DRAFT

ENVIRONMENTAL ASSESSMENT

For

PUBLIC-PRIVATE VENTURE MILITARY HOUSING

At

NAVY FAMILY SUPPORT COMPLEX SMOKEY POINT, MARYSVILLE, WASHINGTON

May 2025

This page intentionally left blank.

Abstract

Designation:	Environmental Assessment
Title of Proposed Action:	Public-Private Venture Military Housing at Navy Family Support Complex Smokey Point
Project Location:	Marysville, Washington
Lead Agency for the EA:	Department of the Navy
Affected Region:	Snohomish County, Washington
Action Proponent:	Naval Station Everett
Point of Contact:	NEPA Planner, PPV Military Housing at NFSC Smokey Point Naval Facilities Engineering Systems Command Northwest, EV21 1101 Tautog Circle, Room 102 Silverdale, WA 98315-1101 Email address: navfac-nw-NEPA@us.navy.mil
Date:	May 2025

Naval Station Everett, a Command of the U.S. Navy (hereinafter, jointly referred to as the Navy), has prepared this Environmental Assessment in accordance with the National Environmental Policy Act, as implemented by Navy regulations. The Proposed Action would include several construction, demolition, and renovation actions at Navy Family Support Complex Smokey Point to develop two new residential neighborhoods, renovate existing hotel suites to 20 apartment units, and include parks, a community center, and nature trails. The proposed expansion would add up to 108 low-rise multifamily housing units by constructing 88 townhomes surrounding the existing Navy family support complex and converting a former 72-room hotel into 20 apartments. The proposed additional housing units would support an estimated 250-350 new residents. Construction is anticipated to begin in January 2026. This Environmental Assessment evaluates the potential environmental impacts associated with the Proposed Action and the No Action Alternative to the following resource areas: water resources, biological resources, air quality, cultural resources, American Indian traditional resources, land use, infrastructure, and transportation.

This page intentionally left blank.

EXECUTIVE SUMMARY

ES.1 Proposed Action

The Navy proposes the execution of a real estate agreement and several construction, demolition, and renovation actions at Navy Family Support Complex (NFSC) Smokey Point to develop two new residential neighborhoods that include parks, a community center, a leasing office, and nature trails. The proposed expansion would add up to 108 low-rise multifamily housing units by constructing 88 townhomes surrounding the existing NFSC and converting a former 72-room hotel into 20 apartments. The proposed additional housing units would support an estimated 250-350 new residents. Construction is anticipated to begin in January 2026. NFSC Smokey Point is located 11 miles north of Naval Station Everett on federally owned property in the City of Marysville in Snohomish County. NFSC Smokey Point is a 52-acre developed site containing various support facilities including the Fleet and Family Support Center, Commissary, Navy Exchange, Navy Federal Credit Union, Navy Marine Corps Relief Society, and the Navy Lodge and Navy Gateway Inns and Suites (NGIS).

ES.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to provide affordable rental housing for junior enlisted military families. The Proposed Action is needed because affordable housing is scarce at Naval Station Everett and the surrounding area.

ES.3 Alternatives Considered

Only those alternatives determined to be reasonable and to meet the purpose and need require detailed analysis. Potential alternatives that meet the purpose and need were evaluated against the following screening factors: availability of developable land on Navy-owned property, access to established amenities to provide Quality of Life (QOL) support and services, availability of existing utilities at the site, maximum commuting distance of one hour to Naval Station Everett, and the ability to meet projected construction and development timelines (completion by Summer 2027). Based on the reasonable alternative screening factors and meeting the purpose and need for the Proposed Action, one action alternative (the Preferred Alternative) and the No Action Alternative are analyzed within this Environmental Assessment (EA). The Preferred Alternative would add up to 108 low-rise multifamily housing units at NFSC Smokey Point, configured in two residential neighborhoods that include parks, a community center, a leasing office, and nature trails.

ES.4 Summary of Environmental Resources Evaluated in the EA

The National Environmental Policy Act (NEPA), and Navy procedures for implementing NEPA, specify that an EA should address those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact.

Adjacent wetlands and downstream receiving waters require protection and discharges to those wetlands and receiving waters must comply with applicable water quality permits under Section 402, the National Pollutant Discharge Elimination System (NPDES), of the Clean Water Act (CWA). Adjacent and downstream habitat for threatened and endangered species requires consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) to ensure protection of potentially affected species and habitat. The National Historic Preservation Act requires Federal

agencies to take into account the effects of their undertaking on historic properties. The proposed action will be consulted on with the Washington State Historic Preservation Officer (WA SHPO) and affected Tribes. The presence of nearby fishing grounds important to federally recognized tribes requires Government-to-Government (GtG) consultation to ensure tribal resources are protected.

The following resource areas have been addressed in this EA: water resources, biological resources, air quality, cultural resources, American Indian traditional resources, land use, infrastructure, and transportation. Because potential impacts were considered to be insignificant, negligible or nonexistent, the following resources were not evaluated in this EA: airspace, geological resources, hazardous materials and waste, noise, public health and safety, socioeconomics, and visual resources.

ES.5 Summary of Potential Environmental Consequences of the Preferred Alternative and Mitigating Actions

Potential impacts to resources at NFSC Smokey Point are summarized in Table ES-1. The analysis contained in this EA has determined that, with the implementation of minimization and avoidance measures, the Proposed Action would not result in significant environmental impacts. Therefore, no mitigation actions are needed.

ES.6 Public Involvement

The Navy has prepared this Draft EA to inform the public of the Proposed Action and to allow the opportunity for public review and comment. Input from the public and from regulatory agencies is incorporated into the analysis of potential impacts, as appropriate.

The Navy has made the Draft EA available for public review and comment for 30 days, from May 15 to June 14, 2025, with a Notice of Availability published in the local newspaper (The Daily Herald). The Notice of Availability also was distributed to relevant agencies and identified stakeholders. The Draft EA has been posted at https://pacific.navfac.navy.mil/NWNEPA for review and comment.

Additionally, hard copies of the Draft EA have been made available for public review at the following local libraries:

Lakewood/Smokey Point Library
3411 169th Place NE, Suites ABC
Arlington, WA 98223

Marysville Library
6120 Grove Street
Marysville, WA 98223

Everett Public Library
2702 Hoyt Avenue
Everett, WA 98201

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*NFSC Smokey Point PPV Housing (Preferred Alternative)*
Water Resources	No change from existing conditions	Impacts to water resources during construction activities and operations would not be significant with implementation of appropriate stormwater infrastructure, best management practices (BMPs), and compliance with permit conditions. No significant impacts to water resources.
Biological Resources	No change from existing conditions	The Navy has determined that the Preferred Alternative may affect but is not likely to adversely affect Puget Sound Chinook, steelhead, and bull trout, and that it may affect, but is not likely to adversely affect critical habitat for Puget Sound Chinook, steelhead and bull trout in the mainstem Quilceda Creek. The Navy is consulting with USFWS and NMFS on this determination (Appendix A). For bald eagles and other migratory birds, temporary foraging disruptions due to construction noise would not be expected to be substantial or result in take. With the implementation of minimization and avoidance measures, there would be no significant impacts to biological resources.
Air Quality	No impact	The Preferred Alternative would result in short-term, air quality impacts during construction. Emissions of all criteria pollutants are expected to remain below General Conformity de minimis thresholds, with their impacts considered minor. For greenhouse gas (GHG) emissions, the operational-related emissions (e.g., energy use, vehicle use) are projected at approximately 2,225 tons of GHG annually, which remains below the reporting threshold of 10,000 metric tons per year. No significant impacts.
Cultural Resources	No impact	There are no known archaeological historic properties within the project site, and the Proposed Action does not entail the removal or any physical alteration of any historic properties. In the case of an inadvertent discovery of archaeological resources in the course of construction, the Navy would stop work in the immediate area and follow the project's Discovery Plan. No significant impacts.
American Indian Traditional Resources	No impact	The Preferred Alternative could result in a potential slight improvement to long-term water quality in fishing areas important to Tribes. The Navy invited the Tulalip Tribes of Washington to participate in government-to-government consultation on the Proposed Action (Appendix D).
Land Use	No impact	The Proposed Action is compatible with existing adjacent land uses. The Installation Development Plan (IDP) for Naval Station Everett does not identify the project area for residential uses. However, an update to the IDP is being prepared and the updated plan will recognize residential uses in the project area. The Proposed Action would have no effect on coastal uses or resources. No significant impacts.
Infrastructure	No impact	The Preferred Alternative would have no impact to public utility infrastructure as no new public utility infrastructure would be required, and there would be no significant impact

Resource Area	*No Action Alternative*	*NFSC Smokey Point PPV Housing (Preferred Alternative)*
		to utility capacity because existing and planned utility capacity exists to serve the proposed project in addition to other anticipated population growth in the area.
Transportation	Natural baseline traffic volume increases would result in minor reductions of level of service (LOS) at some study intersections.	The Preferred Alternative would result in minor reductions of LOS at some study intersections, primarily from natural baseline traffic volume increases. Construction traffic would not have a significant impact to LOS or existing roadway conditions. No significant impact to transportation.

Environmental Assessment for
PPV Military Housing at NFSC Smokey Point
Marysville, Washington
TABLE OF CONTENTS

List of Figures

List of Tables

Appendices

Abbreviations and Acronyms

Acronym	Definition
ACAM	Air Conformity Applicability Model
APE	Area of Potential Effects
ATFP	Antiterrorism Force Protection
AQCR	Air Quality Control Region
BMP	best management practice
CAA	Clean Air Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	Carbon dioxide equivalent
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
DoD	United States Department of Defense
DPS	Distinct population segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EO	Executive Order
EPP	Environmental Protection Plan
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FFSC	Fleet and Family Support Center
FPPA	Farmland Protection Policy Act
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GHG	greenhouse gas
GtG	Government-to-Government
GULD	General Use Level Designation
HRMA	Housing Requirements Market Analysis
HWMP	Hazardous Waste Management Plan
IDP	Installation Development Plan
INRMP	Integrated Natural Resources Management Plan

Acronym	Definition
IP	Industrial Park
LID	low impact development
LLC	Limited liability company
LOS	level of service
LP	limited partnership
MBTA	Migratory Bird Treaty Act
MHPI	Military Housing Privatization Initiative
MOU	Memorandum of Understanding
mph	Miles per hour
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSGP	Multi-Sector General Permit for Stormwater Discharges from Industrial Activities
MSP	Washington Marine Spatial Plan
MS4	Municipal Separate Stormwater Sewer System
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NASWI	Naval Air Station Whidbey Island
NAVFAC HQ	Naval Facilities Engineering Systems Command Headquarters
NAVFAC Northwest	Naval Facilities Engineering Systems Command Northwest
Navy	U.S. Department of the Navy
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NEX	Navy Exchange
NFSC	Navy Family Support Complex
NGIS	Navy Gateway Inns and Suites
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service

