalf of these species on JBLM lands, and, in addition, began an Army Compatible Use Buffer (ACUB) program to conserve prairie habitat and the listed species on non-Army land in the South Puget Sound region. The Army also negotiated voluntary restrictions on military training with the USFWS. A draft Biological Opinion (BO) has been issued by the USFWS. When this BO is finalized, JBLM will be legally required to have these restrictions, and to actively participate in the recovery of the listed species.

The restrictions in place include (a) no off-road vehicle maneuver/digging/bivouacking on multiple prairies, (b) mounted maneuver restricted to specific corridors on Ranges 74/76 (the only location on JBLM suitable for live-fire Stryker training), (c) modified mowing regimes at both airfields, (d) modified parachute drop locations in Training Area 14, (e) no-training buffers around active lark nests, and (e) a number of other mitigating natural resource management actions, including when and where prescribed fire can occur. The BO also imposes intensive monitoring requirements for the species populations and habitats, and their responses to military training.

JBLM's ACUB program is unique. ACUB is the Army's implementation of the DoD REPI program, which was authorized by Congress in 2003 to combat encroachment on military installations. The REPI legislation authorizes the military services to acquire interest (in fee or easement; only from willing sellers) in lands outside installation boundaries. These lands are owned and managed as open space by partners (other federal agencies, state/local government, non-governmental organizations). Almost all REPI projects to date have focused on preventing

incompatible development around installation boundaries, but JBLM's ACUB program is specifically designed to reduce environmental encroachment due to the ESA listings.

In 2013, the JBLM ACUB program won a special REPI grant and the South Puget Sound region was designated as the first Sentinel Landscape, a joint initiative by DoD, the US Department of Agriculture, and the US Department of the Interior to preserve landscapes, natural and working, in the vicinity of military installations. As a result, the geographic scope, conservation tools, partners, and funding of the JBLM ACUB increased substantially. To date, more than \$35 million has been invested in the program, split about equally between DoD/Army and the partners.

The lead ACUB partner is the Center for Natural Lands Management. Other major partners are the Washington State Departments of Fish & Wildlife and Natural Resources, Wolf Haven International, the Natural Resources Conservation Service, and the USFWS. To date, JBLM's ACUB program has enrolled 2,952 acres of state, county, and private land already in conservation status, and acquired an additional 2,104 acres as new conservation preserves. On these lands, the ACUB program helps fund (a) restoration of remnant prairies to suitable habitat for listed species, and (b) increasing the numbers and sizes of listed species populations, often through reintroduction to areas where they once existed, but went locally extinct. In addition, the NRCS has acquired conservation easements on 912 acres of agricultural lands that will be managed simultaneously for grazing and prairie conservation. The ACUB program also has invested in planning, monitoring, and research to support the two main conservation actions.

Creative actions under Sentinel Landscapes include research on how to conserve prairie while continuing grazing, outreach and education, teaming with the USFWS and Thurston County to provide regulatory certainty to prairie landowners, internship programs, and two actions just getting underway, a prairie conservation bank and stewardship endowments to fund perpetual management of ACUB lands.

The Army's proactive conservation actions, both on and off of JBLM, raised the "baseline" status of the listed species, allowing the military mission to continue post-listing, albeit with significant restrictions and at substantial additional expense. As the species recover, the restrictions should gradually be lifted. A recently-signed Memorandum of Understanding between JBLM and the USFWS sets the stage for negotiations to develop a system whereby ACUB actions can serve as "credits" to reduce training restrictions.

#### **4.6. Trespass and Unauthorized Access to JBLM Range and Training Lands**

The unauthorized use of JBLM range and training lands is a significant concern for a variety of reasons. Civilians not associated with JBLM in the training areas without Range Operations knowledge can interfere with military training and are at risk of injury from training. Trash dumping, primarily household and construction waste is a common problem. Twice per year for a week each time, JBLM sends thousands of soldiers out to clean up trash. Hazardous waste dumping, including household chemicals, batteries, oil, and meth labs poses a risk to soldiers and civilian personnel. JBLM Hazmat must respond to such occurrences. Timber theft, particularly in the Rainier Training Area results in thousands of dollars of lost revenue from commercial wood and interferes with ecosystem management of JBLM forests. Illegal shooting presents a clear risk to soldiers and JBLM civilians. Off-road vehicles, primarily in the Rainier Training Area can interfere with military training and cause environmental damage, especially soil erosion and loss of vegetation. Illegal brush-picking affects ecosystem management of JBLM's forests. Unauthorized use of JBLM lands can also result in other illegal activities, such as methamphetamine production, causing significant safety issues.

In addition to these unauthorized uses of JBLM training lands, there are a number of authorized civilian uses. JBLM is required by the Sikes Act to open range lands for recreational use, although military training and environmental protection are higher priorities. Civilian recreational use of JBLM is allowed in authorized areas only. Twenty-one of the training areas are at times open for civilian recreational use that does not conflict with military operations. Activities include hiking, horseback riding, dog training, wildlife and vegetation observation, orienteering, photography, model boating, and service group camping activities (e.g., Boy Scouts, etc.).

Comments received during public open houses conducted in the initial phase of the JLUS process revealed that public uses of JBLM range lands are a potentially important consideration. JBLM actively manages its extensive, unfenced range and training lands to allow certain public uses based on a system of permits and general authorizations. Such uses include hunting, horseback riding, hiking, and other recreational uses. Unauthorized uses also pose a problem, in particular illegal dumping and illicit drug manufacturing. The maintenance of authorized public uses will not only continue to provide benefits to the neighboring communities, but can also minimize unauthorized uses. For instance, authorized users can spot illegal uses, help to clean up trash, and act as stewards for range lands, when they are not in use for training activities.

The JBLM Range Complex rests on 64,000 acres of land, broken down into 32 separate training areas, 14 indirect firing points, and 65 direct fire ranges.

Hunting, fishing, trapping, and the JBLM Morale, Welfare, and Recreation (MWR) ranges (skeet ranges and privately owned weapons Range 15) are authorized in accordance with FL REG 215-1 with coordination from Northwest Adventure Center.

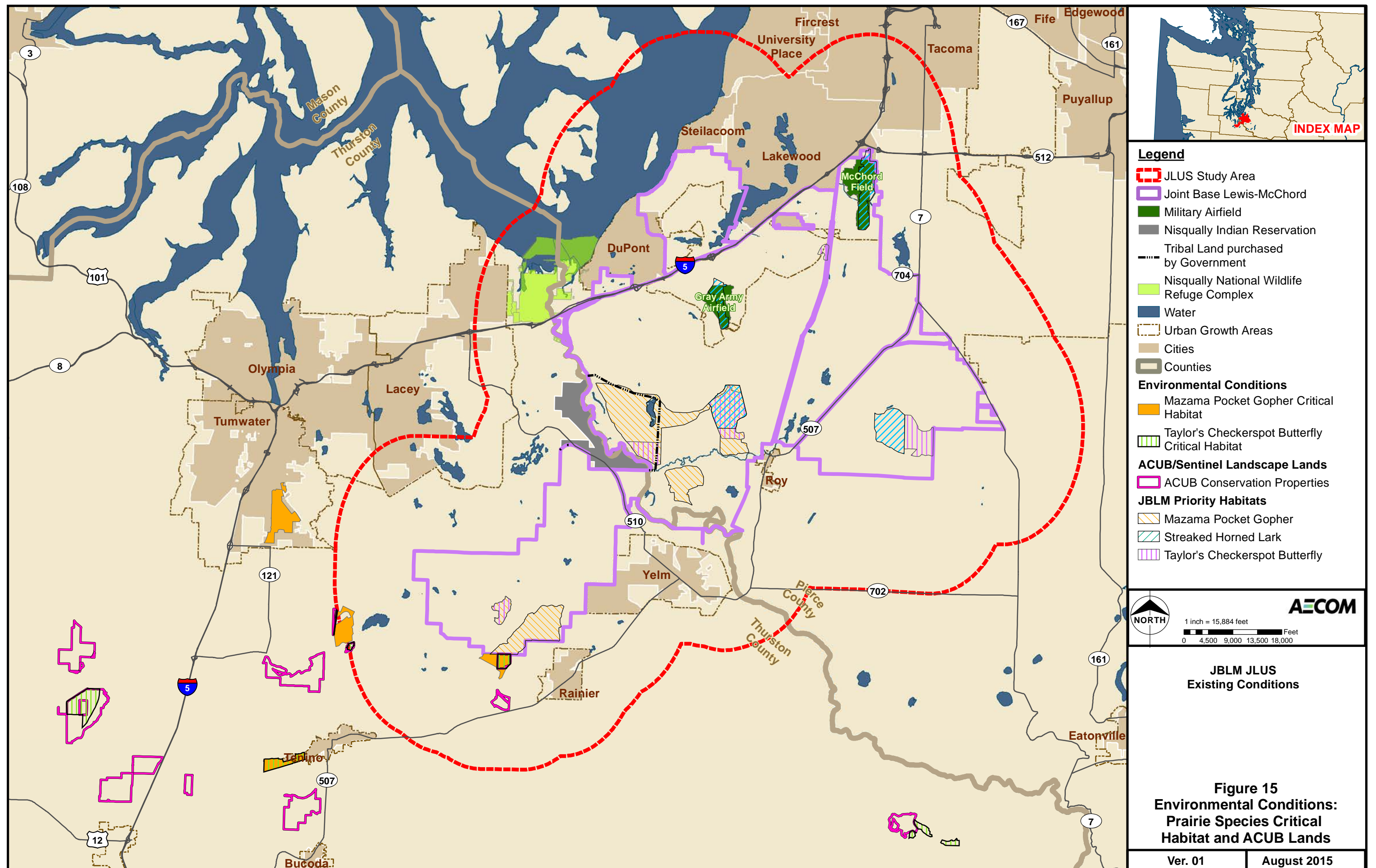


JBLM Range Control operates the Area Access Office to issue permits and grant non-training access to the Range Complex. The Artillery and South Impact Areas are never open to the public due to unexploded ordnance (UXO) hazard. JBLM Range Control publishes a weekly schedule that identifies locations where authorized recreational activities are permitted.

Conduct of illegal activities and nuisance use (such as garbage dumping) on JBLM lands were identified during the public input process. The continuing management of public recreational access to training lands will limit trespass and competition for access to military training lands while maintaining legitimate compatible recreational uses.

#### **4.7. Communication and Coordination**

Communication and coordination among JLUS partners is critical for the implementation of compatibility recommendations. The establishment of the South Sound Military & Communities Partnership (SSMCP) has provided a regional forum for such communication and coordination focused on military related issues. The implementation of communication and coordination strategies is an overarching need that will affect the ability to successfully address the other land use compatibility issues addressed in this report.



## 5. Conclusions

### 5.1. General Conclusions

Most current land uses around JBLM do not have negative impacts on military capabilities. This is due in part to the work local jurisdictions around JBLM have done since the 1992 JLUS to support base capabilities for training and operations. There are some ongoing and new areas of concern that were identified through the current (2015) JLUS process. These are described below. Continued collaboration is needed between local jurisdictions and JBLM to develop and implement regional solutions to these issues and to support the military's ability to carry out its mission requirements today and in the future.

The following section contains conclusions relating to the seven compatibility issues analyzed in this report. Table 5 summarizes those conclusions.



**Table 5. Summary of Conclusions.**

<b>Compatibility Issue</b>	<b>Conclusions</b>
Urban Growth	<ul style="list-style-type: none"> <li>• Additional urban growth within the McChord Field North CZ should be prohibited.</li> <li>• Urban growth should be directed away from high noise areas and APZs, where feasible.</li> <li>• Significant growth capacity in the Thurston Highlands Master Planned Community represents potential incompatibility.</li> </ul>
Aircraft Safety	<ul style="list-style-type: none"> <li>• Existing non-conforming incompatible uses in the McChord Field north CZ represent the most critical encroachment issue facing JBLM.</li> <li>• JBLM should seek federal, state, and local funding to resume property acquisition efforts in the McChord north CZ.</li> <li>• In APZ II, medium and high density residential uses in Tacoma and recreational uses in Lakewood are categorized as incompatible.</li> <li>• Jurisdictions should seek to phase out incompatible uses in APZs through zoning, property acquisition, and public facility siting decisions.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Areas in Lakewood and Tacoma near I-5 are zoned for residential, mixed use, and recreational uses categorized as incompatible or conditionally compatible.</li> <li>• Incompatible or conditionally compatible land uses in the JBLM large weapon noise zones include Roy, parts of Yelm and DuPont, the Nisqually Indian Reservation, and parts of the urban growth area in unincorporated Thurston County near Lacey.</li> </ul>
Endangered and Threatened Species and Habitat	<ul style="list-style-type: none"> <li>• Listed species requirements limit the scope of training on JBLM training lands.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Continuation of current and exploration of new solutions for JBLM-related and other traffic are needed, particularly as it affects local road networks.</li> </ul>
Trespass and Unauthorized Access to JBLM Range and Training Lands	<ul style="list-style-type: none"> <li>• The continuing management of access to training lands will limit trespass and competition for access to military training lands while maintaining legitimate compatible recreational uses.</li> </ul>
Communication and Coordination	<ul style="list-style-type: none"> <li>• Communication and coordination among JLUS partners are critical for the implementation of compatibility recommendations.</li> </ul>

## 5.2. Urban Growth

Areas around the north of the base are developed with urban uses and are affected by several military impacts, including aircraft safety and military operational noise. Land use patterns in this area are not anticipated to change significantly in the future, although additional densification and development are possible. Areas around the southern portion of the base are generally rural in character, but there are isolated areas with urban character with the potential for future growth, and that may be affected by military-related impacts.

Urban growth in these areas can pose a threat to military capabilities when it occurs in areas subject to potential impacts such as aircraft accidents and noise exposure. Urban growth can threaten military training capabilities when adjacent to training lands by introducing light pollution or increasing the possibility of trespass on training lands. Additional urban growth within the McChord Field North CZ should be prohibited, and incompatible urban growth should be directed away from high noise areas and APZs, where feasible.

### **5.3. Aircraft Safety**

The presence of incompatible land uses in the McChord north CZ is the most critical encroachment issue facing JBLM. Existing structures on the western and eastern edges of the CZ pose challenges for aircraft training and operations, including industrial uses and storage condominium units. Most of these uses are nonconforming with current City of Lakewood zoning; however, there is a small area of land along the western edge of the CZ that is zoned industrial. Additionally, there are industrial uses adjacent to the CZ that emit steam plumes, which could pose aviation hazards. JBLM should seek federal, state, and local funding to resume property acquisition efforts in the McChord north CZ.

In APZ I and II, zoning designations for moderate- and high-density residential uses in Tacoma and Lakewood recreational uses in the Lakewood, and Arlington Elementary School in Tacoma create the potential for concentrations of people in an area with a statistically significant risk of aircraft accident. The Star Lite Swap in Lakewood, an existing public assembly site located in a commercially zoned area of the APZ II, poses the same challenge. Jurisdictions should seek to phase out incompatible uses in APZs through zoning, property acquisition, and public facility siting decisions.

### **5.4. Noise**

There are areas in the McChord Field aircraft noise zones to the north of JBLM and in the large weapon noise zones to the south and southwest of the installation that have the potential to generate public nuisance complaints. Within the aircraft noise zones, a few small areas in Lakewood and Tacoma near I-5 are zoned for residential, mixed use, and recreational uses categorized as incompatible or conditionally compatible. Areas within the JBLM large weapon noise zones include Roy, parts of Yelm and DuPont, the Nisqually Indian Reservation, and parts of the urban growth area in unincorporated Thurston County near Lacey. These jurisdictions have been working with JBLM since the 1992 JLUS to reduce the risk of nuisance complaints and to exist amicably alongside the base. This work will continue to be important in the future since these areas have the capacity for population and employment growth.

### **5.5. Endangered and Threatened Species and Habitats**

Listed species requirements limit the scope of training on JBLM training lands. JBLM has led efforts through the Army Compatible Use Buffer (ACUB) program to acquire property and conservation easements, and to implement habitat restoration outside the installation as well as management of land and training operations on the installation to protect listed species. Thurston County and cities within the County can take additional steps by developing additional habitat conservation programs and regulations.

### **5.6. Transportation**

Ongoing WSDOT and JBLM efforts to address regional transportation impacts along the I-5 corridor through JBLM represent significant progress toward ensuring access and mobility both for JBLM and for the surrounding community. Continuation of current and exploration of new solutions for JBLM-related and -non-related traffic is needed.

### **5.7. Trespass and Unauthorized Access to JBLM Range and Training Lands**

Trespass and unauthorized uses of JBLM range and training lands presents risks to civilians and JBLM personnel and interferes with military training. Civilian recreational use of JBLM is allowed in authorized areas only. JBLM is required by the Sikes Act to open range lands for recreational use, although military training and environmental protection are higher priorities. JBLM Range Control operates the Area Access Office to issue permits and grant non-training access to the Range Complex. The Artillery and South Impact Areas are never open to the public due to UXO hazard. JBLM Range Control publishes a weekly schedule that identifies locations where authorized recreational activities are permitted.

Conduct of illegal activities and nuisance use (such as garbage dumping) on JBLM lands were identified during the public input process. The continuing management of public recreational access to training lands will limit trespass and competition for access to military training lands while maintaining legitimate compatible recreational uses.

### **5.8. Communication and Coordination**

Communication and coordination among JLUS partners are critical for the implementation of compatibility recommendations. The establishment of the SSMCP has provided a regional forum for such communication and coordination focused on military related issues.



## 6. Preliminary Compatibility Strategies

A variety of strategies could be employed to mitigate the existing or potential land use incompatibilities noted in the preceding analysis. The tables that follow contain a preliminary set of possible strategies that mitigate for existing incompatibility and ensure compatible future development. Tables 7 through 14 are organized according to the seven compatibility issues examined in this report and contain information regarding geographic applicability as well as examples and detailed actions. Tables 15 through 26 organize those same strategies according to the jurisdiction affected.

Based on the review and guidance of the TWG and SSMCP JLUS Subcommittee, this preliminary list of strategies will be refined and prioritized, resulting in an actionable Implementation Plan. The Implementation Plan will contain details such as the timing, order of magnitude costs, potential funding sources, lead and partner jurisdictions/ agencies/organizations, and supporting background information such as model ordinances.

The TWG and SSMCP JLUS Subcommittee conducted a preliminary strategy prioritization exercise intended to identify the highest priority strategies. Table 6 below summarizes the results of that exercise.

**Table 6. Preliminary Strategy Prioritization.**

Rank	Compatibility Issue	Implementation Strategy	Votes
1	Urban Growth	Incorporate compatibility in updates of local Comprehensive Plans.	15
2	Aircraft Safety	Establish or strengthen permitting process for structures that could pose risks to aviation operations.	9
3	Aircraft Safety/Noise	Real estate tools (e.g., disclosure, deed restrictions, hold harmless agreements).	8
3	Communication & Coordination	Promote pre-planning and review of major new proposals among JLUS internal stakeholders, including JBLM.	8
3	Communication & Coordination	Establish an ongoing JLUS implementation entity.	8
4	Noise	Avoid overflight of sensitive locations and residential areas, when feasible.	6
5	Threatened and Endangered Species and Habitat	Explore use of property tax incentives to encourage preservation of open space and working lands.	5
6	Transportation	Conduct a joint transportation study with a focus on the local circulation network and impacts of ACPs.	4
6	Urban Growth	Incorporate specific land use compatibility requirements into local zoning codes and ordinances (e.g., density or height limits in sensitive areas).	4
7	Aircraft Safety/Noise	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	3

7	Threatened and Endangered Species and Habitat	Pursue additional conservation partnering opportunities through REPI/ACUB and the Sentinel Landscapes partnership.	3
7	Urban Growth	Enact or amend state-level legislation to promote land use compatibility around military installations.	3
8	Communication & Coordination	Promote analysis of military economic impact in state-wide planning processes.	2
8	Communication & Coordination	Pursue state funding for resolution of encroachment issues.	2
8	Communication & Coordination	Increase outreach by military partners.	2
8	Communication & Coordination	Provide information about military installations and activities to property owners and external stakeholders (e.g., POC guidebook, web-based tools, CPLO).	2
8	Threatened and Endangered Species and Habitat	Expand federal or state role in conservation efforts (e.g., funding, legislation to support land transfers).	2
8	Threatened and Endangered Species and Habitat	Support establishment of conservation banking in Thurston County.	2
9	Aircraft Safety	Promote site planning and design guidelines to reduce Bird Aircraft Strike Hazard (BASH).	1
9	Noise	Promote sound attenuation building standards and/or energy efficiency practices, including retrofits.	1
9	Communication & Coordination	State designated Area of Critical State Concern or Regional Military Influence (RMI).	1
9	Light Pollution	Adopt and enforce local dark-sky ordinances.	1
9	Light Pollution	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied.	1

Table 7. Aircraft Safety Strategies.

<b>Strategy</b>	<b>Actions/Examples</b>	<b>Geographic Applicability</b>	<b>Jurisdictions Affected</b>
<b>Establish or strengthen the permitting process for structures that could pose risks to aviation operations</b>	<ul style="list-style-type: none"> <li>· Permitting and/or notification process to coordinate or guide placement and design of structures such as renewable energy and telecommunications infrastructure</li> <li>· Encourage collocation of cellular towers</li> <li>· Incorporate height/marking standards for structures in MTRs</li> <li>· Work to ensure that infrastructure below 200 feet in height is adequately marked for air traffic safety</li> </ul>	McChord North CZ McChord APZ I McChord APZ II McChord Imaginary Surfaces	Lakewood Pierce County Tacoma
<b>Promote site planning and design guidelines to reduce Bird Aircraft Strike Hazard (BASH)</b>	<ul style="list-style-type: none"> <li>· Develop standards to minimize the attraction of birds near the airfield environs or in low-level flight corridors</li> <li>· Typically includes standards for uses that can attract birds, such as detention ponds, sanitary landfills, crops etc.</li> <li>· Coordinate with state and federal entities on aviation impacts on bird species at wildlife refuges and other natural areas in the region</li> </ul>	McChord North CZ McChord APZ I McChord APZ II McChord Imaginary Surfaces	Lakewood Pierce County Tacoma
<b>Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes</b>	<ul style="list-style-type: none"> <li>· Provide GIS noise and safety zone layers to permitting staffs so they are clear on property maps</li> </ul>	McChord North CZ McChord APZ I & II McChord Imaginary Surfaces Aircraft Noise Zones Large Weapon CDNL Zones Large Weapon PK15 Zones	DuPont JBLM  Lakewood Nisqually Indian Reservation Pierce County Roy Tacoma Thurston County Yelm



<b>Strategy</b>	<b>Actions/Examples</b>	<b>Geographic Applicability</b>	<b>Jurisdictions Affected</b>
<b>Record a formal note indicating proximity of parcel or tract of land to a military installation</b>	<p>Require the recording of a note regarding the location of a parcel/tract within any designated airspace, noise, or safety zone</p> <p>Note appears on title to real property as part of any discretionary development permit, approval, or property transfer</p>	<p>McChord North CZ</p> <p>McChord APZ I &amp; II</p> <p>McChord Imaginary Surfaces</p> <p>Aircraft Noise Zones</p> <p>Large Weapon CDNL Zones</p> <p>Large Weapon PK15 Zones</p>	<p>DuPont</p> <p>Lakewood</p> <p>Nisqually Indian Reservation</p> <p>Pierce County</p> <p>Roy</p> <p>Tacoma</p> <p>Thurston County</p> <p>Yelm</p>
<b>Adopt or promote real estate disclosure in sensitive areas</b>	<ul style="list-style-type: none"> <li>Release of information on possible impacts (noise/vibration, air safety zones) on prospective buyers or renters as part of real estate transactions for properties close to test/training impacts</li> <li>Can be mandatory or voluntary disclosure</li> <li>Can be implemented through a local or state-wide mechanism</li> <li>CalPortland mine redevelopment, Thurston Highlands master planned community</li> </ul>	<p>McChord North CZ</p> <p>McChord APZ I &amp; II</p> <p>McChord Imaginary Surfaces</p> <p>Aircraft Noise Zones</p> <p>Large Weapon CDNL Zones</p> <p>Large Weapon PK15 Zones</p>	<p>DuPont</p> <p>Lakewood</p> <p>Nisqually Indian Reservation</p> <p>Pierce County</p> <p>Roy</p> <p>Tacoma</p> <p>Thurston County</p> <p>Yelm</p>

<b>Strategy</b>	<b>Actions/Examples</b>	<b>Geographic Applicability</b>	<b>Jurisdictions Affected</b>
<b>Explore use of hold harmless agreements</b>	<ul style="list-style-type: none"> <li>Legal document between property owner and installation that is recorded with the property title</li> </ul>	McChord North CZ McChord APZ I & II McChord Imaginary Surfaces Aircraft Noise Zones Large Weapon CDNL Zones Large Weapon PK15 Zones	DuPont JBLM Lakewood Nisqually Indian Reservation Pierce County Roy Tacoma Thurston County Yelm
<b>Explore use of covenants, easements, and other deed restrictions to promote compatibility</b>	<ul style="list-style-type: none"> <li>Easements are conditions voluntarily accepted by property owners or purchased by agencies to secure the rights to allow or limit specific property uses or development</li> <li>Navigation easements, for example, are tailored to impacts associated with aircraft overflight and any attendant noise, dust, vibration, etc.</li> <li>These actions are referred to as “less than fee simple” purchase</li> <li>Could also be explored as a condition of subdivision approval</li> </ul>	McChord North CZ McChord APZ I & II McChord Imaginary Surfaces Aircraft Noise Zones Large Weapon CDNL Zones Large Weapon PK15 Zones	DuPont JBLM Lakewood Nisqually Indian Reservation Pierce County Roy Tacoma Thurston County Yelm

Table 8. Military Operational Noise Strategies.

<b>Strategy</b>	<b>Actions/Examples</b>	<b>Geographic Applicability</b>	<b>Jurisdictions Affected</b>
<b>Promote sound attenuation building standards and/or energy efficiency practices in new buildings</b>	<ul style="list-style-type: none"> <li>Encourage the adoption of more energy efficient development as a means to achieve complementary indoor sound reduction in new construction</li> <li>Many of the requirements to increase energy efficiency outlined in the 2012 International Energy Conservation Code, for example, align with recognized sound attenuation requirements</li> <li>Identify any additional building design and construction practices to reduce the level of noise that penetrates habitable indoor space</li> <li>Increase awareness among homeowners and builders of sound attenuation and related energy efficiency methods through educational materials</li> <li>SSMCP can take the lead in promoting these practices.</li> </ul>	Aircraft Noise Zones Large Weapon CDNL Zones Large Weapon PK15 Zones	DuPont Lakewood Nisqually Indian Reservation Pierce County Roy Tacoma Thurston County Yelm
<b>Assist homeowners with the retrofit of windows and other sound attenuation measures to reduce indoor sound levels</b>	<ul style="list-style-type: none"> <li>Explore funding opportunities to retrofit existing structures with sound attenuation elements</li> </ul>	Aircraft Noise Zones Large Weapon CDNL Zones Large Weapon PK15 Zones	DuPont  Lakewood Nisqually Indian Reservation Pierce County Roy Tacoma Thurston County Yelm



<b>Strategy</b>	<b>Actions/Examples</b>	<b>Geographic Applicability</b>	<b>Jurisdictions Affected</b>
<b><i>Avoid overflight of sensitive locations and residential areas, when feasible</i></b>	<ul style="list-style-type: none"> <li>· Consider feasibility of re-evaluating and adjusting existing military flight patterns and training routes to reduce noise exposure on local communities and sensitive locations</li> <li>· Decide on process and criteria for selecting noise-sensitive locations and compatible noise levels (Flight routes currently located to avoid sensitive areas)</li> </ul>	Aircraft Noise Zones	JBLM Lakewood Pierce County Tacoma

Table 9. Urban Growth Strategies.

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Incorporate compatibility in updates of local Comprehensive Plans</i></b>	<ul style="list-style-type: none"> <li>· <i>Include references to compatibility with installations, maps, recommendations, and strategies resulting from JLUS</i></li> <li>· <i>Define and establish Areas of Influence to form the basis of overlay districts</i></li> <li>· <i>Regulations would specify development characteristics, such as land use type, density, height etc. as appropriate to maintain compatibility with the operational impacts experienced in the designated area</i></li> <li>· <i>Often used in conjunction with specific and defined planning zones, such as noise contours or airport accident potential zones</i></li> <li>· <i>Can be broadly defined as a Military Influence Area Overlay that combines other communication and performance-based standards, such as real estate disclosure and joint consultation procedures or sound attenuation of buildings and airport hazard related standards</i></li> </ul>	<i>JLUS study area</i>	<i>DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm</i>

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b>Ensure that the military is aware of and encouraged to participate in major plan updates and amendments</b>	<ul style="list-style-type: none"> <li>Examples include Comprehensive Plans, neighborhood or sector plans in areas of sensitivity, and transportation, infrastructure and natural resource plans</li> </ul>	JLUS study area	DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm
<b>Conduct more detailed small area plans within the local communities</b>	<ul style="list-style-type: none"> <li>Establishes more specific land use vision and development framework for areas of sensitivity in advance of emerging development activity</li> <li>Most appropriate for specific, well-defined areas experiencing military operational impacts such as noise or traffic/transportation/gate access issues</li> <li>Engage local residents, including property owners and renters, and businesses.</li> </ul>	JLUS study area	DuPont Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm



Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</i></b>	<ul style="list-style-type: none"> <li>· <i>Include references to compatibility with installations, maps, recommendations, and strategies resulting from JLUS</i></li> </ul>	<i>JLUS study area</i>	<i>DuPont Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm</i>
<b><i>Establish and promote the use of Conservation Subdivision Design Ordinance</i></b>	<ul style="list-style-type: none"> <li>· <i>Establishes by-right access to alternative subdivision layout that condenses lot sizes on most buildable portion of site and requires dedicated open space on remainder of parcel</i></li> <li>· <i>Uses buffers in the form of preserved open space as part of site development and creates natural mitigation of noise</i></li> </ul>	<i>JLUS study area</i>	<i>Yelm</i>
<b><i>Evaluate policy and zoning options to promote infill and mixed use development to guide denser growth into established centers and away from sensitive areas</i></b>	<ul style="list-style-type: none"> <li>· <i>Used to guide or incentivize growth away from peripheral areas that are likelier to experience military operational impacts due to proximity to installations</i></li> </ul>	<i>JLUS study area</i>	<i>Lacey Lakewood Nisqually Indian Reservation PCRC Pierce County Tacoma Thurston County Yelm</i>

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Explore the use of capital improvement planning and infrastructure system requirements to guide incompatible growth away from sensitive areas</i></b>	<ul style="list-style-type: none"> <li>· Since infrastructure (water, wastewater, roadways) tends to attract growth and enable denser land use patterns, coordinated planning on the extension of public service systems or permitting can promote more compatible development activity in areas exposed to military operational impacts</li> </ul>	<i>JLUS study area</i>	<i>Lakewood Nisqually Indian Reservation Pierce County Tacoma Yelm</i>
<b><i>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</i></b>	<ul style="list-style-type: none"> <li>· Define and establish Areas of Influence to form the basis of overlay districts</li> <li>· Regulations would specify development characteristics, such as land use type, density, height etc. as appropriate to maintain compatibility with the operational impacts experienced in the designated area</li> <li>· Often used in conjunction with specific and defined planning zones, such as noise contours or airport accident potential zones</li> <li>· Can be broadly defined as a Military Influence Area Overlay that combines other communication and performance-based standards, such as real estate disclosure and joint consultation procedures or sound attenuation of buildings and airport hazard related standards</li> </ul>	<i>JLUS study area</i>	<i>DuPont Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm</i>

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b>Address compatibility issues in joint City/County planning within unincorporated Urban Growth Areas (UGAs)</b>	<ul style="list-style-type: none"> <li>Enables more robust compatibility planning in unincorporated areas outside of municipal boundaries</li> <li>Address compatibility issues during regular comprehensive plan and UGA updates (i.e., 10-year comp plan updates, annual docket)</li> <li>Address compatibility issues in Countywide Planning Policies (CWPPs)</li> </ul>	JLUS study area	DuPont Lacey Lakewood Nisqually Indian Reservation PCRC Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm
<b>State-level legislation to promote land use compatibility around military installations</b>	<ul style="list-style-type: none"> <li>Can be used to mandate real estate disclosure and joint consultation procedures for certain development or land use change actions in specific areas around military installations</li> </ul> <p>The Growth Management Act requires that cities and counties not allow incompatible land uses around military installations and requires consultation with installation commanders prior to land use actions – RCW 36.70A.530)</p>	JLUS study area	Washington State



Table 10. Transportation Strategies.

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b>Analyze local transportation impacts</b>	<ul style="list-style-type: none"> <li>Conduct a joint transportation study with a focus on the local civilian circulation network and impacts of Access Control Point (ACPs)</li> </ul>	JLUS study area	DuPont JBLM Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC WSDOT Yelm

Table 11. Threatened and Endangered Species and Habitat Strategies.

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Pursue additional conservation partnering opportunities through REPI/Army Compatible Use Buffer (ACUB), and the Sentinel Landscapes partnership</i></b>	<ul style="list-style-type: none"> <li>· Enables the military to enter into agreements with non-federal entities and land owners to secure conservation easements on property near a military installation or military airspace</li> <li>· Pursue opportunities for additional partnerships, such as the Prairie Conservation Bank</li> </ul>	JLUS study area	JBLM Thurston County
<b><i>Establish a working lands conservation partnership for the region or partner with existing working land trusts to identify priority areas for conservation efforts</i></b>	<ul style="list-style-type: none"> <li>· Formal partnership to identify areas of interest for conservation planning</li> <li>· USDA is a partner in the Northwest Rangelands Trust and can manage easements on agricultural lands</li> </ul>	JLUS study area	JBLM Thurston County
<b><i>Explore federal or state legislation to initiate transfer/sale of land between DoD and other federal or state entities. Alternatively, local jurisdiction may facilitate, enable or organize such actions.</i></b>	<ul style="list-style-type: none"> <li>· Exchange of lands to permit more intensive use or development on lands unaffected by military operations and, in turn, create an open space buffer or compatible low impact uses on lands subject to military impacts</li> <li>· Use acquisition techniques as corrective or preventative measure for land use compatibility. Usually implemented as fee simple acquisition or acquisition of easement, transfer of development rights, or land swap</li> </ul>	JLUS study area	JBLM Thurston County

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b>Explore the purchase of development rights (PDR) or transfer of development rights (TDR) to promote compatibility</b>	<ul style="list-style-type: none"> <li>· Transaction separates development rights from the land in exchange for compensation</li> <li>· Land remains in a low-intensity use, therefore maintaining compatibility</li> <li>· Acquisition of development rights associated with agricultural lands is one of the most common types purchases</li> <li>· REPI is one funding mechanism to achieve purchase of rights; or establish Military Installation Fund (MIF) (Conservation easements have been acquired for prairie habitat conservation)</li> </ul>	JLUS study area	JBLM Thurston County
<b>Explore the feasibility of fee simple acquisition of land to promote compatibility</b>	<ul style="list-style-type: none"> <li>· Acquisition in fee of property within a designated transitional or buffer area near a military installation</li> <li>· Most expensive option available to government (Some fee simple land acquisition has occurred under ACUB program)</li> </ul>	JLUS study area	JBLM Thurston County
<b>Other land conservation/swap/disposal/purchase strategies</b>	<ul style="list-style-type: none"> <li>· Expand conservation banking through Thurston County. There is a need for additional conservation banks</li> <li>· Expand the state and federal role in habitat conservation efforts</li> <li>· Provide regulatory certainty to stakeholders with regard to endangered species and habitat protection regulations. For example the Thurston County Habitat Conservation Plan can provide predictability to landowners and other stakeholders.</li> <li>· Establish endowments for the ongoing maintenance of conservation lands in perpetuity</li> </ul>	JLUS study area	JBLM Thurston County



Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Explore the use of property tax incentives to encourage the preservation of open space and working lands</i></b>	<ul style="list-style-type: none"> <li>Examples at the state level include the Williamson Act in California that enables local governments to enter into contracts with private landowners to restrict land to agricultural or related open space use in return for lower property tax assessments</li> <li>Can also be enacted locally</li> </ul>	JLUS study area	JBLM Thurston County

Table 12. Trespass and Unauthorized Access to JBLM Range and Training Lands.

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Enhance system of notification and communication with public stakeholders on recreational use of range lands to prevent unauthorized use and improve communications on authorized uses</i></b>	<ul style="list-style-type: none"> <li>· Enhance notification system for recreational users accessing range lands</li> <li>· Increase awareness through better signage, mapping, and public education strategies</li> <li>· Provide for periodic outreach to recreational user groups to explain access management process and current status</li> <li>· Encourage informal “eyes and ears” by users to keep training lands free of garbage or illegal uses via communication with Range Control</li> </ul>	JLUS study area	JBLM Nisqually Indian Reservation Roy Thurston County Yelm

Table 13. Communication and Coordination Strategies.

