LANDAU ASSOCIATES

NOISE TECHNICAL REPORT

Fort Lawton Army Reserve Center Redevelopment Project
Seattle, Washington

April 28, 2025

Prepared for

City of Seattle, Washington

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EXECUTIVE SUMMARY

The City of Seattle is proposing redevelopment of the former Fort Lawton Army Reserve Center (Fort Lawton) in the Magnolia neighborhood in northwest Seattle, Washington. This Noise Technical Report describes the current noise conditions in the region, along with policies and regulations that govern noise sources. Impacts of two alternatives (Proposed Alternative and No Action Alternative) are analyzed.

The study area is defined as the former Fort Lawton and adjacent noise-sensitive receiver locations, including nearby Discovery Park, Kiwanis Memorial Preserve Park, and existing residential land uses. Noise-sensitive "uses" considered for this evaluation included residences, parks, and community gathering places located throughout the study area.

Existing noise sources in the study area include the following:

- Ongoing activities associated with residential, institutional, and commercial activities in the vicinity of Fort Lawton.

Noise effects of the Fort Lawton redevelopment on existing and planned uses in Fort Lawton and surrounding communities were considered for the following elements:

- Temporary construction noise
- Long-term operational noise associated with residential, park, and roadway use and maintenance
- Noise from local traffic on the planned Texas Way and the existing Discovery Park Boulevard in Fort Lawton and from other local streets using a screening-level traffic noise model.

The Proposed Alternative includes residential development and a park maintenance facility. Full buildout is expected to be complete by 2032.

The Seattle Municipal Code regulates noise in the Fort Lawton area. The code establishes noise limits based on time of day and type of noise source and noise receptor. However, noise from traffic traveling on public roads is exempt from Seattle's noise limits, and noise impact criteria established by the Washington State Department of Transportation (WSDOT) were used for this assessment. Modeled peak-hour traffic noise increases at full buildout would not exceed the WSDOT substantial increase impact threshold of 10 A-weighted decibels (dBA) at any representative receiver locations under the Proposed Alternative, and no significant impacts are expected.

TABLE OF CONTENTS

TABLES

FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

City ..... City of Seattle
dBA ..... A-weighted decibel
DU ..... dwelling unit
FHWA ..... Federal Highway Administration
Fort Lawton ..... Fort Lawton Army Reserve Center
Fort Lawton Army Reserve Center Redevelopment Project ..... Fort Lawton project
Landau ..... Landau Associates, Inc.
L_{eq} ..... equivalent sound level
L_{eq} 1 hr ..... 1-hour A-weighted equivalent sound level
NAC ..... Noise Abatement Criteria
SF ..... square feet
SMC ..... Seattle Municipal Code
WSDOT ..... Washington State Department of Transportation

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1.0 INTRODUCTION

At the request of the City of Seattle (City) and under contract to EA Engineering, Landau Associates, Inc. (Landau) prepared this report, which provides background information and analysis to support the Noise section of the Draft Environmental Impact Statement for redevelopment of the Fort Lawton Army Reserve Center Redevelopment Project (Fort Lawton project) in Seattle, Washington.

The following sections evaluate the study area, defined as the Fort Lawton site and nearby noise-sensitive receiver locations, including Discovery Park, Kiwanis Memorial Preserve Park, and existing residential land uses. The study includes the temporary effects of noise from construction and long-term noise effects from residential and park use. Local onsite roadway noise was qualitatively evaluated as part of this study.

Impacts of the two alternatives (as described below) are analyzed in this evaluation. The study area for this evaluation is Fort Lawton and surrounding areas in Seattle (see Figure 2).

2.0 FORT LAWTON REDEVELOPMENT AREA

The former Fort Lawton US Army Reserve Center is an approximately 34-acre site located in the Magnolia neighborhood in northwest Seattle, King County, Washington. Fort Lawton was used as a US Army reserve center until the facility was closed in 2005. The property has been vacant but has been maintained pending possible conveyance of the property from the US Army to the City.

Discovery Park, Kiwanis Memorial Preserve Park, and existing residential land uses lie outside the boundaries of Fort Lawton but are specific areas of concern identified in the public scoping process for the redevelopment project.