Acronym	Definition
NOX	Nitrogen Oxides
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Unit
OPNAV	Office of the Chief of Naval Operations
OPNAVINST	Office of the Chief of Naval Operations Instruction
OSHA	Occupational Safety and Health Administration
O_3	Ozone
PAH	Polycyclic aromatic hydrocarbons
Pb	Lead
PFMC	Pacific Fisheries Management Council
pH	Potential of Hydrogen
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
PNC	Pacific Northwest Communities, LLC
ppb	parts per billion
ppm	parts per million
PPV	Public Private Venture
PSCAA	Puget Sound Clean Air Agency
PSD	Prevention of Significant Deterioration
PSE	Puget Sound Energy
QOL	Quality of life
RCW	Revised Code of Washington
ROI	Region of Influence
RFFA	Reasonably Foreseeable Future Action
RV	recreational vehicle
SCC	Snohomish County Code
SIP	State Implementation Plan
SNOPUD	Snohomish County Public Utility District No. 1
SO_2	sulfur dioxide
SWMMWW	Stormwater Management Manual for Western Washington
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TIA	Traffic Impact Analysis
tpy	Tons per year
U&A	Usual and Accustomed
UFC	Unified Facilities Criteria
$\mu g/m^3$	Microgram per cubic meter
U.S.	United States
U.S.C.	U.S. Code
USACE	U.S. Army Corps of Engineers
EPA	U.S. Environmental Protection Agency
USAF	U.S. Air Force
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
WAC	Washington Administrative Code
WA SHPO	Washington State Historic Preservation Officer
WDFW	Washington Department of Fish and Wildlife
WDOE	Washington Department of Ecology
6PPD-Q	6PPD-Quinone

1 Purpose of and Need for the Proposed Action

1.1 Introduction

Naval Station Everett, in partnership with Pacific Northwest Communities, Limited Liability Company (LLC), and Hunt Military Communities, proposes to execute real estate agreements and several construction, demolition, and renovation actions to develop two new residential neighborhoods comprising townhomes, apartments, parks, a community center, and nature trails at NFSC Smokey Point, located in Marysville, Washington. The development activities would support an estimated 250-350 new residents and would include approximately 400 new parking spaces. The action is proposed to begin January 2026.

The Navy has prepared this EA in accordance with NEPA, as amended by the Fiscal Responsibility Act of 2023, and Navy regulations for implementing NEPA. There are no cooperating agencies for this document.

1.2 Background

Current rental market conditions make it challenging for junior enlisted military families to find adequate and affordable housing within a reasonable commuting distance of Naval Station Everett. The U.S. Department of Defense (DoD) Fiscal Year (FY) 1996 National Defense Authorization Act included the Military Housing Privatization Initiative (MHPI) legislation, which authorized privatization of DoD family housing. MHPI was implemented to improve quality of life, eliminate inadequate housing, and utilize private sector expertise in managing homes. Under the MHPI, the Navy created a Public Private Venture (PPV) program to facilitate private housing development intended for military service members and their families.

Naval Facilities Engineering Systems Command Headquarters (NAVFAC HQ) PPV is responsible for the execution and oversight of the Navy's PPV program. The Navy selects highly qualified business partners to construct, renovate, own, maintain, operate and professionally manage housing for military service members and their families. Through the PPV program, the Navy establishes long-term business relationships with outside business entities and creates an LLC or limited partnership (LP). The Navy leases and conveys existing housing assets to the LLC or LP. The LLC or LP develops and manages the property as a private housing community intended for military service members and their families. For Navy Region Northwest, the private sector business is Hunt Military Communities, and the LLC is Pacific Northwest Communities, LLC (PNC). The Navy provides oversight of the project and makes referrals of military and military affiliated residents to the PPV partner as part of the wait list management process.

Existing PPV housing supporting Naval Station Everett is limited to Constitution Park in Lake Stevens, Washington, which provides 141 units. There are about 6,000 Sailors and Civil Service personnel assigned to commands located at Naval Station Everett. Naval Station Everett itself has about 350 Sailors and Civilians assigned. The majority of junior enlisted military families assigned to commands at Naval Station Everett live in private-sector housing. The 2021 Naval Station Everett Military Personnel Housing Survey reported that 26.7 percent of Service Members lived in Everett, about 20 percent live in Marysville, and the remaining 54 percent is spread out across several communities ranging from Mount Vernon to Lake Stevens, Mill Creek, Lynnwood and other areas. The 2021 Naval Station Everett Housing Requirements Market Analysis (HRMA) Update projected a 135-unit deficit for military family housing in 2026. Office of the Secretary of Defense policy allows for building up 90 percent of the deficit, or up to

121 units. The current PPV housing wait list for junior enlisted military families is eight to twelve months. Wait list times are calculated by the Navy Housing Service Center at Naval Station Everett.

An IDP is the official planning document that guides installation physical development in accordance with Uniform Facilities Criteria (UFC) 2-100-01. The plan provides development priorities and actions for the short, intermediate, and long range, with a planning horizon of 2040 for the current IDP. The 2016 Naval Station Everett IDP designates NFSC Smokey Point existing land use as Community Support, and future land use as Community Support, Operations (Training), and Recreation/Open Space. While NFSC Smokey Point does have the NGIS, family housing does not currently exist there, and the IDP does not identify the site as residential. However, housing development is compatible with the surrounding land use, including housing directly north of the site and extensive housing development east and south of the site. The next revision to the IDP will recognize residential uses for the portions of NFSC Smokey Point planned to be developed as housing under the Proposed Action.

NFSC Smokey Point currently provides secure recreational vehicle (RV) parking and storage for use by service members. This parking lot occupies the northern portion of the property and would be demolished to accommodate the proposed housing development. Relocation of the RV parking lot is not planned at this time. It is anticipated that the vehicles will be removed by the owners prior to the start of construction and stored at locations of their choosing off Navy property at NFSC Smokey Point. If in the future a new RV parking lot is proposed for development, the Navy will comply with all applicable planning requirements at that time, including conducting an appropriate NEPA analysis.

1.3 Location

Naval Station Everett is located 29 miles north of Seattle in the City of Everett, one of the main cities in the Seattle metropolitan area and Puget Sound region. Everett is in Snohomish County, bordered by King County to the south and Skagit County to the north in the western region of Washington state.

NFSC Smokey Point is located 11 miles north of Naval Station Everett on federally owned property in the City of Marysville in Snohomish County. NFSC Smokey Point is a 52-acre developed site containing various support facilities including the Fleet and Family Support Center (FFSC), Commissary, Navy Exchange (NEX), Navy Federal Credit Union, Navy Marine Corps Relief Society, and the Navy Lodge and NGIS (Figure 1-1).

Figure 1-1 **NFSC Smokey Point Location**

1.4 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to provide affordable rental housing for junior enlisted military families.

The Proposed Action is needed because affordable housing is scarce at Naval Station Everett and the surrounding area.

1.5 Scope of Environmental Analysis

This EA includes an analysis of potential environmental impacts associated with the Proposed Action and the No Action Alternative. The environmental resource areas analyzed in this EA include Water Resources, Biological Resources, Air Quality, Cultural Resources, American Indian Traditional Resources, Land Use, Infrastructure, and Transportation. The study area for each resource analyzed may differ due to how the Proposed Action interacts with or impacts the resource.

1.6 Key Documents

Key documents are sources of information incorporated into this EA. Documents are considered to be key because of similar actions, analyses, or impacts that may apply to this Proposed Action. Documents incorporated by reference in part or in whole include:

- **Traffic Impact Analysis: Smokey Point Naval Support Complex Expansion** (December 2023). This Traffic Impact Analysis (TIA) documents the traffic impacts associated with the proposed expansion of the Smokey Point Naval Support Complex project.
- **Wetland Reconnaissance, Smokey Point Navy Support Complex, Snohomish County, Washington, Landau Project No. 1255004.010** (April 2024). This technical memorandum identifies the presence of wetlands and/or waterways in the study area and documents the methods and results of the wetland reconnaissance (identification and characterization) and waterway characterization in accordance with state and federal guidelines
- **2021 Naval Station Everett Housing Requirements Market Analysis (HRMA) Update.** A structured analytical process under which an assessment is made of both the suitability and availability of affordable housing, including the private sector rental housing market and military family housing.
- **Naval Station Everett, Installation Development Plan** (May 2016). The IDP provides a Master Plan for Naval Station Everett, including the Main Site and Navy Family Support Complex Marysville. An IDP is the official planning document that guides installation physical development. The plan provides development priorities and actions for the short, intermediate, and long range, with a planning horizon of 2040 for the current IDP.
- **Integrated Natural Resources Management Plan, Naval Station Everett** (June 2022). The Integrated Natural Resources Management Plan (INRMP) is a long-term planning document to guide the management of natural resources at Naval Station Everett, including NFSC Smokey Point, to support the military mission while protecting and enhancing natural resources for multiple uses, sustainable yield, and biological integrity.
- **Authorization to Discharge under the National Pollutant Discharge Elimination System (NPDES), Permit #WAS026620** (February 2021). This permit authorizes the discharge of stormwater to Municipal Separate Storm Sewer Systems serving Naval Station Everett and NFSC Smokey Point. The

permit contains terms and conditions for maintaining the water quality of authorized stormwater discharges.

1.7 Relevant Laws and Regulations

The Navy has prepared this EA based upon federal and state laws, statutes, regulations, and policies pertinent to the implementation of the Proposed Action, including the following:

- NEPA 42 United States Code (U.S.C.) Sections 4321 et seq.
- Navy regulations for implementing NEPA (32 Code of Federal Regulations (CFR) part 775)
- Clean Air Act (CAA) (42 U.S.C. Section 7401 et seq.)
- CWA (33 U.S.C. Section 1251 et seq.)
- Coastal Zone Management Act (CZMA) (16 U.S.C. Section 1451 et seq.)
- Executive Order (EO) 11990 Protection of Wetlands
- National Historic Preservation Act (NHPA) (54 U.S.C. section 3001018 et seq.)
- Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001 et seq.)
- EO 13175, Consultation and Coordination with Indian Tribal Governments
- Energy Independence and Security Act (Section 438)
- Endangered Species Act (16 U.S.C. Section 1531 et seq.)
- Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (16 U.S.C. Section 1801 et seq.)
- Migratory Bird Treaty Act (16 U.S.C. Section 703 et seq.)
- Bald and Golden Eagle Protection Act (16 U.S.C. Section 668 et seq.)
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks
- DON Low Impact Development (LID) Policy

A description of the Proposed Action's consistency with these laws, policies and regulations, as well as the names of regulatory agencies responsible for their implementation, is presented in Chapter 5 (Table 5-1).