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Pursue designation as Area of Critical State/Local Concern and Interest</i></b>	<ul style="list-style-type: none"> <li><i>An Area of Critical State Concern is similar to the Regional Military Influence, but more limited and can be designated by either state or local government (PSRC and the Growth Management Policy Board are currently considering whether military facilities should be regionally recognized employment centers in the Vision 2040 and Transportation 2040 frameworks)</i></li> </ul>	<i>JLUS study area</i>	<i>Washington State DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County Roy Steilacoom Tacoma Thurston County Yelm</i>
<b><i>Support state designations of an area of Regional Military Influence (RMI)</i></b>	<ul style="list-style-type: none"> <li><i>A RMI designates a geographic area to recognize the interdependence of military installations, missions, operating areas and training venues</i></li> <li><i>Emphasizes the need for coordinated planning beyond obvious interrelationships between military installations and immediately adjoining neighbors</i></li> </ul>	<i>JLUS study area</i>	<i>Washington State PSRC TRPC</i>



Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Promote analysis of military economic impact in state-wide planning processes</i></b>	<ul style="list-style-type: none"> <li>Promote the inclusion of cost-benefit analysis of military impacts in state-wide planning processes that establish high-level priorities for revenue, jobs, and local community economic health and are used to evaluate project proposals and initiatives (The Governor recently established the Washington State Military &amp; Defense Industry Sector to coalesce and communicate the sector and address challenges and opportunities for growth with focus on base realignment and closure)</li> </ul>	JLUS study area	Washington State
<b><i>Advocate for state-wide web-based tool to assist with property searches in sensitive areas</i></b>	<ul style="list-style-type: none"> <li>Alternative platform to a locally-hosted web-based tool</li> </ul>	JLUS study area	Washington State
<b><i>Pursue state funding for resolution of encroachment issues</i></b>	<ul style="list-style-type: none"> <li>State contributions to additional studies of encroachment issues</li> <li>State funding of property or easement acquisition</li> </ul>	JLUS study area	Washington State

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Increase outreach by military partners in the community to promote understanding of military mission, operations, and benefits to community and build support for compatibility strategies and increased cooperation</i></b>	<ul style="list-style-type: none"> <li>· Build on outreach efforts of the SSMCP</li> <li>· Use of websites, brochures, briefings, and other media to increase awareness of military activities, mission, and economic impacts</li> <li>· Conduct additional community outreach on military operations and mission to promote visibility of the military</li> <li>· Publication of training schedules or advanced notice of operations when feasible</li> <li>· Conduct quarterly or semi-annual briefings by military representatives at city or at city council/county commission meetings</li> <li>· Other examples are: briefings to community groups; on-installation visits and “field trips” for the public; periodic press releases or media events about mission and economic impacts; and testing and training demonstrations for the public</li> </ul>	JLUS study area	DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm
<b><i>Promote pre-planning and review of major new proposals among JLUS internal stakeholders</i></b>	<ul style="list-style-type: none"> <li>· Includes DoD, local, regional, state, and federal projects</li> <li>· Must set criteria for the scale or type of action warranting referral</li> <li>· Includes referral of local development and subdivision applications to military installation for advisory review/comment</li> <li>· Include JLUS stakeholders in review of countywide planning policies</li> </ul>	JLUS study area	DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County Roy Steilacoom Tacoma Thurston County Yelm

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Promote formal participation of military representatives on local planning boards and commissions</i></b>	<ul style="list-style-type: none"> <li><i>Military representatives participate as non-voting member of community planning advisory bodies such as Planning and Zoning Commissions</i></li> <li><i>JBLM could be represented as an ex officio member on local coordinating bodies such as the Pierce County Growth Management Coordinating Committee</i></li> </ul>	<i>JLUS study area</i>	DuPont JBLM Lacey Lakewood Nisqually Indian Reservation PCRC Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm
<b><i>Participate in a Memorandum of Understanding for joint consultation and information sharing among decision-makers</i></b>	<ul style="list-style-type: none"> <li><i>Formalizes and expands existing procedures regarding notification and consultation/coordination between military, community, local governments, land owners, and land managers on projects, policies, and activities</i></li> <li><i>Establishes clear points of contact in local, state, federal, and DoD agencies</i></li> </ul>	<i>JLUS study area</i>	DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm



Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b>Establish an ongoing JLUS implementation entity</b>	<ul style="list-style-type: none"> <li>Build on current SSMCP structure and ongoing regional outreach partnerships</li> <li>Create an implementation body to advocate for the adoption of recommended compatibility measures and promote continued dialogue</li> <li>Umbrella organization chartered, empowered, and funded to support multi-jurisdictional, regional land use planning and track progress on JLUS actions (JLUS Subcommittee of SSMCP Steering Committee currently directing JLUS study)</li> </ul>	JLUS study area	DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm
<b>Share information among internal stakeholders for improved coordination</b>	<ul style="list-style-type: none"> <li>Develop an internal web-based tool to facilitate project/plan review among internal stakeholders</li> <li>Internal data clearinghouse that enables GIS sharing, data upload, and comment of posted projects and initiatives</li> <li>May also include additional information on mission activities, such as training schedules or other updates</li> <li>Designate an entity to maintain and monitor site</li> </ul>	JLUS study area	DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Provide information about military installations and activities to property owners and external stakeholders</i></b>	<ul style="list-style-type: none"> <li>• Develop and maintain an updated database of points of contact by entity</li> <li>• Compile comprehensive notification lists and expand methods to reach a wider range of affected parties about noise or other mission-related events, including fliers, social media, and texting</li> <li>• Develop online and printed information to highlight military activities, missions, and economic impacts</li> <li>• Create a web-based feature linked to available GIS to enable parcel- or lot-specific searches that identify if a property falls within a sensitive area, such as a noise zone or APZ</li> </ul>	JLUS study area	DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm
<b><i>Other communication/coordination strategies</i></b>	<ul style="list-style-type: none"> <li>• Create and maintain a “bi-directional” guidebook that identifies points of contact on JBLM and within local communities.</li> <li>• Reinforce SSMCP’s role as liaison between JBLM and communities.</li> <li>• JBLM to pursue funding to hire Community Plans Liaison Officer.</li> <li>• Use the Growth Mgmt. Coordination Committee (GMCC) as the Pierce County forum for liaison and information.</li> </ul>	JLUS study area	DuPont JBLM Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm

Table 14. Other Possible Strategies.

Strategy	Actions/Examples	Geographic Applicability	Jurisdictions Affected
<b><i>Adopt and enforce local dark-sky ordinances</i></b>	<ul style="list-style-type: none"> <li>· Reduce the light pollution interference with training activities by requiring the use of fully shielded, cut-off outdoor lighting applications</li> <li>· Down-lighting at all airports and airfields and outdoor stadiums and sports parks</li> <li>· Can be required for major new developments (e.g., commercial, industrial uses)</li> </ul> Retrofitting can be encouraged	JLUS study area	DuPont Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm
<b><i>Adopt on-installation policies to install dark-sky lighting</i></b>	<ul style="list-style-type: none"> <li>· Use of fully shielded, cut-off outdoor lighting applications for on-installations areas, including ramp lights</li> </ul> Intended to minimize light pollution issues affecting regional observatories	JLUS study area	DuPont Lacey Lakewood Nisqually Indian Reservation Pierce County PSRC Roy Steilacoom Tacoma Thurston County TRPC Yelm



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# Joint Base Lewis-McChord (JBLM) Joint Land Use Study (JLUS)



## *Existing Conditions Report*

### *Final*

Prepared by:

AECOM

Prepared for:



SOUTH SOUND MILITARY &  
COMMUNITIES PARTNERSHIP

September 2015

# Existing Conditions Report

## Joint Base Lewis-McChord Joint Land Use Study

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### Executive Summary

The Joint Base Lewis-McChord (JBLM) Joint Land Use Study (JLUS) is a collaborative process among local, state, and regional jurisdictions; the public; federal, state, and regional agencies; and military installations within the South Puget Sound region of the State of Washington. The JLUS presents recommendations for consideration by local and state governments that promote development compatible with military presence and protecting public health, safety, and welfare while also protecting the ability of the military to accomplish its vital training and operational missions presently and over the long-term. The study is designed to create dialogue around the complex issues such as land use, economic development, infrastructure, environmental sustainability, and the operational demands and mission changes of military entities. The intent of the study is to highlight common interests such as economic growth, more efficient infrastructure, healthier environments, improved quality of life, and the protection of Department of Defense (DoD) and civilian investments and missions.

The Final JLUS Report will provide a series of recommendations to guide future decisions and policy actions by public agencies, military installations, and other partners. The purpose of the Existing Conditions Report is to summarize existing compatibility issues and identify other issues that may develop in the future under the current planning framework.

The JLUS study area is defined as the area within 2 miles of the JBLM installation boundary, as shown in Figure 1.1. The 2-mile study area encompasses the communities of Tacoma, Lakewood, University Place, Steilacoom, DuPont, and unincorporated areas within Pierce County; Lacey, Yelm, Rainier, Roy, and unincorporated areas within Thurston County; and the Nisqually Indian Reservation. Camp Murray, which is home to the Washington National Guard, is within the study area as well.

JBLM is the largest military installation on the west coast, encompassing over 90,000 acres including the main cantonment area (approximately 10,000 acres) and close-in training ranges (approximately 80,000 acres). JBLM is a major economic engine in Washington State and, as of 2012, is the second largest employer in the state and the largest employer in Pierce County. JBLM reports that, as of June 2015, the on-base population stands at 23,700. Region-wide, the JBLM-supported population, which includes full-time military, family members, and dependents; DoD employees; and civilian contractors; living on base and in neighboring communities, stands at more than 130,000.

A variety of information was reviewed, including population and economic data, JBLM plans and policies, local community comprehensive plans and development regulations, and environmental documents. Additional input was provided by stakeholders, Subject Matter Experts (SMEs), and the general public.

Upon review of this information, several key compatibility issues were identified:

- Incompatible land uses exist in the McChord Field North Clear Zone (NCZ) and Accident Potential Zones (APZs). Some private property has been acquired.
- Federally listed threatened and endangered prairie species and their habitat exist on and off installation. The need to manage this habitat presents an encroachment threat to military operations on base, while impacting use of land off base.



- Noise impacts from aircraft and training operations affect areas off the installation resulting in potentially incompatible land uses.
- Future urban growth (planned or projected) near the installation boundaries increases the possibility of future conflicts.
- Regional transportation impacts continue as both JBLM and the region have experienced growth.
- Trespass and unauthorized use of JBLM training lands threatens the training mission of the base and the safety of soldiers and civilians. Continued management of JBLM training lands is needed to limit unauthorized uses while permitting authorized, compatible public uses.
- There is a need to maintain and increase communication among JBLM and the surrounding communities.

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### Acronyms and Abbreviations

65 Ldn	65 decibel, day-night average sound level
AC1	Air Corridor 1
AC2	Air Corridor 2
ACUB	Army Compatible Use Buffer
ADPs	Area Development Plans
AIA	Artillery Impact Area
AICUZ	Air Installation Compatible Use Zone Study
AIR	Airport Overlay
APZs	Accident Potential Zones
AR	Army Regulation
BASH	Bird/Wildlife Aircraft Strike Hazard
BEA	U.S. Bureau of Economic Analysis
BMPs	best management practices
BNSF	Burlington Northern-Santa Fe
BRAC	Base Realignment and Closure Commission
CAB	Combat Aviation Brigade
CAO	critical areas ordinance
CNLM	Center for Natural Lands Management
CZ	Clear Zone
dB	decibel
DHR	Directorate of Human Resources
DIN	dissolved inorganic nitrogen
DNL	Day-Night Average A-Weighted Sound Level
DoD	Department of Defense
DPS	Distinct Population Segment
DPTMS	Directorate of Plans, Training, Mobilization, and Security
DPW	Directorate of Public Works
EIS	Environmental Impact Statement
EOC	Elected Officials Council
ESMPs	Endangered Species Management Plans
FEIS	Final Environmental Impact Statement
FONSI	Finding of No Significant Impact
FR	Federal Register
FY	Fiscal Year
GAAF	Gray Army Airfield
GMA	Growth Management Act
GSA	General Services Administration
HCP	Habitat Conservation Plan
HQ	Headquarters
HTAs	Helicopter Training Areas
I-5	Interstate 5
IDP	Installation Development Plan
IMCOM	Installation Management Command
INRMP	Integrated Natural Resources Management Plan
IONMP	Installation Operational Noise Management Plan
JBLM	Joint Base Lewis-McChord

JLUS	Joint Land Use Study
LUPZ	Land Use Planning Zone
MIA	Military Influence Area
ML	Military Lands
MPP	Multi-county Planning Policy
MR	Military Reservation
MWR	Morale, Welfare, and Recreation
NCZ	North Clear Zone
NEPA	National Environmental Policy Act
NGO	non-governmental organization
NLR	noise level reduction
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NZ	Noise Zones
OEA	Office of Economic Adjustment
PAO	Public Affairs Office
PHAM	Prairie Habitat Assessment Methodology
PSRC	Puget Sound Regional Council
RCMP	Range Complex Master Plan
REPI	Readiness and Environmental Protection Integration
RFP	Request for Proposals
RLM	Rural Military Lands
RWDS	reclaimed water distribution system
SHARP	Species and Habitat Asset and Risk Prioritization
SME	subject matter expert
SPP	Sustainability in Prisons Program
SPSSEG	South Puget Sound Salmon Enhancement Group
SR 18	State Route
SSMCP	South Sound Military and Communities Partnership
TA	Training Area
TRPC	Thurston Regional Planning Council
TWG	Technical Working Group
U.S.C.	United States Code
UAS	Unmanned Aircraft System
UGAs	urban growth areas
UML	Urban Military Lands
USDA	U.S Department of Agriculture
USDOI	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service
UXO	Unexploded Ordnance
VA	Veterans Administration
WADS	Western Air Defense Sector
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WWTP	wastewater treatment plant
YTC	Yakima Training Center



## 1. Study Purpose and Background

### 1.1. Study Purpose and Goals

The Joint Base Lewis-McChord (JBLM) Joint Land Use Study (JLUS) is a collaborative process among local, state, and regional jurisdictions; the public; federal, state, and regional agencies; and military installations within the South Puget Sound region of the State of Washington. The JLUS presents recommendations for consideration by local and state governments that promote development compatible with military presence and protecting public health, safety, and welfare while also protecting the ability of the military to accomplish its vital training and operational missions presently and over the long-term. The study is designed to create dialogue around complex issues such as land use, economic development, infrastructure, environmental sustainability, and the operational demands and mission changes of military entities. The intent of the study is to highlight common interests such as economic growth, more efficient infrastructure, healthier environments, improved quality of life, and the protection of Department of Defense (DoD) and civilian investments and missions.

The JLUS process emphasizes coordination and communication as a way to strengthen the relationship among the study area partners and to build a framework for successful implementation and monitoring of recommendations around shared goals. The Final JLUS Report will provide a series of recommendations to guide future decisions and policy actions by public agencies, military installations, and other partners. Recommendations are not binding, but participants are asked to make a good faith effort to implement those recommendations.

The overall goals of the JLUS are to:

- Clearly establish a Military Influence Area (MIA) that considers jurisdictional boundaries, economic influences, environmental assets, and multimodal transportation routes, including those to major ports.
- Jointly analyze the factors that can restrict range and training missions as a result of incompatible land use development adjacent to JBLM.
- Increase engagement and communication among JBLM, local jurisdictions, and property owners to address the long-standing issue of encroachment in the North Clear Zone (NCZ) of McChord Field.
- Cooperatively develop a set of recommendations that encourage land uses that are compatible, acceptable, and feasible for land in the vicinity of military airfield ranges, including aircraft Accident Potential Zones (APZs) and areas affected by noise.
- Protect the public health, safety, and welfare of the civilian and military communities by promoting safe and compatible growth.
- Provide for increased engagement and communication among the following entities in all stages of the planning process: JBLM and other local military facilities; federal, state, county, and municipal government agencies; Tribes; landowners; and other interested parties.
- Continue to strengthen the highly successful role that the South Sound Military and Communities Partnership (SSMCP) has played in encouraging regional communication and cooperation, and use this existing structure as an enduring forum for cooperative land use planning and implementation of study recommendations.
- Address community concerns with noise associated with the installation's aircraft operations and missions, which evolve over time.

- Define military installation compatibility within the context of the Washington State Growth Management Act (GMA) and leverage the ongoing planning efforts of local communities to implement JLUS recommendations in their upcoming comprehensive plan updates.
- Seek creative solutions that preserve habitat for threatened and endangered species while preserving range and training capabilities, including building upon the JBLM Readiness and Environmental Protection Integration (REPI) Sentinel Landscapes challenge project and the Army Compatible Use Buffer (ACUB) program.
- Develop an implementation plan that applies land use planning and policy tools, strategies, and techniques that fairly allocate land use impacts with respect to federal, state, and local governments; private landowners; and the military community.

## 1.2.Purpose of Existing Conditions Report

To establish a baseline for the broader planning context, an initial step of the JLUS planning process was to analyze existing conditions in the study area. The purpose of the Existing Conditions Report is to summarize existing compatibility issues and identify other issues that may develop in the future under the current planning framework. Research for the Existing Conditions Report focused on a review of the following:

- Community growth and land use patterns.
- Current and foreseeable military missions.
- Current land use policy and regulatory measures.
- Stakeholder and subject matter expert input.

The publication of this Existing Conditions Report completes Phase I of the JLUS process. Issues or topics identified in this report as needing further study will become the focus of Phase II of the process, the Compatibility Analysis.

## 1.3.Study Area

For the purposes of this report, the JLUS study area is defined as the area within 2 miles of the JBLM installation boundary, as shown in Figure 1.1. The 2-mile study area encompasses the communities of Tacoma, Lakewood, University Place, Steilacoom, DuPont, and unincorporated areas within Pierce County; Lacey, Yelm, Rainier, Roy, and unincorporated areas within Thurston County; and the Nisqually Indian Reservation. Camp Murray, which is home to the Washington National Guard, is within the study area as well. The Yakima Training Center (YTC), which is under the administration of JBLM, is not considered within the study area.

## 1.4.Formal Study Partners

The JBLM JLUS is made possible through a grant from the DoD Office of Economic Adjustment (OEA) to the City of Lakewood and coordinated by the SSMCP. The study area is a geographically large and diverse region, featuring a complex pattern of land tenure statuses combined with varied economic and resource interests, and multiple operational and mission needs. To reflect this complexity, a wide array of partners will be involved in the study process, including but not limited to:

- DoD OEA
- JBLM Headquarters and staff
- Washington State Department of Commerce
- Nisqually Indian Tribe
- Thurston Regional Planning Council (TRPC)

- Pierce County
- Thurston County
- City of DuPont
- City of Lacey
- City of Lakewood
- City of Rainier
- City of Roy
- Town of Steilacoom
- City of Tacoma
- Tacoma-Pierce County Chamber
- Tacoma-Pierce County Health Department
- City of Yelm

The JLUS is an inclusive, community-driven process designed to engage residents, local businesses, landowners, and others beyond the list of formal study participants. The JLUS is being conducted to identify strategies that enable meaningful input from the broadest possible cross-section of stakeholders and affected communities.

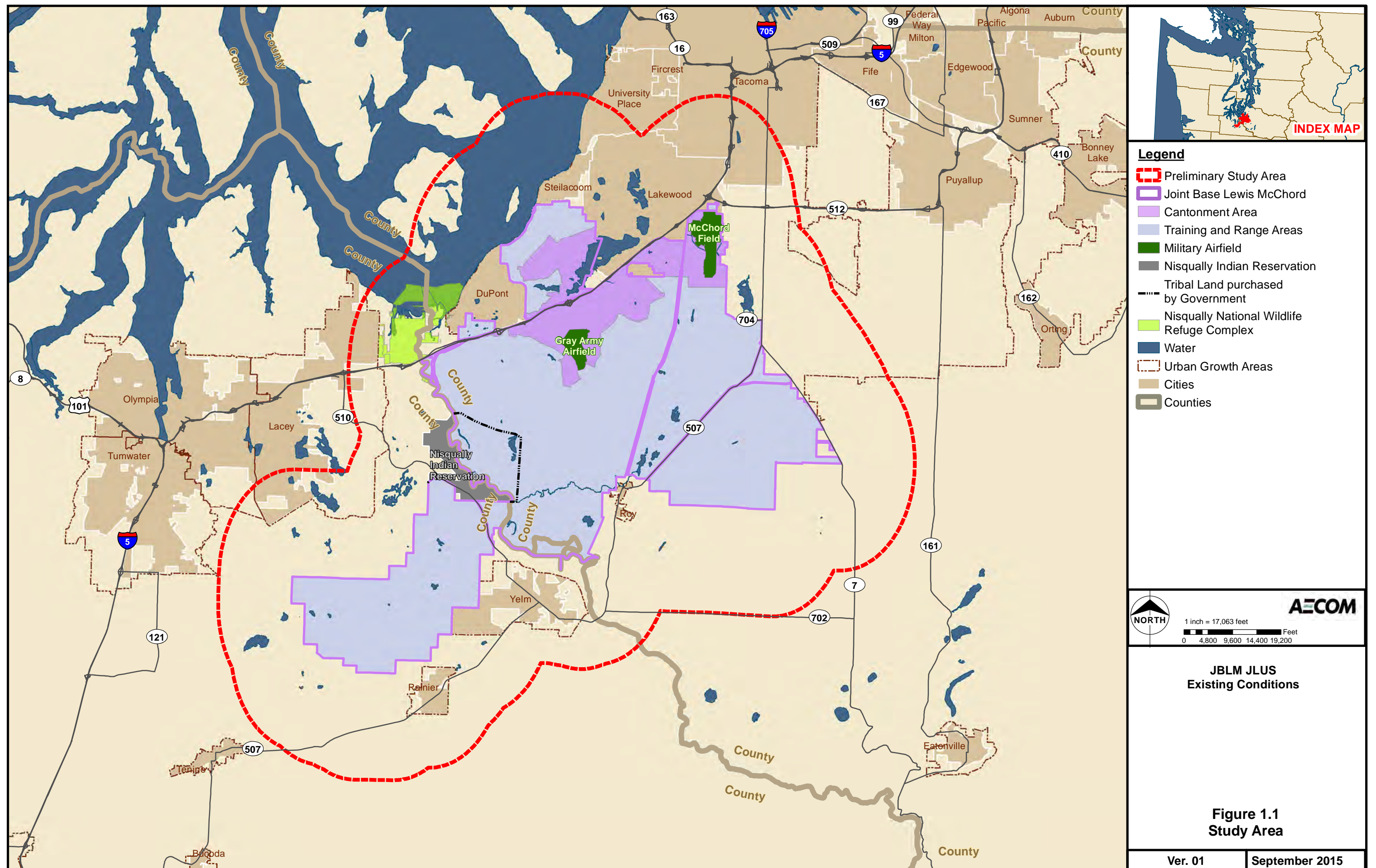
### **1.5.JLUS Committees**

JLUS stakeholders are organized into three levels of formal engagement, as follows: the JLUS Subcommittee (Subcommittee) of the SSMCP, the Technical Working Group (TWG), and the Elected Officials Council (EOC). This Existing Conditions Report was prepared with the input and guidance of these groups.

### **1.6. Stakeholder and Public Engagement**

In addition to the input gathered during committee meetings, information was solicited from various stakeholders, Subject Matter Experts (SMEs), and the general public. Individual interviews were conducted with stakeholders and SMEs, a small group meeting was held with the Nisqually Indian Tribe, and three public open houses were held. These efforts, and the issues and concerns identified as a result, are summarized in Chapter 9 of this report.





## 2. Initial Compatibility Issues

Several initial compatibility issues have been identified thus far during the course of this study. These issues were identified through three primary sources. Several issues were identified during the previous JLUS (the 1992 Fort Lewis and McChord Air Force Base JLUS) and remain as significant compatibility challenges. The Request for Proposals (RFP) for the current JLUS identified four primary issues intended to be the focus of the current study. Two other issues were raised through the stakeholder and public engagement process of this study, while the issue of transportation impacts is an ongoing issue that is primarily addressed by other studies and is not the focus of this JLUS. Table 2.1 identifies these initial compatibility issues and summarizes their status.

Table 2.1. Initial Compatibility Issues.

Issue	Source
Incompatible existing land uses in the McChord Field NCZ and APZs.	1992 JLUS/JLUS RFP
Federally listed threatened and endangered prairie species and habitat on and off installation.	JLUS RFP
Noise impacts from aircraft and training operations.	1992 JLUS/JLUS RFP
Future urban growth (planned or projected) near the installation boundaries.	JLUS RFP
Regional transportation impacts.	1992 JLUS/JLUS RFP
Trespass and unauthorized use of JBLM training lands.	Public/stakeholder input
Need to maintain and increase communication among JBLM and communities.	1992 JLUS and public/stakeholder input

### 2.1. 1992 McChord Air Force Base and Fort Lewis JLUS

In 1992, a JLUS was completed for Fort Lewis and McChord Air Force Base. During the more than 20 years since that study, the two military installations have formed a joint base and grown considerably, missions have changed, and significant urban growth has occurred in the region. While some specific compatibility issues addressed in the previous study are no longer relevant, there are several persistent issues.

The 1992 JLUS resulted in several successful implementation actions. Most significantly, both Pierce County and the City of Lakewood have addressed land use impacts related to JBLM within their comprehensive plans and development regulations, particularly with regard to land uses in the McChord NCZ and APZs. Acquisition of private property by the U.S. Air Force within the NCZ and APZs has occurred to mitigate the presence of incompatible land uses. However, incompatible land uses still exist, regional transportation impacts continue to pose a significant challenge, and noise impacts remain as missions have evolved. The following discussion summarizes the 1992 JLUS and the status of the identified compatibility issues.

The 1992 JLUS examined issues and made recommendations relating to seven topic areas:

- Aircraft Safety
- Aircraft Noise
- Training and Artillery/Small Arms Safety
- Artillery Noise
- Circulation
- Growth Management
- Communication

Of the compatibility issues identified in the 1992 study, those with the most relevance to this current study relate to:

- Development in NCZ and APZs
- Aircraft Noise & Artillery Noise
- Circulation
- Growth Management
- Communication

#### Development in NCZ and APZs

The McChord Field NCZ, is a 3,000 by 3,000 foot zone at the end of the runway where there is the highest statistical possibility of aircraft accidents. Development should be prohibited in this zone. However, pre-existing private development exists in the NCZ, including some industrial uses and storage condominium units.

The 1992 JLUS recommended two complementary approaches to this issue:

- Use public funds to acquire private property.
- Apply zoning restrictions to limit incompatible development.

The City of Lakewood has recognized the NCZ and instituted zoning controls to limit incompatible development. Lakewood's zoning and development regulations are described in further detail later in this report (see Section 6.3).



Funding acquired through the DoD Readiness and Environmental Protection Integration (REPI) program, along with other funding from the State of Washington, Pierce County, and the cities of Lakewood and Tacoma, has been used to acquire seven parcels (out of 36 total) as well as 27 condominium storage units (out of 49 total). These parcels have been transferred to Pierce County ownership.

#### Aircraft Noise & Artillery Noise

The existence of noise impacts on surrounding communities resulting from aircraft operations and artillery firing and other training operations is an intrinsic characteristic of military installations and was noted as a key compatibility issue in 1992.

Recommendations of the 1992 JLUS included:

- Zone to limit noise-sensitive uses in high noise zones.
- Limit night operations.
- Evaluate flight routes.
- Provide public notifications.
- Encourage noise attenuation measures in new construction.
- Encourage real estate disclosures of noise impacts.

Since that time, a number of steps have been taken both on and off the installation. JBLM has an established public notification system of potential noise impacts, managed by the Joint Base Headquarters (HQ). Some limits have been placed on night training activities. Flight routes have generally been established to minimize noise impacts. In neighboring communities, there are inconsistent requirements for noise impact disclosures or noise attenuation requirements for new construction.

#### Circulation

The Interstate 5 (I-5) corridor is the primary transportation artery in the region, with JBLM and densely developed population centers clustered along the corridor. Traffic circulation was identified as a compatibility issue in 1992 and has continued to present a challenge as both JBLM and the surrounding communities have continued to grow.

The 1992 JLUS recommended:

- Improving freeway interchanges.
- Including JBLM in regional transportation planning efforts.

Ongoing I-5 corridor work is addressing interchanges, base access, and including JBLM as a partner in regional transportation planning.

### Growth Management

The 1992 JLUS addressed growth management planning as a key issue and potential tool for mitigating compatibility challenges.

Recommendations included:

- Consider JBLM as an affected agency for land use planning decisions.
- Periodic meetings between military and local, state, and federal elected officials.
- Military should provide statistical data to local planners.

Since 1992, JBLM has been a proactive partner in engaging local communities in planning efforts, while the SSMCP has provided an invaluable forum for regional communication and cooperation.

### Communication

The 1992 JLUS noted the importance of communication between the installation and the surrounding community. The JLUS recommended that the installation expand their public information program. Today, JBLM has an active public information program through the JBLM HQ Public Affairs Office (PAO).

## **2.2. McChord Field North Clear Zone**

While some progress has been made on the issue of incompatible private development in the McChord Field NCZ, as noted above, the issue has not been fully resolved and remains one of the primary compatibility issues for this study.

## **2.3. Threatened and Endangered Species**

The presence of several federally listed threatened or endangered species on JBLM and in the study area presents a significant compatibility challenge. Several species of anadromous fish occupy habitat in the Nisqually River, in the Puget Sound, and in several other fish-bearing streams on and off the installation, including Chambers Creek, the Sequim Creek watershed, and others. Protection of these species has direct impacts for land uses adjacent to fish-bearing streams as well as indirectly through water quality impacts at a watershed scale. For example, stormwater management on and off the installation is affected by the need to protect fish habitat, as are projects with regional impacts such as a proposed new wastewater treatment plant at Solo Point.

In 2013 and 2014, three prairie species were listed as threatened or endangered: the Mazama pocket gopher, Taylor's checkerspot butterfly, and streaked horned lark. These prairie species present perhaps the most critical compatibility challenge to the installation. Suitable native prairie habitat is concentrated on JBLM range and training lands. The presence of native prairie off installation represents a challenge for private landowners. Mitigating threats to these species will require cooperative actions by multiple area stakeholders, including JBLM, local jurisdictions, Tribes, private landowners, and nonprofit organizations.

## **2.4.Noise Impacts**

Noise impacts on surrounding communities resulting from aircraft operations and training activities continue to exist, although the issue is generally well-managed by limiting the extent and timing of activities, and through public notification through the JBLM PAO.

## **2.5.Urban Growth**

JBLM is located in a rapidly urbanizing region with significant growth potential, especially near the southern and eastern installation boundaries. Urban growth near a military installation is an inherent compatibility challenge. More development and more population near an installation increase the likelihood that conflicts will occur over noise impacts, traffic, incompatible development, or environmental impacts. Such conflicts can present a threat to the military mission, if training and other operations are curtailed to minimize real or perceived conflicts with the quality of life of neighboring residents.

## **2.6.Regional Transportation Impacts**

Regional transportation impacts continue to be a challenge. Several ongoing studies and construction projects are occurring along the I-5 corridor. Transportation is not the focus of this study because of these separate efforts. However, the connection between transportation and land use will continue to be assessed as this study progresses.

## **2.7.Trespass and Unauthorized Use of JBLM Training Lands**

Comments received during the three public open houses conducted in the initial phase of this study revealed that public uses of JBLM range lands are a potentially important consideration. JBLM actively manages its extensive, unfenced range and training lands to allow certain public uses based on a system of permits and general authorizations. Such uses include hunting, horseback riding, hiking, and other recreational uses. Unauthorized uses also pose a problem, in particular illegal dumping and illicit drug manufacturing. The maintenance of authorized public uses will not only continue to provide benefits to the neighboring communities, but can also help to minimize unauthorized uses. For instance, authorized users can spot illegal uses, help to clean up trash, and act as stewards for range lands, when they are not in use for training activities. Public uses of JBLM training lands pose burdens and risks to the military, however. The military lacks personnel to patrol public uses and is at risk in the event of public accidents or injury on federal land.

## **2.8.Regional Communication and Cooperation**

The need for continued, effective regional communication and cooperation is a key overarching consideration of this study. The SSMCP has played an invaluable role in providing a forum for communication and cooperation regarding military related issues. The SSMCP will continue to play a vital role as the JLUS recommendations are implemented. JBLM has been a proactive partner with the surrounding community and must continue to communicate with its neighbors through a variety of means.



### 3. Study Area Profile

#### 3.1. Study Area Description

The JLUS study area is situated within the south Puget Sound region and encompasses a diverse geographic area. The study area is bisected by I-5, the major transportation corridor in western Washington. The western portion of the study area is characterized by a high degree of urbanization and population density. The eastern and southern portions of the study area contain rural areas, including agricultural and residential areas, forested and prairie land, several small urban areas, and the Nisqually Indian Reservation. A diversity of natural areas exists throughout the study area, including Puget Sound itself, and the Nisqually National Wildlife Refuge.

#### 3.2. Regional and Community Population Trends

The south Puget Sound region has experienced rapid population growth, as indicated in Table 3.1 and depicted on Figure 3.1. The region is expected to continue to grow, with a more than 30% population increase over 2010 levels by 2040, as indicated in Table 3.2. The majority of the population within the study area is clustered around the I-5 corridor, as shown on Figure 3.2.

Table 3.1. Population Change Since 2000.

	Population 2000	Population 2010	% Change
<b>JBLM</b>	19,089*	23,700**	24.2%
<b>Washington (State)</b>	5,894,143	6,724,540	14.1%
<b>Pierce County</b>	700,818	795,225	13.5%
<b>DuPont</b>	2,452	8,199	234.4%
<b>Lakewood</b>	58,211	58,163	-0.01%
<b>Roy</b>	260	793	205.0%
<b>Steilacoom</b>	6,049	5,985	-1.1%
<b>Tacoma</b>	193,556	196,800	1.7%
<b>Thurston County</b>	207,355	252,264	21.7%
<b>Lacey</b>	31,226	42,393	35.8%
<b>Olympia</b>	42,514	46,478	9.3%
<b>Tumwater</b>	12,698	17,371	36.8%
<b>Yelm</b>	3,289	6,848	108.2%

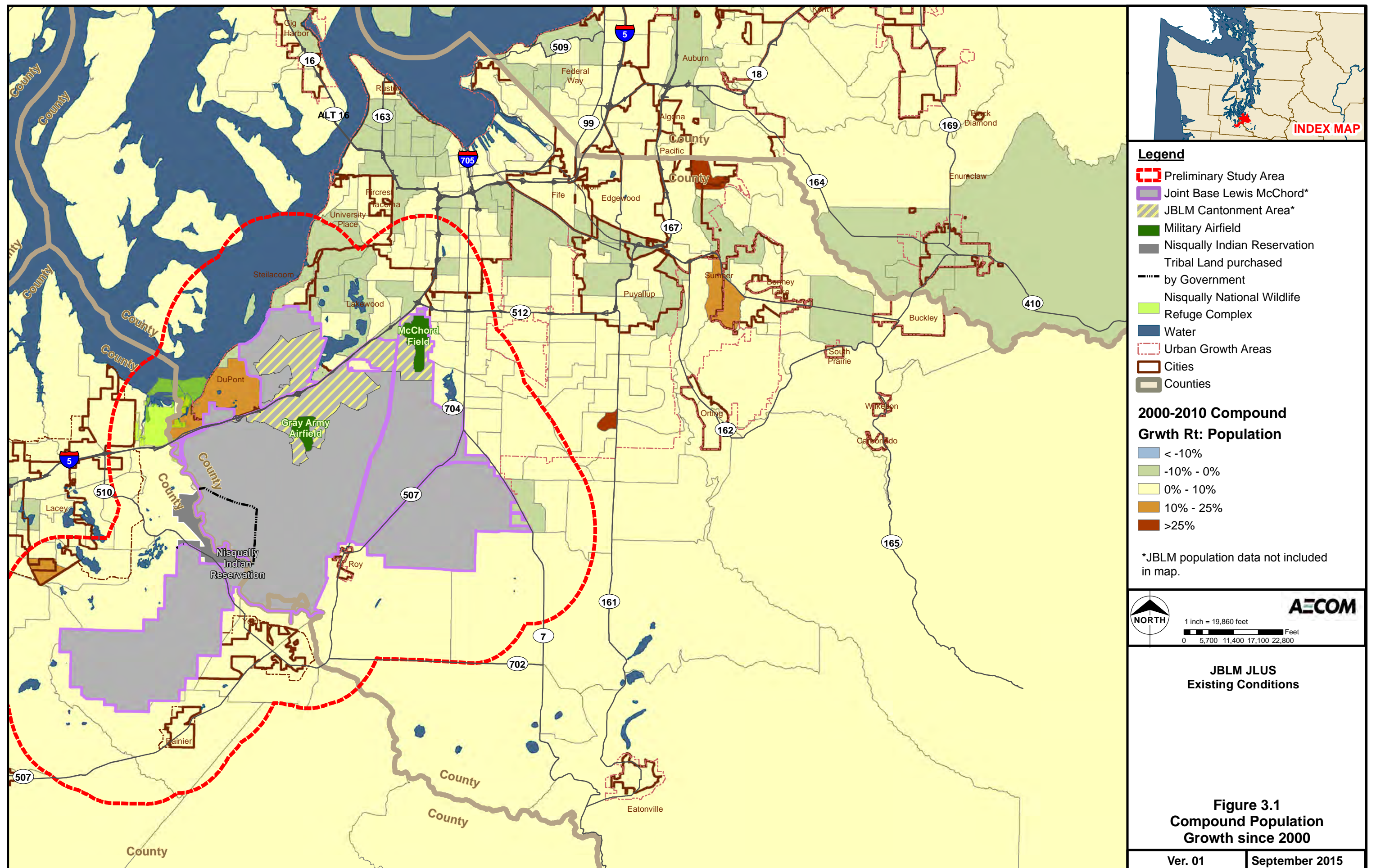
Source: U.S. Census Bureau

\*Source: U.S. Census Bureau. 2000 on-base population.