Table 1 shows the planned land use for the two alternatives analyzed in this report. The alternatives are summarized below.

- **Proposed Alternative:**
  - 2.1 A complex of buildings up to four stories in height, with a 2.2-acre footprint, and 500 units of housing allocated as follows:
    - 2.1.1 100 units of permanent supportive multifamily housing for formerly homeless seniors and veterans;
    - 2.1.2 150 to 200 units of affordable homeownership opportunities for families earning up to 80 percent of the area median income (including 45 townhouse units and 130 multifamily units); and,
    - 2.1.3 200 to 250 units of affordable multifamily rental apartments for low-income households earning up to 60 percent of area median income, including families with children.
  - 2.2 Open space areas allocated as follows:
    - 2.2.1 2.6 acres of landscaped area
    - 2.2.2 13 acres of passive open space
    - 2.2.3 5.1 acres of active open space (grass multi-purpose field)
  - 2.3 Surface parking covering 4.4 acres and roadway/sidewalk covering 2.2 acres.
- **No Action Alternative:** Assumes that no development would occur.

Under the Proposed Alternative full buildout is expected to be complete by 2032. Under the No Action Alternative, this analysis assumes that no buildout will occur.

Table 1: Planned Land Use for Two Alternatives

Land Use Category	Unit	Proposed Alternative	No Action
Residential			
Single Family	#DU	0	0
Multifamily			
Senior/Veteran Housing	#DU	100	0
Affordable Ownership	#DU	150 to 200	0
Affordable Rental	#DU	200 to 250	0
Open Space			
Landscaped Areas	Acres	2.6	5.9
Passive Open Space Areas	Acres	13	9.6
Active Open Space Areas	Acres	5.1	0

Notes:
Values are approximate.
Source: EA Engineering, Science, and Technology, Inc., PBC

Abbreviations:
DU = dwelling unit
SF = square feet

3.0 CHARACTERISTICS OF SOUND AND NOISE

For the purposes of this analysis, noise can be described as sound that is undesired, in terms of its loudness (amplitude) and frequency (pitch). Magnitudes of typical noise levels are presented below.

NOISE SOURCE OR ACTIVITY		SUBJECTIVE IMPRESSION	RELATIVE LOUDNESS (human judgment of different sound levels)
Jet aircraft takeoff from carrier (50 feet)	140	Threshold of pain	64 times as loud
50-horsepower siren (100 feet)	130		32 times as loud
Loud rock concert near stage Jet takeoff (200 feet)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 feet)	110		8 times as loud
Jet takeoff (2,000 feet)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 feet)*	90		2 times as loud
Garbage disposal (2 feet) **Pneumatic drill (50 feet)**	80	**Moderately loud**	**Reference loudness**
Vacuum cleaner (10 feet) Passenger car at 65 mph (25 feet)*	70		1/2 as loud
Typical office environment	60		1/4 as loud
Light auto traffic (100 feet)*	50	Quiet	1/8 as loud
Bedroom or quiet living room Bird calls	40		1/16 as loud
Quiet library, soft whisper (15 feet)	30	Very quiet	
High quality recording studio	20		
Acoustic test chamber	10	Just audible	
	0	Threshold of hearing	

Sources: (Beranek 1988; EPA 1974).

Since the human ear is not equally sensitive to sound at all frequencies, a frequency-dependent rating relates noise to human hearing sensitivity. This is called the A-weighted decibel (dBA) scale. This scale accounts for the human perception of a doubling of loudness as an increase of 10 dBA. Therefore, a 70-dBA sound level will sound twice as loud as a 60-dBA sound level. People generally cannot detect differences of 1 to 2 dBA between noise sources of a similar nature (e.g., an increase in traffic noise compared to existing traffic noise); however, under ideal listening conditions, differences of 2 or 3 dBA can be detected by some people. Most people under normal listening conditions would probably perceive a 5-dBA change in noise of a similar nature. However, if an intruding noise is of a different nature than background noise (e.g., backup alarms in a quiet neighborhood), many people can perceive the intruding noise even if it increases the overall dBA noise level by less than 1 dBA.