1.8 Public and Agency Participation and Intergovernmental Coordination

Federal law directs agencies to involve the public in reviewing and commenting on Navy actions. The Navy is committed to being an environmentally responsible neighbor and maintaining a transparent and collaborative relationship with the community.

The Navy has made the Draft EA available for public review and comment for 30 days, from May 15 through June 14, 2025, with a notice of availability published in the local newspaper (The Daily Herald). The notice of availability also was distributed to relevant agencies and identified stakeholders. The Draft EA has been posted at https://pacific.navfac.navy.mil/NWNEPA for review and comment. Additionally, hard copies of the Draft EA have been deposited with the following regional libraries:

- Marysville Public Library
  6120 Grove Street
  Marysville, Washington 98270
- Lakewood-Smokey Point Public Library
  3411 169th Place NE, Suite A
  Arlington, Washington 98223
- Arlington Public Library
  135 North Washington Avenue
  Arlington, Washington 98223

Public comments may be provided by email to: navfac-nw-NEPA@us.navy.mil or in writing by mail to:

Naval Facilities Engineering Systems Command Northwest, EV21
ATTN: NEPA Planner, Military Housing
1101 Tautog Circle, Room 102
Silverdale, Washington 98315-1101

Comments must be postmarked or received digitally by 11:59 p.m. Pacific Daylight Time on June 14, 2025, to be considered in the development of the Final EA.

The Navy is consulting with USFWS and NMFS under the Endangered Species Act (ESA) for federally-listed threatened and endangered species and designated critical habitat that may be affected by the Proposed Action. The Navy is also consulting with the NMFS under Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSFCMA) on Essential Fish Habitat (EFH) (Appendix A).

To comply with Section 106 of the NHPA, the Navy is consulting with the Washington State Historic Preservation Officer (WA SHPO) and affected tribes on the Proposed Action (Appendix C).

In accordance with Executive Order 13175 *Consultation and Coordination with Indian Tribal Governments,* and Department of Defense and Navy policy, the Navy invited the Tulalip Tribes of Washington, a potentially affected federally recognized tribe, to initiate GtG consultation on the Proposed Action (Appendix D).

2 Proposed Action and Alternatives

2.1 Proposed Action

The Navy proposes the execution of a real estate agreement and several construction, demolition, and renovation actions to develop two new residential neighborhoods that include parks, a community center, a leasing office, and nature trails.

2.2 Screening Factors

NEPA's implementing regulations provide guidance on the consideration of alternatives to a federally proposed action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable and to meet the purpose and need require detailed analysis. Potential alternatives that meet the purpose and need were evaluated against the following screening factors:

- availability of developable land on Navy-owned property
- access to established amenities to provide QOL support and services (such as the NEX, Commissary, and FFSC)
- availability of existing utilities at the site
- maximum commuting distance of 1 hour to Naval Station Everett
- meets projected construction and development timelines (completion by Summer 2027).

Alternatives that did not meet the screening factors are presented in Section 2.3. Alternatives carried forward based on the screening factors are presented in Section 2.4.

2.3 Alternatives Considered but not Carried Forward for Detailed Analysis

The following alternatives were considered but not carried forward for detailed analysis in this EA as they did not satisfy the reasonable alternative screening factors presented in Section 2.2.

2.3.1 Marysville Site

An alternative of moving the housing project to an undeveloped parcel in Marysville was considered but is not being carried forward for detailed analysis in the EA because the location did not satisfy the following screening factors: availability of developable land on Navy-owned property, availability of existing utilities at the site, and meets projected construction and development timelines.

The Marysville site is 100 acres of undeveloped land owned by PNC and would provide ample development capacity to build 88 single-family units on typical residential parcels. The site is located south of 98th Street NE and west of State Route 9 NE. Nearby sewer mains exist, however, an easement over private property or new road construction is required to connect the project site to existing sewer and potable water mains. Electrical power could be brought to the site without the need for a new easement, but the electrical connection has not been designed and would require construction of a new electrical feeder line.

In addition to providing a path for sewer connection, new road construction would be required to access the site. Access to a substantial portion of the site's buildable area would require extending 83rd Avenue NE south to connect with 84th Street NE. New Road construction and sewer connection to off-site

utilities would require permits and city approval, adding significant delays to construction and development timelines. Reliance on a new roadway to be constructed on property not owned or controlled by the Navy, potentially using county or state funds, presents a substantial risk to the project schedule. The funding, entitlement, and construction timeline for a new roadway would exceed the acceptable timeline for implementation of the Proposed Action.

This site would require 39 acres of tree clearing for the proposed development. This area has two streams that have been identified and there are wetlands that would need to be investigated to develop appropriate wetland delineations and mitigations. In-depth environmental studies would be required for tree clearing, wetland impacts, and watershed impacts. Environmental permits and consultations would contribute to extended construction timelines.

The commute from the Marysville site to Naval Station Everett is approximately 10 miles or an 18-minute drive, which does not immediately screen out this location.

The distance from the Marysville site to NFSC Smokey Point and Navy amenities including the NEX, Commissary, and FFSC is approximately 6 miles or a 12-minute drive. Private sector shopping amenities are available within a 3-to-6-mile range. The MHPI Legislation in 10 U.S.C. 2881 precludes PPV from building ancillary facilities in direct competition with the NEX, Commissary, or any non-appropriated fund activity of the DoD for the morale, welfare, and recreation of the armed forces. While access to QOL support and services is available within a reasonable commuting distance, those services would not be immediately available on site. The lack of on-site amenities alone does not preclude selection of this alternative but lowers its favorability.

2.3.2 Mount Vernon

An alternative of moving the housing project to Mount Vernon was considered but is not being carried forward for detailed analysis in the EA because the location did not satisfy the following screening factors: availability of developable land on Navy-owned property, access to established amenities, availability of existing utilities at the site, and meets projected construction and development timelines.

There is no property owned by the Navy or PNC in the Mount Vernon area. Therefore, land would need to be purchased by PNC, which would increase the development cost. Additionally, with no specific site identified, access to existing utilities was unknown, as was the availability of established amenities.

2.3.3 Naval Air Station Whidbey Island Crescent Harbor

An alternative of locating the housing project at Naval Air Station Whidbey Island (NASWI) was considered but is not being carried forward for detailed analysis in the EA because the location did not satisfy the following screening factors: availability of developable land on Navy-owned property, maximum commuting distance of 1 hour to Naval Station Everett, meets projected construction and development timelines. At the time of decision, there was no HRMA projected 2022 housing deficit at NASWI. The location was not suitable, as it would add longer commute times of 1 hour or more, to and from Naval Station Everett.

Considering the planned PPV recapitalization project at NASWI to replace the existing Whidbey Apartments, there was no additional Navy property available for consideration. As there was no housing deficit at NASWI, it would be inappropriate to add capacity as it would not be exclusive to Naval Station Everett Service Members. NASWI does offer access to established amenities such as the Navy Exchange, Commissary, and morale, welfare, and recreation facilities.

2.4 Alternatives Carried Forward for Analysis

Based on the reasonable alternative screening factors and meeting the purpose and need for the Proposed Action, one action alternative (the Preferred Alternative) and the No Action Alternative will be analyzed within this EA.

2.4.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and no new housing would be constructed. Junior enlisted military families assigned to commands at Naval Station Everett would continue to seek off-site accommodations in private sector housing, with an 8-12 month wait list for existing PPV family housing. The No Action Alternative would not meet the purpose of and need for the Proposed Action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in this EA. It provides a measure of the baseline conditions against which the impacts of the action alternative can be compared.

2.4.2 PPV Military Housing at NFSC Smokey Point (Preferred Alternative)

Under the Preferred Alternative, the Navy proposes to lease the site at NFSC Smokey Point to Pacific Northwest Communities, LLC, to allow for construction, demolition, and renovation actions to develop two new residential neighborhoods, renovate existing hotel suites to 20 apartment units, and include parks, a community center, and nature trails (Figure 2-1). The proposed expansion would add up to 108 low-rise multifamily housing units by constructing 88 townhomes surrounding the existing Navy family support complex and converting a former 72-room hotel into 20 apartments. The proposed additional housing units would support an estimated 250-350 new residents. Construction is anticipated to begin in January 2026.

NFSC Smokey Point is a 52-acre site located 11 miles and a 15-minute drive from Naval Station Everett. The proposed development would construct two new residential neighborhoods on the site: one to the north (repurposing approximately 9 acres of existing surface parking), and one to the south (repurposing approximately 7 acres of ballfields). The overall development plan calls for the construction of triplex and quadplex structures. The new construction would result in 88 multi-family, two-, three-, and four-bedroom homes in 25 new buildings on both the north and south parcels of NFSC Smokey Point. The plan allows for 176 garage parking spaces, additional parking in the driveways for up to 176 vehicles, and up to 50 guest parking spaces. An existing parking lot adjacent to the NGIS would be retained and would provide approximately 50 parking spaces for users of the repurposed community center. A north/south pedestrian spine connects the two areas to each other, as well as with the existing development central to the site.

Immediate available amenities exist at this location. Feasibility discussions for planned PPV housing identified NFSC Smokey Point as providing the full complement of QOL support and services such as the NEX, the Commissary, and the FFSC.

Vehicle access to the proposed housing development at NFSC Smokey Point is through existing connections to adjacent streets, and internal circulation branches off existing internal roadways. The Proposed Action would use existing or nearby roads, utilities, and stormwater facilities. Some features and infrastructure would require upgrades to adhere to Federal requirements and codes.

Table 2-1, below, summarizes key details of the Preferred Alternative.

Table 2-1 Preferred Alternative Summary

Item	*Details*	*Notes*
Impervious surface removed	Approximately 8.8 acres	The paved parking lot on the North Parcel would be demolished
Impervious surface created	Approximately 7.9 acres	5.8 acres on the North Parcel and 2.1 acres on the South Parcel (including buildings, driveways, roadways, sidewalks, and parking lots)
Net change in impervious surface	Approximately 0.9-acre reduction	Reduction accounts for changes on the North Parcel and South Parcel combined
Total pervious surface on project site	Approximately 6.5 acres	Approximate total pervious surfaces on the North Parcel and South Parcel combined.
New buildings constructed	25 buildings	The new building count excludes adaptive reuse of the NGIS for apartments
New housing capacity	250-350 new residents in up to 108 new or renovated units	88 new townhome-style units and 20 renovated apartments in the NGIS
New parking capacity	Approximately 400 new parking spaces	176 garage parking spaces, driveway parking for up to 176 vehicles, and up to 50 new guest parking spaces
Maximum height of new structures	Approximately 25 feet	
Maximum depth of excavation	Approximately 9 feet	New sewer lines will be placed approximately 8.5 feet below the ground surface
Construction duration	Approximately 16 months	Includes demolition and construction
Construction workforce	10-100 workers	Approximately 10 workers during lulls in construction and approximately 100 workers during peak construction periods
Potable water demand	Approximately 38,000 gallons per day	
Wastewater conveyance demand	Approximately 28,000 gallons per day	
Electricity demand	Approximately 5,200 kilowatt hours per day	
Stormwater treatment and conveyance capacity	The proposed stormwater runoff treatment system treats a quantity of stormwater up to the 2-year storm when downstream of detention and 91% of the total volume when upstream of detention. Stormwater flow controls meet the current SWMMWW requirements.	New bioretention cells on the North Parcel and bioretention basin on the South Parcel sized to meet flow control requirements, with a discharge pipe terminating at the edge of the wetlands to the south.