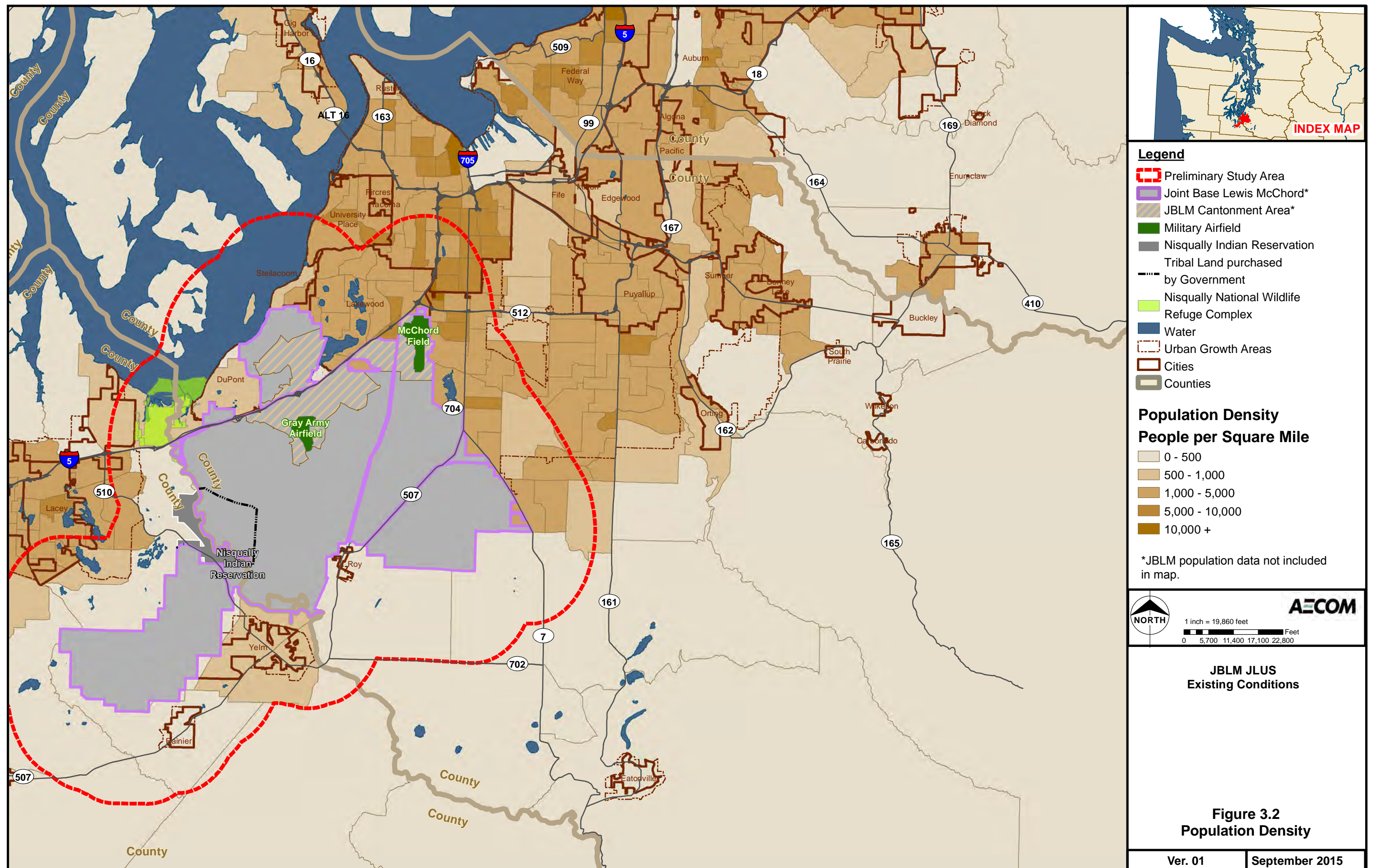
\*\*Source: JBLM. 2015 on-base population.

Table 3.2. Population Projections.

	Population 2020	Population 2030	Population 2040	% Change 2010- 2040
<b>Washington (State)</b>	7,411,977	8,154,193	8,790,981	30.7%
<b>Pierce County</b>	876,565	967,601	1,042,341	31.1%
<b>Thurston County</b>	288,265	326,426	358,031	41.9%
Source: Washington State Office of Financial Management				







### 3.3.Existing Land Use

Buildable lands analyses for Pierce and Thurston counties were reviewed to provide a baseline understanding of existing land uses and future development capacity. These analyses are summarized below.

#### 3.3.1. Pierce County

Pierce County adopted urban growth areas (UGAs) in accordance with the Washington State GMA. The UGAs must be of sufficient size to accommodate the anticipated population growth for 20 years following adoption. The UGAs reflect local comprehensive plans, urban population forecasts, and population capacity analyses. Pierce County Countywide Planning Policies specifically address the sizing of the urban growth boundary, the allocation of the projected housing need, and appropriate average density within the UGAs, along with complementary guidance, including efficient land use patterns and the conservation of natural resources.

The Buildable Lands Program is a collaborative effort among Pierce County and its 23 cities and towns to collect and assess annual development permitting data and wetlands and steep slope information, and to inventory developable land. The County's analysis encompassed unincorporated lands, while the cities' and towns' analyses focused on the lands within their respective municipal boundaries. The program evaluates two aspects of growth management – accommodating projected population growth during the 20-year planning period, and ensuring the availability of commercial and industrial land to support employment activity.

The County has adopted targets for housing units and jobs needed to accommodate projected population increases. The housing and jobs targets are compared to the projected land use capacity for future housing and employment growth to identify whether the targets can be met. The overall analysis demonstrates that the adopted UGA offers sufficient capacity to meet the 2030 urban housing and employment targets for the County and its incorporated communities. Pierce County needs 115,483 additional housing units to accommodate the 2030 urban housing target, while the estimated housing capacity equals 184,962. To satisfy its 2030 total urban employment target, the County needs 160,885 additional jobs compared to an estimated employment capacity of 319,386.

The analysis, however, notes that 10 jurisdictions may need to adopt “reasonable measures” to correct inconsistencies between housing/employment targets and estimated growth capacity. The report identifies housing capacity deficiencies in the cities of DuPont and Roy and employment-related capacity shortfalls in the cities of Lakewood and University Place. While the analyses indicate that these jurisdictions fall short of accommodating their growth targets, the excess capacity in many other jurisdictions more than compensates for the individual jurisdiction deficits, when considering the County as a whole.

The report also notes that the adopted 2030 housing and employment targets and assumptions applied in the housing and employment capacity analyses reflect a redirection of growth through redevelopment and higher density residential projects in cities and towns.



Development activity also generally indicates that the market is constructing urban density housing within the UGA.

The overall adequacy of capacity in the Pierce County UGA and the trend of redevelopment and higher density growth suggest that the County and its municipalities have flexibility to absorb future growth.

### **3.3.2. Thurston County**

The 2014 Buildable Lands Program for Thurston County addresses three key growth-related issues:

- If residential development in the UGAs is occurring at the densities envisioned in local comprehensive plans.
- The adequacy of land supply in the UGAs to accommodate anticipated population growth.
- The adequacy of land supply in the UGAs to meet future growth in employment.

The report also highlights related countywide planning policies that seek to concentrate development in growth areas through infill, phasing urban development outward from core areas, establishing mechanisms to ensure sufficiently high average residential densities, and designating rural areas for low intensity uses.

Thurston County is approximately 735 square miles, including water bodies. As of March 2014, 6.6 percent of this land area is vacant. Another 23 percent is in residential uses but development density could increase over time. Almost 15 percent of land is in forest or agriculture uses, but is zoned to allow for future residential development.

The south Puget Sound is one of the fastest growing areas in the State of Washington. Thurston County expects an additional 120,000 people by 2035, a high growth rate sustained by a stable economy, quality of life, a lower cost of living compared to areas closer to the center of the Seattle metropolitan area, and major employers such as JBLM. The County also anticipates adding another 60,000 jobs by 2035. The County will add about one-third of its future jobs and housing over the next 20-years, indicating the potential for a dramatic transformation of the built environment.

The analysis demonstrates that the land supply is sufficient to accommodate population growth in Thurston County's urban areas, and that each urban jurisdiction has designated an adequate amount of land to meet the projected 2035 residential population. The report notes, however, that federal endangered species listings could affect the available supply of land. The results also highlight that there is enough vacant, partially used, or redevelopable land to support the employment growth forecast.

In terms of its overall development patterns, Thurston County urban jurisdictions are achieving urban densities greater than the rule of thumb threshold of four dwelling units per acre. This



threshold is identified by the state as a minimum development density that must be met to support growth management goals. Close to one-third of Thurston County's households live in the rural areas. However, the trend of housing development in rural areas has decreased as more development is focused in urban areas.

The overall adequacy of capacity in the Thurston County UGA and the trend of concentrated development suggest that the County and its municipalities have flexibility to absorb future growth.

### 3.4.Economic Profile

Table 3.3 summarizes employment characteristics in the study area. State and local governments, retail trade, and health care and social services are major employers in both counties. The per capita average income in Pierce and Thurston counties in 2010 was \$40,500 and \$40,736, respectively, as compared to an average income of \$42,589 in Washington State.

Table 3.3. Employment in Washington State, Pierce County, and Thurston County.

Employment by Industry, Number of Jobs	Washington State	Pierce County	Thurston County
Direct JBLM Employment*	75,043	-	-
Farm employment	83,537	1,846	1,846
Non-farm employment	3,710,031	378,675	127,443
Forestry, fishing, and related activities	36,226	947	929
Mining	6,779	416	114
Utilities	5,300	685	180
Construction	200,663	23,255	5,623
Manufacturing	277,335	18,129	3,099
Wholesale trade	133,450	12,397	3,245
Retail trade	383,760	39,149	14,658
Transportation and warehousing	108,207	12,398	2,311
Information	113,007	3,667	1,284
Finance and insurance	166,015	14,972	4,605

Employment by Industry, Number of Jobs	Washington State	Pierce County	Thurston County
Real estate and rental and leasing	173,021	17,259	5,473
Professional, scientific, and technical services	272,870	16,582	6,854
Management of companies and enterprises	34,261	1,009	730
Administrative and waste management services	186,278	18,803	5,381
Educational services	69,909	7,064	2,669
Health care and social assistance	384,753	43,411	14,365
Arts, entertainment, and recreation	90,052	7,358	2,752
Accommodation and food services	240,984	23,041	8,270
Other services, except public administration	195,140	21,377	7,375
Government and government enterprises	632,021	96,756	37,526
Federal, civilian	75,691	13,201	1,009
Military	81,698	37,547	812
State and local government	474,632	46,008	35,705
State government	151,725	11,791	24,276
Local government	322,907	34,217	11,429

Source: U.S. Bureau of Economic Analysis (BEA) 2012

\*Source: JBLM Department of Public Works. 2013 data includes all on-installation employment (military & civilian).

JBLM is a major economic engine in Washington State and, as of 2012, is the second largest employer in the state and the largest employer in Pierce County. The economic impact of JBLM includes wage and salary payments to military and civilian employees, construction contractor payments, and operating costs such as rent and lease payments for various types of equipment, utilities, telephone services, office supplies, and non-construction contracts. It is estimated that

70-75 percent of JBLM Soldiers live off base, bringing large revenue and jobs to surrounding communities.

The Washington Economic Development Commission conducted an analysis in 2010 to determine the economic impact of Washington's military bases and defense-related economy, identify new and emerging business opportunities, and build on the state's significant military presence.

According to the report, installation spending in 2009 resulted in an estimated \$8.5 billion of economic activity within Washington State, including payroll, contracts, pensions, and other expenditures. DoD contracting produced an estimated \$3.7 billion in total output. The total defense activity created nearly \$12.2 billion in total output in the state and supported approximately 191,600 jobs and nearly \$10.5 billion of labor income. At JBLM specifically, payroll and other expenditures equaled \$3.5 billion in 2009. In the same year, businesses in Pierce County also received \$862,361,235 in defense contracts.

Aside from quantifiable economic impacts, military-related activity provides numerous benefits to the state and regional economies, including generating employment opportunities for a wide range of individuals, providing skilled workers in the form of retiring military personnel, creating supplementary markets for firms whose principal focus is not defense, offering relative insulation from the volatility of market demand, and spurring technological innovation.



## 4. JBLM Profile

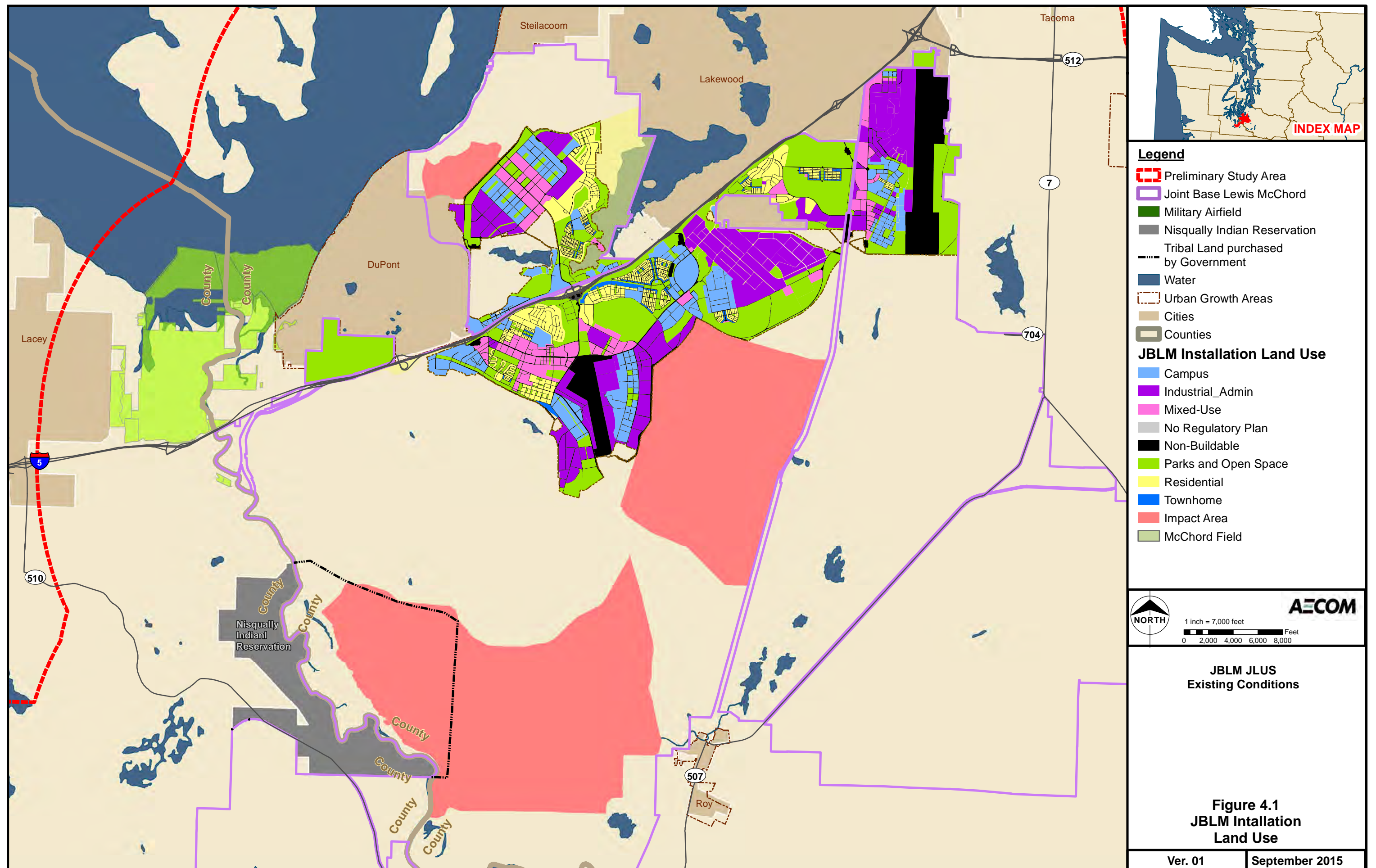
### 4.1. Installation Profile

Joint Base Lewis-McChord (JBLM) was formally established in 2010, combining Fort Lewis and McChord Air Force Base into a single administrative unit. JBLM is home to the U.S. Army I Corps and 7<sup>th</sup> Infantry Division, the U.S. Air Force 62<sup>nd</sup> Airlift Wing, Madigan Army Medical Center, 1<sup>st</sup> Special Forces Group, U.S. Navy and U.S. Marine Corps elements, and other commands and tenant organizations. JBLM reports that, as of June 2015, the on-base population stands at 23,700. Region-wide, the JBLM-supported population, which includes full-time military, family members, and dependents; DoD employees; and civilian contractors; living on base and in neighboring communities, stands at more than 130,000. JBLM is the largest military installation on the west coast, encompassing over 90,000 acres including the main cantonment area (approximately 10,000 acres) and close-in training ranges (approximately 80,000 acres). There are two airfields on the installation: McChord Field, which is home to C-17 transport fleet, and Gray Army Airfield (GAAF), which supports mainly helicopter operations. JBLM has a rail loading complex that connects to the Burlington Northern-Santa Fe (BNSF) line. The training lands on JBLM include 115 live-fire training ranges. Convoy routes to YTC use I-5 to State Route (SR 18) to I-90 to I-82. The ports of Olympia, Tacoma, and Seattle provide deep water seaport capabilities. Figure 4.1 depicts land use on the installation.

JBLM is a premier power projection platform with many strategic advantages, including its location on the Pacific Rim, home to the I Corps and its historical Asia/Pacific focus, deep water port access, global airlift capabilities, and extensive training ranges.

The topography of the base allows troops to train in both hilly and flat terrain. Forests provide the dense vegetation needed for concealment, while grasslands and oak woodlands provide open areas for equipment, smoke, artillery, and maneuvers training. The Nisqually River provides suitable conditions for training in river crossing maneuvers, while the Puget Sound coastline at Solo Point is used for amphibious maneuvers. Water drops and pickups involving personnel and equipment are conducted in Puget Sound and at American, Sequelitchew, and Lewis Lakes.

JBLM shares borders with Camp Murray (Washington Army National Guard) and the American Lake Veterans Administration (VA) Hospital. The Yakima Training Center (YTC) encompasses over 300,000 acres of range and training lands in central Washington. YTC is considered a sub-installation of JBLM, but is outside the scope of this JLUS.



## 4.2. Current Mission

JBLM's mission is to:

- Provide state-of-the-art training and infrastructure, responsive quality of life programs, and fully capable mobilization and deployment operations for the Army, Navy, Air Force, and Marines.
- Manage resources efficiently and equitably to support mission readiness and execution, and the well-being of service members, families, and civilians.
- Sustain and protect the environment as a fully integrated community partner in the lower Puget Sound, with a highly trained and motivated workforce.

## 4.3. History

### Fort Lewis

Fort Lewis began as a gift of land from the Pierce County electorate in 1917 for use as a military training camp for Soldiers entering World War I. On May 26, 1917, Captain David L. Stone and his staff arrived to begin initial construction of "Camp Lewis," named after Captain Meriwether Lewis of the famed Lewis and Clark expedition. In 1924, Congress authorized the permanent construction of facilities and renamed the encampment Fort Lewis. During this period of construction, the principles of landscape architects Frederick Law Olmsted, Jr. and George B. Ford were used to develop the land. They created the area now called the Historic Downtown, or the garrison, as well as the parade field and close-in housing areas.

In 1936, Brigadier General David L. Stone, who as a Captain had supervised the original construction of Fort Lewis, returned to the site as Commanding General. During the next several years, an Army airfield (later McChord Air Force Base) was constructed. The installation greatly expanded during World War II and continued to expand through the Vietnam and Cold Wars. At the conclusion of the Cold War, when many military installations were downsizing, Fort Lewis continued to grow due to its strategic location in the Pacific Northwest region.

### McChord Air Force Base

McChord Field was established as an airfield supporting Fort Lewis in 1930, originally named Tacoma Field. In 1940, after the airfield was officially transferred to the U.S. Government, it was renamed McChord Field in honor of Colonel William Caldwell McChord, Chief of the Training and Operations Division in HQ Army Air Corps, who died in 1937. After the bombing of Pearl Harbor in December 1941, nearly all new heavy bomb groups were organized and trained at McChord Field. In 1946, McChord was assigned to the new Air Defense Command. The new installation mission was air defense of the United States, and McChord was the first of 28 stations forming part of the permanent air defense radar network.

Today, the Western Air Defense Sector (WADS) is a major tenant at McChord Field. It is one of two air defense sectors responsible for the security and integrity of U.S. air space. In



1947, with the inception of the United States Air Force, McChord Field became independent of Fort Lewis, and was re-designated McChord Air Force Base. Since then, the primary mission at McChord has been airlift, and today the 62nd Airlift Wing is the primary Air Force active duty unit at the installation. Together with the Reserve 446<sup>th</sup> Air Wing, McChord Field can provide strategic airlift capabilities 24 hours a day, 7 days a week, 365 day a year.

## **5. Federal, State, and Regional Policy Context**

### **5.1. Department of Defense Joint Land Use Study Program**

The JLUS program, managed by the Office of Economic Adjustment (OEA), operates under congressional authorization given to DoD in 1985 for the purpose of incorporating noise and aircraft safety data into local planning programs. A JLUS is a cooperative land use planning effort between military installations and local communities intended to support the implementation of compatible development measures that prevent urban encroachment, safeguard the military mission, and protect the public health, safety, and welfare.

### **5.2. Washington State Growth Management Act**

The Washington State Growth Management Act (GMA) directs cities and counties in the state to plan for future growth. Communities required to plan under GMA must adopt a comprehensive plan and supporting development regulations, which include zoning, subdivision, and environmentally critical areas ordinances, among others. Cities and counties must coordinate to establish UGAs that can accommodate 20 years of housing and employment growth based on population projections. Urban growth must be directed within UGAs. Development at urban densities, including urban services such as urban sanitary sewer service, is prohibited outside of UGAs.

The GMA also requires comprehensive plans to be periodically updated. Pierce County and the City of Tacoma are required to adopt updated Comprehensive Plans in 2015, while the remaining communities within the study area are required to adopt updates in 2016.

### **5.3. South Sound Military and Communities Partnership**

In 2010, The City of Lakewood led the JBLM Growth Coordination Plan, an OEA-funded study intended to address the rapid growth on JBLM that was occurring at the same time that many of its neighboring communities were also growing. The South Sound Military and Communities Partnership (SSMCP) was formed as a result of a Growth Coordination Plan recommendation to “establish a regional partnership to coordinate community and military planning services.” The mission of the SSMCP is to foster effective communication, understanding, and mutual support with one point of coordination for the resolution of issues that transcend the specific interests of the military and civilian communities of the JBLM region. The SSMCP is comprised of a coalition of south Puget Sound area city and county governments, military installations, social service organizations, and private associations, and regional planning councils. Washington State agencies, local businesses, and nonprofit organizations support and advise the SSMCP. The SSMCP has been an effective organization in securing funding for projects such as this JLUS, transportation-related studies, and other projects related to the interface of military issues and community planning. The SSMCP will continue to play a vital role in facilitating the implementation of JLUS recommendations.

## 6. Overview of Community Plans and Regulatory Policy

JBLM is bordered by a number of cities as well as unincorporated urban and rural lands in both Pierce and Thurston counties. As the communities around the base grow, development patterns can emerge that result in more people living and working in very close proximity to the base. This can create a land use conflict known as encroachment, in which civilian uses put pressure on military installations to modify their operations, possibly threatening the ability of the DoD to conduct training necessary for achieving and maintaining combat readiness. Higher intensity uses of land near installation boundaries, such as major employment and service centers, public assembly facilities, and high density housing, can pose the potential for conflict. Uses that emit airborne substances or electrical currents, or that attract birds, can also cause conflicts in areas located within the Clear Zones and APZs of military airfields. Training and readiness activities at JBLM produce various impacts that can diminish the quality of life in surrounding communities, including noise and the risk of aircraft accidents. Zoning in the study area is depicted on Figure 6.1.

Local government tools such as growth management policies and land use regulations can help ensure land use compatibility with military installations by mitigating known impacts and preventing future encroachment. For this analysis, the existing major land use policy documents and the land use regulations of the cities, counties, and regional governments in the JBLM JLUS study area were reviewed. A complete list of those plans and regulatory codes is provided in Table 6.1. In general, the policy plans were more likely than the codes to contain policies and regulations focusing on land use compatibility with JBLM.



**Table 6.1. Plans and Codes Reviewed**

<b>Geographic Area Covered</b>	<b>Title</b>	<b>Date</b>
City of DuPont	City of DuPont Comprehensive Land Use Plan	2001
City of DuPont	DuPont Municipal Code	2014
City of Lacey	City of Lacey and Thurston County Land Use Plan for the Lacey Urban Growth Area	2008
City of Lacey	Lacey Municipal Code	2014
City of Lakewood	City of Lakewood Comprehensive Plan	2000
City of Lakewood	City of Lakewood Municipal Code	2014
Nisqually Indian Reservation and Off-Reservation Service Areas	Nisqually Indian Tribe Community Vision Plan	2013
Pierce County	Pierce County Comprehensive Plan	2011
Pierce County	Pierce County Code	2013
Pierce County	Pierce County Countywide Planning Policies	2012
King, Kitsap, Pierce and Snohomish Counties	Vision 2040 (Puget Sound Regional Council)	2009
City of Rainier	Comprehensive Plan for Growth Management and Joint Comprehensive Plan with Thurston County for Growth Management in the Rainier Urban Growth Area	2007
City of Rainier	Rainier Municipal Code	2012
City of Roy	City of Roy Comprehensive Plan	2004
City of Roy	Roy City Code	2014
Town of Steilacoom	Town of Steilacoom Comprehensive Plan	2012
Town of Steilacoom	Steilacoom Municipal Code	2013
City of Tacoma	City of Tacoma Comprehensive Plan	2014
City of Tacoma	Tacoma Municipal Code	2014
Thurston County	Thurston County Comprehensive Plan	2008
Thurston County	Thurston County Code	2014
Thurston County	Thurston County Countywide Planning Policies	2002
Thurston County	Thurston 2025 Regional Transportation Plan	2004
City of Yelm	City of Yelm Comprehensive Plan and Joint Plan with Thurston County	2009
City of Yelm	Yelm Municipal Code	2014
City of Yelm's Master Plan Zoning District	Thurston Highlands Final Environmental Impact Statement	2008

Findings of the review are summarized in Table 6.2 and described in greater detail below. Most of the cities, counties, and regional governments in the study area have land use policies or regulations in place that promote a harmonious relationship with JBLM. These generally fall into three categories:

1. Promoting compatibility by regulating land use intensities or by encouraging collaborative planning with JBLM.
2. Mitigating negative off-base impacts through techniques such as noise attenuation.

3. Recognizing the unique nature of military installations located within local municipal boundaries.

Some of the policies and regulations reference Fort Lewis or McChord Air Force Base because they pre-date the formation of JBLM. For the purposes of this analysis, these were considered to apply to JBLM.

All of the cities and counties in the study area are in the process of updating their comprehensive plans, as required by the GMA. The state deadline for Pierce County jurisdictions to complete their periodic comprehensive plan updates is 2015. The deadline for Thurston County jurisdictions is 2016. There may be new policies and regulations adopted by local governments in the near future that address JBLM. The JLUS offers an opportunity to develop guidance in conjunction with these planning efforts.

**Table 6.2. Summary of Findings**

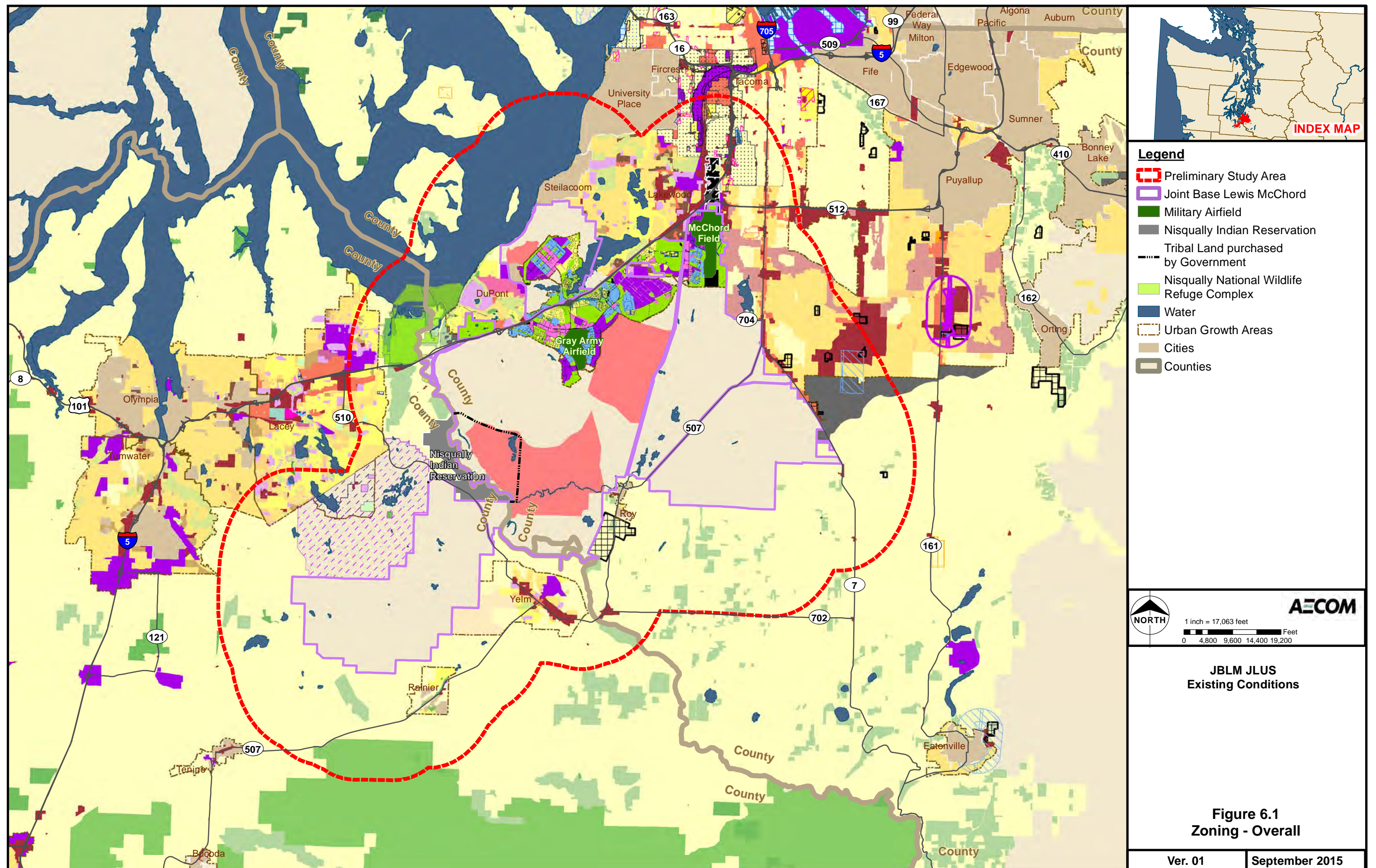
Government or Regional Planning Council	Borders Base	Within Clear Zone, APZ I, or APZ II	Types of Policies or Regulations			Other Mention of JBLM
			Compatible Land Use Patterns	Mitigation of Off-Base Impacts	Military Installations within Municipality	
DuPont	X				X	X
Lacey						X
Lakewood	X	X	X	X	X	X
Nisqually Indian Tribe	X				X	X
Pierce County	X	X	X	X	X	X
Puget Sound Regional Council	NA	NA	X			X
Rainier						X
Roy	X			X		X
Steilacoom	X			X		X
Tacoma		X	X	X		X
Thurston County	X		X	X		X
Thurston Regional Planning Council	NA	NA	X	X		X
Yelm	X		X			X

Key findings of the analysis include:

- Lakewood has established zoning designations for Military Lands (ML), Clear Zone (CZ), Air Corridor 1 (AC1), and Air Corridor 2 (AC2), but grandfathered uses exist and permitted uses may allow for additional incompatible development.
- Pierce County created an Airport Overlay (AIR) designation intended to minimize land use incompatibilities in CZ and APZs and requires noise insulation and disclosure of noise within areas where noise impacts are considered significant.

- Tacoma encourages the use of noise reduction techniques to mitigate impacts of aircraft noise and encourages lower density development in APZs.
- Thurston County requires disclosure of noise impacts (from military operations and other sources like airfields) on deeds.
- Yelm has zoned 1,200 acres for future residential development as part of a potential Thurston Highlands master planned community, which borders heavily used JBLM training areas.
- Other jurisdictions reference JBLM but have few specific land use regulations that address impacts to the joint base.







### 6.1.Pierce County

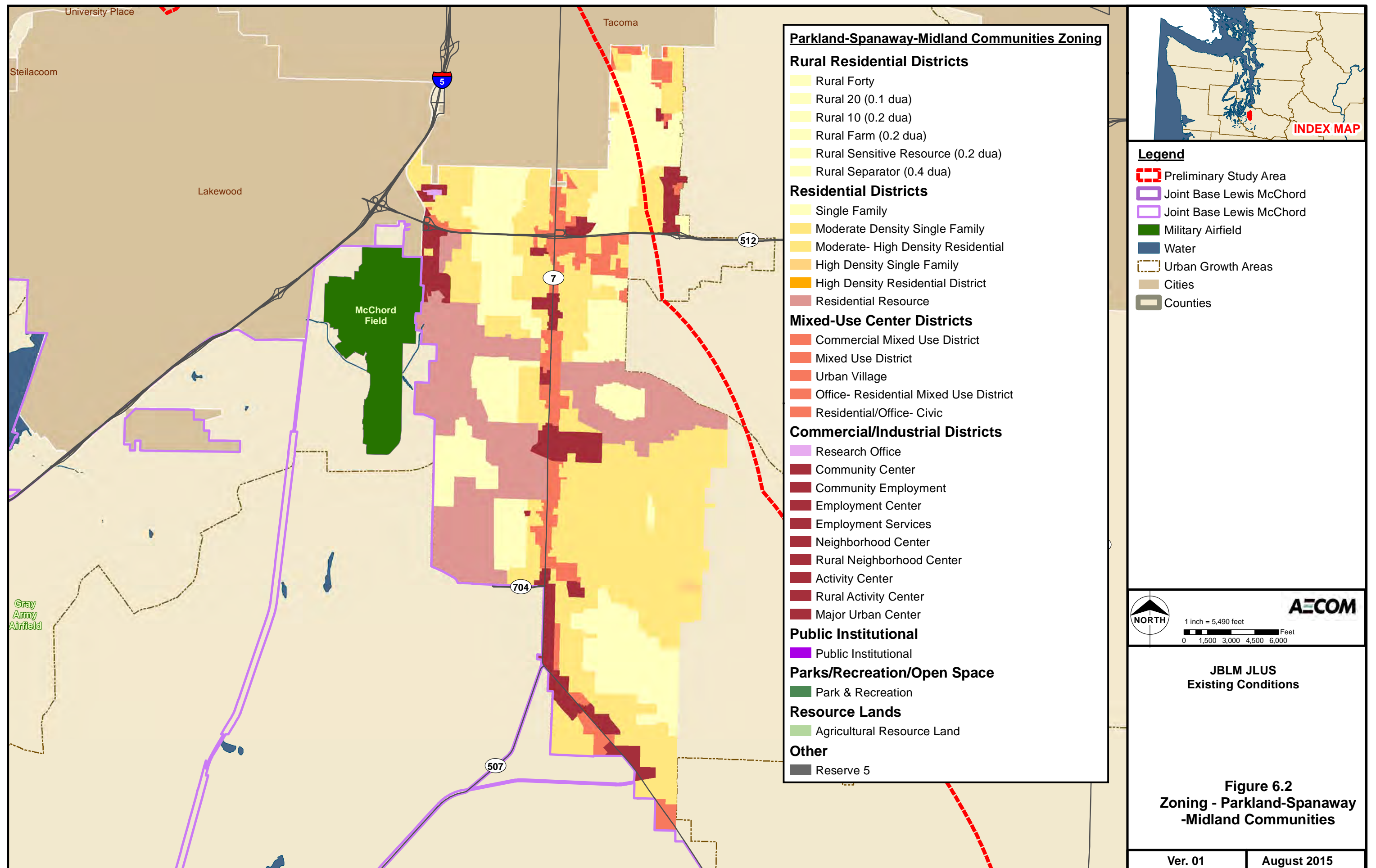
A large portion of JBLM is bordered by unincorporated Pierce County. Unincorporated urban county lands adjacent to JBLM are primarily located along the northeastern edge of the base. Figure 6.2 depicts zoning in this area. Uses in this area are primarily residential, and also include mixed uses, community employment uses, and a rural reserve area (an area currently zoned for rural land uses, but identified for potential future urban growth). The County's zoning map shows that a small portion of unincorporated urban county lands (less than 15 acres) are within the McChord APZ 1; the majority of this area is zoned for residential uses. Unincorporated rural county lands adjacent to JBLM are primarily located along the southeastern edge of the base.

The County's comprehensive plan (2011) includes significant discussion and policy language regarding JBLM. One reason for this is that in 1992 the Pierce County Council passed Resolution No. R92-103, adopting the initial JLUS study for Fort Lewis and McChord Air Force Base, conducted by the County and published in 1992. R92-103 also directed the County to integrate JLUS recommendations into the updates of land use regulations. The comprehensive plan includes eight objectives that specifically address land use compatibility issues. LU-JLUS Objectives 74, 75, and 76 address the Clear Zone, APZ I, and APZ II and include provisions for regulating incompatible land uses and mitigating impacts. LU-JLUS Objective 76 is specifically focused on noise impacts. ENV Objective 11 also addresses noise impacts; it calls for the County to address development activities and land use designations in areas adjacent to airports and military installations to ensure that noise impacts on residents are minimized. LU-JLUS Objective 77 recognizes safety issues associated with training, artillery, and small arms activities on the base, and includes provisions for regulating incompatible land uses and mitigating impacts. LU-JLUS Objective 79 calls for providing military installations with opportunities to participate in the review and development of land use programs, policies, and decisions that affect them. LU-UML Objectives 80 and 81 address military installations on County lands. They recognize the unique character of land uses associated with military operations, and clarify how military lands will be treated in the analysis of residential land capacity within the Pierce County Comprehensive Urban Growth Area.