A measure used to represent the average sound energy occurring over a specified time period is the equivalent sound level (L_{eq}). L_{eq} is the steady-state sound level that would contain the same acoustical

energy as the time-varying sound that actually occurs during the monitoring period. The 1-hour A-weighted equivalent sound level (L_{eq} 1 h) is the energy average of A-weighted sound levels occurring during a 1-hour period.

When distance is the only factor considered, sound levels from isolated point sources of noise typically decrease by about 6 dBA for every doubling of distance from the noise source. When the noise source is a continuous line, sound levels decrease by about 3 dBA for every doubling of distance; however, an attenuation rate of 4.5 dBA per doubling of distance is often used when intervening ground is effective in absorbing sound (e.g., ground vegetation, scattered trees, and clumps of bushes).

Noise levels at different distances can also be affected by several factors other than the distance from the noise source. Topographic features and structural barriers that absorb, reflect, or scatter sound waves can affect the decreasing noise levels. Atmospheric conditions (wind speed and direction, humidity levels, and temperatures) can also affect the degree to which sound is attenuated over distance.

Echoes off topographical features or buildings can sometimes result in higher sound levels (lower sound attenuation rates) than normally expected. Temperature inversions and altitudinal changes in wind conditions can also refract and focus sound waves toward a location at considerable distance from the noise source. As a result, the existing noise environment can be highly variable depending on local conditions.

4.0 AFFECTED ENVIRONMENT

Existing noise-generating uses at Fort Lawton consist primarily of vehicle traffic traversing the site. Existing noise-generating uses in the surrounding areas include traffic on local streets, use and maintenance of the Fort Lawton Army Reserve Complex building and military cemetery, commercial development near West Government Way and south of Fort Lawton, and noise from residential development north and east of Fort Lawton.

Typical daytime noise levels for urban and suburban residential areas range from approximately 45 dBA (noise of "normal living") to 60 dBA (a noisy lawn mower at 10 meters), with occasional noises as loud as 70 dBA (noise level associated with a main road during daytime; Seattle n.d.; Wyle Laboratories 1971).

4.1 Noise-Sensitive Receiver Locations

Noise-sensitive receiver locations considered for this evaluation include existing nearby residences and planned residences, parks, and community gathering places located throughout the study area, which includes Fort Lawton, Discovery Park, Kiwanis Memorial Preserve Park, and other adjacent areas (Figure 2).

In general, new and existing residential areas within and surrounding the Fort Lawton site are most likely to be affected by construction noise during the development process. In addition to these residential receivers, noise impacts to other surrounding areas were considered, including Discovery Park and Kiwanis Memorial Preserve Park. These areas may be affected by short-term construction noises but are not expected to be affected by onsite roadway noise. Noise sources and receptors specific to each alternative are discussed in more detail below.

4.2 Regulatory Framework

4.2.1 Seattle Municipal Code

Chapter 25.08 of the Seattle Municipal Code (SMC), Noise Control, contains regulations that limit noise from construction and other noise sources within the City. Section 25.08.410 of the SMC sets forth maximum permissible environmental noise levels based on districts (Table 2); SMC 25.08.100 defines the three districts, based on land use, as follows:

- "Residential District" includes zones defined as residential zones and NC1 zones in the Land Use Code of the City of Seattle, Title 23.
- "Commercial District" includes zones designated as NC2, NC3, SM, SM-SLU, SM-D, SM-NR, C1, C2, DOC1, DOC2, DRC, DMC, PSM, IDM, DH1, DH2, PMM, and IB in the Land Use Code of the City of Seattle, Title 23.
- "Industrial District" includes zones designated as IG1, IG2, and IC in the Land Use Code of the City of Seattle, Title 23.

The code states that "between the hours of 10 p.m. and 7 a.m. during weekdays, and between the hours of 10 p.m. and 9 a.m. on weekends and legal holidays [nighttime], the exterior sound level limits [listed below] are reduced by 10 dB(A) where the receiving property lies within a residential district of the City."