Figure 2-1 shows the initial conceptual site plan for family housing at NFSC Smokey Point. Subsequent design changes for the North Parcel and South Parcel are reflected in the detailed site plans for each parcel (Figure 2-2 and Figure 2-3).

Most of the North Parcel is currently about 9 acres of asphalt and concrete, i.e., impervious surface (Figure 2-4). The plan calls for demolishing the paved areas and repurposing the area for landscape, housing, and overflow parking. The Navy also plans to demolish one 5,000-square-foot warehouse. The North Parcel would include 18 new triplex and fourplex residential structures and a central park with a large playground (Figure 2-2).

Proposed demolition on the South Parcel would remove ball fields and a portion of existing tennis courts (Figure 2-5). Grading would occur in support of the new housing. The South Parcel would include seven new triplex and fourplex housing structures and a picnic area (Figure 2-3).

Renovation activities would include modification of a current warehouse, and adaptive re-use of NGIS into apartments, a Community Center, and Leasing Office. The reuse of the NGIS building would be proposed to maximize housing options since its closure in 2020. The plan calls for the conversion of existing suites into 20 apartments (Figure 2-6). Apartments would include a mix of two- and three-bedroom units. Some of the exterior stairwells would be converted and incorporated into townhome-style units. The original exterior design of the NGIS buildings would mostly be retained and minimally upgraded as required by proposed renovations. A section of 8,000-square-foot office would remain and be repurposed as part of the Community Center (Figure 2-7).