There are additional objectives regarding JBLM in the comprehensive plan. These include objectives for cooperating with the base in developing plans for transportation circulation improvements around installations (LU-JLUS Objective 78), recognizing the possibility of military lands reverting back to Pierce County (LU-UML Objective 82), providing guidance for designating other military lands (LU-UML Objective 83), and recognizing the portions of federal military installations that lie outside of the UGA (LU-RML Objective 84).

The Pierce County Code includes regulatory language about military lands and the McChord air corridor, which are those areas within the NCZ and APZs. Section 18A.10.110 establishes the Urban Military Lands (UML) and Rural Military Lands (RLM) zoning classifications and recognizes that the autonomy associated with the federal ownership in combination with the unique character of the military operations and support structures is not typical of civilian land uses. Section 18A.10.100 establishes airport overlays, which are intended to minimize land use incompatibilities associated with operations at McChord Air Force Base and Pierce County's Thun Field. Section 18A.60.020 prohibits large concentrations of people in the McChord APZ I, as well as new residential uses. Section 18A.60.040 includes provisions for noise insulations that apply to uses within the 65 Ldn (65 decibel, day-night average sound level) Noise Contour, the Clear Zone, the APZ I, and APZ II for McChord Air Force Base. Section 18A.60.050 provides performance criteria for use in determining the compatibility of a use, the project design, and any mitigation measures with aircraft operations within Clear Zones or within the APZs.

In addition to the County's comprehensive plan and regulatory code, there are the Pierce County Countywide Planning Policies. The Washington State GMA requires counties and the municipalities inside of their boundaries to develop countywide planning policies. These policies establish a countywide framework for comprehensive plans, and are intended to ensure that county and municipal plans are consistent. The Pierce County Countywide Planning Policies include a policy that encourages compatible land use patterns around JBLM. Policy UGA-9 states that the County and each municipality neighboring JBLM should develop planning provisions, including development regulations that encourage adjacent land uses that are compatible with military uses.



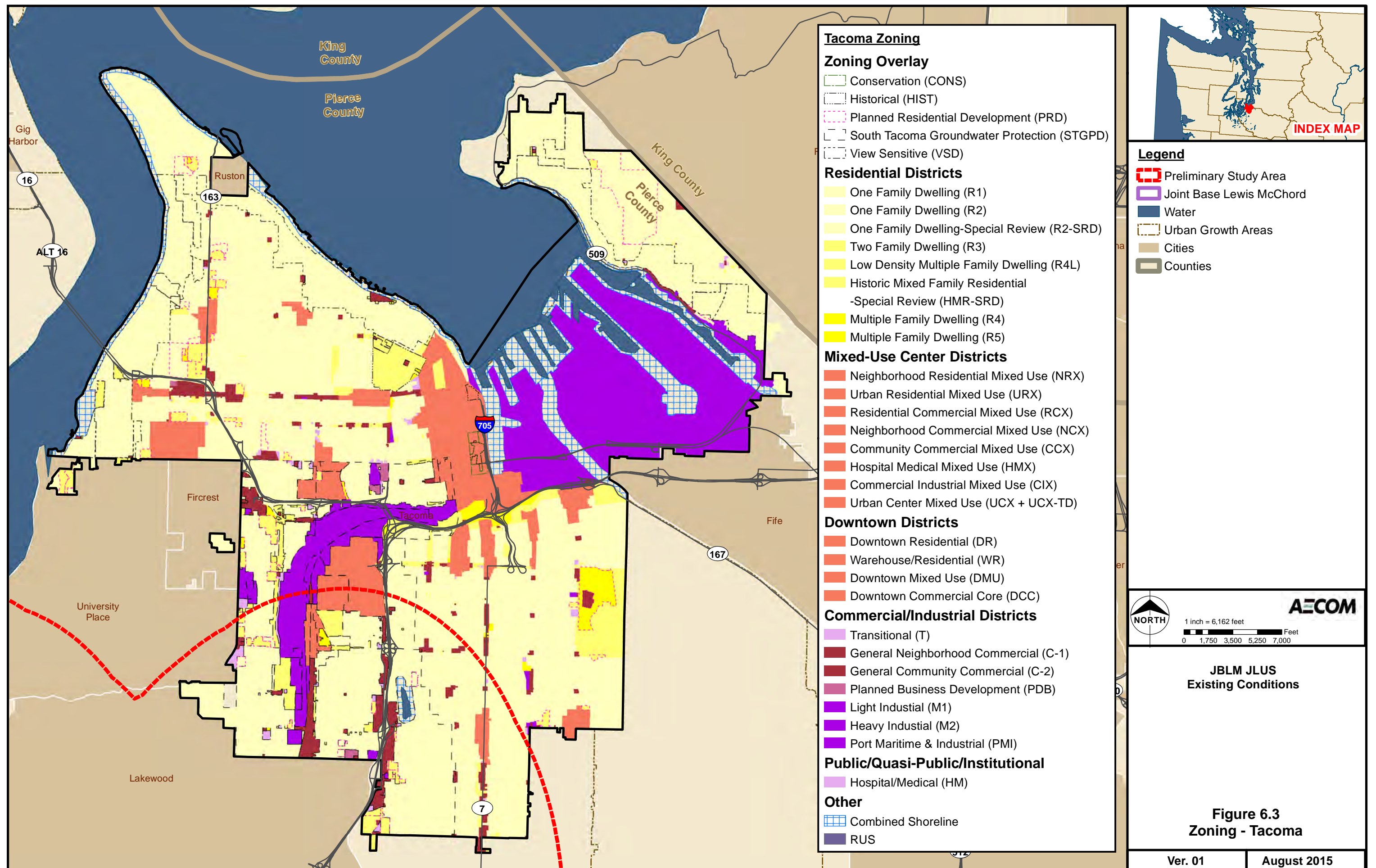


## 6.2. City of Tacoma

The City of Tacoma does not abut JBLM; however, a small portion of the southern part of Tacoma is within the McChord Field APZ II area. Tacoma zoning is shown on Figure 6.3. This area is zoned for residential, commercial, and business uses; it contains an elementary school and two parks.

The City's comprehensive plan (2014) includes goals and policies that address impacts associated with the APZ II area. Goal ST-8 promotes the use of noise reduction techniques to protect citizens against the adverse effects of noise, including noise generated by McChord Field operations. Specific policy provisions include buffering noise sources, using construction techniques that reduce noise, discouraging uses that will significantly increase noise levels in areas that are already noise-impacted, and discouraging noise-sensitive uses in noise-impacted areas. Goal ST-9 promotes lowering residential densities and identifying flight hazards in the APZ II zone to limit injury and property damage in the event of an Air Force aircraft accident. Supporting policies include establishing procedures to notify the commander of McChord Field concerning proposed land use changes; discouraging concentrations of more than 25 people and housing densities greater than 6 units per acre; restricting flight hazards such as airborne substances, light, electrical currents, and bird-attracting uses; and minimizing incompatible uses such as public assembly facilities.

The City's comprehensive plan also includes a general policy about planning for compatible land use development. Policy LU-UGA-8 calls for the City to coordinate planning with Pierce County and other adjacent jurisdictions for land use development, transportation, and services within UGAs to ensure that development is orderly, compatible, sufficiently served, and consistent with City plans.



### 6.3. City of Lakewood

The City of Lakewood's southwestern border is adjacent to JBLM. Most of the City's southeastern border is just across I-5 from JBLM. There is also a small area of land across from I-5 that is within the City's jurisdiction, known as the Woodbrook Area. The easternmost tip of Lakewood is within the McChord Field NCZ, APZ I, and APZ II (also referred to as the "air corridor"). The City's zoning and land use maps show that the parcels adjacent to the base are designated for a variety of uses, including open space, single-family residential, multi-family residential, mixed use, commercial, institutional, and industrial. There are also designations for military lands within the City's jurisdiction, and for the NCZ, APZ I, and APZ II. Lakewood zoning is shown on Figure 6.4.

The City's comprehensive plan (2000) and municipal code have policies and regulations in place to address military lands and the air corridor. Military lands are defined in the comprehensive plan as the portions of the federal and state military installations within the City. Goal LU-35 and its corresponding policies recognize that military lands require unique consideration and coordination by the City. Policy LU-35.2 adopts by reference the official federal and state military installation master plans addressing military lands within the City. Goal LU-36 and its corresponding policies support a strong community relationship with military installations. Policy LU-36.2 states that the City will promote an active planning and funded mitigation effort to improve the isolated communities adjacent to military installations.

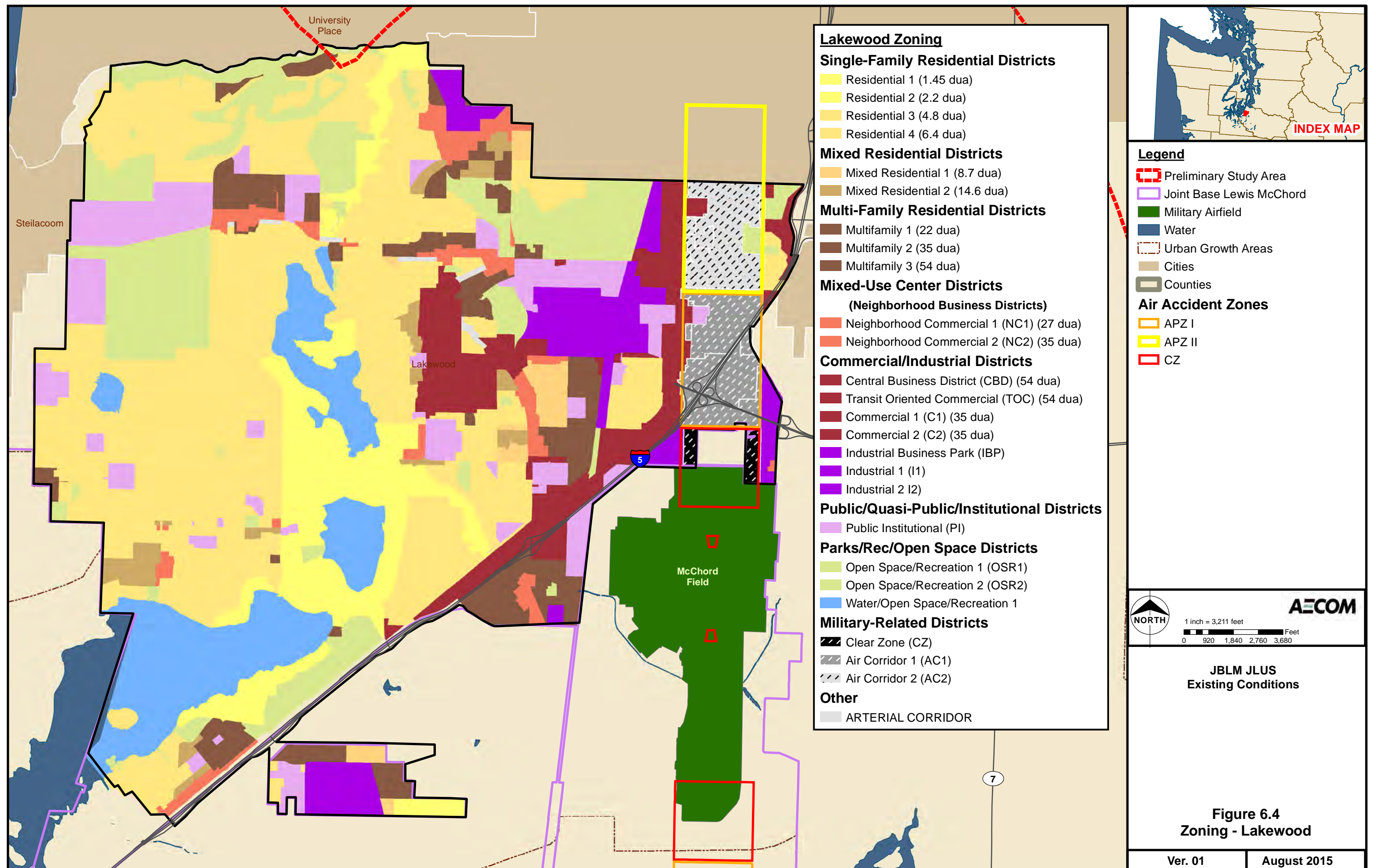
Goals LU-37 through LU-39 address the air corridor areas that extend northward from the McChord Field runway and that are subject to noise and safety impacts of military flight operations. Goal LU-37 is to minimize the risk to life and property from potential hazards associated with military flight operations. Policies in support of this goal include coordinating with JBLM on mitigation measures; controlling the type, intensity, and design of uses within the corridor; identifying areas of restricted development; and promoting the acquisition of the parcels in the NCZ by JBLM. Goal LU-38 is to identify appropriate land uses within the air corridor. Supporting policies include promoting the conversion of existing higher-density housing to less intense land uses and encouraging the siting of appropriate land uses within the air corridor such as warehousing and open space. Goal LU-39 and its corresponding policies have to do with minimizing the negative impacts of aircraft noise through actions such as working with the base to identify noise impact contours and developing design and construction guidelines.

Sections 18A.30.700 through 18A.30.790 of the City's municipal code describe the City's military-related zoning districts: Military Lands (ML), Clear Zone (CZ), Air Corridor 1 (AC1), and Air Corridor 2 (AC2). The purpose of the ML zoning district is to recognize the autonomy associated with federal and state ownership of the military installations adjacent to and within Lakewood, which are not typical of civilian land uses and require special

consideration by the City as a host community. The purpose of the CZ, AC1, and AC2 zoning districts is to promote land use and development that is compatible with the aircraft noise and accident potential associated with the proximity to JBLM aircraft flight operations. Section 18A.30.790 addresses noise attenuation and establishes requirements for building design and construction in the CZ, AC1, and AC2 zoning districts, such as sound insulation. Section 18A.30.770 includes provisions to limit the intensity of development patterns; the intensity limit for the CZ zoning district is 10 people per acre, the limit for AC1 is 25 people per acre, and the limit for AC2 is 50 people per acre. Section 18A.30.780 establishes land use regulations to help prevent poor visibility and obstructions that could lead to aircraft crashes, such as the generation of steam, dust, or smoke, and attracting flocks of birds.

Section 18.A.30.730 describes permitted uses in military-related zoning districts. In the CZ, AC1, and AC2 zoning districts, continuation of uses that legally existed at the time the ordinance was adopted is permitted. Thus, while new development must comply with the standards mentioned above to ensure compatibility with military aircraft operations, there may be some existing, permitted uses that are less compatible.





#### 6.4. City of DuPont

JBLM borders the City of DuPont on the northeast, east, and southeast. Along the northeastern border, DuPont has lands designated for military use, open space, and a residential reserve area that has been identified for potential future residential growth. To the east, lands are designated for a variety of uses, including military, open space, residential, commercial, industrial, and manufacturing and research. The City's Town Center is in the southeast, along the I-5 corridor. This area includes mixed uses, office, commercial, residential, and open space. The remainder of the southeastern border with JBLM includes residential uses and some open space. DuPont zoning is shown on Figure 6.5.

The City's comprehensive land use plan (2001) does not specifically discuss land use compatibility with JBLM; however, Policy LU-35 states that two industrial areas will be established to the west and south of the lands designated for military uses within the City. The policy discussion points out that industrial uses tend to have lower employee densities than other uses. Lower intensity land uses are generally compatible with military installations. The comprehensive plan also mentions JBLM's impacts on traffic patterns and the environment. For instance, Policy ESA-12 calls for working with Fort Lewis, the Washington State Department of Ecology (Ecology), and other affected parties to re-establish historic flows through Sequelitchew Creek.

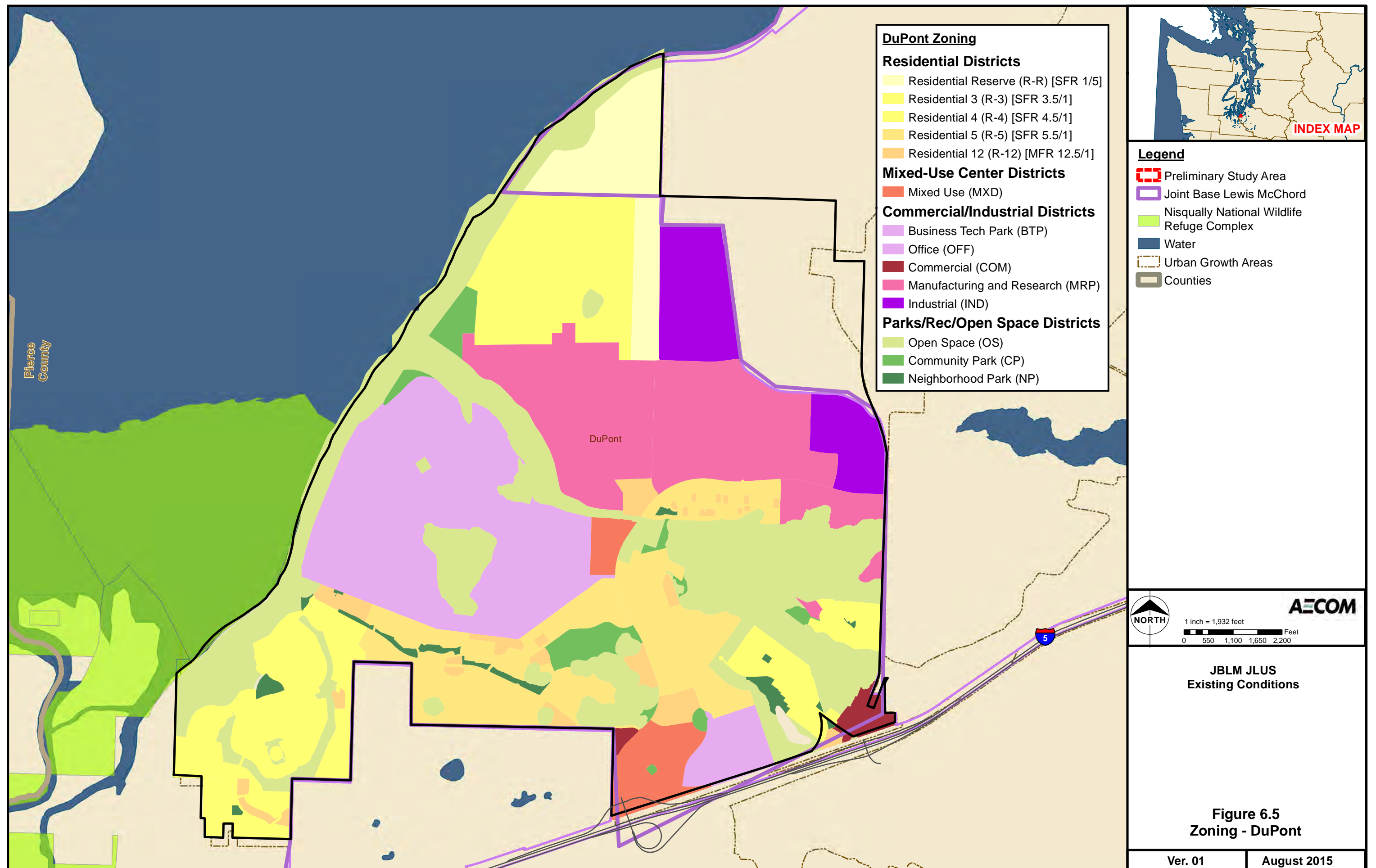
The City's municipal code describes the lands within DuPont that are designated for military uses. Section 25.57.010 recognizes that there are federal military installations within the DuPont city limits, that these lands have unique character and uses associated with military operations, and that these lands are managed by the federal government rather than the City.

#### 6.5. Town of Steilacoom

A portion of the Town of Steilacoom's southern border is adjacent to JBLM. The Town's current zoning and land use maps show that the parcels adjacent to the base are designated for open space and single-family residential uses.

There are mentions throughout the Town's comprehensive plan (2012) of JBLM's impacts on the demographics, economy, services, and traffic of Steilacoom. There is also some discussion of land use compatibility. The plan mentions that military aircraft from the base frequently fly over Steilacoom, and that flight patterns are restricted to minimize noise impacts in residential areas. Also, Policy 7.3 states that the Town supports interlocal planning agreements that help to mitigate impacts associated with development outside of the Town boundaries.





## 6.6. City of Roy

A portion of the City of Roy's western border is adjacent to JBLM. The City's zoning map shows that the parcels adjacent to the base are zoned for single-family, multi-family, and light industrial uses. Applied zoning designations are consistent with the future land use designations found in the comprehensive plan.

Policy 7-3 in the City's comprehensive plan (2004) aims to prevent conflicts between base missions and the community. It states that the City will work with JBLM officials to mitigate noise impacts caused by military activities. The comprehensive plan also notes that Roy has limited options for expansion, because it is bordered on all sides by JBLM; a proposed Roy Mitigation Site (for western gray squirrel habitat), a proposed Nisqually River Interpretive Center; and various critical areas.

## 6.7. Thurston County

The majority of JBLM land in Thurston County is adjacent to unincorporated Thurston County land, with the exception of Yelm and the Nisqually Indian Reservation. The County's zoning map shows that the parcels adjacent to the east, south, and west of the base are zoned for resource use, agriculture, or low density single family. Most of the parcels adjacent to the north of the base are part of the McAllister Geologically Sensitive Area, which allows low density residential, commercial, and agricultural uses that minimize the potential for contamination or significant loss in recharge capacity of a vulnerable groundwater aquifer and potable water source of importance to the general public. According to the County's comprehensive plan, zoning designations and future land use designations are consistent with each other.

Thurston County's comprehensive plan (2008) encourages cooperation with JBLM, as well as other governmental jurisdictions, in Land Use Goal 3, Objective D, Policy 1. Additionally, Land Use Goal 3, Objective D, Policy 2 states that the JBLM base commander is to be adequately notified of any changes to a comprehensive plan or development regulation amendment so that the current land use and long-range goals of the base are considered in any final action.

Noise impacts are mentioned several times in the County's comprehensive plan. Land Use Goal 1, Objective A, Policy 18 aims for the siting of uses adjacent to the base to take into account any noise impacts. Policy 4 of the Air Quality Goal in the Natural Environment section call for the County to minimize noise impacts from noise-producing sources, such as military firing ranges, by designating noise impacted lands for use as forestry, agriculture, public reserves, industrial, and, as a last priority, low-density residential (the deed, title, or covenant for lots in new residential subdivisions must contain statements notifying prospective purchasers that the property will be affected by noise). Noise impact areas identified in the plan primarily include agricultural lands, the McAllister Geologically Sensitive Area, and low-density residential.



The Thurston County Code establishes the Military Reservation (MR) zoning district, which includes the portion of JBLM that is in Thurston County. Section 20.08F recognizes that the primary purpose of the base is the military mission of training and national defense. It also states that a secondary purpose is natural resource production, and that Thurston County does not have regulatory authority over federally owned lands.

The Thurston County Countywide Planning Policies do not contain any policies specific to JBLM or military installations.

### **6.8.City of Yelm**

Yelm's southwest border is adjacent to JBLM. Yelm area zoning, including the Nisqually Indian Reservation, is shown on Figure 6.6. The southwest portion of the City is currently undeveloped, but it is zoned for a master planned community. A Final Environmental Impact Statement (FEIS) was published in 2008 for this area, for a development called Thurston Highlands. The FEIS studied potential impacts such as noise and light from military operations on residents. It found that these could be mitigated and that no significant unavoidable adverse impacts were identified that would affect compatibility between the proposed master planned community and JBLM. The development has not moved forward since publication of the FEIS, due to economic challenges posed by the recession.

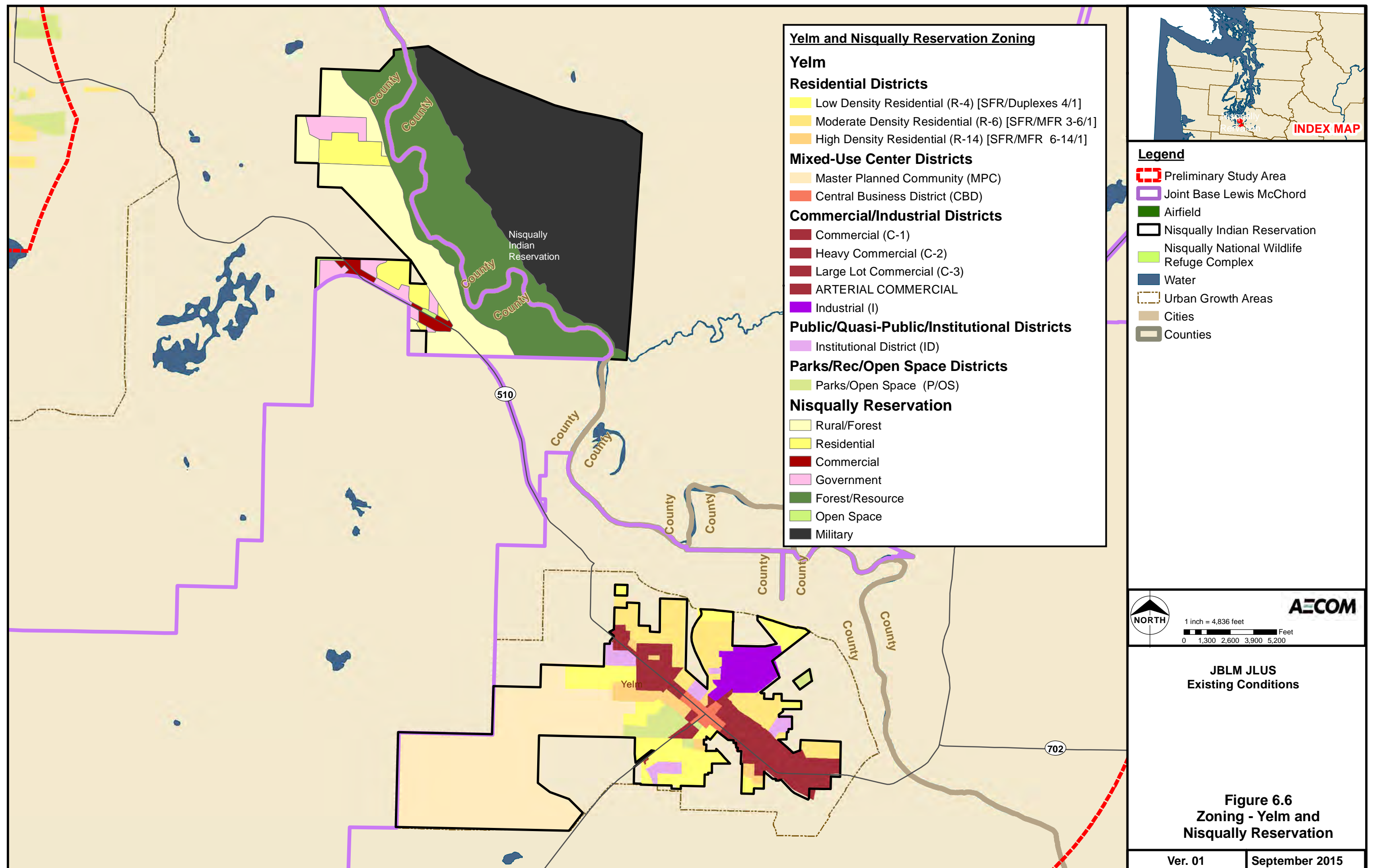
The City's comprehensive plan (2009) contains language that the City will cooperate with governmental jurisdictions, including the Joint Base Commander and neighboring jurisdictions, on land use planning efforts, and will provide notification and opportunity to comment prior to final action on a comprehensive plan or development regulation amendment. The plan also contains policy language for cooperating with neighboring jurisdictions to address regional transportation issues and improved access to JBLM.

### **6.9.City of Rainier**

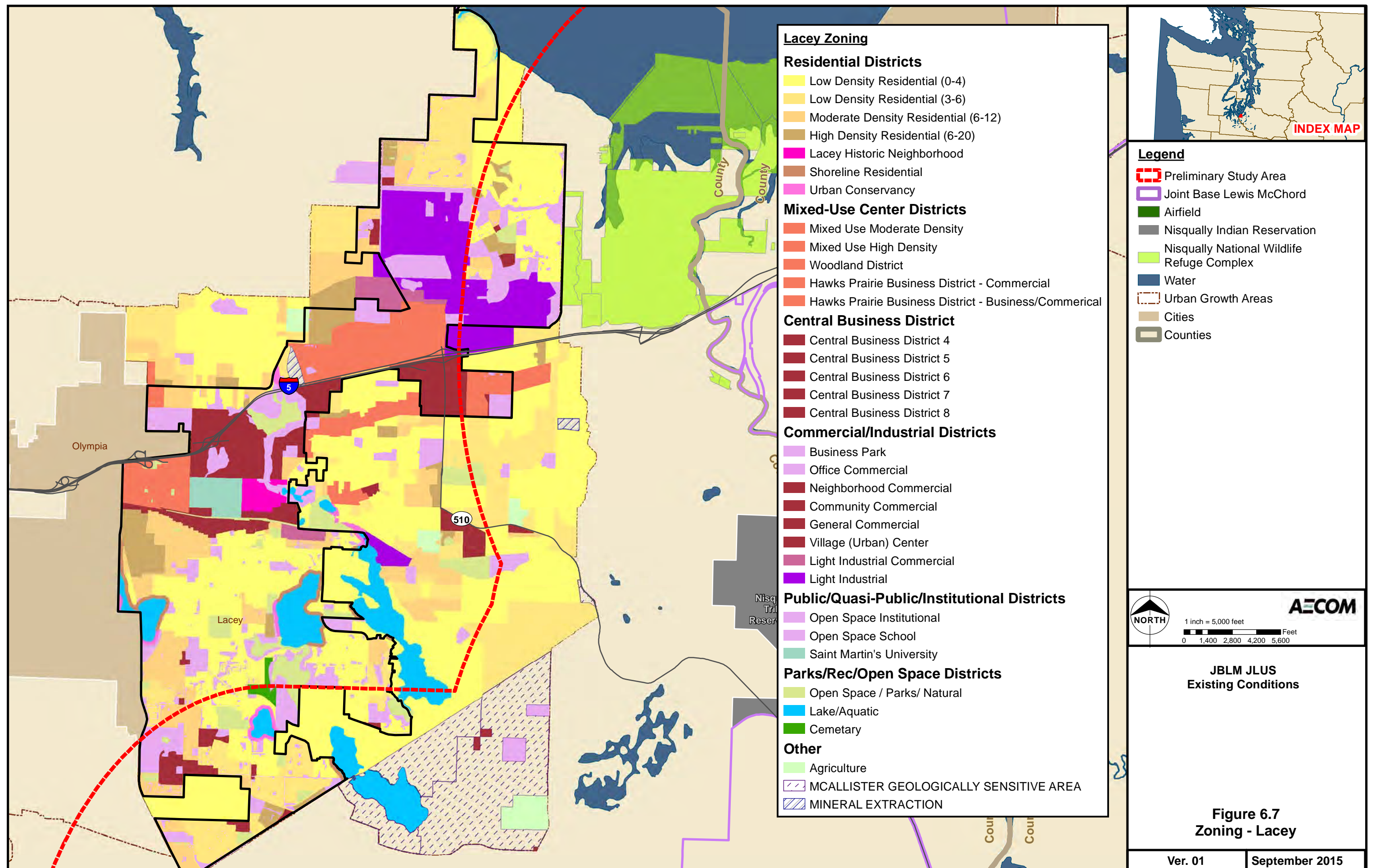
The City of Rainier and the Rainier UGA do not directly border JBLM, although the western and northern boundaries are separated from the base only by a small area of unincorporated Thurston County. The City's current zoning and land use maps show that the parcels near the base are designated for low- and medium-density residential uses. The City's comprehensive plan (2007) does not contain any policies directly related to JBLM.

### **6.10. City of Lacey**

The City of Lacey does not directly border the base but is within the JLUS study area. Lacey zoning is shown on Figure 6.7. The City's comprehensive plan (2008) does not contain any policies or regulations directly related to JBLM. However, the City profile and history reference proximity to the base, and the resulting number of active duty military personnel living in Lacey, as a significant historic and present-day growth pressure.







### **6.11. Nisqually Indian Tribe**

The Nisqually Indian Reservation is located along the Nisqually River at the junction of Pierce and Thurston counties. It is bordered to the north, east, and south by JBLM. The reservation lands to the south and west of the river are controlled by the Tribe and include residences and the Tribal Center. The reservation lands north and east of the river are controlled by JBLM and serve as an artillery impact area.

The Nisqually Indian Tribe Community Vision Plan includes a few mentions of JBLM, but does not include any policy language specific to the base. It does include policies about building partnerships to protect natural resources such as habitat areas, shorelines, and forested lands.

### **6.12. Puget Sound Regional Council**

The Puget Sound Regional Council (PSRC) is the planning agency for a four-county region including King, Kitsap, Pierce, and Snohomish counties. PSRC works with local governments, businesses, and citizens to build a common vision for the region's future, expressed through three connected major activities: VISION 2040, the region's growth strategy; Transportation 2040, the region's long-range transportation plan; and Prosperity Partnership, which develops and advances the region's economic strategy.

VISION 2040 addresses land use compatibility issues related to military installations. Multi-county Planning Policy (MPP) DP-52 states that counties and jurisdictions in the region will protect military lands from encroachment by incompatible uses and development on adjacent land. The plan also includes a discussion of the fact that encroachment of incompatible land uses around airports is a significant problem, and that Washington State law calls for the protection of both general aviation airports and military airfields from incompatible land uses.

In 2014, PSRC began to evaluate whether the VISION 2040 and Transportation 2040 frameworks should recognize military facilities as regional employment centers. The initial draft report, published in September 2014, provides background on military facilities in the region; describes how these facilities are currently included in each of the economic, land use, and transportation planning programs at PSRC; and offers recommendations to the Growth Management Policy Board.

The report recognizes that military facilities play a major role in the central Puget Sound region's economy. The Regional Economic Strategy lists military facilities as an industry cluster due to these economic impacts. The military cluster, which includes direct employees and related industries, provides more than \$3.1 billion annually in total payroll to 91,000 people in the four-county area. Secondary impacts are also significant, with local sales associated with military employment estimated at nearly \$24 billion. The estimated yearly impact of JBLM is \$6.18 billion (2010 data). The Regional Economic Strategy



establishes various implementation activities, some of which reflect the important economic interaction between the installations and surrounding communities. Goals include the retention of existing talent serving at military installations, continued support for the military mission, and the protection of military lands from encroachment and incompatible uses.

In addition to describing economic impacts, recent military sector reports identify other issues, challenges, and opportunities associated with a large military sector, including communication, information sharing, creating subarea plans, and addressing site-specific concerns through community outreach. Land use compatibility and the maintenance of public infrastructure that supports the military are among the specific issues highlighted.

VISION 2040 is the regional growth management, environmental, economic, and transportation plan for the central Puget Sound region. The primary military-related issue of concern of VISION 2040 is incompatible development. The plan, however, does not currently mention military facilities in the discussion of designated centers and only considers military facilities as part of existing infrastructure in Transportation 2040. Though there are no examples of military-sponsored projects in PSRC's Transportation Improvement Program, the Recognizing Military Facilities report notes that the military can partner with any eligible jurisdiction and submit an eligible project, including roads or transit projects that provide access to the military facilities.

In March 2015, the PSRC adopted the following Policy Position:

*In recognition of their importance in the central Puget Sound region, the Puget Sound Regional Council recognizes military facilities as regionally significant employment areas. This recognition means the following:*

**(2015-2016) PSRC Transportation Project Selection:** *The PSRC Project Selection Task Force should ensure that military communities have a voice at the Task Force. As part of this process, the Task Force is asked to consider whether the 2015 PSRC project selection criteria should be amended so that projects terminating at military facilities be scored as equivalent to locally defined centers in **countywide** funding competitions. Per federal statutes, military facilities will be able to partner with eligible applicants in countywide competitions but not be the sole applicant.*

**(2015-2016) PSRC Tiered Centers Framework Project:** *Based on the recommendations adopted in the 2013 Regional Centers Monitoring Report, PSRC will be implementing multicounty planning policies that call for the establishment of a common framework among the countywide processes for designating sub regional centers to ensure compatibility within the region. The role and inclusion of military facilities will be further considered as part of this regional conversation on a tiered centers framework.*

***(2016-2017) PSRC Data Collaboration:*** Multiple comments were made regarding the need for better data sharing and coordination. As part of the 2016-2017 Biennium Budget and Work Program, PSRC data staff will look for opportunities to gather data from, and share data with, military facilities.

***(2016-2017) PSRC/EDD Regional Economic Strategy Update:*** Military facilities and stakeholders are the most fully integrated into PSRC's economic development planning. The sector is recognized as an industry cluster, a military liaison has a seat on the Economic Development District Board, and a major activity in the current work program was completed through the establishment of a military sector organization. Staff will continue this high level of engagement in the 2017 update and through its participation in the Washington Military Alliance.

***(2016-2018) PSRC Long-Range Transportation Plan:*** The 2018 update of Transportation 2040 will include enhanced outreach and coordination with military facilities to create a fuller understanding of specific near-base transportation project needs. Military facilities will be recognized in the plan's text, maps, and project lists.

***Reflect Military Facilities in PSRC Plans:*** PSRC has begun, and will continue, to reflect military facilities in all of its plan maps and other appropriate plan elements.

### **6.13. Thurston Regional Planning Council**

The Thurston Regional Planning Council (TRPC) is a council of governments in Thurston County that carries out regionally focused plans and studies on topics such as transportation, growth management, and environmental quality. TRPC also provides information and education regarding the region and its emerging planning issues.