Table 2: Seattle Maximum Permissible Noise Levels

District of Sound Source	District of Receiving Property (dBA; L_{eq})			
	Residential (daytime)	Residential (nighttime)	Commercial	Industrial
Residential	55	45	57	60
Commercial	57	47	60	65
Industrial	60	50	65	70

Section 25.08.425 of the SMC addresses sounds created by construction and maintenance equipment. The sound levels listed above in Table 2 may be exceeded by 15 to 20 dBA for maintenance or repair activities and by 20 to 25 dBA for construction equipment during the following times:

> *Within Lowrise, Midrise, Highrise, Residential-Commercial, and Neighborhood Commercial zones, between 7 a.m. and 7 p.m. on weekdays and between 9 a.m. and 7 p.m. on weekends and legal holidays, except that for parking lot maintenance or if the equipment is being used for a public project, then between 7 a.m. and 10 p.m. on weekdays and between the hours of 9 a.m. and 10 p.m. on weekends and legal holidays.*
>
> *Within all other zones, between 7 a.m. and 10 p.m. on weekdays and between 9 a.m. and 10 p.m. on weekends and legal holidays.*

Additional noise limits and timing restrictions apply to types of equipment that create impulse sound or impact sound or are used as impact equipment, such as pavement breakers, piledrivers, jackhammers, or sandblasting tools.

SMC Section 25.08.480 exempts sounds created by motor vehicles traveling on public roadways from the noise limits identified in Table 2.

In addition to the noise pollution control rules described above, public nuisance noises are regulated by Chapter 25.08, Subchapter V of the SMC. Noises can be considered public disturbance noises if they are unreasonable noises that disturb another person. Loud and raucous, and frequent, repetitive, or continuous sounds made by animals, horns or sirens, musical instruments, motor vehicles, or the amplified or unamplified human voice can be considered nuisance noises.

4.2.2 FHWA/WSDOT Traffic Noise Abatement Criteria

Seattle exempts noise from traffic traveling on public roadways from its noise limits. Therefore, the Federal Highway Administration's (FHWA's) Noise Abatement Criteria (NAC) and WSDOT's

implementation of these criteria provide a means to consider traffic noise. The FHWA NAC are not applicable to this project because no FHWA funding is proposed; however, the FHWA NAC are presented here as quantitative noise thresholds for evaluating the impacts of traffic noise on receivers within the study area. Use of federal funds for roadway or intersection improvements would trigger the WSDOT requirement to model traffic noise impacts and evaluate traffic noise abatement and to present the results of the noise abatement analysis in National Environmental Policy Act environmental documentation for any roadway projects. No federal funds are currently anticipated for roadway/intersection improvements for the proposed project.

The NAC identify noise levels for various land-use categories to determine whether traffic noise impacts occur. The NAC for residential areas, schools, active sport areas, parks, and trails is a level "approaching or exceeding" 67 dBA at exterior use locations, and WSDOT defines a peak-hour traffic noise level threshold of 66 dBA. Consistent with the NAC, WSDOT defines a traffic noise impact as either of the following:

- Peak-hour traffic noise level of 66 dBA (L_{eq}) or greater at the exterior outdoor use area of any existing or future dwelling
- Increase in peak-hour traffic noise of 10 dBA L_{eq} or greater (future project level minus existing level) at the exterior outdoor use area of any existing dwelling (considered a "substantial increase").

5.0 IMPACTS

5.1 Noise-Generating Uses

Noise impacts of the alternatives on existing and planned uses of Fort Lawton and surrounding communities were considered qualitatively for temporary construction noise and for long-term (operational) noise from residential activities, parks/recreation uses, senior support service offices, and maintenance activities. Local traffic noise on local streets is quantitatively addressed in this study.

5.2 Proposed Alternative

5.2.1 Temporary Construction Noise

Clearing and grading activities, and demolition of existing structures and construction of new infrastructure and housing are usually accompanied by temporary increases in noise due to the use of heavy equipment and hauling of construction materials. Noise impacts depend on the background sound levels, the type of construction equipment being used, and the amount of time it is in use.

Chapter 25.08.425 of the SMC limits construction activity within residential zones, such as those on and adjacent to the Fort Lawton site, to daytime hours (7 a.m. to 7 p.m. on weekdays and 9 a.m. to 7 p.m. on weekends and legal holidays). This would prevent construction noise impacts during periods when most people are at home sleeping. Construction noise may still have a temporary, localized impact on nearby residences, businesses, schools, and parks, but the temporary nature of construction and the restriction to daytime hours would limit any resulting impacts to be less than significant.