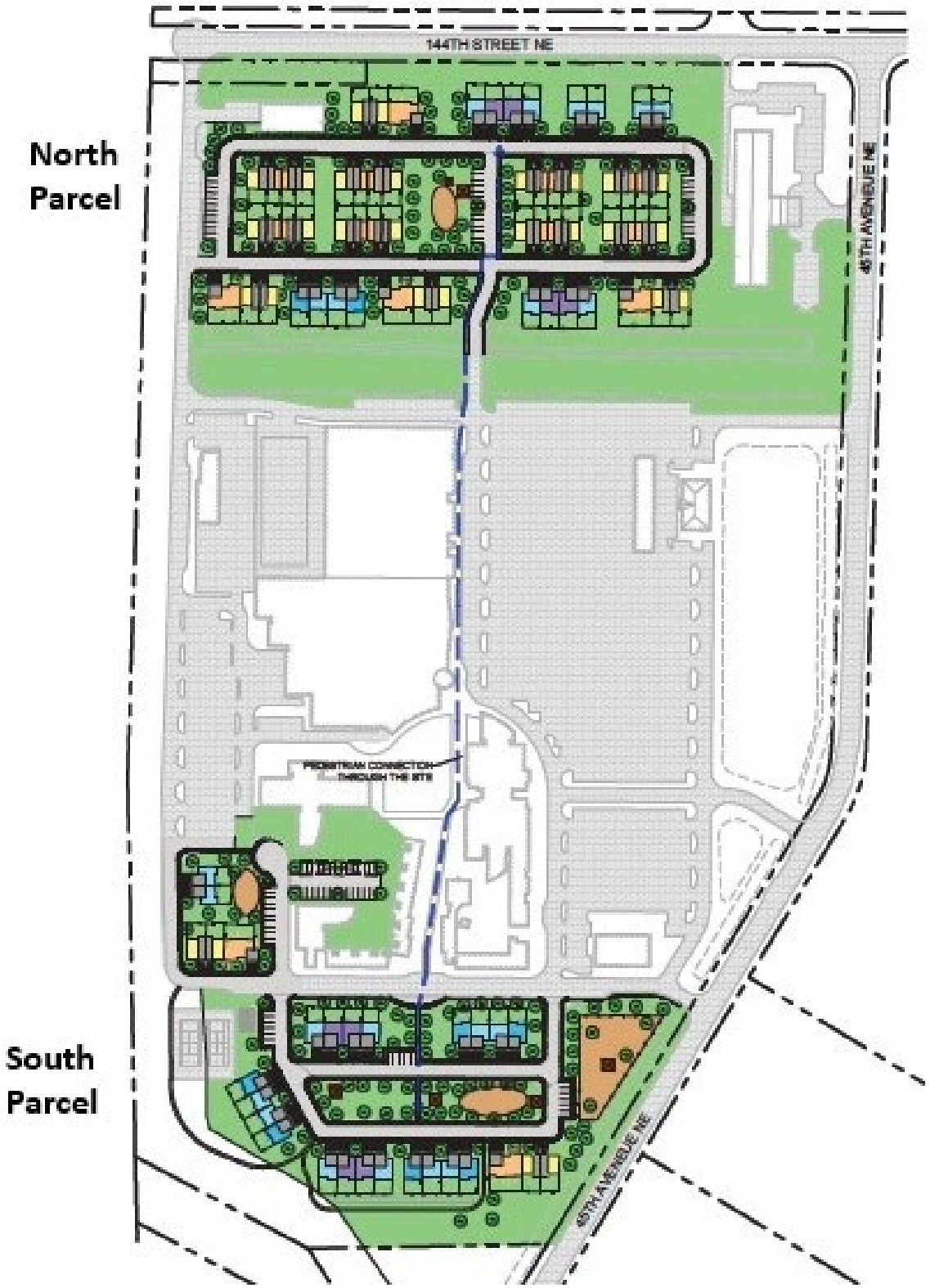


Figure 2-1 Preferred Alternative: PPV Military Housing at NFSC Smokey Point

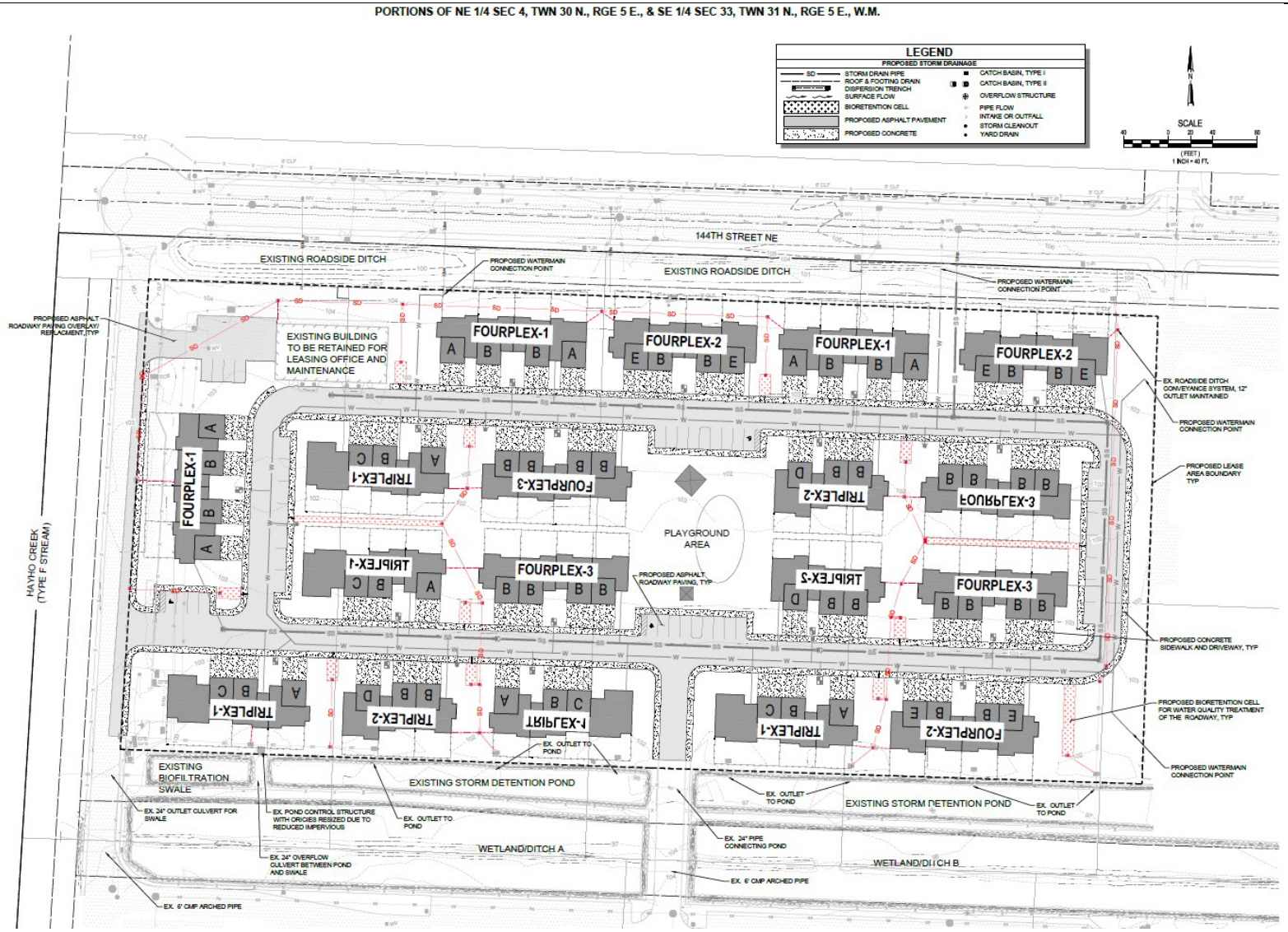


Figure 2-2 NFSC Smokey Point: North Parcel Proposed Housing Development

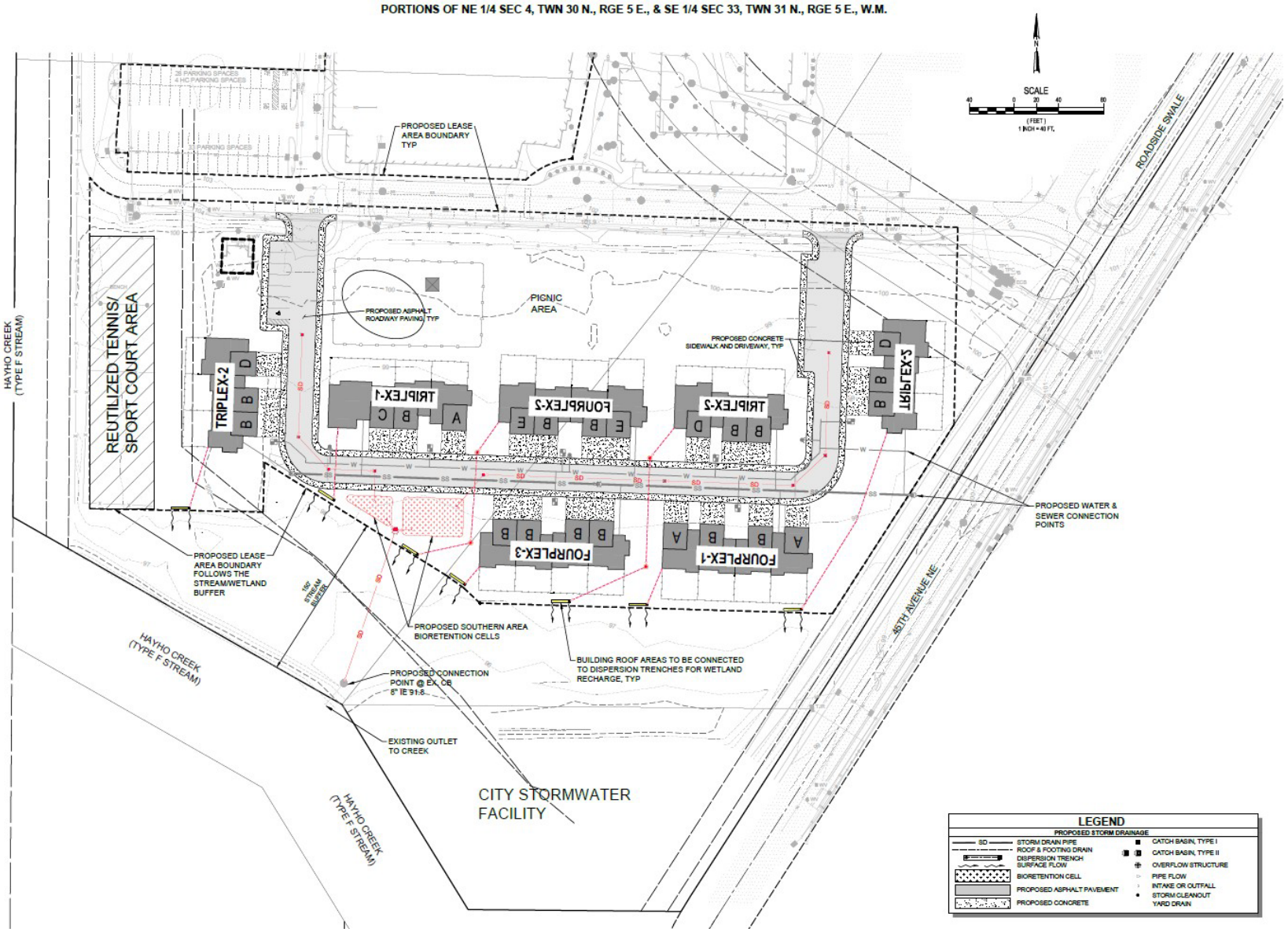


Figure 2-3 NFSC Smokey Point: South Parcel Proposed Housing Development

Figure 2-4 North Parcel Existing Conditions

Figure 2-5 South Parcel Existing Conditions

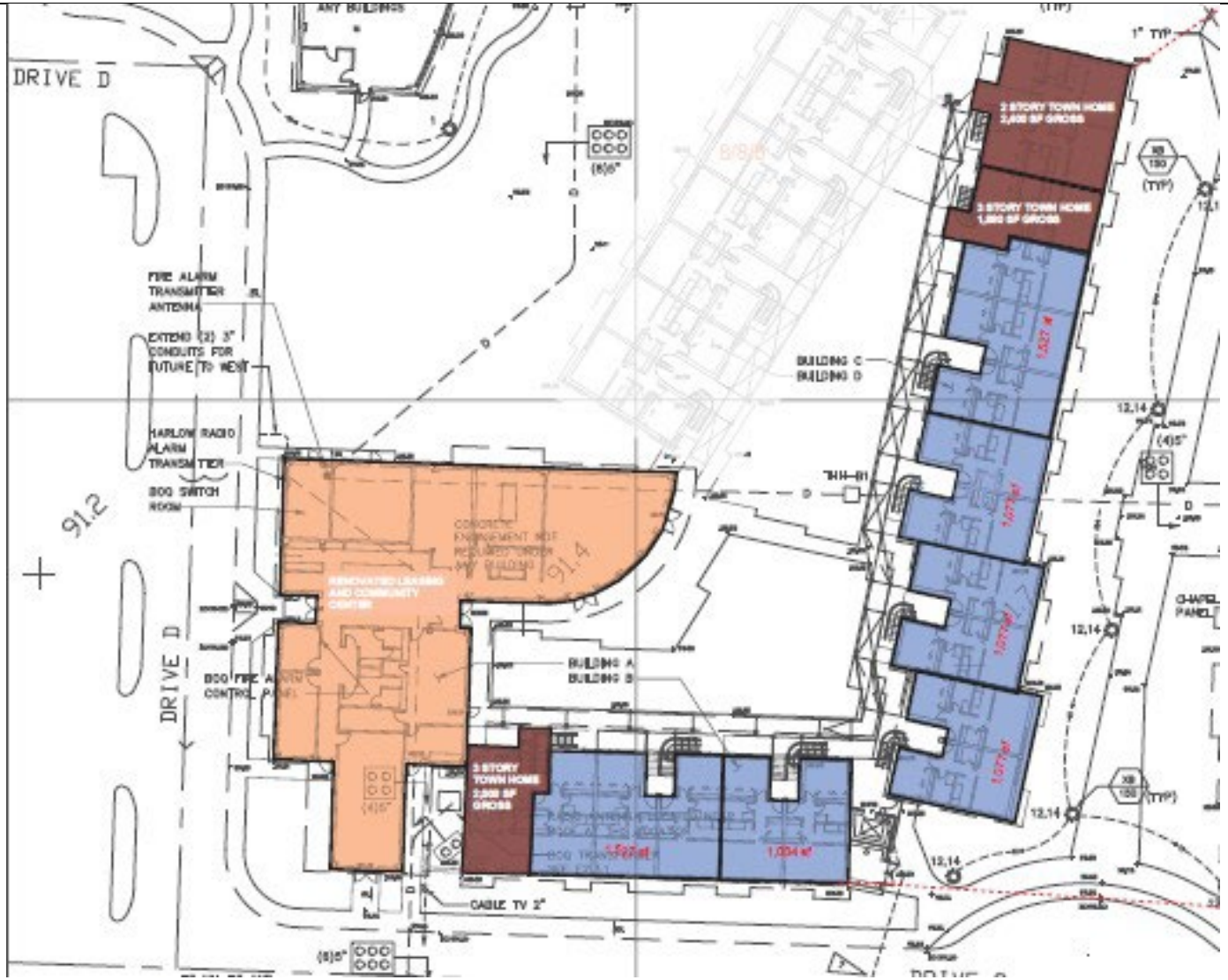


Figure 2-6 Adaptive Re-use of Existing NGIS Suites into Apartments

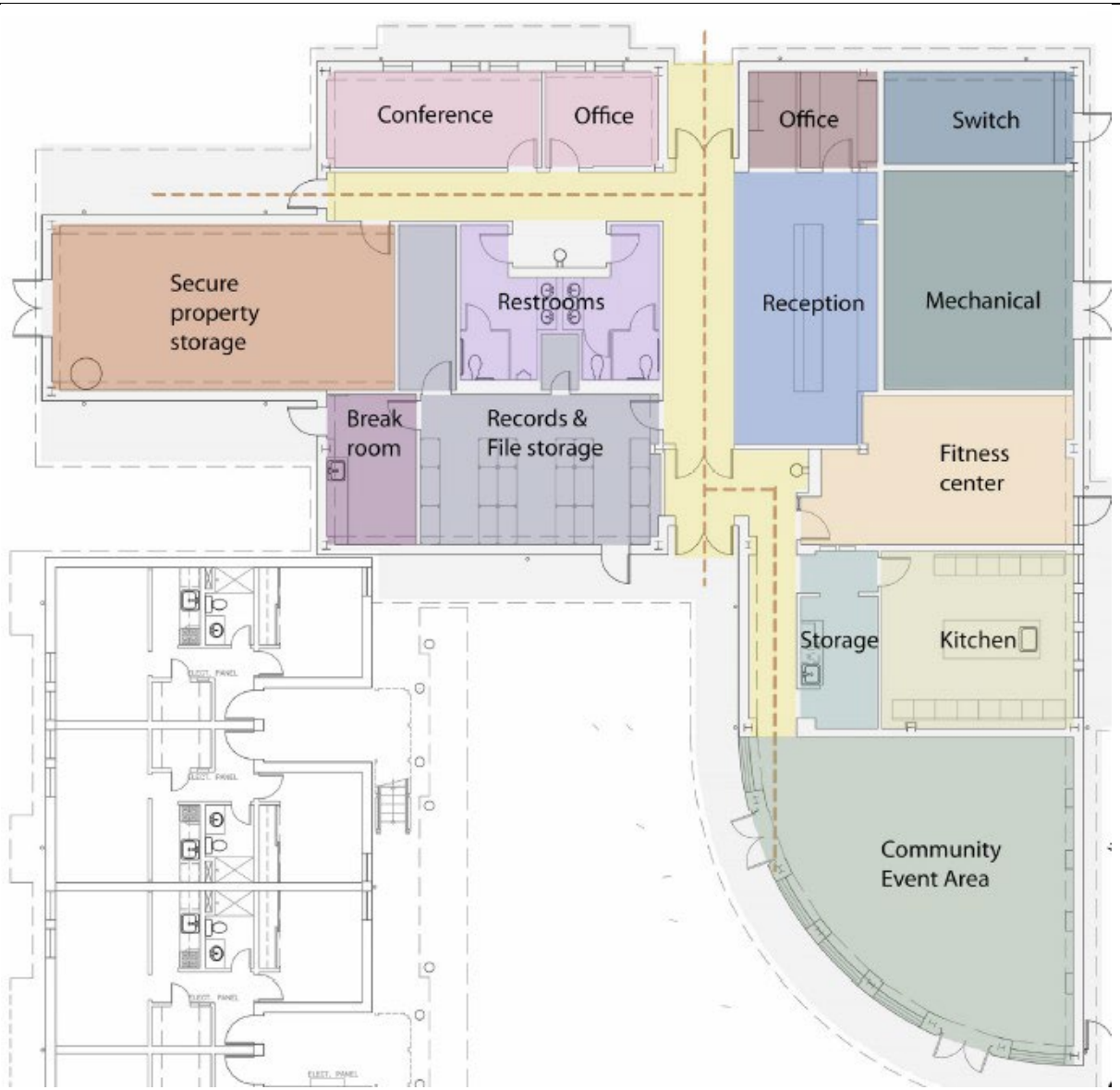


Figure 2-7 Proposed Repurposing NGIS into Community Center

2.5 Best Management Practices Included in Proposed Action

This section presents an overview of the BMPs that are incorporated into the Proposed Action in this document (Table 2-2). BMPs are existing policies, practices, and measures that the Navy would adopt to reduce the environmental impacts of designated activities, functions, or processes. Although BMPs mitigate potential impacts by avoiding, minimizing or eliminating impacts, BMPs are distinguished from potential mitigation measures because BMPs are (1) existing requirements for the Proposed Action, (2) ongoing, regularly occurring practices, or (3) not unique to this Proposed Action. In other words, the BMPs identified in this document are inherently part of the Proposed Action and are not potential mitigation measures proposed as a function of the NEPA environmental review process for the Proposed Action. BMPs include actions required by federal or state law or regulations. The recognition of the general management measures prevents unnecessarily evaluating impacts that are unlikely to occur.