TRPC does not have a regional land use or growth management plan. TRPC does have a regional transportation plan, and is working to develop strategies for improving traffic flow along the section of I-5 that crosses JBLM, between Lacey and Lakewood.

## 7. Overview of JBLM Plans and Policies

The JLUS existing conditions research included review of several documents produced by JBLM, with relevance to land use compatibility. These documents include:

- Draft JBLM 2014 Master Plan and Supporting Documents.
- Draft Air Installation Compatible Use Zone Study (AICUZ) – 2014.
- Draft Installation Operational Noise Management Plan (IONMP) – 2014.  
*Note: Master Plan, AICUZ, and IONMP are draft pending completion of an Environmental Assessment.*
- Range Complex Master Plan (RCMP).

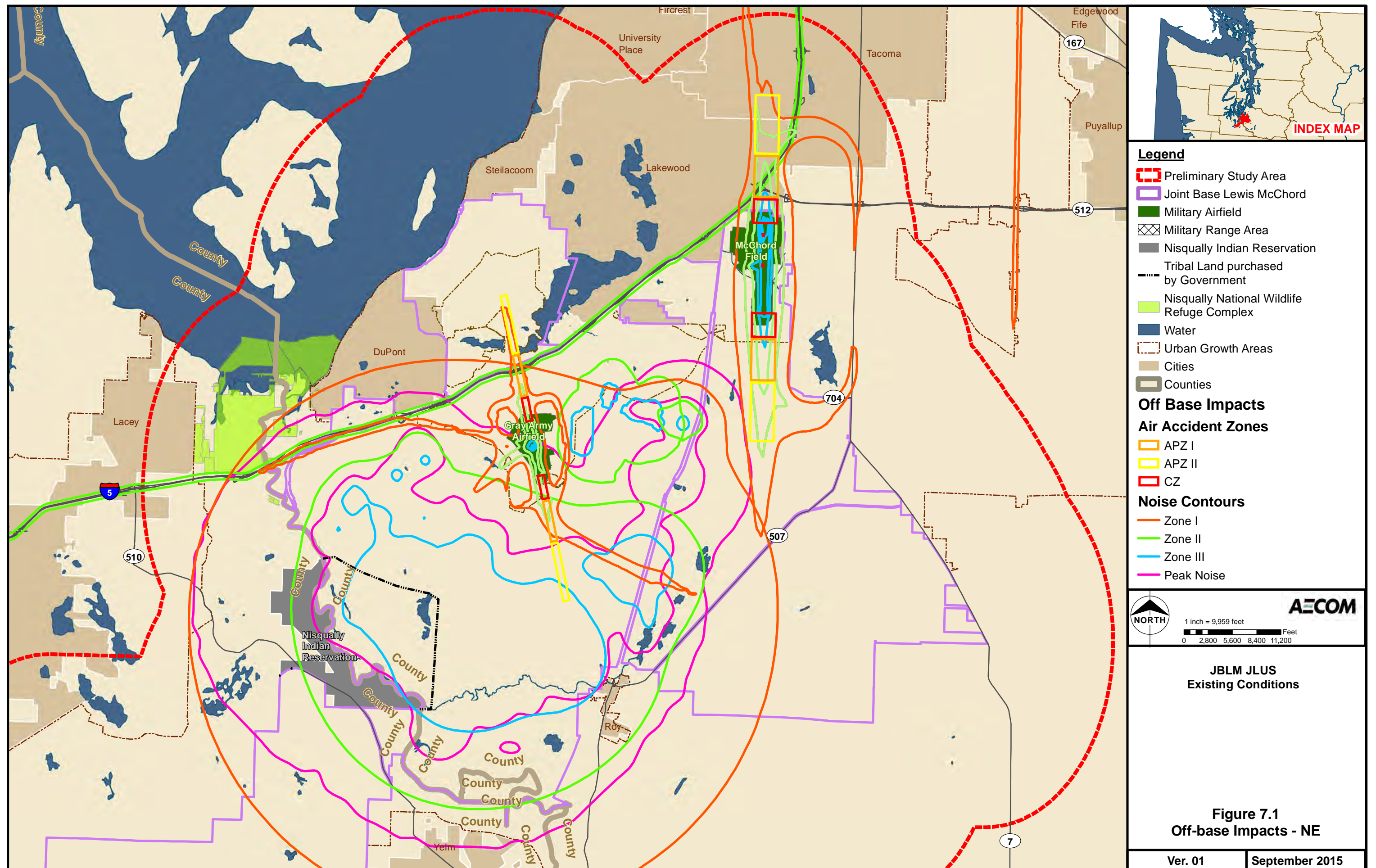
The Draft AICUZ and Draft IONMP studies are of particular importance to the JLUS; noise contour data generated by those reports will affect subsequent analyses of land use compatibility. As of May 2015, both of these documents are currently in draft form and are being updated to account for additional C-17 training flights. The final information is hereby incorporated by reference upon finalization. A summary of off-base impacts derived from the preliminary data is shown on Figures 7.1 and 7.2.

The Draft JBLM Master Plan identifies priorities for future base growth over the next 20 years and is thus of importance when evaluating potential land use conflicts. The RCMP describes range and training activities and their locations.

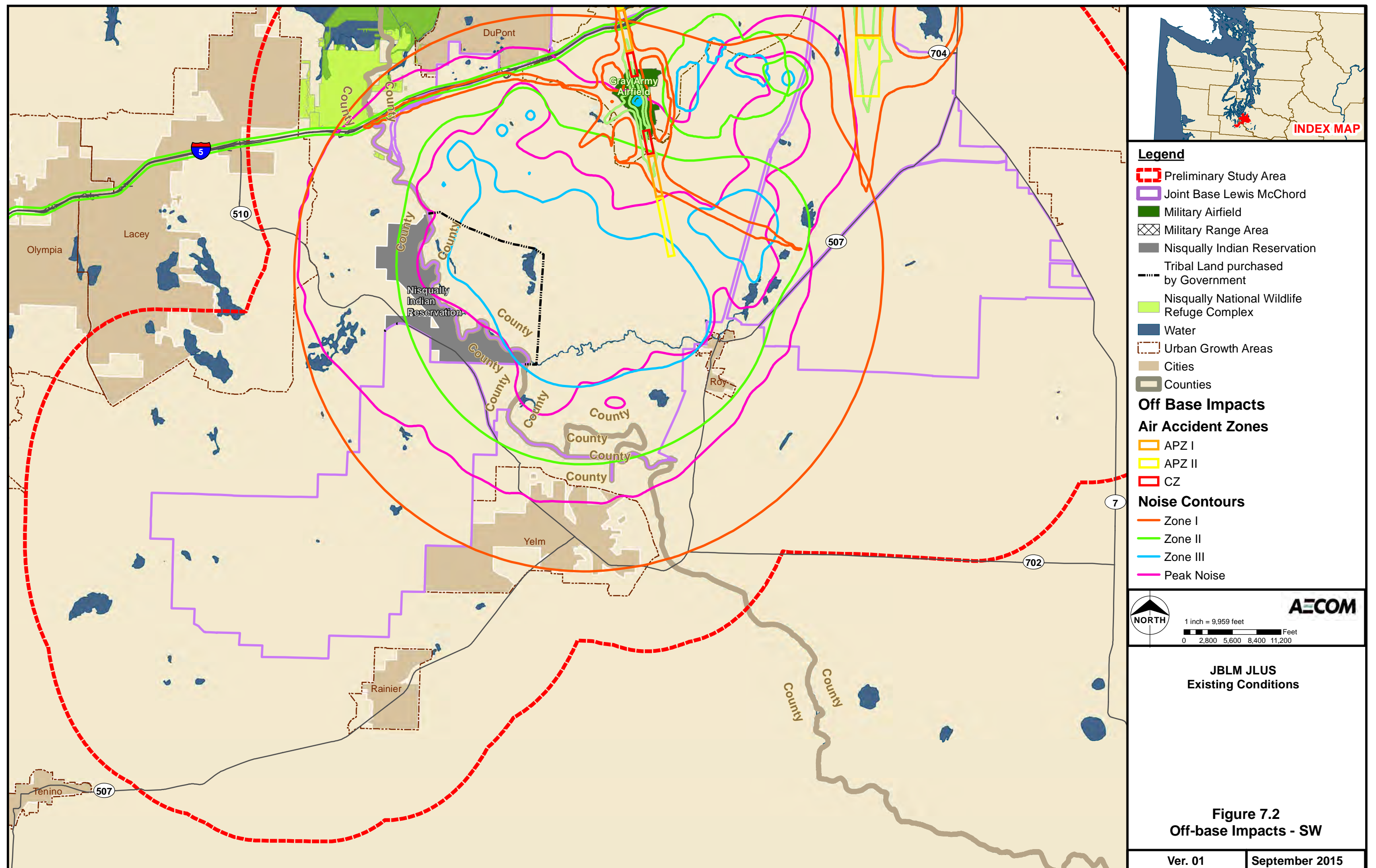
Key themes and issues that emerged from review of the JBLM documents include the following:

- Incompatible land uses exist to the north of McChord Field within the NCZ and APZs, and within areas subject to aircraft noise impacts.
- Noise impacts from artillery and other training operations are concentrated to the south and east of the installation.
- Past growth on Lewis North, including the newly opened Integrity Gate, has the potential for land use impacts in DuPont and Steilacoom.









The following are brief summaries of these four JBLM planning documents.

### 7.1. Air Installation Compatible Use Zone (AICUZ) Study – 2014 Draft

The primary purpose of the AICUZ study is to provide compatible land use recommendations within an AICUZ area of influence encompassing the Clear Zone (CZ), Accident Potential Zones (APZ) I and II, and land exposed to noise levels at or above the 65 decibel (dB) Day-Night Average A-Weighted Sound Level (DNL).

There are currently over 20,000 annual aircraft operations at McChord Field. Approximately 80% of flight operations are McChord-based C-17 aircraft, with 81% of operations occurring during daytime hours (7:00 am – 10:00 pm).

The AICUZ establishes three noise zones, as follows:

Noise Zone	Aviation DNL (dBA)	Land Use Recommendation
I	< 65	Generally acceptable with any residential or noise-sensitive uses.
II	65–75	Normally not recommended with residential or noise-sensitive uses.
III	>75	Not recommended with any residential or noise-sensitive uses.

Noise zones, the CZ, and APZs were overlaid on existing zoning to identify incompatible land uses. Table 7.1 below (reproduced from the AICUZ study) summarizes the extent of potentially incompatible land uses.

**Table 7.1. Acreage within Noise Zones, CZ, and APZs.**

Category	Acreage Within CZs and APZs			Acreage Within Noise Zones, Not Included in CZs and APZs				Total
	Clear Zone	APZ I	APZ II	65-69	70-74	75-79	80+	
Air Corridor/Clear Zone	46	-	-	-	-	-	0	46
Commercial	0	21	49	-	0	0	0	70
Industrial	5	-	-	-	-	-	0	5
Public/Institutional	0	8	0	-	0	0	0	8
Mixed Use <sup>1</sup>	0	0	0	8	0	0	0	8
Open Space/Recreation	0	0	17	-	0	0	0	17
Residential	0	8	171	33	0	0	0	212
<b>Total</b>	<b>51</b>	<b>37</b>	<b>237</b>	<b>41</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>366</b>
<sup>1</sup> “ “ Represents compatible land use Mixed use was characterized as potential residential land use zone.								

Key considerations to note, based on this analysis, include the following:

- Approximately 51 acres of incompatible land uses exist in the CZ.
- Most commercial and residential land uses are considered incompatible in APZ I. In total, 37 acres of such development exists.



- Residential development at densities greater than 2 dwelling units/acre in addition to some commercial and recreational uses are considered incompatible in APZ II. In total, 237 acres of incompatible development exists in this zone.
- Within the DNL 65-74 dB zones, residential development may be compatible if it incorporates noise level reduction (NLR) materials, but is generally discouraged unless there is a demonstrated community need and a lack of viable alternatives. There are 33 acres of residential development and 8 acres of mixed-use development within these zones.

## 7.2. Installation Operational Noise Management Plan (IONMP) – 2014 Draft

The IONMP analyzes exposure to noise and safety hazards associated with military operations. The IONMP establishes three Noise Zones (NZ I, II, and III) and a Land Use Planning Zone (LUPZ) to classify noise impacts and define land use compatibility, as shown in Table 7.2 below (reproduced from the IONMP).

**Table 7.2.**  
**Army Land**  
**Use Planning**  
**Guidelines**

Noise Zone	Aviation ADNL (dBA)	Impulse CDNL (dBC)	Small Arms (dBP)
<b>Land Use Planning Zone</b>	60 – 65	57 – 62	N/A
<b>I</b>	<65	<62	<87
<b>II</b>	65-75	62-70	87-104
<b>III</b>	>75	>70	>104
Notes: ADNL – A-weighted Day-Night Levels. CDNL – C-weighted Day-Night Levels. dBA – A-weighted decibel dBC – C-weighted decibel dBP – peak sound level  Source: USACHPPM 2005.			

The IONMP notes the following conclusions:

- Off-installation noise impacts are primarily attributed to artillery training and aircraft operations.
- Howitzer training in the summer months leads to noise complaints in Thurston County, south and east of JBLM.
- Large caliber arms noise is influenced by meteorological conditions and can result in noise complaints from elsewhere in the region.
- NZ II, III, and LUPZ from large caliber arms extend off the installation, affecting DuPont, Roy, Yelm, and the Nisqually Indian Reservation.

- NZ II, III, and LUPZ from Gray Army Airfield do not extend beyond the installation boundary.
- NZ II, III, and LUPZ from McChord Field extend off the installation and affect some incompatible land uses.

### **7.3. Range Complex Master Plan (RCMP)**

The RCMP establishes the range and maneuver land requirements to support the installation training missions, and identifies encroachment issues that impact use of the range complex. The RCMP notes that JBLM has sufficient training land to accommodate platoon and below training, while company and above maneuver training is better suited at the YTC. Several challenges are noted, including the presence of threatened and endangered species, buffer requirements for wetlands and water bodies, and the presence of Unexploded Ordnance (UXO) in some areas, all of which limit where and how training operations are conducted. The RCMP also notes that restricted airspace is becoming crowded, especially since the stationing of the Combat Aviation Brigade (CAB) and arrival of Unmanned Aircraft Systems (UAS). JBLM is seeking off-base routes and Helicopter Training Areas (HTAs).

### **7.4. Joint Base Real Property Master Plan – 2014 Draft**

The JBLM Real Property Master Plan guides the future physical development of the joint base over a 20-year planning horizon by identifying a vision for future growth and establishing real property planning controls, including an Installation Development Plan (IDP).

The IDP contains an Illustrative Plan, Regulating Plan, and a series of Network Plans for each of 17 areas (Area Development Plans, or ADPs), as well as overall plans covering the whole installation. The Illustrative Plan graphically depicts a hypothetical full build-out of the installation if the Master Plan were carried to completion. The Regulating Plan is the installation's regulatory mechanism that acts as a form-based zoning code that establishes allowed uses, and regulates building form, height, lot placement, and other building design aspects. The Network Plans identify the major transportation, bike and pedestrian, and open space networks.

Lewis North, north of I-5, is targeted for much of the future base growth, including housing and mission facilities. This potential growth, along with recent growth, and the projected opening of the new Integrity Gate in early 2015, has the potential to impact the nearby communities of DuPont and Steilacoom with increased traffic and increased demand for housing and other services.

## 8. Overview of Environmental Plans, Policies, and Initiatives

The presence of several federally listed threatened or endangered species and their habitats on and off JBLM poses a significant compatibility challenge. Species of concern include anadromous fish, the Mazama pocket gopher, Taylor's checkerspot butterfly, and streaked horned lark. Environmental conditions in the study area are shown on Figure 8.1. Critical habitat (outside of JBLM in Figure 8.1) is designated by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA). This habitat consists of geographic areas that contain features essential for the conservation of a threatened or endangered species and may require special management and protection. Critical habitat may not be modified in a way that negatively affects listed species. Priority habitat (on JBLM, shown on Figure 8.2) encompasses areas where the listed species habitat will be managed similar to critical habitat.

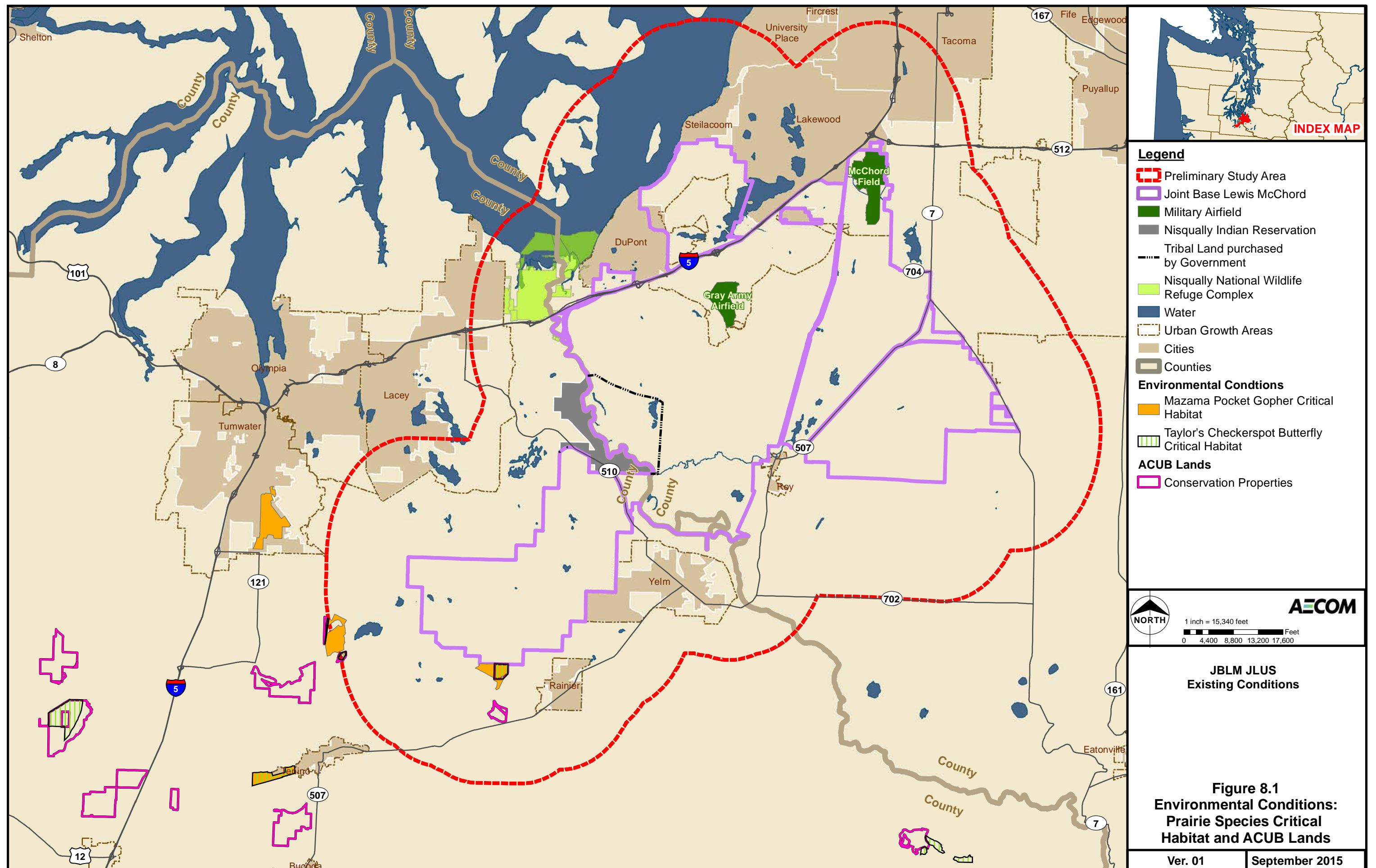
Management of habitat for these species has occurred via a variety of approaches, some of which are currently in the developmental stages. Management of habitat on JBLM is directed by the Integrated Natural Resources Management Plan (INRMP), which is currently in the process of being updated to address the newly listed prairie species. JBLM also has in place several Endangered Species Management Plans (ESMPs).

The Army Compatible Use Buffer (ACUB) program has provided funding for the acquisition and management of properties off the installation intended for preservation of prime prairie habitat. ACUB program properties are shown on Figure 8.2.

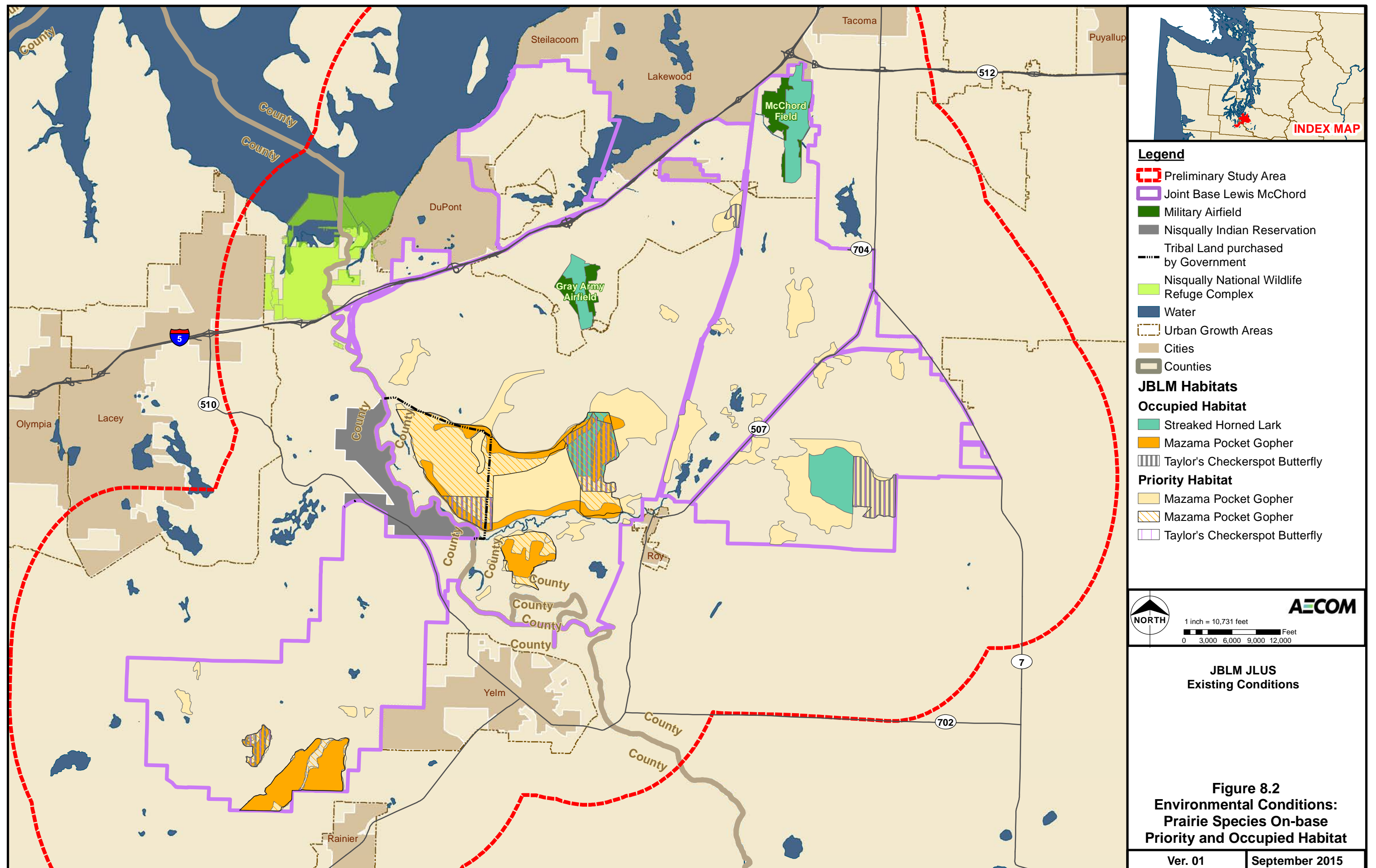
Thurston County manages critical areas, including habitat for fish and for prairie species, through its critical areas ordinance (CAO). Thurston County is also in the process of developing a Prairie Habitat Assessment Methodology (PHAM) that will establish a system of credits that can be used as mitigation for prairie habitat impacts associated with development proposals.

Several environmental documents were reviewed to establish a baseline understanding of relevant environmental issues in the study area. These documents are summarized below. Documents reviewed include:

- JBLM Integrated Natural Resources Management Plan (INRMP) 2007-2011.  
*Note: INRMP in process of being updated.*
- JBLM Endangered Species Management Plans (ESMP):
  - Mazama Pocket Gopher (2014).
  - Streaked Horned Lark (2013).
  - Taylor's Checkerspot Butterfly (2013).
- JBLM Army Compatible Use Buffer (ACUB) Annual Report.
- Federal Register Notice for Listing of Mazama Pocket Gopher & Critical Habitat.
- Thurston County Critical Areas Ordinance (CAO).
- Thurston County Prairie Habitat Assessment Methodology.
- Sequim Creek Watershed Restoration Planning Core Group Final Briefing Memo and Core Group Recommendations for a Restoration Plan.
- Environmental Assessment for Construction of a Wastewater Treatment Plant and Main Pipeline Infrastructure for Water Reuse at Joint Base Lewis-McChord, Washington.







### 8.1. Army Compatible Use Buffer Program

The ACUB Program covers prairie habitats and is intended to help minimize restrictions on military training associated with the recently listed Taylor's checkerspot, streaked horned lark, and Mazama pocket gopher. The overall goal of the program is to reduce environmental encroachment (restrictions on training) on JBLM associated with the listing or potential listing of prairie species under the Endangered Species Act by supporting the conservation of these species on lands off the installation. With the exception of a property in Clallam County and one possible property in Pierce County, all current and likely future ACUB properties are in Thurston County, which has most of the remaining, undeveloped prairie habitat in the South Puget Sound region.

The JBLM ACUB Program is designed primarily for habitat preservation to reduce environmental encroachment, although one parcel also prevents incompatible development along the installation boundary. In June 2013, JBLM was one of the winners of the Fiscal Year (FY) 13 REPI Challenge, and South Puget Sound became first pilot project in the Sentinel Landscapes Program, jointly run through the DoD, U.S. Department of Agriculture (USDA), and U.S. Department of the Interior (USDOl). The actions have resulted in a substantial expansion of the JBLM ACUB Program in terms of partners, land area, and funding.

Original partners to the program include the Center for Natural Lands Management (CNLM), Washington Department of Fish and Wildlife (WDFW), Washington State Department of Natural Resources (WDNR), and Wolf Haven International (a conservation non-governmental organization [NGO]). New partners as a result of REPI challenge include the USDA Natural Resources Conservation Service (NRCS), the U.S. Fish and Wildlife Service (USFWS), Thurston County, Sustainability in Prisons Program (SPP), Washington State Department of Veterans Affairs, and several private landowners. The current scope of operations is 5,968 acres in 16 locations. Total funding to date is about \$35 million, split evenly between DoD/Army and the partners.

Projects covered under the challenge are summarized below:

- Land acquisition projects (Dan Kelly Ridge, Mima Mounds addition, Violet Prairie-Scatter Creek Preserve).
- Habitat restoration and maintenance projects (invasive species control across ACUB lands, butterfly enhancement for Taylor's checkerspot at unoccupied sites, habitat maintenance and restoration at occupied sites, Taylor's checkerspot enhancement at the Bald Hills Natural Area Preserve, habitat improvement for Taylor's checkerspot off ACUB lands, cooperative integrated prescribed fire program, regional prairie seed production, regional native plug production, shared resources).
- Projects to increase the sizes and numbers of species populations (captive rearing and translocation methods for Taylor's checkerspot, genetic enhancement of Puget Sound lowland streaked horned lark populations, Mazama pocket gopher translocation).

- Research projects (native plant establishment, butterfly habitat strategy).
- Administration.

## 8.2.JBLM Endangered Species Management Plans

JBLM has ESMPs in place for the Mazama pocket gopher, streaked horned lark, and Taylor's checkerspot butterfly. ESMPs are required under Army Regulation (AR) 200-1. They comprise the Endangered Species Management Component of the INRMP. ESMPs include management measures to protect, maintain, and enhance (if needed) populations of federally listed, proposed, and candidate species and their habitat. JBLM's ESMPs are prepared with input from the Directorate of Plans, Training, Mobilization, and Security (DPTMS); JBLM Fish and Wildlife; USFWS, and WDFW. ESMPs attempt to minimize conflicts between training activities and species management strategies. The goal is to have no net loss in the military mission.

Summaries of key points from each of these ESMPs is included below.

### 8.2.1. Mazama Pocket Gopher ESMP

- The ESMP covers the Mazama pocket gophers on JBLM
- Current status of species: of the eight subspecies that occur in Washington, four are federally listed as threatened (4/2014, 79 Federal Register [FR] 19760-19796): Roy Prairie pocket gopher (*Thomomys mazama glacialis*), Olympia pocket gopher (*T.m. pugetensis*), Tenino pocket gopher (*T.m. tumuli*), and Yelm pocket gopher (*T.m. yelmensis*).
  - Of the listed subspecies, the Roy prairie and Yelm pocket gopher occur on JBLM land in Pierce and Thurston counties, respectively.
  - On JBLM, the currently known distribution of Mazama pocket gophers includes four large areas: the 91<sup>st</sup> Division Prairie (Artillery Impact Area; Roy Prairie ssp.), Marion Prairie and the South Impact Area (Roy Prairie ssp.), Weir Prairie (Yelm ssp.), and Johnson Prairie (Yelm ssp.).
  - Critical Habitat has been designated in Thurston County for the Olympia, Tenino, and Yelm ssp. (4/2014, 79 FR 19712-19757). Critical habitat has not been designated on JBLM because the approved ESMPs and INRMP effectively manage habitat.

#### Brief species/habitat overview

- Currently patchily distributed in western Washington.
- Primarily located in glacial outwash prairies, which are much reduced from historical coverage.
- Pocket gophers are most likely to be located in areas with less than 10 percent cover of woody vegetation. Less prevalent in soils with lots of rock/cobbles.
- Remain active year-round, breed from March through June.
- Solitary, asocial animals, with limited dispersal capabilities.
- Construct burrow systems where they spend most of their time. Harvest roots and bulbs for food from underground.



### **Brief overview of threats**

- Vulnerable to local extinction because of limited, small populations. Need yearly successful reproduction to persist.
- Glacial outwash prairies have become fragmented, degraded, reduced in size, or lost completely. Habitat loss (including loss of habitat connectivity) is due to residential and commercial development, conversion to agriculture, encroachment of woody vegetation, and military training.
- Other threats: control as a pest species, predation, small population effects, and other disturbance and development of grassland habitats.

### **Summary of specific recommendations or conclusions**

- Conservation goals: (1) maintain, protect, and contribute to recovering populations both on and off DoD lands; (2) protect and enhance suitable and priority habitat areas, including increasing the amount and quality of suitable habitat for the species within priority habitat areas; (3) develop long-term survival strategies; (4) continue to support regional recovery efforts (ACUB and others); and (5) provide for no net loss in the capability of installation lands to support the military missions.
- Conservation actions identified in ESMP:

#### For Goal 1

- Continue to enforce restrictions that protect pocket gopher populations, which apply to all parties training or recreating on priority habitat areas.
- Attend range walks with trainers to coordinate restrictions specific to Range 74/76 and other areas where the species occurs.
- Maps and written and verbal instructions regarding the types, locations, and timing of activities that are allowed or disallowed.
- Review planned military construction or maintenance activities, recreational events, and other civilian projects in priority habitats to identify associated risks.
- Participate in regional research efforts.
- Survey all potential habitat within or adjacent to priority habitat areas. Site condition monitoring annually, mound surveys every 3 years. Follow approved survey protocols.
- Perform compliance, implementation, and effectiveness monitoring for the ESMP. Annual reports sent to USFWS. Establish adequate buffers around occupied areas.

#### For Goal 2

- Continue management of habitat areas to improve/restore habitat conditions. Management actions include prescribed fire, small-scale planting enhancement plots, and control of encroaching woody plants and invasive species.

- Oversight of prescribed burns by Fish and Wildlife Program personnel to maintain low-statured native vegetation in prairie habitat. Consider Taylor's checkerspot and streaked horned lark when planning burns.
- After control of invasive species, immediately re-establish native plant species. Avoid disturbing gophers or limiting availability of forage vegetation.

For Goal 3

- Expand populations both on and off JBLM.
- Lift training pressures in areas occupied by pocket gophers by creating new training areas, preferably in places not occupied by listed species.

For Goal 4

- Facilitate, fund, and implement regional recovery efforts (prevent further decline of the species and increasing population size of four Thurston/Pierce subspecies), including prairie land acquisition and restoration of degraded habitats.
- Provide annual funding for development of management strategies.
- Work cooperatively with agencies and NGOs.

For Monitoring Plan

- Survey all potential habitat within priority habitat areas for pocket gophers. Goal is to develop a suitable survey protocol approved by USFWS/WDFW. Work with USFWS to determine suitable buffers to place around occupied areas.
- Work cooperatively with federal, state, and NGO partners to develop and implement a population monitoring plan that will allow JBLM to track population status of the subspecies on/off installation.
- Monitor military training to determine effects, and to ensure training in compliance with INRMP. Monitor effectiveness of conservation commitments and implementation of management actions in the INRMP and ESMP.
- Provide monitoring reports annually to USFWS.

### 8.2.2. Streaked Horned Lark

#### **Species/habitat/geographic area covered**

- ESMP covers streaked horned larks on JBLM.
- Current status of species: federally listed as threatened (10/2013, 78 FR 61451-61503).
- On JBLM, nesting streaked horned larks occur on Gray Army Airfield, McChord Field, Range 74/76, Range 50, TA6, and the 13<sup>th</sup> Division Prairie.
- Critical habitat has been designated in Washington, but not in Pierce or Thurston counties (10/2013, 78 FR 61505-61589).

#### **Brief species/habitat overview**

- Occur in prairies of western Washington and Oregon; prefer breeding territories that are sparsely vegetated and contain open, rocky areas between the vegetation.

- In the south Puget Sound, nesting locations occur at regional airfields and prairie areas. Populations are restricted to four sites on JBLM and to the Olympia and Shelton airports.
- Place nests on the ground, usually at the base of perennial forbs.
- Overwinter in open habitats, focusing on areas of bare ground lacking trees and shrubs; feeding also occurs in areas with short, sparse vegetation and bare ground.
- Nest building in Puget Sound region begins in late April to mid-May, and all nesting activity is completed by late August.
- Populations in Washington are mostly migratory, with a few birds remaining over the winter; most of the streaked horned larks in Washington are believed to winter along the lower Columbia River and in the Willamette Valley, Oregon.

#### **Brief overview of threats**

- Main threats: habitat loss and degradation due to agricultural and urban development, successional changes, military training, and the spread of invasive plants.
- Other threats: predation, inadequate regulatory mechanisms, low genetic diversity, small populations, low reproductive success, declining population sizes, and aircraft strikes.
- In Washington, nest failure is one of the most significant threats. Causes: human disturbance, predation, inbreeding, and nest parasitism.
- On JBLM, military training and recreation activities that crush nests, eggs, or young, or that disturb nesting adults are threats. Also activities that alter habitat so that it is no longer suitable for nesting.

#### **Summary of specific recommendations or conclusions**

- Must address the needs of the streaked horned lark while ensuring that management activities are fully vetted with the training community.
- Conservation goals: (1) protect and support recovery of populations both on and off DoD lands; (2) protect and enhance suitable and priority habitat areas, including increasing the amount of suitable habitat for the species within priority habitat areas; (3) develop, implement, and monitor long-term survival strategies; (4) continue to support regional recovery efforts (ACUB and others); and (5) protect, enhance, and sustain native prairie seed bed nursery capabilities of the Range Support and Fish and Wildlife Programs.
- Conservation actions identified in ESMP:
  - For Goal 1
    - Continue to enforce restrictions that protect lark populations, which apply to all parties training or recreating on priority habitat areas.



- Attend range walks with trainers to coordinate restrictions specific to Range 74/76 and other areas where the species occurs.
- Maps and written and verbal instructions regarding the types, locations, and timing of activities that are allowed or disallowed.
- Review planned military construction or maintenance activities, recreational events, and other civilian projects in priority habitats to identify associated risks.
- Participate in regional research efforts.
- Survey annually for occupied habitat, and mark nests to protect them from disturbance/destruction.

For Goal 2

- Continue management of habitat areas to improve/restore habitat conditions. Management actions include prescribed fire, small-scale planting enhancement plots, and invasive species control.
- Prescribed burns within half of all suitable habitat (except airfields) each year to maintain habitat.
- After control of invasive species, immediately re-establish native plant species.

For Goal 3

- Participate in regional recovery efforts to enhance existing populations on and off JBLM.

For Goals 4 and 5

- Facilitate, fund, and implement regional recovery efforts (increasing the number and size of populations both on and off JBLM, prairie land acquisition, habitat restoration) and native seed bed nursery programs.
- Provide annual funding for development of management strategies.
- Work cooperatively with agencies and NGOs.

For Goal 6

- Survey all potential habitat within or adjacent to priority habitat areas annually for occupancy. Follow established survey protocols. Mark off occupied areas plus buffers.
- Monitor military training to determine effects, and to ensure training in compliance with INRMP. Monitor effectiveness of conservation commitments and implementation of management actions in the INRMP and ESMP.
- Provide monitoring reports annually to USFWS.

### 8.2.3. Taylor's Checkerspot Butterfly

#### Species/habitat/geographic area covered

- ESMP covers Taylor's checkerspot butterflies on JBLM. Occurs in prairie habitats.
- Current status of species: federally listed as endangered (10/2013, 78 FR 61451-61503).