5.2.2 Long-Term Operational Noise

Operational noise under the Proposed Alternative would include typical activities and sources related to multifamily residences, parks/recreation spaces, senior support service offices, and maintenance facilities at the Fort Lawton site. Noise associated with residences and senior support services offices is expected to be minimal. Active open spaces (i.e., a grass multi-purpose field) can produce noise associated with maintenance activities, which are subject to timing and noise level restrictions established by the City. The amplified and unamplified human voices of park users and residents are regulated under the nuisance code in Chapter 25.08, Subchapter V of the SMC. No amplification systems are planned for the Fort Lawton project.

5.2.3 Local Roadway Noise

The Proposed Alternative would result in increased traffic on local roadways, within and around Fort Lawton. For this assessment, traffic noise from increased traffic on the following roads was evaluated for existing homes and noise-sensitive receivers (receiver locations are shown on Figure 2).

- Texas Way (Fort Lawton Cemetery and Kiwanis Memorial Preserve Park/R-2)
- 40th Avenue West (Existing Residence; R-1)
- West Government Way (Existing Residences; R-3 and R-5)

- 34th Avenue West (Existing Residence; R-4).

Traffic along Discovery Park Boulevard was not modeled because the project is not expected to increase traffic volume on this road.

Peak-hour traffic volumes along these streets in the project vicinity, under the existing conditions and projected for each alternative, are listed in Table 3. Peak-hour traffic volume forecasts were provided by Heffron Transportation Inc. (Heffron 2017).

Table 3: Weekday Peak-Hour Automobile and Heavy Truck Traffic Volumes in Project Vicinity

Representative Receiver Location	Existing (2024)	Proposed Alternative (2032)	No Action (2032)
Fort Lawton Military Cemetery near Texas Way (Cemetery)[(a)]	59 (2)	263 (9)	62 (2)
Existing residences along 40th Avenue West, between West Lawton Street and West Commodore Way (R-1)	100 (3)	129 (5)	105 (4)
Existing residences along 36th Avenue West, north of West Government Way (R-2)[(a)]	100 (3)	103 (4)	103 (4)
Existing residences along West Government Way between 36th Avenue West and 34th Avenue West (R-3)	421 (10)	629 (15)	443 (10)
Existing residences along 34th Avenue West, south of West Government Way (R-4)	408 (7)	456 (8)	428 (8)
Existing residences along West Government Way east of 34th Avenue West (R-5)	694 (17)	906 (22)	728 (18)

Notes:
(##) = automobile traffic volume (heavy truck traffic volume)
Traffic volume measured in vehicles per hour (combined vehicles in all directions).
(a) Cemetery receptor location is modeled at a distance of 90 feet from the western edge of Texas Way.

The Federal Highway Administration Traffic Noise Model, Version 2.5 (USDOT FHWA 2004) was used to predict existing and future noise levels during peak hours under the screening-level assumptions listed below. The model was configured as follows for the roads listed above.

- No field measurements were performed for this screening-level noise study.
- It was assumed that all receivers have a direct line of sight to impacted roadways; barrier analysis was not conducted.
- Traffic was assumed to travel at 25 miles per hour on all roadways (Heffron 2017).
- The surface between the street and nearby residences consists mainly of landscaped areas; therefore, the ground surface type was defined as “lawn.”
- All receiver locations were modeled at a distance of 10 feet from the nearest edge of the roadway, unless otherwise noted.
- Traffic volumes were assumed to increase 1 percent each year, independent of the proposed project (Heffron 2017).
- The higher traffic volume, which consistently occurred during evening peak-hour values, was used for this analysis.
- All roads were modeled as straight lines; the model was not configured to account for existing or proposed topography, roadway improvements, or configuration changes resulting from the project.

The modeled noise levels for the roadways described above, under the existing conditions, the Proposed Alternative, and the No Action Alternative, are shown in Table 4 for each representative receptor

location identified on Figure 2. As seen in Table 4, the modeled traffic sound levels with the Proposed Alternative are all 64 dBA or less, which is below the 66 dBA level identified as a traffic noise impact using FHWA/WSDOT noise impact criteria. Table 4 also provides the calculated increases in sound levels with the Proposed Alternative compared to existing conditions. Similarly, the calculated peak-hour traffic noise increases at full build would not exceed the WSDOT substantial increase impact threshold of 10 dBA at any representative receiver location under the Proposed Alternative.