Table 2-2 Best Management Practices

BMP	*Description*	*Impacts Reduced/Avoided*
General Construction Best Management Practices	These requirements are incorporated into the construction contract and include adherence to construction permit requirements, stormwater management and erosion control, maintenance of construction equipment, spill containment, spill response, fugitive dust control, and construction worker safety.	Reduces potential water quality impacts.
Discovery Plan	Construction monitoring will be required for ground disturbance below 4 feet—with a focus on the sewer lines excavation. A Discovery Plan which will include a Plan of Action will include information should archaeological material or human remains be encountered during construction.	Reduces potential cultural resources impacts.
Fugitive Dust Controls	Fugitive dust at the site will be controlled in accordance with Puget Sound Clean Air Agency regulations (Regulation1, Section 9.15). Precautions to control fugitive dust originating from the project site may include the use of control equipment, enclosures, and wet suppression techniques during high wind conditions, stabilizing construction sites, cleaning vehicles, the use of track outs and exit aprons, and covering or wetting haul truck loads prior to departure to or from the site.	Reduces potential air quality impacts.
Stormwater Management Plan (SWMP)	A plan that includes pollution prevention measures, treatment or removal techniques, monitoring, use of legal authority, and other appropriate measures to control the quality of stormwater discharged to the storm sewer system and thence to waters of the United States.	Reduces potential water quality impacts.

Table 2-2 Best Management Practices

BMP	*Description*	*Impacts Reduced/Avoided*
Stormwater Controls (paved surfaces)	Stormwater management facilities would be upgraded to current flow management standards under the Stormwater Management Manual for Western Washington (SWMMWW) and use bioretention cells or other Washington Department of Ecology (WDOE) GULD stormwater technologies (WDOE 2024a; WDOE 2024b). The proposed bioretention cells meet the T7.30 BMP specifications in the SWMMWW and have been shown to reduce metal contamination, oil, total suspended solids, and have also been rated as having a high potential to treat 6PPD-Q (Nazarpour et al., 2023; WDOE, 2022). Operational BMPs include street sweeping and stormwater system maintenance, which are source control BMPs with high potential to treat 6PPD-Q (WDOE, 2022). Additional required operational BMPs include painting galvanized metals and pet waste management.	Prevents impacts to surface water quality and protects fish, including ESA-listed salmon and salmon species which are protected tribal resources.
Environmental Protection Plan (EPP)	The EPP identifies spill sources at the work site and outlines responsive actions in the event of a spill or release, as well as notification and reporting procedures.	Reduces potential water quality impacts.
Construction Material Storage	Construction materials would not be stored where high water or upland runoff could cause materials to enter surface waters.	Reduces potential water quality impacts.
No Discharge of Unauthorized Pollutants	No petroleum products, fresh cement, lime, fresh concrete, chemicals, or other toxic or harmful materials would be allowed to enter surface waters. Washwater resulting from washdown of equipment or work areas would be contained for proper disposal and would not be discharged unless authorized. Equipment that enters surface water would be maintained to prevent any leaks or pollutants from washing off and entering surface water. There would be no discharge of oil, fuels, or chemicals to surface waters, or onto land where there is potential for re-entry into surface waters. Fuel hoses, oil drums, oil or fuel transfer valves, fittings, etc., would be checked regularly for leaks. Materials would be maintained and stored properly to prevent spills. No cleaning chemicals or solvents would be discharged to ground or surface waters.	Reduces potential water quality impacts.

3 Affected Environment and Environmental Consequences

This chapter presents a description of the environmental resources and baseline conditions that could be affected from implementing any of the alternatives and an analysis of the potential direct and indirect effects of each alternative.

All potentially relevant environmental resource areas were initially considered for analysis in this EA. In compliance with NEPA and Navy guidelines, the discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

"Significantly," as used in NEPA, requires considerations of both context and intensity. Context means that the significance of an action must be analyzed under several perspectives such as society as a whole, the affected region, the affected interests, and the locality. Significance varies with the setting of a proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant. Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be to be considered significant. Likewise, the less sensitive the context, the more intense a potential impact would need to be in order to be significant.

This section includes water resources, biological resources, air quality, cultural resources, American Indian traditional resources, land use, infrastructure, and transportation.

The potential impacts to the following resource areas are considered to be negligible or non-existent so they were not analyzed in detail in this EA:

Airspace: The nearest airport to the project area is Arlington Municipal Airport (Airport Code AWO), located approximately 3 miles to the northeast. The Proposed Action does not involve the construction of any structure taller than two-stories, and new facilities would not exceed the height of existing facilities on the project site. All new exterior lighting would be downward-facing and fully shielded, which would prevent glare that could interfere with local flight operations. The Proposed Action would not impact airspace resources.

Geological Resources: NFSC Smokey Point is located in a seismically active area susceptible to impacts from geological hazards such as regionally active volcanoes, earthquakes, and ground liquefaction. The Proposed Action would involve site preparation to create a suitable area for construction. Previous geotechnical studies indicate the project site contains approximately four feet of fill materials. The nearest major (capable of producing an earthquake greater than 7.0 magnitude) and active faults to NFSC Smokey Point are the South Whidbey Fault Zone and the Darrington-Devils Mountain Fault Zone, located roughly 15 miles to the south and 9 miles to the north, respectively.

Because NFSC Smokey Point is constructed on fill materials, the risk of soil liquefaction is elevated. However, these conditions are well known and have been incorporated into the planning and construction processes of Naval Station Everett for decades. All buildings would be designed based on 2018 International Building Code and Navy requirements and would withstand strong shaking and lateral forces during an earthquake. During construction, worker safety procedures would be followed in the event of an earthquake, including the posting of evacuation routes and safety areas in the event of a

tsunami threat. The Proposed Action would not change existing geological resources or geologic hazard conditions and there would be no impact to geological resources from implementation of the Proposed Action.

Hazardous Materials and Wastes: Proposed construction activities could result in temporary increases in the presence and use of hazardous materials onsite, such as petroleum, oils, and lubricants used in the operation of construction-related motors and vehicles. However, the use, storage, and disposal of hazardous materials and wastes during the construction period would be managed per applicable regulations, the Naval Station Everett Hazardous Waste Management Plan (HWMP) (Naval Facilities Engineering Systems Command, Northwest [NAVFAC Northwest], 2021), and the use of standard general construction BMPs (refer to Section 2.5, Best Management Practices). The Proposed Action would not require construction within known hazardous materials or waste sites. Should hazardous materials and/or contaminated soil be encountered during construction, appropriate procedures would be followed and the material would be isolated or removed in accordance with federal and state regulations.

The Proposed Action post-construction activities would not change the types of, nor increase the amount of, hazardous materials used, or hazardous wastes generated at the project site. Therefore, implementation of the Proposed Action would have no impacts related to hazardous materials and wastes, and conditions and circumstances related to hazardous materials and wastes would remain effectively unchanged.

Noise: The Proposed Action occurs in a peripheral area of the cities of Marysville and Arlington, Washington. The project site is in a generally industrial area with a small residential neighborhood to the north and one further to the east. The Proposed Action involves site preparation and construction on the project site and may result in short-term noise impacts to nearby residences which would cease upon the completion of project construction. Long-term noise impacts are anticipated to be minimal and typical to residential areas. The Proposed Action would not result in any substantive change to the noise environment of the surrounding region.

Public Health and Safety: Renovation of existing buildings and construction of new buildings or additions would be conducted in accordance with established Navy policies for ensuring the health and safety of the public. Applicable building safety requirements would be incorporated into new construction and renovation. Contractors working at NFSC Smokey Point must adhere to Occupational Safety and Health Administration (OSHA) requirements and the Army Corps of Engineers' Manual 385-1-1, Safety and Health Requirements. A project-specific Health and Safety Plan would be prepared prior to the start of activities. Under the No Action Alternative, there would be no change to the availability of, or access to, emergency response services (i.e., police, fire, and paramedics) to the surrounding community. Under the Proposed Alternative, additional demand for emergency response due to the creation of 108 new housing units at NFSC Smokey Point would be minimal and is not expected to adversely strain local emergency resources. Vehicles used in construction and renovation activities and transport of construction materials would travel on public roadways to access NFSC Smokey Point and would follow all applicable traffic laws and regulations to minimize risks to other drivers.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directs that federal agencies shall "make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or

safety risks." Under the Proposed Action, standard jobsite safety measures would be implemented, which include securing equipment, materials, and vehicles; erecting fencing; and adhering to any other requirements in the project Health and Safety Plan. The nearest childcare facility, the Tender Hearts Day School, is located more than one half mile from the proposed northern neighborhood construction site. Due to the distance from the construction site and the physical barrier of the daycare facility, children would be exposed to minimal construction noise. Construction noise exposure while children are playing outdoors would be temporary, short-term, and attenuated by the distance between the daycare facility and the construction site. There would be no environmental health or safety risks that may disproportionately affect children from implementation of the Proposed Action.

Socioeconomics: The Proposed Action involves the development of 108 new dwelling units at the project site. The new dwelling units are anticipated to be occupied primarily by junior enlisted military families who are already stationed at Naval Station Everett but living in private market housing in the surrounding region. In total, between 250-350 enlisted personnel and their immediate family members are expected to reside within the proposed development. The average number of dependents per military personnel is 2.3 individuals, including spouses, children, and other adult dependents (U.S. DoD, 2021). The Proposed Action is located within Census Track 528.03, which includes portions of the City of Marysville and the City of Arlington. As of the 2020 U.S. Census, the tract has a total population of 6,245 people, of which 75-percent are over the age of 18 (4,690 individuals). The Proposed Action would increase the total number of people living in the census track to between 6,495 and 6,595, or an increase of between 4- and 5.6-percent.