- On JBLM, populations of Taylor’s checkerspot occur within the Artillery Impact Area (AIA), on Ranges 72-79 and 50, and on the Seibert-staked area (off-limits to certain types of training) near Pacemaker airstrip on Training Area (TA) 14.
- The population in Ranges 72-79 is the source population for the WDFW captive rearing program. Range 50 is a translocation site, and some translocated butterflies also occur in TA 14.

#### **Brief species/habitat overview**

- The current range of the Taylor’s checkerspot includes eight sites in Washington, two in Oregon, and one in British Columbia.
- The species is associated with grasslands that contain a diversity of larval host and nectar plants surrounded by fescue or other short-statured grassland species.
- Life cycle is dependent on larval host and nectar plants. They are resident and non-migratory, and produce one brood per year. Adults emerge in early-April to mid-June.
- Landscape heterogeneity is an important habitat consideration. Structural elements of open grasslands, such as forest edges and wet meadows, provide habitat features.

#### **Brief overview of threats**

- The Taylor’s checkerspot is listed because of significant population declines range-wide; habitat loss and degradation due to human-related activities; habitat modification caused by encroachment of invasive non-native plants; succession from grasslands to native shrubs and trees.
- Primary threat range-wide is direct habitat loss.
- On JBLM, threats include air operations, vehicle and foot traffic, and other types of training; invasion of non-native grasses that modify native grassland habitat structure; and frequent wildfire in the AIA.

#### **Summary of specific recommendations or conclusions**

- Must address the needs of the Taylor’s checkerspot while ensuring that management activities are fully vetted with the training community.
- Conservation goals: (1) protect and contribute to the recovery of populations both on and off DoD lands; (2) protect and enhance suitable and priority habitat areas, including increasing the amount of suitable habitat for the species within priority habitat areas; (3) develop, implement, and monitor long-term Taylor’s checkerspot butterfly survival strategies; (4) continue to support regional recovery efforts, primarily through the JBLM ACUB and the USFWS recovery programs; and (5) protect, enhance, and sustain native prairie seed bed nursery capabilities of the Range Support and Fish and Wildlife Programs.

- Conservation actions identified in ESMP:

For Goal 1

- Continue to enforce vehicular movement restrictions, which apply to all parties training or recreating on priority habitat areas.
- Attend range walks with trainers to coordinate restrictions specific to Range 74/76 and other areas where the species occurs.
- Maps and written and verbal instructions regarding the types, locations, and timing of activities that are allowed or disallowed.
- Review planned military construction or maintenance activities, recreational events, and other civilian projects in priority habitats to identify associated risks.
- Participate in regional research efforts.
- Survey annually for occupied habitat. Use Seibert stakes to demarcate priority habitat areas.

For Goal 2

- Continue management of habitat areas to improve/restore habitat conditions. Management actions include prescribed fire, small-scale planting enhancement plots, and invasive species control.
- After control of invasive species, immediately re-establish native plant species.

For Goal 3

- Participate in regional recovery efforts to enhance existing populations and establish new populations.
- Focus on captive rearing and propagation from current JBLM population, and release onto suitable habitat on/off installation.
- Maintain and provide resources for native prairie seed bed.

For Goals 4 and 5

- Facilitate, fund, and implement the ACUB program (prairie land acquisition, restoration of habitat, increasing the number and size of populations on acquired lands) and native seed bed nursery programs.
- Provide annual funding for development of management strategies.
- Work cooperatively with agencies and NGOs.

For Goal 6

- Survey occupied sites on JBLM and ACUB lands annually. Follow established survey protocols.
- Monitor military training to determine effects, and to ensure training in compliance with INRMP. Monitor effectiveness of conservation commitments and implementation of management actions in the INRMP and ESMP
- Provide monitoring reports annually to USFWS.

### **8.3. Thurston County Prairie Habitat Assessment Methodology (PHAM)**

Thurston County is currently developing the PHAM, which is described in a protocol document and a procedure manual. The protocol describes the overall process, which



involves obtaining permits under the interim permitting strategy, creating prairie credits for mitigation, developing eligibility criteria for mitigation and obtaining credits, and managing the program. The procedure manual describes the procedures for collecting field data, running the Species and Habitat Asset and Risk Prioritization (SHARP) model, and using model results to define the proposed/future condition. The SHARP Model Documentation documents the assumptions, background, equations, and indicators used by the Thurston County PHAM Version 1.0 of the model.

Guiding principles of the PHAM are to protect and maintain prairie ecosystems and prairie-associated species in perpetuity; provide a mechanism to maintain local control over permitting decisions related to habitat; and allow for long-term economic certainty and responsible economic development.

### **Brief Overview of Methodology**

- The methodology produces an estimate of the number of weighted acres of Potentially Suitable Habitat (area and quality of prairie being conserved) or Potentially Affected Habitat (area and quality of prairie being impacted). Potentially Affected Habitat = debits; Potentially Suitable Habitat = credits.
- Applicable to a defined set of potential land uses and development activities. Additional activities likely included in the future.
- Mitigation sequencing must be followed.
- Mitigation occurs within the boundaries of Thurston County, except under rare circumstances.
- Impacts on a particular subspecies of pocket gopher must be mitigated within the geographic area known to support that species.
- As a default, off-site mitigation on large sites is preferred. In some instances onsite is preferable.
- SHARP is used to determine mitigation obligation (debits) for activities on prairie parcels of a certain size or occupied by target prairie-associated species.
- SHARP is run twice: on the current condition, and on the proposed future condition (15 years in the future).
- Mitigation obligation is determined based on the most significantly impacted species.
- SHARP can also be used to quantify credits for eligible mitigation sites and conservation activities, as determined by Thurston County and USFWS. Credits are only calculated using the post-project estimate of Potentially Suitable Habitat.
- For all mitigation sites, the credit developer is responsible for conducting ongoing monitoring and demonstrating progress toward meeting the performance standards outlined in their mitigation instrument.

### **Brief Overview of Data Gathering and Running SHARP**

- In office data: soil type (for prairies and prairie-associated species), grasslands on aerial imagery (for streaked horned lark), 75-foot buffer from parcel boundary to determine field survey area.
- Field data: transects 25 meters apart, collecting data every 25 meters (data on cover of various types of vegetation, presence of gopher mounds, presence of oviposition and larval host plants for Taylor's checkerspot, presence of nectar species for Taylor's checkerspot).
- Define assessment area for the SHARP model.
- Follow instructions for running model to obtain desired outputs.

#### **Summary of specific recommendations or conclusions**

- Methodology will be used as part of an Interim Permitting Plan and the Habitat Conservation Plan for Thurston County. Will be used by permittees, credit developers, and program administrators.

### **8.4.Sequalitchew Creek Watershed – Final Briefing Memo and Core Group Recommendations for a Restoration Plan**

The document presents the set of recommended actions adopted by the South Puget Sound Salmon Enhancement Group to include in a restoration plan for the Sequalitchew River Watershed. The actions were developed by a Core Group of stakeholders that included representatives from the City of DuPont, Ecology, the Environmental Caucus, CalPortland Company, the Nisqually Indian Tribe, the Sequalitchew Creek Watershed Council, JBLM, and Pierce County.

The document covers the Sequalitchew Creek Watershed, located in Pierce County, Washington. Important habitats in the watershed that are addressed include streams, lakes, wetlands, and the Nisqually River estuary.

The vision for the restoration plan is to “identify actions and probable project costs necessary to restore flows and ecological conditions suitable for native salmonid populations in the Sequalitchew Creek basin.” Actions identified in this document are intended to improve salmonid species that use aquatic habitats in the watershed. Species identified by name in the document include Chinook, chum, and coho salmon, but other species would also benefit.

Four phases of recommended actions were identified:

- **Phase 0:** update the City of DuPont's CAO to allow restoration actions.
- **Phase 1:** rehabilitate east-west flow from Sequalitchew Lake to West Edmond Marsh (seasonally manage lake levels, manage beaver dams and beavers in watershed, monitor flows through Edmond Marsh and adaptively manage flexible levelers, rehabilitate and monitor the Losing Reach, begin the planning process for components of Phases 3 and 4).

- **Phase 2:** improve fish passage and habitat from West Edmond Marsh through the ravine (complete additional actions to enhance the Losing Reach, replace the Losing Reach near City Hall, evaluate and modify the Center Drive Culvert, adaptively manage flows and habitat changes within the ravine, support efforts to restore the mouth of Sequelitchew Creek<sup>1</sup>, install weir in Hamer Marsh, monitor water quality in Hamer Marsh).
- **Phase 3:** rehabilitate flow and fish passage through the DuPont Railroad Trail (investigate subsurface conditions, improve flow connectivity and fish passage through the trail, create a southern flow alignment).
- **Phase 4:** restore flows and fish passage to Sequelitchew Lake (replace/remove the JBLM crossover culverts, replace the JBLM 12-inch culvert between Hamer and Edmond Marsh if water quality in Hamer Marsh meets water quality standards, change the JBLM water supply to a deep well system).

Expected outcomes of each of the phases are as follows:

- **Phase 1** should improve gradient flow from Sequelitchew Lake to West Edmond Marsh. The Edmond Marsh complex may decrease in size as a result of Phase 1 actions. Work will also begin on the Losing Reach and on planning for future phases.
- **Phase 2** should provide the ability for coho, winter chum, and possibly other salmonids to access habitat in Sequelitchew Creek from the estuary into West Edmond Marsh. It should also improve groundwater recharge from Hamer Marsh.
- **Phase 3** should create the opportunity for fish passage all the way from the estuary to the easternmost end of East Edmond Marsh. It would also reduce the need to manage beaver activity through the DuPont Railroad Trail, and should improve water quality.
- **Phase 4** would further enhance flows between Hamer and Edmond Marshes, and would restore nearly all flows from Sequelitchew Lake and Sequelitchew Springs into Sequelitchew Creek. It also would provide fish passage to the lake.

### 8.5. JBLM Wastewater Treatment Plant Environmental Assessment

The Environmental Assessment discloses the environmental impact of JBLM's proposed action to construct a new wastewater treatment plant (WWTP) and reclaimed water distribution system (RWDS) extending from the new plant throughout the installation.

The purpose of the action is to provide the necessary sewage treatment capability to improve water quality discharges into Puget Sound, reduce on-base potable water consumption by 2 percent per year by 2015, and to construct a state-of-the-art facility that will meet federal water quality regulatory and sustainability requirements on JBLM.

The need for the Proposed Action is to improve the quality of wastewater leaving the installation with the construction of a new WWTP that will eliminate or reduce the permit exceedances that have occurred place with the outdated Solo Point WWTP. There is a need

to reduce the amount of wastewater and improve the quality of discharge into Puget Sound, and to provide a new source of water for irrigation and industrial facilities. The Solo Point WWTP has resulted in 18 permit exceedances since 2009, and is projected to fail in 5 to 7 years.

The EA covers all plant and animal species that occur within the action area. Marine species are of interest because of the WWTP outfall and impacts from discharge into Puget Sound. Endangered, threatened, and candidate species that were identified as likely or potentially present in the action area include bull trout, Chinook salmon, steelhead, Pacific eulachon, canary rockfish, yelloweye rockfish, bocaccio, marbled murrelet, streaked horned lark, and southern resident killer whale.

#### **Summary of specific recommendations or conclusions**

- Both action alternatives would result in similar effects to resources and meet the project purpose and need.
- All effects could be readily mitigated through avoidance and careful project design, and mitigation measures and best management practices (BMPs) are listed.
- Neither of the action alternatives would result in significant, unmitigatable adverse impacts; however, under the Preferred Alternative mitigation measures would be required to compensate for adverse effects to water, biological resources, and cultural resources. Adverse effects to soils would be mitigated through the National Pollutant Discharge Elimination System (NPDES) compliance process. The effects determination for the Preferred Alternative cannot be completed until subsequent National Environmental Policy Act (NEPA), Section 106, and Section 7 consultation is completed for the RWDS and outfall construction to ensure planned activities are consistent with the programmatic assumptions outlined in the EA.
- Implementation of Alternative B would reduce identified impacts, including significant impacts (including water quality) that were identified in the No Action Alternative to acceptable levels. Therefore, an Environmental Impact Statement (EIS) is unnecessary for implementation of Alternative B, and a Finding of No Significant Impact (FONSI) is appropriate.

### **8.6. Summary of Threatened and Endangered Anadromous Fish and Habitats**

The study area contains habitat for a variety of listed anadromous fish species. These include the threatened Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*), threatened Puget Sound steelhead trout (*O. mykiss*; Coastal-Puget Sound Distinct Population Segment [DPS]), and threatened bull trout (*Salvelinus confluentus*).

The north portion of JBLM provides habitat for outmigrating juvenile and in-migrating adult anadromous salmonids using the Nisqually River to the south and Chambers Creek to the north. Most spawning of Chinook near JBLM occurs in the mainstem of the Nisqually River.



Principal spawning months are July through September. The Nisqually River has both winter- and summer-run steelhead. Bull trout have been observed in the Nisqually River, which passes through JBLM, although not in large numbers; most likely foraging fish.

In addition to anadromous fish in the study area, a number of listed marine fish species exist in Puget Sound adjacent to JBLM:

- Pacific eulachon (*Thaleichthys pacificus*; Southern DPS) – Threatened
- Canary rockfish (*Sebastes pinniger*) – Threatened
- Yelloweye rockfish (*Sebastes ruberrimus*) – Threatened
- Boccacio (*Sebastes paucispinis*) – Endangered

Two of the primary factors responsible for the decline of the three rockfish species are habitat degradation and water quality problems, including low dissolved oxygen and elevated contaminant levels.

Rocky habitat utilized by these species is threatened by, or has been impacted by, derelict fishing gear, construction of bridges, sewer lines and other structures, deployment of cables and pipelines, and burying from dredge spoils and natural subtidal slope movement. Shoreline development along the Puget Sound is a factor.

Inputs of toxic chemicals into Puget Sound are a concern, as are sewage, animal waste, and nutrient inputs. Rockfish typically move out of areas with low dissolved oxygen, but may be killed if periodic surges of low dissolved oxygen occur.

#### **Puget Sound Water Quality Issues**

Nutrient loads, particularly nitrogen, have been identified as a potential stressor to the Puget Sound ecosystem. Low dissolved oxygen is a consequence of excessive nutrient loads. Nitrogen sources in the Puget Sound region include WWTPs and rivers that discharge directly into the Sound. On-site septic systems are another source of nutrient loads.

In South Puget Sound, rivers contribute 65% of dissolved inorganic nitrogen (DIN) annually. During the summer, rivers contribute 37% while WWTPs contribute 63%. Nutrient loads from Central Puget Sound, with inputs from more highly developed watersheds, may also impact SPS water quality. WWTP discharges within the study area come from: Chambers Creek, JBLM, McNeil Island, Boston Harbor, Seashore Villa, LOTT, Tamoshan, Carlyon Beach, Shelton

## 9. Summary of Stakeholder and Public Input

### 9.1. Stakeholder and Subject Matter Expert Interview Input

Stakeholder and subject matter expert (SME) interviews were conducted between May and August 2014 to gather input on a variety of topics. Interviews were conducted in person or by phone with JBLM representatives, representatives for landowners, government officials, elected officials, environmental interests, and economic development organizations. A small group meeting was also conducted with members and staff of the Nisqually Indian Tribe.

Interviewees were asked to provide their input on:

- Desired outcomes from the JLUS.
- Organizational goals and priorities.
- Communication needs and experiences.
- Policy and regulation changes.
- Data needs for the study.

Interviewees cited a wide variety of themes and issues, which are summarized below. Because of the large area influenced by JBLM and the different characteristics of each community, many of the topics tended to be geographically and community-specific. Even comments on major JLUS topics such as urban encroachment, endangered species, noise, and land uses in the McChord Airfield NCZ appear directly related to the commentor's proximity to specific activities on the installation.

Interviews were conducted with the following:

#### **JBLM**

- Mike Barton, JBLM Real Estate Office
- Vince Bozick, JBLM Directorate of Public Works (DPW) Master Planning Division
- Robert Bright, Directorate of Plans, Training, Mobilization, and Security (DPTMS), Gray Army Airfield Operations
- Scott Byrd, JBLM Directorate of Human Resources (DHR)
- Sallie Donahue, DPW Business and Operations Integration Division
- Jeff Foster, JBLM DPW Environmental Division
- Nathan Harber, JBLM DPW Master Planning Division
- Tom Knight, JBLM HQ, Chief of Staff
- Hal Nelson, DPTMS, Range Support
- John Norgren, JBLM HQ Public Affairs Office (PAO)
- Joe Piek, JBLM HQ PAO
- Eileen Rodriguez, 62nd Airlift Wing, Airfield Manager
- Stephanie Sparks, DPW Environmental Division (contractor)

#### **Elected and other City Officials**

- Don Anderson, City of Lakewood Mayor
- Shelly Badger, Yelm City Administrator
- John Caulfield, City of Lakewood City Manager
- Michael Grayum, City of DuPont Mayor

- Ron Harding, City of Yelm Mayor
- Ron Lucas, Town of Steilacoom Mayor
- Pat McCarthy, Pierce County Executive
- Dan Roach, Pierce County Council Chair
- Sandra Romero, Thurston County Commissioner, District 2
- Andy Ryder, City of Lacey Mayor
- Marilyn Strickland, City of Tacoma Mayor
- Karen Valenzuela, Thurston County Commissioner, District 3
- Cathy Wolfe, Thurston County Commissioner, District 1

#### **Agency Representatives**

- Rob Allen, Pierce County Economic Development Department
- Jeremy Davis, Thurston County Long Range Planning Division
- Kristiné Reeves, Washington State Department of Commerce

#### **Environmental Issues Subject Matter Experts**

- Hannah Anderson, Center for Natural Lands Management (CNLM)
- Patrick Dunn, CNLM
- Justin Hall, Nisqually River Foundation
- Lance Winecka, South Puget Sound Salmon Enhancement Group (SPSSEG)
- Heather Burgess, land use attorney representing property owners

#### **Tribes**

- Nisqually Indian Tribe

#### **Critical Takeaways**

Following are the most critical takeaways from the stakeholder and SME interviews, based on the comments raised by multiple interviewees or because of a qualitative statement of importance made by an interviewee.

- Cooperative efforts among multiple stakeholders (i.e., JBLM, local governments, other government agencies, nonprofits, and private landowners) will be critical for solving issues facing the region, including but not limited to habitat conservation and transportation.
- JBLM has done a good job of improving its communication with the community and has been a proactive partner for habitat conservation and other initiatives. It is vital that communication and partnerships are maintained and continually improved.
- The need for protection of prairie habitat for threatened and endangered species is the most important issue facing Thurston County right now.

Other comments are summarized by topic below.

#### **Stakeholder Recommendations**

- The JLUS process could help in formalizing public outreach and coordination among governments
- The JLUS could recommend that Lakewood follow Pierce County's process of notification for towers and development.

- More cooperation is needed. Protection/restoration of prairie species is not limited to ACUB Program efforts. Development also needs to be managed with threatened and endangered species in mind.

#### **Military Airspace and Operations**

- Airspace capacity is constrained for both manned and unmanned military aircraft. Given the current airspace capacity, and the complex requirements of both civilian and military airspace, the scheduling of military flights is a challenge.
- Vegetation is lifting the fence on the east side of McChord Field, allowing animals in, especially deer, coyote, and rabbits. This poses a safety challenge to military flight operations.
- McChord Airfield has an active Bird/Wildlife Aircraft Strike Hazard (BASH) program to manage risks from conflicts between birds and wildlife and aircraft operations.
- As trees on properties adjacent or near to McChord Field grow taller, there is the potential for them to obstruct takeoff and landing operations. A survey and risk assessment, and ultimately trimming, may be required in both McChord Field clear zones.

#### **Communications and Coordination**

- JBLM provides monthly community briefings to Lacey, Lakewood, Tacoma, and Sumner, as well as Military Affairs Committee briefings. A command representative provides annual updates to Chambers of Commerce and City Councils.
- JBLM PAO hosts a Facebook town hall every 6 months, largely attended by military spouses.
- Public education regarding habitat conservation efforts is important. People need to know that protection of threatened and endangered species benefits JBLM, which is a huge benefit to the regional economy.
- Pierce County, Tacoma, and Lakewood all give notice to JBLM of cell tower and development applications. JBLM provides comments and recommendations if these have the potential to obstruct aircraft operations or pose other safety hazards.
- Surrounding communities would benefit from advance knowledge about JBLM land use and capital facilities planning.
- The relationship between CNLM and JBLM's higher headquarters, Installation Management Command (IMCOM), offers room for improvement.
- Conservation efforts on JBLM would benefit from better integration and coordination with the training function at JBLM.
- The effort required by civilians to reach the appropriate JBLM staff member to address an issue is often arduous. Frequent leadership changes at JBLM add an additional challenge to coordination efforts.
- Homeowners associations should be included in outreach and coordination activities.
- Public schools in surrounding communities miss out on funding when military families fail to notify administration of their military status when registering students.
- People living near JBLM would benefit from better education about the military's mission and operations.



### **McChord Airfield North Clear Zone**

- The JLUS is viewed as a beneficial process for providing an outside look at zoning, particularly in the NCZ and APZs.
- McChord Field is currently operating with waivers to Clear Zone standards.
- McChord Air Field's NCZ is unique, being valuable industrial land, not farmland. With no alternative uses, the property's value is in its development potential. This increases the cost and difficulty of acquiring Clear Zone properties.
- Changes in REPI policies and funding levels have slowed the momentum to acquire properties in the Clear Zone.
- Without additional funding, few options are available for resolving the NCZ land use conflict.

### **Noise Impacts**

- Noise issues that arose from changing helicopter operations were quickly resolved.
- Military flight patterns are designed in part to diminish noise impacts on surrounding communities.
- JBLM PAO generally provides 1–2 weeks advance notice of activities to a standing list that includes the Olympian, Nisqually Valley News and Suburban Times newspapers, the offices of mayors in surrounding cities, and 911 dispatch centers.
- The threshold for public notification of potentially noise-generating military activities is large-impact activities (e.g., howitzers, range clearance, "Osprey" aircraft deployments), not small explosives, mortars, or small arms.
- Sustained artillery fire and sustained training at night generate the most complaints. Ammunition less than 120mm does not.
- Noise complaints to the JBLM PAO mostly come from communities to the south and east, which are closer to major training areas: Roy, Yelm, Lacey, and Olympia.
- The Joint Base Commander must approve any noise-generating activities planned to occur between 11:00 pm and 7:00 am. Fortunately, the sun sets early for many months, so required night training can often be concluded before 11:00 pm.
- JBLM will likely conduct more smaller unit training in the foreseeable future. However, shrinking military budgets may mean that more large-scale training exercises will occur at JBLM to avoid the costs of transporting troops and equipment to Yakima.

### **Off-base Community**

- 9,000 military personnel will be separating from active duty in the next couple of years. In 2013, one-third of those separating stayed in Washington State.
- 32,064 military retirees currently live within 40 miles of JBLM and use the installation for services.
- Workforce development activities at JBLM assist with those transitioning to the private sector. Efforts also include building partnerships with other service providers and industries needing skills sets that military personnel have, such as law enforcement, security, construction, aerospace manufacturing, and cyber-security.
- JBLM duty officers embed with Lakewood and Tacoma police departments on Friday and Saturday as part of a mutual aid agreement.
- JBLM and surrounding communities would benefit through coordinated planning of utility services, emergency management, and community facilities, such as libraries,

pools, veteran services, community centers, sports fields, etc.

### **Threatened and Endangered Species and Habitat**

- The biggest environmental issue facing Thurston County is protecting the thousands of acres of prairie habitat inhabited by the listed gopher species.
- Endangered species listings are affecting the base and surrounding properties.
- The pocket gopher listing will most directly impact private landowners.
- Listed species are a potential threat to training readiness at JBLM, if not managed effectively.
- Challenges to listed-species recovery efforts include habitat fragmentation, lack of consistent funding, and finding landowners who are willing sellers.
- Successful conservation efforts benefit all landowners as well as JBLM.
- The ACUB program is a partnership formed to address encroachment issues. Partners include JBLM, WDFW, WDNR, Department of Corrections, private partners, and non-profits.
- ACUB funds the Sentinel Landscapes pilot program. Activities on lands that JBLM currently has under ACUB/Sentinel Landscapes focus on restoration, bringing back native prairie elements, reintroducing prescribed fire, incorporating specific habitat structure and plants for butterflies, and the reintroduction of species.
- Bald eagle nests in the vicinity of JBLM, particularly along the Nisqually River, are very productive due to restrictions during their breeding season and predators being scared off by noise in the surrounding area.
- Environmental groups have a positive relationship with JBLM in working toward preservation of habitat.
- CNLM is currently developing BMPs for preserving habitat on agricultural lands.
- Preventing agricultural land from conversion to urban development helps preserve gopher habitat as ranchers typically provide good habitat stewardship. For example, with proper rotation, livestock grazing can rejuvenate soil to the benefit of gophers and butterflies.
- The Thurston County Habitat Conservation Plan (HCP), being developed in consultation with the USFWS, kicked-off in July 2014. A draft plan targeting 14–15 species is anticipated in early 2015.
- Thurston County is developing a prairie habitat assessment methodology that will include a credit/debit system to identify mitigation requirements for development proposals. It will not be finalized until the HCP is complete.
- Thurston County has a conservation futures fund, funded through excise taxes on real estate, that provides funds to acquire property with critical habitat. Funds are used in partnership with the Capitol Land Trust, Nisqually Land Trust, and CNLM. However, these funds cannot be used for maintenance of acquired lands.
- There is an opportunity to make use of existing public lands not currently considered as habitat for listed species (e.g., Fort Steilacoom Park, historically a native prairie).
- Sequatchew Creek, with headwaters on JBLM, has a watershed restoration plan stemming from a settlement agreement related to the expansion (in 2007) of the Cal Portland mine in DuPont. Beaver dams and shallow wells reduce flow and stormwater contaminate the creek, compromising habitat for migrating salmon. Beaver management, deeper wells, and replacing culverts with weirs can all improve

the situation. For these activities to be effective, active participation is required by many entities: JBLM, DuPont, Ecology, Pierce County, Cal Portland, and the SPSSEG.

- Reed canary grass in Maury Creek (near McChord Field) restricts its water flow.
- Restoration efforts can sometimes be complicated by regulations. For example, the DuPont CAO prohibits certain modifications of waterways that would assist with restoration activities. Permitting requirements, such as habitat protection areas (HPAs), present additional challenges.
- The need for regulatory certainty is part of the species and habitat challenge.

#### **Training Land**

- Daily range use is prioritized for military activities; then environmental needs; scheduled family Morale, Welfare, and Recreation (MWR) activities; and lastly unscheduled MWR activities. A recorded message identifies which areas are open.
- Compatible public activities are authorized on military lands. Incompatible activities, like rifle hunting, have to be scheduled to avoid conflicts.
- The habitat protection for listed species may require the closure of more popular recreation areas.
- Though artillery impact areas are not fenced off, signs effectively discourage trespassing — not many people wander into impact areas. Outside of impact areas, a lot of unauthorized use occurs on training lands. The most prevalent trespassers on JBLM training lands are people dumping garbage and people participating in recreational activities that are either prohibited outright, or that have not been granted conditional approval by JBLM.

#### **Transportation**

- Traffic is a major concern on and off base. Population off base continues to grow.
- Off-base issues generally involve the I-5 corridor, with most focused on congestion during commuting hours.
- The I-5 corridor work may affect JBLM property, depending on the selected option. It may also impact the historic building currently housing the Family Resource Center on JBLM.
- DoD is bringing more activities on base to reduce off-base traffic associated with JBLM.
- The Point Defiance rail bypass proposal would dramatically increase rail traffic through the region, could have a significant impact on overall mobility in the area, and may affect rail operations on JBLM.
- A dedicated shuttle or transit system from local communities onto JBLM may help reduce congestion.
- Traffic complaints to the JBLM PAO mostly come from DuPont, Lakewood, Tacoma, and Lacey.

#### **Urban Growth**

- Development pressure in Thurston County presents a long-term challenge, as many military retirees choose to stay in the county while species and habitat restoration programs limit development.
- Land use in unincorporated Thurston County near the base is zoned for rural residential at one home per 1–5 acres, or zoned for agriculture. Rezoning to a lower

density (downzoning) would be considered if best available science showed doing so would produce some environmental benefit, but currently that is not the case.

- An ongoing lawsuit through the Growth Management Hearings Board contends that Thurston County zoning has too much density.
- I-5 improvements could stimulate more development, which may exacerbate current issues.

## **9.2. Community Participation**

The SSMCP hosted its first round of three public meetings about the JBLM JLUS in late June 2014. A project website was also launched prior to the public open houses to provide information and gather comments. The following points are a summary of comments from those sources.

### **Transportation**

- Congestion and increased travel times on the I-5 corridor affect everyone in the region and heavily impact local economies. A cross-base highway could alleviate some of the congestion but could also funnel even more traffic to I-5. Several participants oppose the cross-base highway because of environmental or base security reasons.
- Many members of the public would like to see a balanced transportation approach that incorporates an improved transit system (though they acknowledge the challenges of a currently dispersed ridership). More connectivity between cities along the corridor may help to stimulate a higher demand.

### **Growth around the Joint Base**

- JBLM benefits the local economy by improving the regional tax base and providing job opportunities, including those for military spouses and families.
- Commercial development on base needs to be balanced in such a way that community businesses off base are not harmed.
- New development should be of high quality so as to improve quality of life for residents in the surrounding communities. Too much development that could change the small town feel of DuPont was a concern.
- Growth should not be allowed to compromise the natural beauty benefits of the area or the revenue generated from environmental tourism.
- Opportunities for partnerships between the base and surrounding communities to collaborate on recreation and social service facilities should be explored.

### **Environmental Issues**

- In general, participants believe the base is currently doing a good job of being a responsible environmental steward.
- It is essential to preserve critical areas both on and off the base, with emphasis placed on coordination between cities, counties, and the base. Environmental issues, however, need to be balanced with the military mission.
- More effective methods are needed to mitigate surface water runoff that contains contaminants coming from traffic on I-5 and jet fuel emissions, and to address the issue of water availability in the Yelm UGA.
- Garry oak habitat, which does not have a federal endangered species act designation, was not shown on the meeting exhibits; however, this habitat is considered sensitive by the



State of Washington, and the JLUS should address impacts on this habitat.

### **Off-Base Impacts**

- Most attendees stated their opinion that, when people move near a base, they need to acknowledge that impacts come with that decision. Most participants said they are willing to live with the impacts because of the need for military training and readiness; however, real estate disclosures of potential impacts on nearby properties should be required.
- Most said the noise from explosions and helicopters is tolerable. To some, the sound of military helicopters means active training and equates to protection. Most also give credit to the base for following the flight plans and guidelines that limit impacts on the surrounding communities. Others are unclear as to why helicopters are flown down I-5 or need to travel over adjacent civilian property, given that helicopters do not require the large turning radius that airplanes do.
- The McChord Field NCZ presents mixed challenges. Many believe there should be no development near McChord in order to preserve the functions of the base and protect civilians from potential accidents. However, some current business owners in the McChord Field NCZ would like to stay where they are as it is a good location for their business. Some have also experienced financial challenges when trying to sell property in the NCZ because of the location.

### **Other Topics**

- Recreational access to the range was of particular interest to the Back Country Horsemen. Past trail riding opportunities to preferred areas were closed in 2012 due to increased helicopter use of the training area. Access for general recreation, hunting, and firewood gathering was also of interest, and recommendations were made for improving the relationship.
- There is interest in advance knowledge about growth fluctuations at the base to enable surrounding communities to better plan for changes.
- Two way communication between the base and communities was viewed as important and ensures that cities and counties feel heard.
- The SSMCP was noted for doing a good job facilitating communication and coordination of communities surrounding the base.
- Quality social and health services were viewed as critical to have within the community, and concern was expressed that health services are not keeping pace with current demand.



# Joint Base Lewis-McChord (JBLM) Joint Land Use Study (JLUS)



## *Implementation Plan*



October 2015

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# Implementation Plan

## 1. Overview

Based on the review and guidance of the TWG and SSMCP JLUS Subcommittee, a preliminary list of implementation strategies was developed, refined, and prioritized, resulting in an actionable Implementation Plan. The Implementation Plan contains details such as the timing, order of magnitude costs, potential funding sources, lead and partner jurisdictions/agencies/organizations, and supporting background information such as model ordinances.

The Implementation Plan is intended as a series of tools that the local jurisdictions and JBLM can choose to adopt during the implementation phase of the JLUS process. All of the entities participating in the JLUS retain the responsibility of selecting those compatibility tools that best reflect the specific issues, concerns, and needs of each stakeholder.

The Implementation Plan comprises the following 22 strategies:

**Table 1. Implementation Strategies.**

Strategy #	Strategy
1	Establish an ongoing JLUS implementation entity
2	Incorporate compatibility in updates of local Comprehensive Plans
3	Analyze local transportation impacts
4	Increase outreach by military partners in the community
5	Share information about JBLM and activities among internal and external stakeholders
6	Enhance system of notification and communication with public stakeholders to prevent unauthorized use and improve communications on authorized uses
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions
8	Maximize use of existing financial incentives to encourage preservation of open space and working lands

**Table 1. Implementation Strategies (continued).**

<b>Strategy #</b>	<b>Strategy</b>
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.
11	Pursue additional conservation partnering opportunities through Readiness and Environmental Protection Initiative (REPI)/Army Compatible Use Buffer (ACUB), and the Sentinel Landscapes partnership
12	Expand the federal role in habitat conservation efforts
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings
14	Support state designations of an area of Regional Military Influence (RMI) or Area of Critical State/Local Concern and Interest
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.
17	Pursue federal or state funding for resolution of encroachment issues
18	Real estate tools - disclosures, deed restrictions, hold harmless agreements
19	Avoid overflight of noise sensitive areas and residential areas, when feasible
20	Enact or amend state-level legislation to promote land use compatibility around military installations

**Table 1. Implementation Strategies (continued).**

<b>Strategy #</b>	<b>Strategy</b>
21	Promote analysis of military economic impact in state-wide planning processes
22	Expand conservation banking through Thurston County.

The sections that follow contain a summary table of all implementation strategies, an implementation strategy table indicating the geographic applicability of each strategy, jurisdiction-specific action plans, and sample documents intended to aid jurisdictions in implementing the recommended strategies.

## 2. Implementation Strategy Summary

A variety of strategies could be employed to mitigate the existing or potential land use incompatibilities noted in the preceding analysis. The tables that follow contain a preliminary set of possible strategies that mitigate for existing incompatibility and ensure compatible future development.

Table 2 summarizes the set of implementation strategies and includes action steps and examples; identification of lead and partner organizations, phasing (near-, mid-, and long-term), order of magnitude cost, and any background documents contained in the appendices. The strategies are ordered according to phasing.

The phasing contained in this Implementation Plan is broken down as follows:

**Near:** Less than 1 year from JLUS adoption

**Mid:** 1 to 3 years from JLUS adoption

**Long:** 3 to 5 years or longer from JLUS adoption

For the purposes of this Implementation Plan, the order of magnitude costs are defined as follows:

- \$ -** Generally requires staff time, minor budget impacts, and/or use of existing funding sources.
- \$\$ -** More substantial or new funding required, such as to hire a consultant to complete a study.
- \$\$\$ -** Significant and/or ongoing investment for endowments, property acquisition, or capital projects.



Table 2. Implementation Strategy Summary.

Strategy #	Strategy	Actions/Examples	Lead/Partners	Timeframe	Order of Magnitude Cost	Potential Funding Sources	Supporting Documents/Data
1	<b>Establish an ongoing JLUS implementation entity</b>	<ul style="list-style-type: none"> <li>Build on current SSMCP structure and ongoing regional outreach partnerships</li> <li>Create an implementation body to advocate for adoption of recommended compatibility measures and promote continued dialogue</li> <li>Umbrella organization chartered, empowered and funded to support multi-jurisdictional, regional land use planning and track progress on JLUS actions</li> </ul>	<i>Lead:</i> SSMCP Steering Committee	Near	\$	OEA	
2	<b>Incorporate compatibility in updates of local Comprehensive Plans</b>	<ul style="list-style-type: none"> <li>Incorporate updates during next comprehensive plan update cycle</li> <li>Include references to compatibility with installations, maps, recommendations, and strategies resulting from JLUS</li> <li>Define and establish Areas of Influence to form the basis of overlay districts</li> <li>Regulations would specify development characteristics, such as land use type, density, height etc.. as appropriate to maintain compatibility with the operational impacts experienced in the designated area</li> <li>Often used in conjunction with specific and defined planning zones, such as noise contours or airport accident potential zones</li> <li>Can be broadly defined as a Military Influence Area Overlay that combines other communication and performance based standards, such as real estate disclosure and joint consultation procedures or sound attenuation of buildings and airport hazard related standards</li> <li>Address compatibility issues in Countywide Planning Policies (CWPPs)</li> <li>Address compatibility issues during regular comprehensive plan and UGA updates (i.e., 10 year comp plan updates, annual docket)</li> </ul>	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area	Near	\$\$	OEA	Appendix A: Sample Comprehensive Plan Policy Language

Table 2. Implementation Strategy Summary (continued).