Table 4: Modeled Traffic Noise Levels (L_{eq})

Representative Receptor Location	Modeled Noise Level (dBA)			
	Existing (2024)	Proposed Alternative (2032)	No Action (2032)	Difference, Proposed Alternative vs. Existing
Cemetery (Texas Way)	46	53	47	6
R-1 (40th Ave West)	56	58	57	1
R-2 (36th Ave West)	48	48	48	<1
R-3 (West Government Way/35th Avenue West)	62	64	62	2
R-4 (34th Avenue West)	61	62	62	<1
R-5 (West Government Way/33rd Avenue West)	64	65	64	1

Note:
Noise levels are rounded to the nearest whole decibel, consistent with WSDOT traffic noise modeling guidance. Values indicated as "<1" not shown because of rounding.

5.3 No Action Alternative

Under the No Action Alternative, no development is proposed for the Fort Lawton site at this time. No temporary clearing/grading, demolition, or construction noise would occur. Local roadway noise is expected to increase slightly to correspond with an expected 1 percent per year increase in traffic volumes (Heffron 2017), resulting in a modeled increase of noise associated with traffic of less than 1 dBA compared to existing conditions (see Table 4). No project-related operational noises would occur.

6.0 MITIGATION MEASURES

The following mitigation measures are proposed to address the potential impacts from construction and operation of the project under the Proposed Alternative.

6.1 Construction and Demolition

To reduce construction noise at nearby receivers, the following mitigation measures could be incorporated into construction plans and contractor specifications:

- Locate stationary equipment away from receiving properties.
- Install mufflers on engines.
- Substitute quieter equipment or construction methods.
- Minimize operation time for construction equipment.
- Erect portable noise barriers around loud stationary equipment located near sensitive receivers.
- Turn off idling construction equipment.
- Require contractors to rigorously maintain all equipment.
- Train construction crews to avoid unnecessarily loud actions (e.g., dropping bundles of rebar onto the ground or dragging steel plates across pavement) near noise-sensitive areas.

State and local regulations require limiting construction activities to between the hours of 7 a.m. and 10 p.m. on weekdays, and between the hours of 9 a.m. and 10 p.m. on weekends.

A qualitative evaluation of project impacts indicates no adverse impacts will occur to noise-sensitive receivers in the study area.

6.2 Traffic and Operational Noise

Under the Proposed Alternative, no significant traffic or operational noise impacts were identified, and no mitigation is required. Regardless, under the Proposed Alternative, existing wooded areas in the northern and southern parts of the Fort Lawton site would be preserved, and forest land in the western portion of the site would be dedicated to the adjacent Discovery Park. Woodland buffers would assist in reducing the impact of noise from the Fort Lawton site on the surrounding areas.

7.0 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Compared to pre-development noise levels, noise levels will likely increase in the study area from short-term clearing/grading, demolition, and construction noise and from long-term traffic and human noise sources. However, the impact of noise from residential development and parks/recreation uses is expected to be minimal, and no significant impacts are expected.

8.0 LIMITATIONS

The conclusions made in this report are based on the results of a primarily qualitative analysis of planning documents that did not include field measurements or incorporation of detailed site-specific information. While this review allows for a preliminary assessment of potential impacts, it does not constitute a site-specific noise study.

9.0 USE OF THIS REPORT

This screening-level noise study has been prepared for the use of the City of Seattle to support the preparation of the Noise section of the Environmental Impact Statement for the Fort Lawton Army Reserve Center Redevelopment Project in Seattle, King County, Washington. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau shall be at the user's sole risk. Landau warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

10.0 REFERENCES

Beranek, L.L. 1988. Noise and Vibration Control, Institute of Noise Control Engineering.