The project site is located within the 2nd District of the Marysville School District. Dependents under the age of 18 can be anticipated to attend schools within this district. The nearest elementary school to the project site is Shoultes Elementary School, the nearest middle school is Cedarcrest Middle School, and the nearest high school is Marysville Pilchuck High School. The Proposed Action is anticipated to increase the population of individuals under the age of 18 by up to approximately 100 individuals who may attend these public schools or private schools in the region. A concentration of up to 100 new school-aged children is not anticipated to adversely strain local schools because these children would be distributed across age groups and schools, and some of them may have already been attending local schools while living in private-sector housing.

The population increase resulting from the Proposed Action is anticipated to come from the surrounding region. New military housing options at the project site are intended to free up existing private market and rental housing by transitioning junior enlisted military families to the new PPV dwelling units constructed via the Proposed Action. Naval Station Everett personnel may be widely and unevenly distributed within the region surrounding the installation. The reconcentration of junior enlisted military families at the project site is unlikely to adversely affect the socioeconomic conditions of the broader region. For these reasons, the Proposed Action was determined to have negligible impacts to socioeconomics.

Visual Resources: The analysis of visual resources considers the natural and built features of the landscape visible from public viewpoints that contribute to an area's visual quality. NFSC Smokey Point is in a generally flat area that is characterized by industrial activity and adjacent residential development. Viewsheds from and through the project site are obstructed by industrial facilities, existing housing developments to the north and east, landscaping, and native vegetation. No vegetation, other than lawn, will be removed by the implementation of the Proposed Action. The maximum height of the proposed structures is approximately 25 feet, the same as or lower than existing facilities on the project

site. The development of the Proposed Action would not adversely alter viewsheds in the surrounding area.

3.1 Water Resources

This discussion of water resources includes groundwater, surface water, wetlands, and floodplains. The study area for water resources consists of the NFSC Smokey Point facility and downstream creeks that receive stormwater runoff discharges from the Proposed Action site. Stormwater leaving the project site enters Hayho Creek, which flows into Middle Fork Quilceda Creek and then into the mainstem of Quilceda Creek about a mile downstream from the facility.

Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs and wells. Groundwater is used for water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition. Sole source aquifer designation provides limited protection of groundwater resources which serve as drinking water supplies.

Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. A Total Maximum Daily Load (TMDL) is the maximum amount of a substance that can be assimilated by a water body without causing impairment. A water body can be deemed impaired if water quality analyses conclude that exceedances of water quality standards occur. No natural waterbodies occur on the project site, only constructed stormwater ditches and detention ponds. Surface water considered in this section refers to the stormwater runoff from the facility to downstream creeks.

Wetlands are jointly defined by the U. S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE) in 33 Code of Federal Regulations (CFR) Section 328.3 as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands generally include “swamps, marshes, bogs and similar areas.”

Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplain boundaries are most often defined in terms of frequency of inundation, that is, the 100-year and 500-year flood. Floodplain delineation maps are produced by the Federal Emergency Management Agency (FEMA) and provide a basis for comparing the locale of the Proposed Action to the floodplains.

3.1.1 Regulatory Setting

The Safe Drinking Water Act is the federal law that protects public drinking water supplies throughout the nation. Under the Safe Drinking Water Act, the EPA sets standards for drinking water quality. Groundwater quality and quantity are regulated under several statutes and regulations, including the Safe Drinking Water Act.

Through the NPDES program, the CWA establishes federal limits on the amounts of specific pollutants that can be discharged into surface waters. The NPDES program regulates the discharge of point (i.e., end of pipe) and nonpoint (i.e., stormwater) sources of water pollution.

EPA administers the NPDES program within the State of Washington and has general permitting authority. Federal facilities in the State of Washington are eligible for coverage under an individual NPDES permit or the multi-sector general permit from EPA. Construction activities with the potential to discharge into Waters of the U.S. and that disturb one or more total acres of land at federal facilities are eligible for coverage under EPA's construction general permit (CGP). Compliance with the CGP requires development of a construction site- SWPPP document.

Surface water quality standards contained in Washington Administrative Code (WAC) 173-210A provide the basis for protecting and regulating the quality of surface waters in the State of Washington. The standards implement portions of the CWA by specifying the designated and potential uses of waterbodies in the state and set water quality criteria to protect those uses and acknowledge limitations. The standards also contain policies to protect high-quality waters (anti-degradation) and specify how criteria are to be implemented.

Section 438 of the Energy Independence and Security Act establishes stormwater design requirements for development and redevelopment projects. Under these requirements, federal facility projects larger than 5,000 square feet must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow."

Requirements and policies regarding stormwater discharges for Navy facilities are set forth in the Department of the Navy's Environmental Readiness Program Manual, Office of the Chief of Naval Operations (OPNAV) M-5090.1. These requirements state that Navy facilities must comply with all substantive and procedural requirements applicable to point and non-point sources of pollution as required by EO 12088, *Federal Compliance with Pollution Control Standards*, and the CWA. Navy policy regarding point source stormwater discharges from Navy facilities is that these discharges must meet all applicable federal, state, and local permit requirements, including control requirements for toxic and non-conventional pollutants and best conventional technology limits for conventional pollutants. The Navy's policy on stormwater management and non-point source pollution control requires commands to ensure that all activities comply with stormwater management and pollution prevention requirements, as stipulated in permits under which the activity is covered.

EO 11988, *Floodplain Management*, requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development unless it is the only practicable alternative. The flood potential of a site is usually determined by the 100-year floodplain, which is defined as the area that has a one percent chance of inundation by a flood event each year.

3.1.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under water quality resources at NFSC Smokey Point.

3.1.2.1 Groundwater

As described in the INRMP (Naval Station Everett, 2022), NFSC Smokey Point is within the Marysville trough valley, where sediments include thick glacial sands and silts that were deposited as the glaciers retreated. The Marysville trough is also comprised of wetlands over a significant percent of the area due to the high groundwater table. The location of NFSC Smokey Point was formerly agricultural land that was subsequently purchased and developed by the Navy. The 52 acres constituting NFSC Smokey Point were built up through the placement of fill or graded material, except for the wetland areas and the riparian buffer of Hayho Creek. Water from the several stormwater detention ponds located at the site infiltrates into the groundwater and the one linear wetland feature south of the North Parcel. All water used at the facility is provided by local utilities and no groundwater is withdrawn or injected at the site. Groundwater quality is subject to Washington State groundwater standards (WAC 173-200) in accordance with the National Pollutant Discharge System Phase II Municipal Separate Storm Sewer Systems (MS4) permit, Section 1.3.1 (described in detail in the next section).

3.1.2.2 Surface Water

NFSC Smokey Point is located within the Quilceda Creek Watershed (Figure 3-1). Stormwater within the 52-acre NFSC Smokey Point facility is collected from impervious surfaces, routed through ditches, pipes, and detention ponds and discharged to Hayho Creek (Figure 3-2). Hayho Creek runs along the western and southern property boundary of NFSC Smokey Point, with a 50-foot native vegetation buffer on Navy property (Figure 3-2, Figure 3-3). Hayho Creek is a seasonal tributary of the Middle Fork Quilceda Creek, which flows into Quilceda Creek and then discharges into Ebey Slough, a distributary channel (side channel) of the Snohomish River. It is in Water Resource Inventory Area 7, Hydrologic Unit Code 171100110204. Hayho Creek runs in a series of ditches, originally channelized to drain the surrounding wetlands for agriculture.