Strategy #	Strategy	Actions/Examples	Lead/Partners	Timeframe	Order of Magnitude Cost	Potential Funding Sources	Supporting Documents/Data
3	Analyze local transportation impacts	<ul style="list-style-type: none"> <li>Conduct a joint transportation study with a focus on the local civilian circulation network and impacts of gates</li> <li>Using existing data contained in current I-5 corridor analyses, identify local action steps and develop an implementation program</li> <li>Consider health impacts related to transportation</li> </ul>	Lead: SSMCP Partners: WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments	Near	\$	OEA, State of Washington	Appendix E: Transportation Study Outline
4	Increase outreach by military partners in the community	<ul style="list-style-type: none"> <li>Build on outreach efforts of the SSMCP</li> <li>Promote understanding of military mission, operations, and benefits to community and build support for compatibility strategies and increased cooperation</li> <li>Use of web sites, brochures, briefings, and other media to increase awareness of military activities, mission, and economic impacts</li> <li>Conduct additional community outreach on military operations and mission to promote visibility of the military</li> <li>Publication of training schedules or advanced notice of operations when feasible</li> <li>Conduct quarterly or semi-annual briefings by military representatives at city or at city council/county commission meetings</li> <li>Other examples are: briefings to community groups; on-installation visits and "field trips" for the public; periodic press releases or media events about mission and economic impacts; testing and training demonstrations for the public</li> <li>Compile comprehensive notification lists and expand methods to reach a wider range of affected parties about noise or other mission-related events, including fliers, social media, and texts</li> <li>Develop online and printed information to highlight military activities, missions, and economic impacts</li> </ul>	Lead: JBLM Partners: SSMCP	Near	\$\$		

Table 2. Implementation Strategy Summary (continued).

Strategy #	Strategy	Actions/Examples	Lead/Partners	Timeframe	Order of Magnitude Cost	Potential Funding Sources	Supporting Documents/Data
5	Share information about JBLM and activities among internal and external stakeholders	<p><b>Participate in a Memorandum of Understanding for joint consultation and information sharing among decision-makers</b></p> <ul style="list-style-type: none"> <li>Formalizes and expands existing procedures regarding notification and consultation/coordination between military, community, local governments, land owners and land managers on projects, policies, and activities</li> <li>Establishes clear points of contact in local, state, federal and DoD agencies</li> <li>Create and maintain a "bi-directional" guidebook that identifies points of contact on JBLM and within local communities.</li> <li>Reinforce SSMCP's role as liaison between JBLM and communities.</li> <li>JBLM pursue funding to hire Community Plans Liaison Officer.</li> <li>Use the PCRC as the Pierce County forum for liaison and information</li> <li>Create a web-based feature linked to available GIS to enable parcel- or lot- specific searches that identify if a property falls within a sensitive area, such as a noise zone or APZ</li> </ul> <p><b>Develop an internal web-based tool to facilitate project/plan review among internal stakeholders</b></p> <ul style="list-style-type: none"> <li>Internal data clearinghouse that enables GIS sharing, data upload, and comment of posted projects and initiatives</li> <li>May also include additional information on mission activities, such as training schedules or other updates</li> </ul>	Lead: SSMCP Partners: JBLM; Nisqually Tribe; Local, County, and Regional governments	Near	\$\$		Appendix D: Sample Project Notification MOU
6	Enhance system of notification and communication with public stakeholders to prevent unauthorized use and improve communications on authorized uses	<ul style="list-style-type: none"> <li>Enhance notification system for public users accessing range lands</li> <li>Increase awareness through better signage, mapping and public education strategies</li> <li>Provide for periodic outreach to public user groups to explain access management process and current status</li> <li>Encourage informal "eyes and ears" by users to keep training lands free of garbage or illegal uses via communication with Range Control</li> </ul>	Lead: JBLM	Near	\$		

Table 2. Implementation Strategy Summary (continued).

Strategy #	Strategy	Actions/Examples	Lead/Partners	Timeframe	Order of Magnitude Cost	Potential Funding Sources	Supporting Documents/Data
7	<b>Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions</b>	<p><b>Establish or strengthen permitting process for structures that could pose risks to aviation operations</b></p> <ul style="list-style-type: none"> <li>Permitting and/or notification process to coordinate or guide placement and design of structures such as renewable energy and telecommunications infrastructure</li> <li>Encourage collocation of cellular towers</li> <li>Incorporate height/marking standards for structures in MTRs</li> <li>Work to ensure that infrastructure below 200 feet in height are adequately marked for air traffic safety</li> <li>Create GIS layers to help trigger need for notification</li> </ul> <p><b>Promote pre-planning and review of major new proposals among JLUS internal stakeholders</b></p> <ul style="list-style-type: none"> <li>Includes DoD, local, regional, state, and federal projects</li> <li>Must set criteria for the scale or type of action warranting referral</li> <li>Includes referral of local development and subdivision applications to military installation for advisory review/comment</li> <li>Include JLUS stakeholders in review of countywide planning policies</li> </ul> <p><b>Promote formal participation of military representatives on local planning boards and commissions</b></p> <ul style="list-style-type: none"> <li>Military representatives participate as non-voting member of local coordinating bodies such as the Pierce County Growth Management Coordinating Committee</li> </ul>	Lead: SSMCP Partners: JBLM; Nisqually Tribe; Local, County, and Regional governments	Mid	\$		Appendix D: Sample Project Notification MOU
8	<b>Maximize use of existing financial incentives to encourage preservation of open space and working lands</b>	<ul style="list-style-type: none"> <li>Use Washington State Current Use Property Tax Assessment program as incentive for conservation</li> <li>Conservation Futures funding</li> <li>Other examples at the state-level include the Williamson Act in California that enable local governments to enter into contracts with private landowners for the purpose of restricting land to agricultural or related open space use in return for lower property tax assessments</li> </ul>	Lead: Thurston County, Pierce County	Mid	\$		



Table 2. Implementation Strategy Summary (continued).

Strategy #	Strategy	Actions/Examples	Lead/Partners	Timeframe	Order of Magnitude Cost	Potential Funding Sources	Supporting Documents/Data
9	<b>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</b>	<ul style="list-style-type: none"> <li>Regulations would specify development characteristics, such as land use type, density, height etc.. as appropriate to maintain compatibility with the operational impacts experienced in the designated area</li> <li>Often used in conjunction with specific and defined planning zones, such as noise contours or airport accident potential zones</li> <li>Can be broadly defined as a Military Influence Area Overlay that combines other communication and performance based standards, such as real estate disclosure and joint consultation procedures or sound attenuation of buildings and airport hazard related standards</li> </ul> <p><b>Evaluate policy and zoning options to promote infill and mixed use development to guide denser growth into established centers and away from sensitive areas</b></p> <ul style="list-style-type: none"> <li>Used to guide or incentivize growth away from peripheral areas that are likelier to experience military operational impacts due to proximity to installations</li> </ul> <p><b>Promote site planning and design guidelines to reduce Bird Aircraft Strike Hazard (BASH)</b></p> <ul style="list-style-type: none"> <li>Develop standards to minimize the attraction of birds near the airfield environs or in low-level flight corridors</li> <li>Typically includes standards for uses that can attract birds, such as detention ponds, sanitary landfills, crops etc...</li> <li>Coordinate with state and federal entities on aviation impacts to bird species at wildlife refuges and other natural areas in the region</li> </ul>	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments	Mid	\$\$		Appendix B: Sample Development Regulations
10	<b>Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.</b>	<ul style="list-style-type: none"> <li>Provide GIS noise and safety zone layers to permitting staffs so they are clear on property maps</li> </ul>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments	Mid	\$\$		Appendix B: Sample Development Regulations

Table 2. Implementation Strategy Summary (continued).

Strategy #	Strategy	Actions/Examples	Lead/Partners	Timeframe	Order of Magnitude Cost	Potential Funding Sources	Supporting Documents/Data
11	<b>Pursue additional conservation partnering opportunities through Readiness and Environmental Protection Initiative (REPI)/Army Compatible Use Buffer (ACUB), and the Sentinel Landscapes partnership</b>	<ul style="list-style-type: none"> <li>Enables the military to enter into agreements with non-federal entities and land owners to secure conservation easements on property near a military installation or military airspace</li> <li>Pursue opportunities for additional partnerships, such as the Prairie Conservation Bank</li> <li>USDA is a partner in the Northwest Rangelands Trust and can manage easements on agricultural lands</li> </ul> <p><b>Explore use of purchase of development rights (PDR) or transfer of development rights (TDR) to promote compatibility</b></p> <ul style="list-style-type: none"> <li>Transaction separates development rights from the land in exchange for compensation</li> <li>Land remains in a low intensity use, therefore maintaining compatibility</li> <li>Acquisition of development rights associated with agricultural lands is one of the most common types purchases</li> <li>REPI is one funding mechanism to achieve purchase of rights; or establish Military Installation Fund (MIF)</li> </ul>	<i>Lead:</i> JBLM <i>Partners:</i> Thurston County	Mid	\$	REPI/ACUB	
12	<b>Expand the federal role in habitat conservation efforts</b>	<ul style="list-style-type: none"> <li>Establish endowments for the ongoing maintenance of conservation lands in perpetuity</li> </ul>	<i>Lead:</i> JBLM	Mid	\$\$		
13	<b>Promote sound attenuation building standards and/or energy efficiency practices in new buildings</b>	<ul style="list-style-type: none"> <li>Encourage the adoption of more energy efficient development as a means to achieve complementary indoor sound reduction in new construction</li> <li>Many of the requirements to increase energy efficiency outlined in the 2012 International Energy Conservation Code, for example, align with recognized sound attenuation requirements</li> <li>Identify any additional building design and construction practices to reduce the level of noise that penetrates habitable indoor space</li> <li>Increase awareness among homeowners and builders of sound attenuation and related energy efficiency methods through educational materials</li> <li>SSMCP can take the lead in promoting these practices.</li> </ul>	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments	Mid	\$		Appendix B: Sample Development Regulations

Table 2. Implementation Strategy Summary (continued).

Strategy #	Strategy	Actions/Examples	Lead/Partners	Timeframe	Order of Magnitude Cost	Potential Funding Sources	Supporting Documents/Data
14	<b>Support state designations of an area of Regional Military Influence (RMI) or Area of Critical State/Local Concern and Interest</b>	<ul style="list-style-type: none"> <li>A RMI designates a geographic area to recognize the interdependence of military installations, missions, operating areas and training venues</li> <li>Emphasizes the need for coordinated planning beyond obvious interrelationships between military installations and immediately adjoining neighbors</li> </ul> <b>Pursue designation as Area of Critical State/Local Concern and Interest</b> <ul style="list-style-type: none"> <li>An Area of Critical State Concern is similar to the Regional Military Influence, but more limited and can be designated by either state or local government (PSRC and the Growth Management Policy Board are currently considering whether military facilities should be regionally recognized employment centers in the Vision 2040 and Transportation 2040 frameworks)</li> </ul>	<i>Lead:</i> SSMCP <i>Partners:</i> State of Washington	Mid	\$		
15	<b>Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input</b>	<ul style="list-style-type: none"> <li>Adopt and enforce local dark-sky ordinances</li> <li>Reduce the light pollution interference with training activities by requiring the use of fully shielded, cut-off outdoor lighting applications</li> <li>Down-lighting at all airports and airfields and outdoor stadiums and sport parks</li> <li>Can be required for major new developments (e.g. commercial, industrial uses). Retrofitting can be encouraged</li> <li>Apply restrictions in light influence areas adjacent to sensitive training or operations areas</li> </ul>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments	Mid	\$\$		Appendix B: Sample Development Regulations
16	<b>Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.</b>	<ul style="list-style-type: none"> <li>SSMCP can coordinate discussions</li> <li>Address the results of updated 2015 JBLM Housing Market Analysis</li> </ul>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM	Mid	\$		
17	<b>Pursue federal or state funding for resolution of encroachment issues</b>	<ul style="list-style-type: none"> <li>Pursue OEA, DoD, or other federal funding for additional property acquisition in the McChord north CZ.</li> <li>State contributions to additional studies of encroachment issues</li> <li>State funding of property or easement acquisition</li> </ul>	<i>Lead:</i> SSMCP, JBLM <i>Partners:</i> State of Washington, OEA, DoD	Mid	\$\$\$	DoD, OEA	

Table 2. Implementation Strategy Summary (continued).

Strategy #	Strategy	Actions/Examples	Lead/Partners	Timeframe	Order of Magnitude Cost	Potential Funding Sources	Supporting Documents/Data
18	<b>Real estate tools - disclosures, deed restrictions, hold harmless agreements</b>	<p><b>Adopt or promote real estate disclosure in sensitive areas</b></p> <ul style="list-style-type: none"> <li>Release of information on possible impacts (noise/vibration, air safety zones) to prospective buyers or renters as part of real estate transactions for properties close to test/training impacts</li> <li>Consider requiring recording of a note regarding the location of a parcel/tract within any designated airspace, noise or safety zone. Note appears on title to real property as part of any discretionary development permit, approval, or property transfer</li> <li>Can be mandatory or voluntary disclosure</li> <li>Can be implemented through a local or state-wide mechanism</li> <li>Cal Portland mine redevelopment, Thurston Highlands master planned community</li> </ul> <p><b>Explore use of covenants, easements, and other deed restrictions to promote compatibility</b></p> <ul style="list-style-type: none"> <li>Easements are conditions voluntarily accepted by property owners or purchased by agencies to secure the rights to allow or limit specific property uses or development</li> <li>Avigation easements, for example, are tailored to impacts associated with aircraft overflight and any attendant noise, dust, vibration, etc.</li> <li>These actions are referred to as “less than fee simple” purchase</li> <li>Could also be explored as a condition of subdivision approval</li> </ul> <p><b>Explore use of hold harmless agreements</b></p> <ul style="list-style-type: none"> <li>Legal document between property owner and installation that is recorded with the property title</li> </ul>	Lead: SSMCP Partners: Master Builders Associations	Long	\$		Appendix C: Sample Real Estate Disclosures
19	<b>Avoid overflight of noise sensitive areas and residential areas, when feasible</b>	<ul style="list-style-type: none"> <li>Continue to consider feasibility of re-evaluating and adjusting military flight patterns and training routes to reduce noise exposure on local communities and noise-sensitive areas, in accordance with FAA and DoD policy and criteria.</li> <li>In-brief new commanders on community concerns and sensitive areas</li> <li>Continue coordination based on current AICUZ and IONMP data and recommendations</li> </ul>	Lead: JBLM	Long	\$		



Table 2. Implementation Strategy Summary (continued).

Strategy #	Strategy	Actions/Examples	Lead/Partners	Timeframe	Order of Magnitude Cost	Potential Funding Sources	Supporting Documents/Data
20	<b>Enact or amend state-level legislation to promote land use compatibility around military installations</b>	<ul style="list-style-type: none"> <li>Can be used to mandate real estate disclosure and joint consultation procedures for certain development or land use change actions in specific areas around military installations</li> <li>The Growth Management Act requires that cities and counties not allow incompatible land uses around military installations and requires consultation with installation commanders prior to land use actions – RCW 36.70A.530)</li> </ul>	<i>Lead:</i> SSMCP <i>Partners:</i> State of Washington	Long	\$		
21	<b>Promote analysis of military economic impact in state-wide planning processes</b>	<ul style="list-style-type: none"> <li>Promote inclusion of cost-benefit analysis of military impacts in state-wide planning processes that establish high level priorities for revenue, jobs, and local community economic health and are used to evaluate project proposals and initiatives (The Governor recently established the Washington State Military &amp; Defense Industry Sector to coalesce and communicate the sector and address challenges and opportunities for growth with focus on base realignment and closure)</li> </ul>	<i>Lead:</i> SSMCP <i>Partners:</i> State of Washington	Long	\$		
22	<b>Expand conservation banking through Thurston County.</b>	<ul style="list-style-type: none"> <li>There is a need for additional conservation banks.</li> <li>Provide regulatory certainty to stakeholders with regard to endangered species and habitat protection regulations. For example the Thurston County Habitat Conservation Plan can provide predictability to landowners and other stakeholders.</li> </ul>	<i>Lead:</i> Thurston County <i>Partners:</i> JBLM	Long	\$\$		

### 3. Compatibility Issues

The Implementation Plan has been developed to address the seven core compatibility issues outlined in the JLUS. A variety of tools and strategies may be employed to address each compatibility issue, with some tools or strategies being effective in addressing more than one compatibility issue. The section that follows outlines each of the seven compatibility issues and identifies Implementation Strategies being recommended to address that issue.

#### Communication and Coordination

Strategy #	Strategy	Timeframe
1	Establish an ongoing JLUS implementation entity	Near
2	Incorporate compatibility in updates of local Comprehensive Plans	Near
4	Increase outreach by military partners in the community	Near
5	Share information about JBLM and activities among internal and external stakeholders	Near
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	Mid
14	Support state designations of an area of Regional Military Influence (RMI) or Area of Critical State/Local Concern and Interest	Mid
20	Enact or amend state-level legislation to promote land use compatibility around military installations	Long
21	Promote analysis of military economic impact in state-wide planning processes	Long

## Urban Growth

Strategy #	Strategy	Timeframe
2	Incorporate compatibility in updates of local Comprehensive Plans	Near
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	Mid
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	Mid
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings	Mid
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	Mid
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	Mid
17	Pursue federal or state funding for resolution of encroachment issues	Mid
18	Real estate tools - disclosures, deed restrictions, hold harmless agreements	Long
19	Avoid overflight of noise sensitive areas and residential areas, when feasible	Long
20	Enact or amend state-level legislation to promote land use compatibility around military installations	Long

### Aircraft Safety

Strategy #	Strategy	Timeframe
2	Incorporate compatibility in updates of local Comprehensive Plans	Near
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	Mid
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	Mid
17	Pursue federal or state funding for resolution of encroachment issues	Mid
18	Real estate tools - disclosures, deed restrictions, hold harmless agreements	Long
19	Avoid overflight of noise sensitive areas and residential areas, when feasible	Long

### Military Operational Noise

Strategy #	Strategy	Timeframe
2	Incorporate compatibility in updates of local Comprehensive Plans	Near
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	Mid
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings	Mid
18	Real estate tools - disclosures, deed restrictions, hold harmless agreements	Long
19	Avoid overflight of noise sensitive areas and residential areas, when feasible	Long



### Threatened and Endangered Species and Habitat

Strategy #	Strategy	Timeframe
2	Incorporate compatibility in updates of local Comprehensive Plans	Near
8	Maximize use of existing financial incentives to encourage preservation of open space and working lands	Mid
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	Mid
11	Pursue additional conservation partnering opportunities through Readiness and Environmental Protection Initiative (REPI)/Army Compatible Use Buffer (ACUB), and the Sentinel Landscapes partnership	Mid
12	Expand the federal role in habitat conservation efforts	Mid
22	Expand conservation banking through Thurston County.	Long

### Transportation

Strategy #	Strategy	Timeframe
2	Incorporate compatibility in updates of local Comprehensive Plans	Near
3	Analyze local transportation impacts	Near

### Trespass and Unauthorized Access to JBLM Range and Training Lands

Strategy #	Strategy	Timeframe
2	Incorporate compatibility in updates of local Comprehensive Plans	Near
6	Enhance system of notification and communication with public stakeholders to prevent unauthorized use and improve communications on authorized uses	Near

#### **4. Jurisdiction-Specific Action Plans**

The following section organizes recommended actions by regional partners and divides the suggested measures into near-term (less than 1 year); mid-term (1 to 3 years); and long-term actions (3 to 5 years +).

Table 3 provides a reference matrix that identifies the geographic applicability, and affected jurisdictions for each implementation strategy.

Table 3. Implementation Strategies – Geographic Applicability.

			Affected Jurisdictions															Geographic Applicability							
Strategy #	Strategy	Lead/Partners	JBLM	Nisqually Indian Reservation	State of Washington	WSDOT	PSRC	PCRC	TRPC	Pierce County	Thurston County	DuPont	Lacey	Lakewood	Roy	Steilacoom	Tacoma	Yelm	JLUS Study Area	McChord NCZ	McChord APZ I	McChord APZ II	McChord Imaginary Surfaces	Aircraft Noise Zones	Large Weapons Noise Zones
1	Establish an ongoing JLUS implementation entity	Lead : SSMCP Steering Committee	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X						
2	Incorporate compatibility in updates of local Comprehensive Plans	Lead : Nisqually Tribe; Cities and Counties in JLUS Study Area	X	X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	Analyze local transportation impacts	Lead : SSMCP Partners : WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X					
4	Increase outreach by military partners in the community	Lead : JBLM Partners : SSMCP	X																X						
5	Share information about JBLM and activities among internal and external stakeholders	Lead: SSMCP Partners: JBLM; Nisqually Tribe; Local, County, and Regional governments	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X					
6	Enhance system of notification and communication with public stakeholders to prevent unauthorized use and improve communications on authorized uses	Lead : JBLM	X																X						
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	Lead : SSMCP Partners : JBLM; Nisqually Tribe; Local, County, and Regional governments	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X					
8	Maximize use of existing financial incentives to encourage preservation of open space and working lands	Lead : Thurston County, Pierce County			X					X	X									X					

Table 3. Implementation Strategies – Geographic Applicability (continued).

			Affected Jurisdictions															Geographic Applicability							
Strategy #	Strategy	Lead/Partners	JBLM	Nisqually Indian Reservation	State of Washington	WSDOT	PSRC	PCRC	TRPC	Pierce County	Thurston County	DuPont	Lacey	Lakewood	Roy	Steilacoom	Tacoma	Yelm	JLUS Study Area	McChord NCZ	McChord APZ I	McChord APZ II	McChord Imaginary Surfaces	Aircraft Noise Zones	Large Weapons Noise Zones
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	Lead : Nisqually Tribe; Local, County, and Regional governments		X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	Lead : SSMCP Partners : JBLM; Nisqually Tribe; Local, County, and Regional governments	X	X						X	X	X	X	X	X	X	X	X			X	X	X	X	X
11	Pursue additional conservation partnering opportunities through Readiness and Environmental Protection Initiative (REPI)/Army Compatible Use Buffer (ACUB), and the Sentinel Landscapes partnership	Lead : JBLM Partners: Thurston County	X								X								X						
12	Expand the federal role in habitat conservation efforts	Lead: JBLM Partners: Thurston County	X								X								X						
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings	Lead : SSMCP Partners : Nisqually Tribe; Local, County, and Regional governments		X						X	X	X	X	X	X	X	X	X						X	X
14	Support state designations of an area of Regional Military Influence (RMI) or Area of Critical State/Local Concern and Interest	Lead : SSMCP Partners : State of Washington			X														X						
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	Lead : SSMCP Partners : JBLM; Nisqually Tribe; Local, County, and Regional governments	X	X			X		X	X	X	X	X	X	X	X	X	X	X						



Table 3. Implementation Strategies – Geographic Applicability (continued).

Strategy #	Strategy	Lead/Partners	Affected Jurisdictions																	Geographic Applicability					
			JBLM	Nisqually Indian Reservation	State of Washington	WSDOT	PSRC	PCRC	TRPC	Pierce County	Thurston County	DuPont	Lacey	Lakewood	Roy	Steilacoom	Tacoma	Yelm	JLUS Study Area	McChord NCZ	McChord APZ I	McChord APZ II	McChord Imaginary Surfaces	Aircraft Noise Zones	Large Weapons Noise Zones
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	Lead: SSMCP Partners: JBLM	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X						
17	Pursue federal or state funding for resolution of encroachment issues	Lead: SSMCP, JBLM Partners: State of Washington, OEA, DoD			X														X	X					
18	Real estate tools - disclosures, deed restrictions, hold harmless agreements	Lead: SSMCP Partners: Master Builders Associations					X	X	X											X	X	X	X	X	X
19	Avoid overflight of noise sensitive areas and residential areas, when feasible	Lead: JBLM	X																					X	X
20	Enact or amend state-level legislation to promote land use compatibility around military installations	Lead: SSMCP Partners: State of Washington			X														X						
21	Promote analysis of military economic impact in state-wide planning processes	Lead: SSMCP Partners: State of Washington			X														X						
22	Expand conservation banking through Thurston County.	Lead: Thurston County Partners: JBLM	X								X								X						

## SSMCP Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
1	Establish an ongoing JLUS implementation entity	<i>Lead:</i> SSMCP Steering Committee
3	Analyze local transportation impacts	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
4	Increase outreach by military partners in the community	<i>Lead:</i> JBLM <i>Partners:</i> SSMCP
5	Share information about JBLM and activities among internal and external stakeholders	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments
14	Support state designations of an area of Regional Military Influence (RMI) or Area of Critical State/Local Concern and Interest	<i>Lead:</i> SSMCP <i>Partners:</i> State of Washington

Strategy #	Strategy	Lead/Partners
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM
17	Pursue federal or state funding for resolution of encroachment issues	<i>Lead:</i> SSMCP, JBLM <i>Partners:</i> State of Washington, OEA, DoD

### Long-Term Actions

Strategy #	Strategy	Lead/Partners
18	Real estate tools - disclosures, deed restrictions, hold harmless agreements	<i>Lead:</i> SSMCP <i>Partners:</i> Master Builders Associations
20	Enact or amend state-level legislation to promote land use compatibility around military installations	<i>Lead:</i> SSMCP <i>Partners:</i> State of Washington
21	Promote analysis of military economic impact in state-wide planning processes	<i>Lead:</i> SSMCP <i>Partners:</i> State of Washington

## JBLM Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
3	Analyze local transportation impacts	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
4	Increase outreach by military partners in the community	<i>Lead:</i> JBLM <i>Partners:</i> SSMCP
5	Share information about JBLM and activities among internal and external stakeholders	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
6	Enhance system of notification and communication with public stakeholders to prevent unauthorized use and improve communications on authorized uses	<i>Lead:</i> JBLM

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
11	Pursue additional conservation partnering opportunities through Readiness and Environmental Protection Initiative (REPI)/Army Compatible Use Buffer (ACUB), and the Sentinel Landscapes partnership	<i>Lead:</i> JBLM <i>Partners:</i> Thurston County



Strategy #	Strategy	Lead/Partners
12	Expand the federal role in habitat conservation efforts	<i>Lead: JBLM Partners: Thurston County</i>
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead: SSMCP Partners: JBLM; Nisqually Tribe; Local, County, and Regional governments</i>
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead: SSMCP Partners: JBLM</i>
17	Pursue federal or state funding for resolution of encroachment issues	<i>Lead: SSMCP, JBLM Partners: State of Washington, OEA, DoD</i>

### Long-Term Actions

Strategy #	Strategy	Lead/Partners
19	Avoid overflight of noise sensitive areas and residential areas, when feasible	<i>Lead: JBLM</i>
22	Expand conservation banking through Thurston County.	<i>Lead: Thurston County Partners: JBLM</i>

## Nisqually Indian Tribe Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	<b>Incorporate compatibility in updates of local Comprehensive Plans</b>	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	<b>Analyze local transportation impacts</b>	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	<b>Share information about JBLM and activities among internal and external stakeholders</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	<b>Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
9	<b>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</b>	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
10	<b>Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
13	<b>Promote sound attenuation building standards and/or energy efficiency practices in new buildings</b>	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments

Strategy #	Strategy	Lead/Partners
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

## PCRC Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
5	Share information about JBLM and activities among internal and external stakeholders	<i>Lead: SSMCP Partners: JBLM; Nisqually Tribe; Local, County, and Regional governments</i>

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	<i>Lead: SSMCP Partners: JBLM; Nisqually Tribe; Local, County, and Regional governments</i>
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead: SSMCP Partners: JBLM</i>

### Long-Term Actions

Strategy #	Strategy	Lead/Partners
18	Real estate tools - disclosures, deed restrictions, hold harmless agreements	<i>Lead: SSMCP Partners: Master Builders Associations</i>



## TRPC Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	Incorporate compatibility in updates of local Comprehensive Plans	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	Analyze local transportation impacts	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	Share information about JBLM and activities among internal and external stakeholders	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM

### Long-Term Actions

Strategy #	Strategy	Lead/Partners
18	Real estate tools - disclosures, deed restrictions, hold harmless agreements	<i>Lead:</i> SSMCP <i>Partners:</i> Master Builders Associations

## Pierce County Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	Incorporate compatibility in updates of local Comprehensive Plans	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	Analyze local transportation impacts	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	Share information about JBLM and activities among internal and external stakeholders	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
8	Maximize use of existing financial incentives to encourage preservation of open space and working lands	<i>Lead:</i> Thurston County, Pierce County
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments

Strategy #	Strategy	Lead/Partners
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM

## Thurston County Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	Incorporate compatibility in updates of local Comprehensive Plans	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	Analyze local transportation impacts	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	Share information about JBLM and activities among internal and external stakeholders	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
8	Maximize use of existing financial incentives to encourage preservation of open space and working lands	<i>Lead:</i> Thurston County, Pierce County
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments



Strategy #	Strategy	Lead/Partners
11	Pursue additional conservation partnering opportunities through Readiness and Environmental Protection Initiative (REPI)/Army Compatible Use Buffer (ACUB), and the Sentinel Landscapes partnership	<i>Lead:</i> JBLM <i>Partners:</i> Thurston County
12	Expand the federal role in habitat conservation efforts	<i>Lead:</i> JBLM <i>Partners:</i> Thurston County
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM

### Long-Term Actions

Strategy #	Strategy	Lead/Partners
22	Expand conservation banking through Thurston County.	<i>Lead:</i> Thurston County <i>Partners:</i> JBLM

## DuPont Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	Incorporate compatibility in updates of local Comprehensive Plans	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	Analyze local transportation impacts	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	Share information about JBLM and activities among internal and external stakeholders	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments

Strategy #	Strategy	Lead/Partners
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM

## Lacey Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	Incorporate compatibility in updates of local Comprehensive Plans	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	Analyze local transportation impacts	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	Share information about JBLM and activities among internal and external stakeholders	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM



## Lakewood Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	<b>Incorporate compatibility in updates of local Comprehensive Plans</b>	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	<b>Analyze local transportation impacts</b>	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	<b>Share information about JBLM and activities among internal and external stakeholders</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	<b>Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
9	<b>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</b>	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
10	<b>Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
13	<b>Promote sound attenuation building standards and/or energy efficiency practices in new buildings</b>	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments

Strategy #	Strategy	Lead/Partners
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM

## Roy Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	<b>Incorporate compatibility in updates of local Comprehensive Plans</b>	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	<b>Analyze local transportation impacts</b>	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	<b>Share information about JBLM and activities among internal and external stakeholders</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	<b>Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
9	<b>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</b>	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
10	<b>Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
13	<b>Promote sound attenuation building standards and/or energy efficiency practices in new buildings</b>	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments

Strategy #	Strategy	Lead/Partners
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM



## Steilacoom Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	<b>Incorporate compatibility in updates of local Comprehensive Plans</b>	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	<b>Analyze local transportation impacts</b>	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	<b>Share information about JBLM and activities among internal and external stakeholders</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	<b>Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
9	<b>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</b>	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
10	<b>Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
13	<b>Promote sound attenuation building standards and/or energy efficiency practices in new buildings</b>	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments

Strategy #	Strategy	Lead/Partners
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM

## Tacoma Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	Incorporate compatibility in updates of local Comprehensive Plans	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	Analyze local transportation impacts	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	Share information about JBLM and activities among internal and external stakeholders	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
9	Incorporate specific land use compatibility requirements into local zoning codes and ordinances	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
10	Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
13	Promote sound attenuation building standards and/or energy efficiency practices in new buildings	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments

Strategy #	Strategy	Lead/Partners
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM



## Yelm Action Plan

### Near-Term Actions

Strategy #	Strategy	Lead/Partners
2	<b>Incorporate compatibility in updates of local Comprehensive Plans</b>	<i>Lead:</i> Nisqually Tribe; Cities and Counties in JLUS Study Area
3	<b>Analyze local transportation impacts</b>	<i>Lead:</i> SSMCP <i>Partners:</i> WSDOT; JBLM; Nisqually Tribe; Local, County, and Regional governments
5	<b>Share information about JBLM and activities among internal and external stakeholders</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments

### Mid-Term Actions

Strategy #	Strategy	Lead/Partners
7	<b>Establish or strengthen notification and planning processes to increase communication between JBLM and neighboring jurisdictions</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
9	<b>Incorporate specific land use compatibility requirements into local zoning codes and ordinances</b>	<i>Lead:</i> Nisqually Tribe; Local, County, and Regional governments
10	<b>Incorporate considerations of aircraft safety and military operational noise into local jurisdiction planning and permitting processes.</b>	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
13	<b>Promote sound attenuation building standards and/or energy efficiency practices in new buildings</b>	<i>Lead:</i> SSMCP <i>Partners:</i> Nisqually Tribe; Local, County, and Regional governments

Strategy #	Strategy	Lead/Partners
15	Conduct a lighting study to refine the geographic area in which a Military Lighting Overlay District may be applied based on JLUS Implementation entity and stakeholder input	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM; Nisqually Tribe; Local, County, and Regional governments
16	Establish a process for coordination among JBLM and neighboring communities to seek ways to provide adequate rental housing for servicemembers.	<i>Lead:</i> SSMCP <i>Partners:</i> JBLM

**Appendix A:**  
**Sample Comprehensive Plan Policy**  
**Language**

Comprehensive Plan Gap Analysis Matrix

The following table presents a high-level analysis of the existing comprehensive plans of partner cities and counties. The purpose is to identify whether existing plans address the compatibility issues identified in the JLUS and to serve as a guide for the applicability of the sample policy language contained in this appendix.

	Role of JBLM	Communication & Coordination	Support for Compatibility Implementation	Endangered Species	Information Exchange with JBLM	Increase Public Awareness	Aircraft Noise Attenuation	Large Weapons Noise Attenuation	Light pollution	Trespass on JBLM	Sound Attenuation	Urban Growth	Aircraft Safety
Pierce County													
Thurston County													N/A
DuPont													
Lacey				N/A			N/A	N/A		N/A	N/A	N/A	N/A
Lakewood				N/A								*	
Roy				N/A									N/A
Steilacoom				N/A									N/A
Tacoma				N/A				N/A		N/A	N/A		N/A
Yelm													N/A
Nisqually Indian Reservation													N/A

Key:

Fully Addressed

Fully Addressed with Minor Revisions

Partially Addressed

Not Addressed

Pending JLUS Completion

Not Applicable in Jurisdiction

\*

N/A



## **Comprehensive Plan Language**

Local jurisdictions can add the following suggested goals and specific policies to their Comprehensive Plans as separate elements or as supplementary language to strengthen existing goals and policies.

### **General Compatibility**

#### ***Goal: Compatibility with Joint Base Lewis-McChord***

Promote future development that protects public health, safety, and welfare by minimizing risk to life, property, and the well-being of [City/County] residents from military training operations and maintaining compatibility with current and foreseeable missions at Joint Base Lewis-McChord (JBLM).

#### ***Policy: Role of Joint Base Lewis-McChord***

Continue to support the unique and vital mission capabilities of JBLM and the significant contribution of the installation, military personnel, families, and civilian workers to the economic base of the community and region.

#### ***Policy: Military-Community Partnerships***

Partner with JBLM and the South Sound Military and Communities Partnership to anticipate and meet community growth and service demands related to military mission change and to ensure that residents of [City/County] participate fully in economic opportunities and outreach activities associated with the installation.

#### ***Goal: Communication/Coordination***

Foster meaningful, ongoing communication among [City/County], residents, JBLM, the South Sound Military and Communities Partnership and other regional partners to increase awareness of Department of Defense and other federal and state missions and activities and to coordinate on ongoing compatibility planning and management activities.

***Policy: Support for Compatibility Implementation***

Continue [City/County] participation in the Joint Land Use Study (JLUS) by appointing primary points of contact to facilitate the communication and coordination strategies recommended in the JLUS Report.

***Policy: Information Exchange with Joint Base Lewis-McChord***

Work with JBLM to establish ongoing communication mechanisms for issues of mutual concern, including mission or operational changes that could affect the surrounding community or specific development and infrastructure projects that could affect compatibility with training operations.

***Policy: Increase Public Awareness***

Partner with JBLM to make information on the potential impacts of training operations available to residents.

***Additional Communication and Coordination Strategies***

***Policy: Development Review***

Review community development and infrastructure proposals for interaction that could produce compatibility challenges with training operations, including: noise sensitive uses in areas of known exposure to aviation and range noise; physical infrastructure that could interfere with low-level flight operations; and sources of electrical emissions that could interfere with military communications or navigation systems.

***Policy: Military Involvement and Planning Process***

Provide notice to JBLM for review and comment on [County/City] discretionary land use actions to include, but not be limited to, Comprehensive Plan amendments or updates, zoning changes, land development code changes, and subdivision plats.

***Goal: Land Use Compatibility***

Enhance land use compatibility between JBLM and property in the surrounding area to protect public health and safety.

***Policy: Military Influence Area (MIA) Overlay***

Define and maintain a Military Influence Area (MIA) as an overlay to the zoning map. The MIA will consist of areas based on noise and safety guidance from the [Air Installation Compatible Use Zone or Installation Operational Noise Management Plan] study, as well as other compatibility factors evaluated in the JLUS program. Within the MIA, the [County/City] will implement a variety of land use, communication and other mitigation techniques to reduce possible land use conflicts and protect the health and safety of people and property in affected areas. The appropriate strategies will vary based upon the particular operational impacts associated with sub-areas of the MIA.

***Policy: Support for Buffering Activities***

Open space, agriculture, and low-density uses adjacent to military activities provide a critical buffer that protects surrounding areas from the nuisance and safety risks of nearby military operations; therefore, as part of overall compatibility strategies, the [County/City] will, whenever feasible, use open space and conservation planning to assist in establishing buffers in proximity to JBLM.

***Policy: Support Recovery of Endangered Species Act Listed Species***

Listed species requirements limit the scope of training on JBLM lands; therefore, as part of overall compatibility strategies, the [County/City] will, whenever feasible, use open space and conservation planning to support the recovery of Endangered Species Act listed species.

## **Appendix B:**

# **Sample Development Regulations**



Development Regulations Gap Analysis Matrix

The following table presents a high-level analysis of the existing development regulations of partner cities and counties. The purpose is to identify whether existing regulations address the compatibility issues identified in the JLUS and to serve as a guide for the applicability of the sample development regulations contained in this appendix.