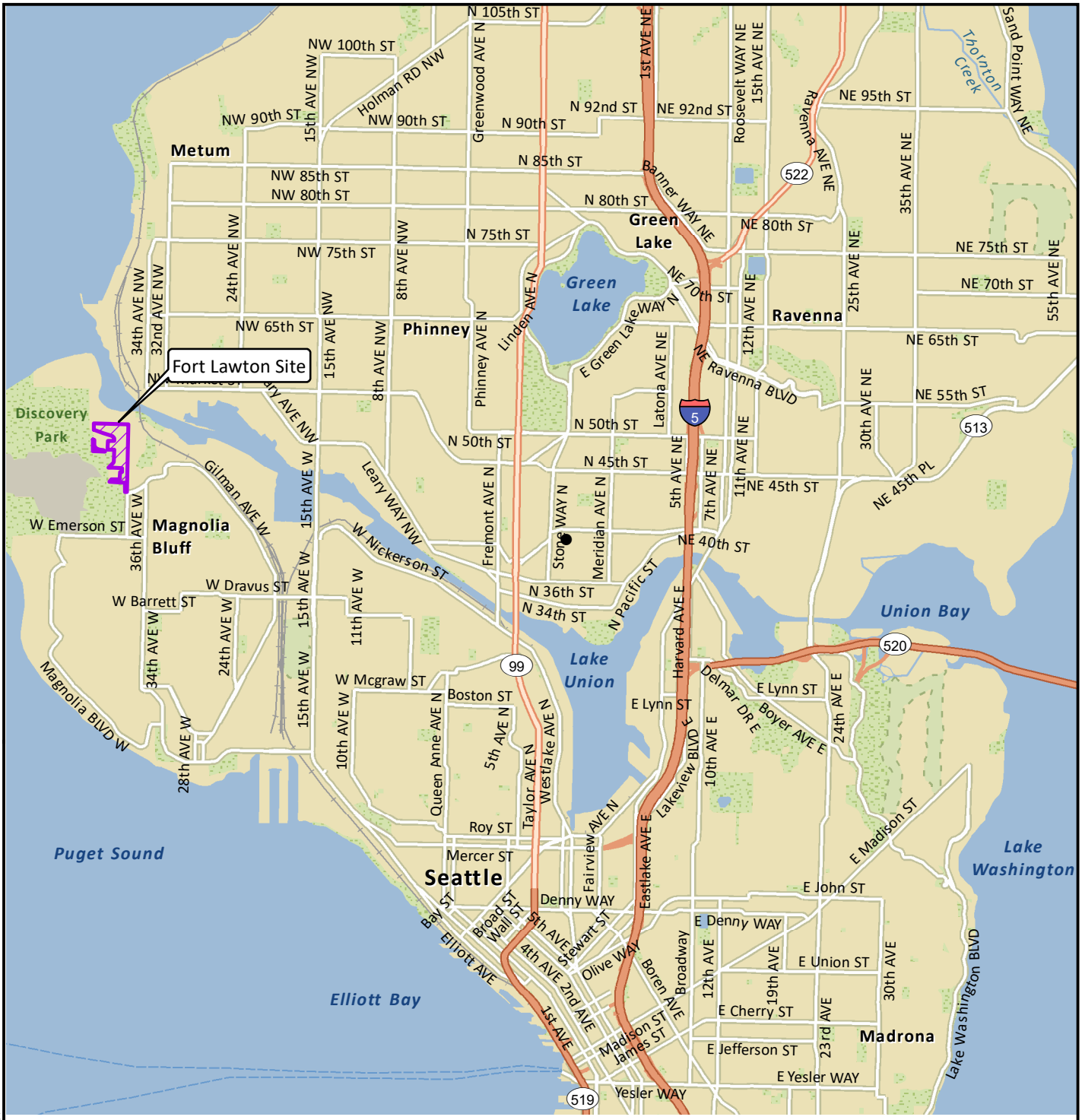
EPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. US Environmental Protection Agency.

Heffron. 2017. Draft: Transportation Technical Report for Fort Lawton Army Reserve Center Redevelopment. Heffron Transportation Inc. September 15.

Seattle, City of. n.d. Typical Environmental Noises, Sound Levels and Human Responses. Department of Construction & Inspections, City of Seattle.

USDOT FHWA. 2004. Federal Highway Administration's Traffic Noise Model User's Guide (Version 2.5 Addendum). US Department of Transportation Federal Highway Administration. April.

Wyle Laboratories. 1971. Community Noise. US Environmental Protection Agency. December 31.