	Military Influence Overlay Area	Urban Growth	CZ/APZ regs				Noise Attenuation	Light pollution	Endangered Species
			McChord NCZ	McChord APZI	McChord APZ II	Imaginary Surfaces			
Pierce County					*				
Thurston County			N/A	N/A	N/A	N/A			
DuPont			N/A	N/A	N/A	N/A			
Lacey		NA	N/A	N/A	N/A	N/A			N/A
Lakewood		*		*	*				N/A
Roy			N/A	N/A	N/A	N/A			N/A
Steilacoom			N/A	N/A	N/A	N/A			N/A
Tacoma			N/A	N/A	N/A				N/A
Yelm			N/A	N/A	N/A	N/A			
Nisqually Indian Reservation			N/A	N/A	N/A	N/A			

Key:

Fully Addressed	
Fully Addressed with minor revisions	*
Partially Addressed	
Not Addressed	
Not Applicable in Jurisdiction	N/A

# Detailed Land Use Compatibility Guidelines

## APPENDIX B: DETAILED COMPATIBILITY GUIDELINES

### DoD COMPATIBLE LAND USE GUIDELINES FOR CLEAR ZONES AND ACCIDENT POTENTIAL ZONES (APZ). (U.S. Army 1981)

LAND USE	CLEAR ZONE	APZ I	APZ II
<b>A. RESIDENTIAL</b>			
Single Family Unit	No	No	Yes <sup>2</sup>
2-4 Family Units	No	No	No
Multifamily Dwellings (Apartments)	No	No	No
Group Quarters	No	No	No
Residential Hotels	No	No	No
Mobile Home Parks or Courts	No	No	No
Other Residential	No	No	No
<b>B. INDUSTRIAL &amp; MANUFACTURING<sup>3</sup></b>			
Food and Kindred Products	No	No	Yes
Apparel	No	No	No
Lumber and Wood Products	No	Yes	Yes
Furniture and Fixtures	No	Yes	Yes
Printing, Publishing	No	Yes	Yes
Miscellaneous Manufacturing	No	Yes	Yes
<b>C. TRANSPORTATION, COMMUNICATIONS &amp; UTILITIES<sup>4</sup></b>			
Railroad, Rapid Rail Transit (on-grade)	No	Yes <sup>4</sup>	Yes
Highway and Street Rights-of-Way	Yes <sup>5</sup>	Yes	Yes
Auto Parking	No	Yes	Yes
Communications	Yes <sup>5</sup>	Yes	Yes
Utilities	Yes <sup>5</sup>	Yes <sup>4</sup>	Yes
Other Transportation, Communications and Utilities	Yes <sup>5</sup>	Yes	Yes
<b>D. COMMERCIAL &amp; RETAIL TRADE</b>			
Wholesale Trade	No	Yes	Yes
Building Materials (Retail)	No	Yes	Yes
General Merchandise (Retail)	No	No	Yes
Food (Retail)	No	No	Yes
Automotive, Marine, and Aviation	No	Yes	Yes
Apparel and Accessories (Retail)	No	No	Yes
Furniture, Home Furnishings (Retail)	No	No	Yes
Eating and Drinking Facilities	No	No	No
Other Retail Trade	No	No	Yes
<b>E. PERSONAL &amp; BUSINESS SERVICES<sup>6</sup></b>			
Finance, Insurance, and Real Estate	No	No	Yes
Personal Services	No	No	Yes
Business Services	No	No	Yes
Repair Services	No	Yes	Yes
Professional Services	No	No	Yes
Contract Construction Services	No	Yes	Yes
Indoor Recreation Services	No	No	Yes
Other Services	No	No	Yes

<b>F. PUBLIC AND QUASI-PUBLIC SERVICES</b>			
Government Services	No	No	Yes <sup>6</sup>
Educational Services	No	No	No
Cultural Activities	No	No	No
Medical and Other Health Services	No	No	No
Cemeteries	No	Yes <sup>7</sup>	Yes <sup>7</sup>
Non-profit Organizations including Churches	No	No	No
Other Public and Quasi-Public Services	No	No	Yes
<b>G. OUTDOOR RECREATION</b>			
Playgrounds and Neighborhood Parks	No	No	Yes
Community and Regional Parks	No	Yes <sup>8</sup>	Yes <sup>8</sup>
Nature Exhibits	No	Yes	Yes
Spectator Sports Including Arenas	No	No	No
Golf Courses <sup>9</sup> , Riding Stables <sup>10</sup>	No	Yes	Yes
Water Based Recreational Areas	No	Yes	Yes
Resort and Group Camps	No	No	No
Entertainment Assembly Areas	No	No	No
Other Outdoor Recreation	No	Yes <sup>8</sup>	Yes
<b>H. RESOURCE PRODUCTION &amp; EXTRACTION&amp; OPEN LAND</b>			
Agriculture <sup>11</sup>	Yes	Yes	Yes
Livestock Farming, Animal Breeding <sup>12</sup>	No	Yes	Yes
Forestry Activities	No	Yes	Yes
Fishing Activities and Related Services <sup>13</sup>	No <sup>14</sup>	Yes <sup>13</sup>	Yes
Mining Activities	No	Yes	Yes
Permanent Open Space	Yes	Yes	Yes
Water Areas <sup>13</sup>	Yes	Yes	Yes

Footnotes:

- 1 A "Yes" or "No" designation for compatible land use is to be used only for gross comparison. Within each, uses exist where further definition may be needed as to whether it is clear or usually acceptable/unacceptable owing to variations in densities of people and structures. For heliports and stagefields, the takeoff safety zone is equivalent to the clear zone and the approach-departure zone is equivalent to APZ I for these land use guidelines.
- 2 Suggested maximum density 1-2 dwelling units per acre, possibly increased under a Planned Unit Development where maximum lot coverage is less than 20 percent.
- 3 Factors to be considered: Labor intensity, structural coverage, explosive characteristics, and air pollution.
- 4 No passenger terminals and no major above ground transmission lines in APZ I.
- 5 Not permitted in graded area.
- 6 Low intensity office uses only. Meeting places, auditoriums, etc., not recommended.
- 7 Excludes chapels.
- 8 Facilities must be low intensity.
- 9 Clubhouse not recommended.
- 10 Concentrated rings with large classes not recommended.
- 11 Includes livestock grazing but excludes feedlots and intensive animal husbandry.
- 12 Includes feedlots and intensive animal husbandry.
- 13 Includes hunting and fishing.
- 14 Controlled hunting and fishing may be permitted for the purpose of wildlife control.



# GUIDELINES FOR CONSIDERING NOISE IN LAND USE PLANNING AND CONTROL. (FICUN 1980)

	NZ I		NZ II		NZ III		
	0-55	55-65	65-70	70-75	75-80	80-85	85+
<b>RESIDENTIAL</b>							
Household Units	Yes	Yes	25 <sup>1</sup>	30 <sup>1</sup>	No	No	No
Group Quarters	Yes	Yes	25 <sup>1</sup>	30 <sup>1</sup>	No	No	No
Residential Hotels	Yes	Yes	25 <sup>1</sup>	30 <sup>1</sup>	No	No	No
Manufactured Housing	Yes	Yes	No	No	No	No	No
Other Residential	Yes	Yes	25 <sup>1</sup>	30 <sup>1</sup>	No	No	No
<b>MANUFACTURING</b>							
Food Products	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Textile Mill Products	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Apparel	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Wood Products	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Furniture	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Paper	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Printing	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Manufacturing	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
<b>TRANSPORT, COMMS &amp; UTIL</b>							
Railroad	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	Yes <sup>4</sup>
Motor Vehicle	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	Yes <sup>4</sup>
Aircraft	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	Yes <sup>4</sup>
Marine Craft	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	Yes <sup>4</sup>
Highway & Street	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	Yes <sup>4</sup>
Parking	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Communications	Yes	Yes	Yes	25 <sup>5</sup>	30 <sup>5</sup>	No	No
Utilities	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	Yes <sup>4</sup>
Other T, C & U	Yes	Yes	Yes	25 <sup>5</sup>	30 <sup>5</sup>	No	No
<b>TRADE</b>							
Wholesale Trade	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Retail - Building	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Retail - General	Yes	Yes	Yes	25	30	No	No
Retail - Food	Yes	Yes	Yes	25	30	No	No
Retail - Auto	Yes	Yes	Yes	25	30	No	No
Retail - Apparel	Yes	Yes	Yes	25	30	No	No
Retail - Furniture	Yes	Yes	Yes	25	30	No	No
Retail - Eating	Yes	Yes	Yes	25	30	No	No
Other Retail Trade	Yes	Yes	Yes	25	30	No	No
<b>SERVICES</b>							
Finance, Insurance	Yes	Yes	Yes	25	30	No	No
Personal Services	Yes	Yes	Yes	25	30	No	No
Cemeteries <sup>11</sup>	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	Yes <sup>6</sup>
Repair Services	Yes	Yes	Yes	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
Profess Services	Yes	Yes	Yes	25	30	No	No
Hospitals, Nursing	Yes	Yes	25	30	No	No	No
Other Medical Facilities	Yes	Yes	Yes	25	30	No	No

Contract Construction	Yes	Yes	Yes	25	30	No	No
Government Services	Yes	Yes	Yes	25	30	No	No
Educational Services	Yes	Yes	25	30	No	No	No
Misc Services	Yes	Yes	Yes	25	30	No	No
<b>CULTURAL, ENTERTAINMENT &amp; REC</b>							
Churches	Yes	Yes	25	30	No	No	No
Nature Exhibits	Yes	Yes	Yes	No	No	No	No
Public Assembly	Yes	Yes	Yes	No	No	No	No
Auditoriums	Yes	Yes	25	30	No	No	No
Amphitheaters	Yes	Yes	No	No	No	No	No
Outdoor Sports	Yes	Yes	Yes <sup>7</sup>	Yes <sup>7</sup>	No	No	No
Amusements	Yes	Yes	Yes	Yes	No	No	No
Recreational	Yes	Yes	Yes	25	30	No	No
Resorts	Yes	Yes	Yes	Yes	No	No	No
Parks	Yes	Yes	Yes	Yes	No	No	No
Other	Yes	Yes	Yes	Yes	No	No	No
<b>RESOURCE PRODUCT</b>							
Agriculture	Yes	Yes	Yes <sup>8</sup>	Yes <sup>9</sup>	Yes <sup>10</sup>	Yes <sup>10</sup>	Yes <sup>10</sup>
Livestock	Yes	Yes	Yes <sup>8</sup>	Yes <sup>9</sup>	No	No	No
Forestry	Yes	Yes	Yes <sup>8</sup>	Yes <sup>9</sup>	Yes <sup>10</sup>	Yes <sup>10</sup>	Yes <sup>10</sup>
Fishing	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mining	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Resource	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Legend:

Yes	Land use and related structures compatible without restrictions.
No	Land use and related structures are not compatible and should be prohibited.
ADNL	A-weighted day-night sound level
NZ	Noise Zone
Yes <sup>x</sup>	(Yes with restrictions) Land use and related structures generally compatible; see footnotes.
25, 30, 35	Land use and related structures generally compatible; measures to achieve noise level reduction (NLR) of 25, 30 or 35 must be incorporated into design and construction of structure.
25 <sup>*</sup> , 30 <sup>*</sup> , 35 <sup>*</sup>	Land use generally compatible with NLR; however, measures to achieve an overall NLR do not necessarily solve noise difficulties; additional evaluation is warranted.
NLR	Noise level reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

Footnotes:

- \* The designation of these uses as "compatible" in this zone reflects individual Federal agencies' consideration of general cost and feasibility factors as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.

<sup>1</sup> (a) Although local conditions may require residential use, it is discouraged in 65-70 ADNL and strongly discouraged in 70-75 ADNL. The absence of viable alternative

development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals.

(b) Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB (65-70 ADNL) and 30 dB (70-75 ADNL) should be incorporated into building codes and be considered in individual approvals. Normal construction can be expected to provide a NLR of 20 dB, thus the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. Additional consideration should be given to modifying NLR levels based on peak noise levels.

(c) NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, design, and use of berms and barriers can help mitigate outdoor noise exposure particularly from ground level transportation sources. Measures that reduce noise at a site should be used wherever practical in preference to measures that only protect interior spaces.

2 Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

3 Measures to achieve NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

4 Measures to achieve NLR of 35 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

5 If noise-sensitive, use indicated NLR; if not, use is compatible.

6 No buildings.

7 Land use compatible provided special sound reinforcement systems are installed.

8 Residential buildings require a NLR of 25.

9 Residential buildings require a NLR of 30.

10 Residential buildings not permitted.

11 In areas with ADNL greater than 80, land use not recommended, but if community decides use is necessary, hearing protection devices should be worn by personnel.

## **Sample Military Influence Area Overlay**



## **Joint Base Lewis-McChord Military Influence Area Overlay District**

### **Summary**

The Joint Base Lewis-McChord (JBLM) Military Influence Area Overlay District provides for uses and design requirements for lands adjacent to and within runway protection zones, airspace zones, military training routes, and aircraft and range noise zones of JBLM. Site design and other requirements related to land use, height, and lighting are necessary to maintain the safety of range and aircraft training operations and protect public health and safety. The JBLM Military Influence Area Overlay (MIAO) establishes six Military Areas of Influence:

- North Clear Zone (CZ) and Accident Potential Zones (APZs) for McChord Field
- Imaginary surfaces for McChord Field
- Military training routes (MTRs)
- Noise zones for McChord Field
- Noise zones for large weapons firing activities at JBLM ranges
- Noise zones for large weapons “single-event” firing activities at JBLM ranges

The official zoning map delineates the boundaries of the JBLM Military Areas of Influence districts, based upon the air safety, flight corridor, and noise zones.

**{Note: Jurisdictions will select appropriate provisions based on the operational impacts and associated Military Areas of Influence within or near their jurisdictional boundaries}**

### **JBLM Military Influence Area Overlay District**

- A. The purpose of the JBLM Military Influence Area Overlay District (MIAO) is to:
  1. Ensure safety to people and property within the MIAO;
  2. Prohibit incompatible uses and structures within the designated Military Areas of Influence;

3. Protect the airspace, approach zones, and airfield imaginary surfaces from structures or placement of objects that interfere with the safe operation of aircraft;
  4. Limit land uses within the MIAO to those uses that are compatible with military operations; and
  5. Protect people and property from the potential adverse effects of aircraft and range noise and operations
- B. The following documents are hereby adopted by reference as is fully set forth within this Ordinance:
1. Joint Base Lewis-McChord Joint Land Use Study (JLUS) Report
  2. JLUS Maps
- C. Location of districts within the JBLM MIAO:
1. North Clear Zone (CZ) and Accident Potential Zones (APZs) for McChord Field
  2. Imaginary surfaces for McChord Field
  3. Military training routes (MTRs)
  4. Noise zones for McChord Field
  5. Noise zones for large weapons firing activities at JBLM ranges
  6. Noise zones for large weapons "single-event" firing activities at JBLM ranges
- D. Development standards within the MIAO Zoning Districts
1. Within the CZ and APZs, the following uses are prohibited:
    - a. Any structures in the Clear Zone
    - b. Any residential uses in APZ 1
    - c. Any uses that concentrates, within a structure on a regular basis, more than 25 people per acre. This limitation applies to sports stadiums, amphitheaters, auditoriums, clubhouses, churches, schools, hospitals, assisted living and other medical facilities, hotels and motels, restaurants and other eating and drinking establishments built to such a scale that gatherings of more than 25 people per acre would occur on a regular basis.
    - d. Within the APZ 2, the following uses are prohibited: multi-family residential development; and single-family residential with a density of more than one (1) unit per five (5) acres

2. Within all MIAO areas, buildings, structures, and objects with a height of ninety (90) feet or more are prohibited, except where a representative from JBLM specifically certifies that the proposed height is not a hazard to aircraft take-offs, landings, or flight operations.
3. Within all MIAO areas, all lights used in conjunction with streets, parking, signs, and uses of land shall be arranged and operated in such a manner that they do not interfere with pilot vision during take-off, landing, or flight operations (See proposed lighting ordinance).
4. Within all MIAO areas, no uses or operations of any type shall produce smoke, glare, birds or other visual interference that will present a hazard to aircraft during take-off, landing, or flight operations. Agricultural uses are exempt.
5. Within all MIAO areas, no uses or operations of any type shall produce electronic interference with navigation signals or radio communication between aircraft, the airport, or the air traffic controller.
6. Within all MIAO areas, approval for a permit for residential development shall require a perpetual nonexclusive easement acknowledging that the property is situated in an area that may be subjected to conditions resulting from military training at JBLM.
7. Within all MIAO areas, all real estate transactions shall include a form disclosing proximity of the site to the military installation. The form shall be affixed to all listing agreements, sales and rental contracts, subdivision plats, and any individual marketing materials, such as brochures, etc. Disclosure is required as soon as practicable, but must be before the execution of a contract, i.e., before the making or acceptance of an offer.
8. The following standards apply to development within the McChord Field noise zones that are 60 dB plus:
  - a. All work and operations shall be conducted within buildings or enclosed structures.
  - b. All new development, redevelopment, and building alterations or additions permitted within the noise impact area shall be

required to meet the noise attenuation requirements of JLUS Report.

- c. Applications for the approval of development within the noise impact area shall include certification from a qualified acoustical expert that the proposed construction complies with the standards of JLUS Report
- 2. All applications for rezoning and development approval, including site plans, building permits, subdivision plats, sign permits, temporary use permits, and other permits and plans in the JLUS MIAO shall be subject to advisory review by a representative at JBLM. Such review shall be limited to issues of compatibility with JBLM and issues affecting the safety of persons and property related to aircraft take-offs, landings, and flight and range operations.



## **Sample Sound Attenuation Measures**

## **Selected Building Element Measures to Increase Sound Attenuation above the 2012 IRC and IECC**

Residences in proximity to military air installations may experience adverse effects that interrupt daily activities. Certain construction techniques can mitigate these effects by insulating building interiors from noise associated with military flight. Many techniques to mitigate noise overlap with measures that increase the energy efficiency of a building, which can reduce electricity costs and increase the value of one's home. The purpose of this ordinance review is to document measures that increase sound attenuation and energy efficiency that the local governments can adopt to amend their existing residential codes.

In order to measure the noise impacts surrounding military airfields, the Department of Defense (DOD) conducts an Air Installation Compatible Use Zones (AICUZ) study.

Every three years the International Code Council releases standards for buildings, residences, energy efficiency, plumbing, and many other standards. The International Residential Code (IRC) establishes minimum regulations for one and two-family dwellings, as well as townhouses. The International Energy Conservation Code (IECC) establishes minimum regulations for energy efficient performance-related provisions for residential buildings three stories or less in height. The most recent code versions for both the IRC and the IECC are from 2012.

### **Review Process**

According to the JLUS recommendations, permanent residential uses are incompatible in any noise contour greater than 75 DNL. Additionally, the target indoor noise level for residences is 45 dB. Generally, up to 30 dB of noise mitigation techniques are feasible for residences. Therefore, techniques for residences in noise contours above 75 DNL noise contour are not included in the recommendations since the techniques cannot make the homes reach the 45 dB target indoor noise level. The recommended noise level reduction for each noise contour is depicted below.

### Recommended Noise Level Reduction by Noise Contour

Noise Contour	Recommended Noise Level Reduction (NLR)	Target dB level
65-70 DNL	25 dB	45 dB
70-75 DNL	30 dB	45 dB
75+ DNL	Residences not recommended	N/A

*Building Elements:* The residential code comparison focuses on the following building elements:

- Exterior Walls
- Windows
- Doors
- Roof-Ceiling Assembly
- Floor, Foundation, and Basements
- Ventilation and Wall Penetrations

*Code Comparison:* This analysis compares existing standards and codes and identifies supplementary attenuation provisions developed by the North Central Texas Council of Governments as part of a study conducted around NAS Fort Worth JRB.

**Navy Model Ordinance:** In 2005, the Department of the Navy published guidelines for incorporating sound insulation techniques for new and existing residences located near military air installations. These guidelines include a model building code that incorporates noise level reduction design requirements. Many of the sound insulation construction techniques also improve energy efficiency.

**International Energy Conservation Code (IECC):** The International Code Council produces building standards to increase energy efficiency. The standards outlined in the IECC meet the

requirements of the International Residential Code (IRC) and the International Building Code (IBC).

**NCTCOG Regional Amendments:** The Regional Codes Coordinating Committee of the North Central Texas Council of Governments (NCTCOG) develops regional amendments to the International Code Council's code versions in an effort to simplify the construction process, reduce training costs, and enhance the safety of building systems in the region. This ordinance review focuses on the NCTCOG regional amendments for the 2012 IRC and IECC.

*Code Comparison Major Findings:*

- The Navy Model Ordinance represents more basic requirements, while Ordinance 17681 expands on these requirements.
- Many of the requirements to increase energy efficiency outlined in the 2012 IECC align with sound attenuation requirements.
- When conflicting requirements exist, staff recommendation would be to follow the stricter guidelines.
- The NCTCOG amendments to the 2012 IECC and IRC is intended to be discretionary and each city is to determine which amendments to include.
- The NCTCOG amendments to the 2012 IECC related to sound attenuation include changes to alternative compliance measures, glazing area, and wall insulation.
- The NCTCOG amendments to the 2012 IRC related to sound attenuation include changes to opening requirements between garages and residences and enclosures for water heaters.
- Noise transmission enters a residence through gaps and cracks, windows and doors, and walls and roof, in that order<sup>1</sup>. Therefore, a generalized approach for acoustic treatment would be to:
  - Eliminate all openings and flanking

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<sup>1</sup> Transportation Research Board, ACRP Report 15, p. 107



- Improve all windows and doors
- Improve walls and ceilings
- Add mechanical ventilation or central air conditioning
- Treat attic spaces and/or roof structures

Selected building element techniques from the code comparison are summarized in the table below. These measures represent only the most basic requirements that would increase sound attenuation and energy efficiency.

**Selected Building Element Measures to  
Increase Sound Attenuation above the 2012 IRC and IECC**

Building Element	65 dB	70 dB	75 dB
Exterior Walls	Interior walls should be at least ½” thick.	Interior walls should be at least 5/8” thick.	
	Insulation batts should be totally secured by an enclosure on all sides.		
Windows	All openable windows in exterior walls should be at least STC 30 dB.	All openable windows in exterior walls should be at least STC 35 dB.	All openable windows in exterior walls should be at least STC 40 dB.
Doors	Exterior, sliding glass, or doors to the garage should have a rating of at least STC 30 dB.	Exterior and sliding glass doors should have a rating of at least STC 35 dB, while access doors to the garage should have a rating of at least STC 30 dB.	Exterior and sliding glass doors should have a rating of at least STC 40 dB, while access doors to the garage should have a rating of at least STC 30 dB.
Roof-Ceiling Assembly	Ceilings should be finished with gypsum board at least 5/8” thick.  Attic insulation should be batt or blown-in glass fiber or mineral wool		

	with a minimum R-30 rating applied between the ceiling joints.
<b>Floors and Foundations</b>	Air barrier should be installed at any exposed edge of the insulation.
<b>Ventilation and Wall and Roof Penetrations</b>	Window and/or through-the-wall ventilation or AC units should not be used.

## **Sample Light Pollution Reduction Ordinance**

## ***Light Pollution Reduction Ordinance***

### LIGHTING STANDARDS.

**Purpose.** The purpose of this ordinance is to protect the health, safety and welfare of the public by encouraging lighting practices and systems that will minimize glare, light trespass, and light pollution, while maintaining nighttime safety, utility, security and productivity, curtailing the degradation of the nighttime visual environment, and minimizing the impact of lighting on training operations at Joint Base Lewis-McChord.

### **Applicability.**

**New Uses, Buildings and Major Additions or Modifications.** For all proposed new land uses, developments, buildings, and structures that require a building permit or other authorization from the City/County, all outdoor lighting fixtures shall meet the requirements of this Ordinance. All building additions or modifications of twenty (25) percent or more in terms of additional dwelling units, gross floor area, or parking spaces, either with a single addition or with cumulative additions subsequent to the effective date of this provision, shall be subject to the requirements of this Ordinance for the entire property, including previously installed and any new outdoor lighting.

**Existing Uses.** Existing uses shall be exempted from the provisions of this Ordinance. Existing uses and lighting which substantially deviate from the Purpose and Intent set forth above, and which are brought to the attention of the City/County Council/Commission by an aggrieved party, may constitute a public nuisance under Sec. X-X, and subject to abatement or other relief.

**Resumption of Use after Abandonment.** If a property or use with non-conforming lighting is abandoned as defined below, then all outdoor lighting shall be reviewed and brought into compliance with this Ordinance before any use is resumed.

**Roadways.** Lighting for public roadways is exempt from the provisions of this Ordinance.



**Definitions.**

As used in this Ordinance unless the context clearly indicates otherwise, certain words and phrases shall mean the following:

(1) Development project. Any residential, commercial, industrial or mixed use subdivision plan of development plan which is submitted to the City/County for approval.

(2) Diffuse. To spread or scatter widely, or thinly.

(3) Direct illumination. Illumination resulting from light emitted directly from a lamp or luminaire, not light diffused through translucent signs or reflected from other surfaces such as the ground or building surfaces.

(4) Fully Shielded Light Fixture. A lighting fixture constructed in such a manner that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal as determined by a photometric test or certified by the manufacturer. Any structural part of the light fixture providing this shielding must be permanently affixed.

(5) Glare. The sensation produced by a bright source within the visual field that is sufficiently brighter than the level to which the eyes have adapted to cause annoyance, discomfort, or loss in visual performance and visibility. The magnitude of glare depends on such factors as the size, position, brightness of the source, and on the brightness level to which the eyes have become adapted.

(6) Installed. The attachment, or assembly fixed in place, whether or not connected to a power source, of any outdoor light fixture.

(7) Light Pollution. Any adverse effect of manmade light.

(8) Light Trespass. Light from an outdoor luminaire falling on an adjacent property as observed at four feet above ground at the property line.

(9) Lumen per Acre Cap. The upper limit, or most light allowed. Lower lighting levels are encouraged.

(10) Luminaire. The complete lighting assembly, less the support assembly.

(11) Outdoor Light Fixture. An outdoor illuminating device, outdoor lighting or reflective surface, lamp or similar device, permanently installed or portable, used for illumination or advertisement. Such devices shall include, but are not limited to lights used for:

- Parking lot lighting;
- Buildings and structures;
- Recreational areas;
- Landscape lighting;
- Billboards and other signs (advertising or other);
- Product display area lighting;
- Illuminating building overhangs and open canopies.

(12) Outdoor Recreation Facility. An area designed for active recreation, whether publicly or privately owned, including, but not limited to, baseball diamonds, soccer and football fields, golf courses, tennis courts and swimming pools.

(13) Person. Any individual, tenant, lessee, owner, or any commercial entity including but not limited to firm, business, partnership, joint venture, corporation, or limited liability company.

(14) Sign, Externally Illuminated. A sign illuminated by light sources from outside the sign surface.

(15) Sign, Internally Illuminated. A sign illuminated by light sources enclosed entirely within the sign cabinet and not directly visible from outside the sign.

(16) Sign, LED. A sign that uses light-emitting diodes that emit light when an electrical current is applied in the forward direction of the device

(17) Sign, Neon. A sign including luminous gas-filled tubes formed into text, symbols or decorative elements and directly visible from the outside of the sign cabinet.

(18) Sky Glow. The brightening of the night sky that results from the scattering of artificial visible radiation by the constituents of the atmosphere.

(19) Temporary Lighting. Lighting which does not conform to the provisions of this Ordinance and which will not be used for more than one consecutive thirty day period within a calendar year, with one consecutive thirty-day extension. Temporary lighting is intended for uses which by their nature are of a limited duration; for example holiday lighting decorations, civic events, or construction projects.

(20) Translucent. Permitting light to pass through but diffusing it so that persons, objects, etc., on the opposite side are not clearly visible.

(21) Use, Abandonment of. The relinquishment of a property, or the cessation of a use or activity by the owner or tenant for a continuous period of twelve months, excluding temporary or short term interruptions for the purpose of remodeling, maintaining or rearranging a facility. A use shall be deemed abandoned when such use is suspended as evidenced by the cessation of activities or conditions which constitute the principal use of the property.

#### Shielding and Outdoor Lighting Standards.

The following lighting standards are hereby imposed:

(1) All nonexempt outdoor lighting fixtures shall be fully shielded.

(2) All nonexempt outdoor lighting fixtures shall be placed so as to not cause light trespass, or light glare.

(3) All nonexempt outdoor lighting fixtures shall be of a type and placed so as to not allow any light above the horizontal, as measured at the luminaire.

(4) All light fixtures that are required to be shielded shall be installed and maintained in such a manner that the shielding is effective.

(5) Residential uses shall not exceed 5500 lumens per acre. Commercial or business zoned uses shall not exceed 70,000 lumens per property.

(f) Outdoor Advertising Signs.

External illumination for signs shall conform to all provisions of this Ordinance. All upward directed lighting is prohibited.

#### **Exemptions.**

1. Single-family and two-family dwelling uses
2. Agricultural uses
3. State and Federal Facilities
4. Emergency Lighting
5. Swimming Pool and Fountain Lighting
6. Flags, Lighted
7. Holiday lighting

#### **Appeals.**

Any person substantially aggrieved by any decision of the designated official made in administration of this Ordinance has the right and responsibilities of appeal to the City/County.

#### **Law Governing Conflicts.**

Where any provision of federal, state, county, township, or city statutes, codes, or laws conflict with any provision of this Ordinance, the more restrictive shall govern unless otherwise regulated by law.



**Violation and Penalty.**

It shall be a civil infraction for any person to violate any of the provisions of this Ordinance. Each and every day or night during which the violation continues shall constitute a separate offense. A fine shall be imposed of not less than fifty dollars nor more than seven hundred dollars for any individual or not less than 100 dollars nor more than ten thousand dollars for any corporation, association, or other legal entity for each offense. The imposition of a fine under this Ordinance shall not be suspended.

**Severability.**

If any of the provisions of this Ordinance or the application thereof are held invalid, such invalidity shall not affect other provisions or applications of this Ordinance, which can be given effect, and to this end, the provisions of this Ordinance are declared to be severable.

## **Appendix C:**

# **Sample Real Estate Disclosures**

**SAMPLE REAL ESTATE DISCLOSURE**

**AREA OF MILITARY IMPACT  
REAL ESTATE DISCLOSURE FORM**

Property at the following location is situated within the vicinity of Fort Jackson/McCrary Training Center and/or McEntire Joint National Guard Base . The subject property may therefore be exposed to periodic low-level military aircraft over-flights and associated noise, the risk of an aircraft accident, noise from large artillery and small arms firing and tracked vehicle movement, smoke from prescribed burns on the installations, and other impacts associated with standard military training activities.

**Parcel #:** \_\_\_\_\_ **Deed Book #** \_\_\_\_\_ **Page #** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

I, \_\_\_\_\_, (owner of the subject property) hereby certify that I have informed \_\_\_\_\_ (prospective purchaser/lessee/renter) that the subject property is located within the vicinity of Fort Jackson/McCrary Training Center and/or McEntire Joint National Guard Base and may therefore be exposed to periodic low-level military aircraft over-flights, artillery/small arms noise, other such military training activities.

\_\_\_\_\_  
*Owner/ Date*

I, \_\_\_\_\_, (prospective purchaser/lessee/renter of the subject property) hereby certify that I have been informed by \_\_\_\_\_ (owner) that the subject property is located in the vicinity of Fort Jackson/McCrary Training Center and/or McEntire Joint National Guard Base and may therefore be exposed to periodic low-level military aircraft over-flights, artillery/small arms/tracked vehicle movement noise, smoke from prescribed burns on the installations and other such impacts of standard military training activities.

\_\_\_\_\_

*Purchaser/Lessee/Renter Date*

Signed before me on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, in the  
County of \_\_\_\_\_, South Carolina

\_\_\_\_\_, Notary Public, State of South Carolina.

My Commission Expires on \_\_\_\_\_. (SEAL)



## SAMPLE AVIGATION EASEMENT FORM

Parcel \_\_\_\_\_ County \_\_\_\_\_

Grantor (s) Name \_\_\_\_\_

Grantor (s) Address \_\_\_\_\_

### LEGAL DESCRIPTION:

In accordance with section XXXXX of the Land Use Ordinance for XXXXX County, State of XXXXX, approving a permit for residential development on the above described property, and in consideration of such approval, Grantors grant to the owners of all property adjacent to the above described property, a perpetual nonexclusive easement as follows:

1. The Grantors, their heirs, successors, and assigns acknowledge by the granting of this easement that the residential development is situated in an area that may be subjected to conditions resulting from military training at Fort Campbell/Campbell Army Airfield/Sabre Army Heliport. Such conditions include the firing of small and large caliber weapons, the overflight of both fixed-wing and rotary-wing aircraft, the movement of vehicles, the use of generators, and other accepted and customary military training activities. These activities ordinarily and necessarily produce noise, dust, smoke and other conditions that may conflict with Grantors' use of Grantors' property for residential purposes. Grantors hereby waive all common law rights to object to normal and necessary military training activities legally conducted on adjacent Fort Campbell which may conflict with Grantors' use of Grantors' property for residential and other purposes, and Grantors hereby grant an easement to the adjacent Fort Campbell for such activities.
2. Nothing in this easement shall grant a right to Fort Campbell/Campbell Army Airfield/Sabre Army Heliport for ingress or egress upon or across the described property. Nothing in this easement shall prohibit or otherwise restrict the Grantors from enforcing or seeking enforcement of statutes or regulations of governmental agencies for activities conducted on adjacent properties.
3. This easement is appurtenant to all property adjacent to the above described property and shall bind to the heirs, successors, and assigns of Grantors and shall endure for the benefit of the adjoining Fort Campbell/Campbell Army Airfield/Sabre Army Heliport. Fort Campbell/Campbell Army Airfield/Sabre Army Heliport is hereby expressly granted the right of third party enforcement of the easement.

IN WITNESS WHEREOF, the Grantors have executed this easement dated this \_\_ day of \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
Grantor

\_\_\_\_\_  
Grantor

***SUBDIVISION LANGUAGE***

Avigational easement and release: It shall be the responsibility of the subdivider to dedicate to the County on the final plat such easements and releases in such location and width as required for the avigational easement and release for property within the Military Activity Zone Overlay District. The subdivider of said property shall dedicate to the County on the final plat an avigational easement over the subject property and release the County from all liability for any and all claims for damage originating from dust, noise, vibration, fumes, fuel and lubricant particles, etc.

**Appendix D:**  
**Sample Project Notification MOU**

## ***SAMPLE MEMORANDUM OF UNDERSTANDING***

Between Joint Base Lewis-McChord and

The Counties of \_\_\_\_\_ and

The Cities of \_\_\_\_\_

This Memorandum of Understanding between Joint Base Lewis-McChord (JBLM), the Counties of \_\_\_\_\_, and the Cities of \_\_\_\_\_, is enacted to establish a mutually beneficial process that will ensure timely and consistent notification and cooperation between the parties on projects, policies, and activities. These parties have a mutual interest in the cooperative evaluation, review, and coordination of local plans, programs, and projects in the Counties of \_\_\_\_\_, the Cities of \_\_\_\_\_, and on JBLM.

The Cities of \_\_\_\_\_ and the Counties of \_\_\_\_\_ agree to:

1. Submit information to JBLM on plans, programs, actions, and projects that may affect mission activities on JBLM land. Information may include, but not be limited to the following:
  - Development proposals
  - Transportation improvements and plans
  - Sanitary waste facilities/wastewater facilities/water facilities/any infrastructure necessary to support development
  - Open space and recreation
  - Land use plans, comprehensive plan, and ordinances
  - Rezoning and variances
  - School facility siting plans



- Lighting plans for roadways, subdivision developments, parks, and major commercial/industrial developments
  - Capital Improvements Plan
  - Demographic data
2. Submit to JBLM for review and comment, project notification, policies, plans, reports, studies and similar information on development, infrastructure and environmental activities within proximity of JBLM as defined by the Joint Land Use Study Military Areas of Influence.
  3. Consider JBLM comments as part of local responses or reports.
  4. Make information on Joint Land Use Study recommendations, noise mitigation and encroachment reduction strategies readily available to the public.
  5. Include JBLM in the distribution of meeting agendas for, but not limited to:
    - City Council, County Council, County Commission
    - Planning Commission
    - Regional Council or Regional Planning Council
    - Workshops or Public Meetings for Major Planning Studies or Plan Updates

Joint Base Lewis-McChord agrees to:

1. Submit information to City and County representatives on plans, programs, actions, and projects, which may affect the city or county. These may include, but not be limited to, the following:
  - Installation Master Plan
  - Area Development Plans
  - Air Installation Compatibility Use Zone
  - Installation Operational Noise Management Plan
  - NEPA Studies

- Changes in existing installation use that may change off-post impacts, such as noise
  - Appropriate data on troop strength and activities for local plans, programs and projects
  - Army Compatible Use Buffer
  - Schedule of training activities when feasible
2. Submit to City and County representatives for review and comment, project notification, policies, plans, reports, studies and similar information on development, infrastructure and environmental activities at JBLM.
  3. Make information on Joint Land Use Study recommendations, noise mitigation and encroachment reduction strategies readily available to the public.

This agreement will remain in effect until terminated by any of the parties. Amendments to this memorandum may be made by mutual agreement of all the parties. Review process details and appropriate forms may be developed to facilitate uniform and efficient exchanges of comments.

This understanding will not be construed to obligate JBLM, the Cities of \_\_\_\_\_, the

Counties of \_\_\_\_\_ to violate existing or future laws or regulations.

This agreement is approved by:

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County

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City

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Joint Base Lewis-McChord