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Fort Lawton Project Noise Technical Report Seattle, Washington	**Vicinity Map**	Figure 1

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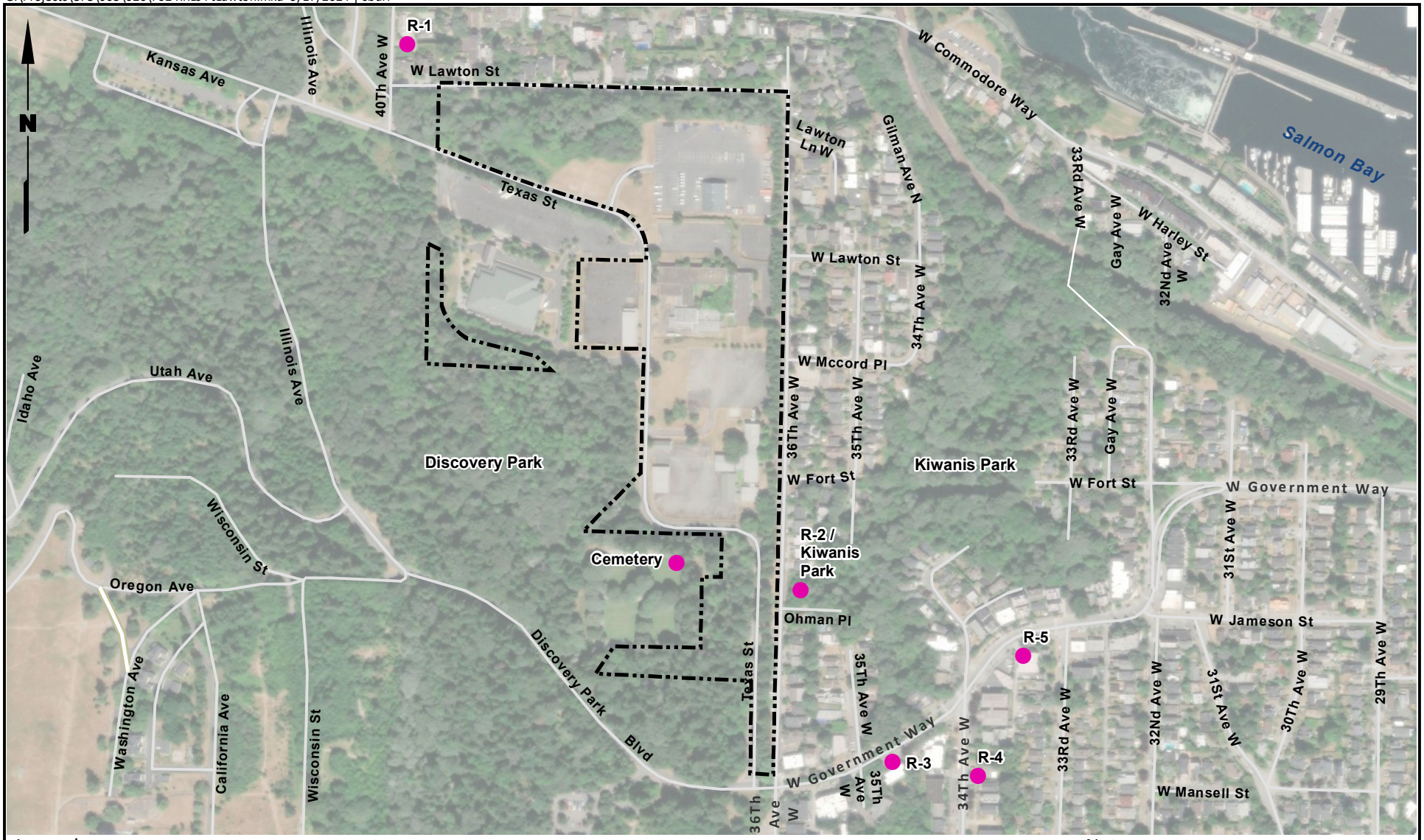

Legend

- Receiver Location
- Project Area

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Source: Esri World Imagery.

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Scale in Feet

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Fort Lawton Project
Noise Technical Report
Seattle, Washington

Representative Receiver Locations
Fort Lawton Site

Figure 2