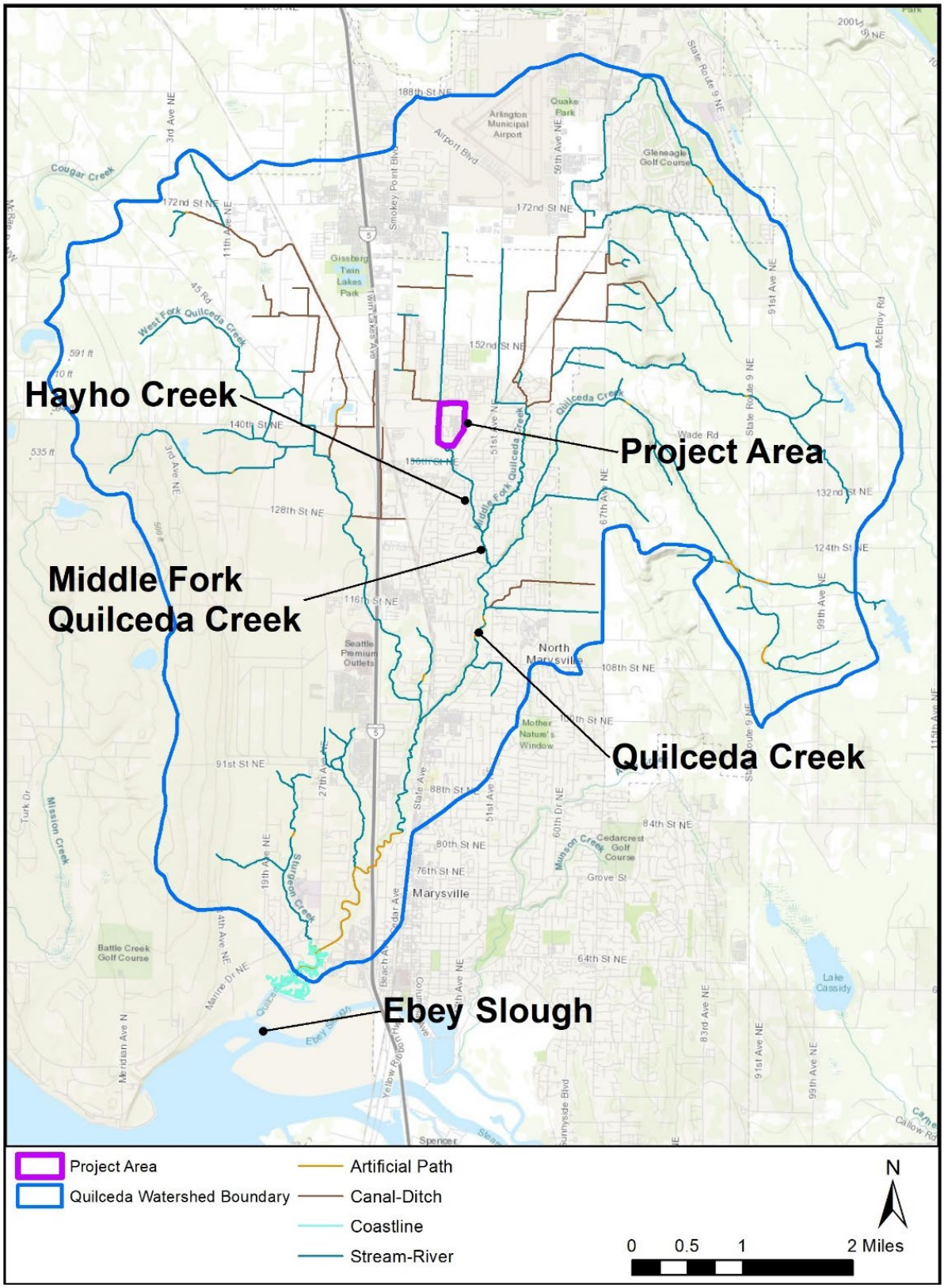


Figure 3-1 Quilceda Creek Watershed Overview

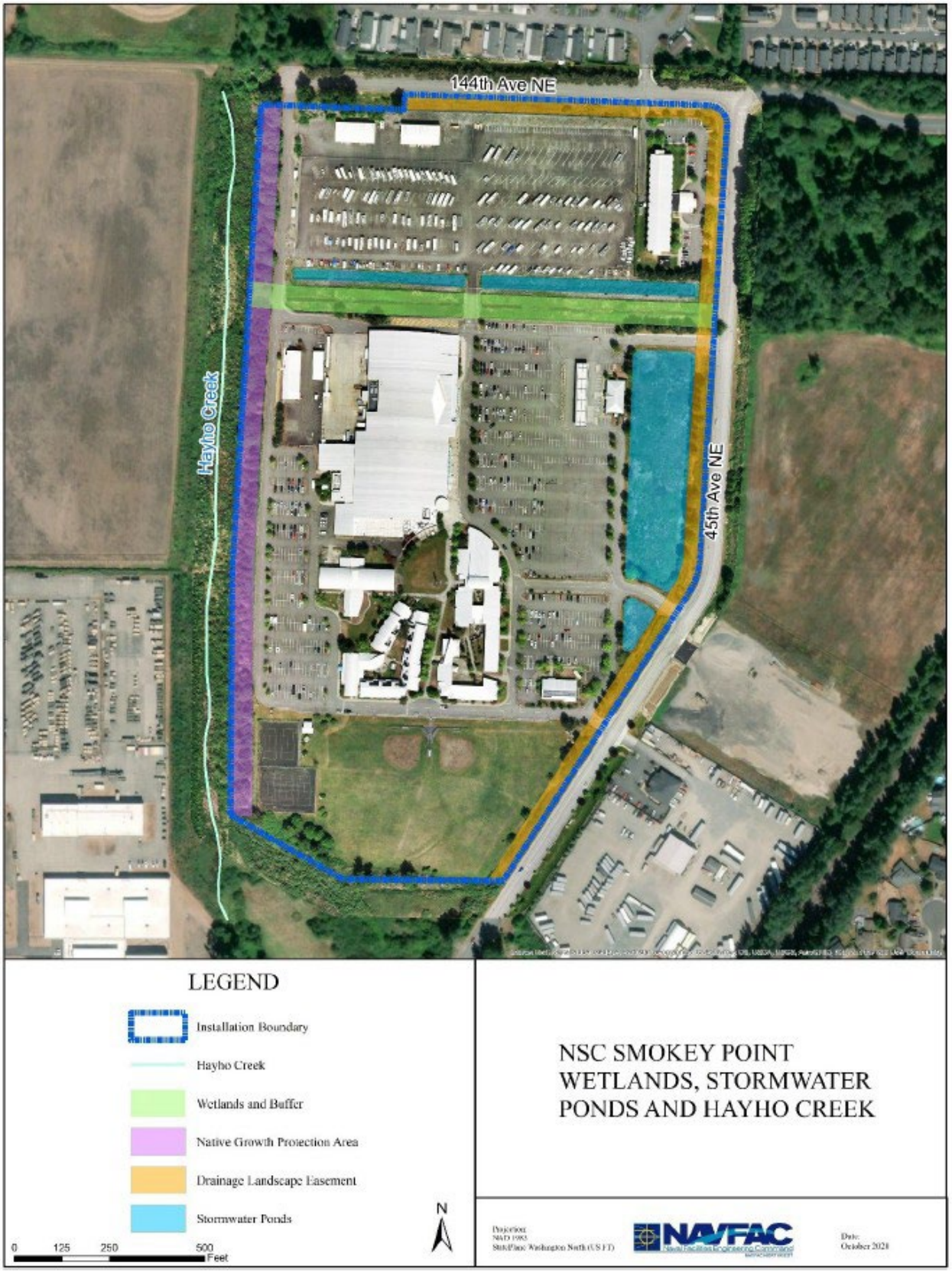


Figure 3-2 Hydrologic Features at NFSC Smokey Point

Figure 3-3 Hayho Creek, West of Project Site, Looking South

A dye test was conducted in May and June 2022 to determine stormwater flow paths through the NFSC Smokey Point site (NAVFAC Northwest, 2022c). The results are illustrated in Figure 3-4. Red arrows indicate surface flow and blue arrows indicate below-ground flow through pipes. The north parking lot, currently used as recreational vehicle storage that would be developed as housing under the Proposed Action, drains through grates and subsurface drains to the stormwater ponds, then through a vegetated swale, and discharges to Hayho Creek on the west side of the property (Figure 3-5). The ballfields in the southern part of the property, which would be developed as housing under the Proposed Action, are drained by underground pipes with an outlet to Hayho Creek at the south edge of the property on the west side of the city stormwater facility.

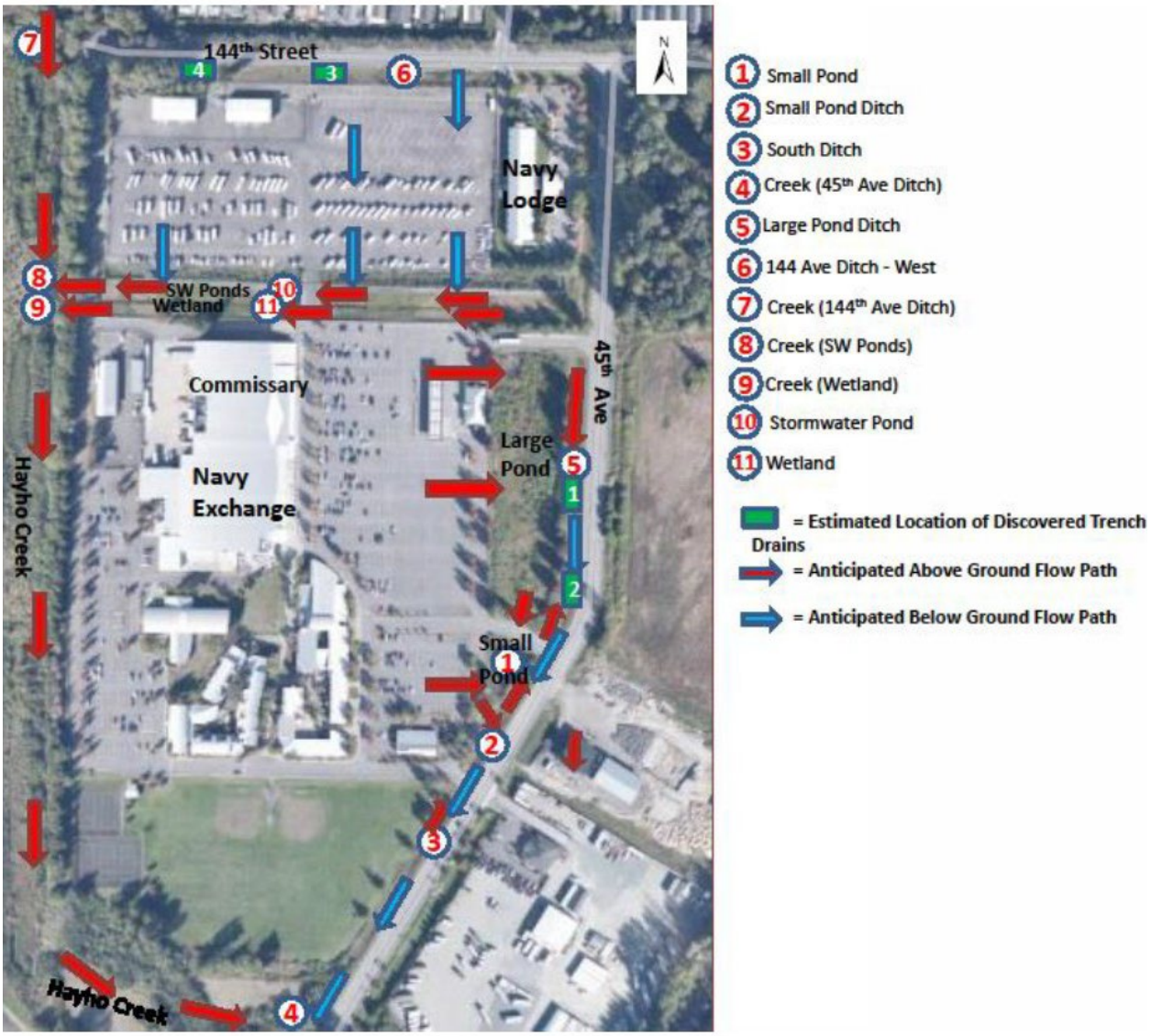


Figure 3-4 Current Drainage at NFSC Smokey Point

Figure 3-5 Existing Stormwater Outfall to Hayho Creek, West of Project Site

NFSC Smokey Point is managed under a National Pollutant Discharge System Phase II MS4 permit number WAS026620 that was issued by the EPA in February 2021. As part of that permit, water quality data were collected to identity Early Action Projects in 2021 and 2022 (NAVFAC Northwest, 2022a; NAVFAC Northwest, 2022b). The studies focused on the currently developed portions of the site, and did not collect samples below the area with ballfields that will be developed under the Proposed Action.

The 2021 sampling results included two locations that were downstream of the northern portion of the project site (the RV parking lot) and two samples collected from the large and small ponds located along the east side of the property that are downstream from the large parking lot adjacent to the gas station (Figure 3-4).

Total zinc and dissolved zinc were above the WAC 173-201A surface water quality standards in the large pond, small pond, and at the creek (location 8 on Figure 3-4). Fecal coliform concentrations were above the WAC 173-201A standards at the top of the stormwater pond (location 10 on Figure 3-4) and the small pond (location 1 on Figure 3-4). The small pond also showed concentrations of total copper and dissolved copper above WAC 173-201A surface water quality standards (NAVFAC Northwest, 2022a).

Water quality sampling for copper, zinc, and fecal coliform at 12 locations as part of the dye study conducted in 2022 yielded copper and fecal coliform levels above Multi-Sector General Permit for Stormwater Discharges from Industrial Activities (MSGP) or WAC 173-201A standards at one ditch location along the east side of the site (location 5 on Figure 3-4) and zinc exceedances in the sample collected from Hayho Creek at the outlet of the stormwater ponds on the west side of the property (location 8 on Figure 3-4).

Hayho Creek, listed as Unnamed Creek (tributary to Quilceda Creek, middle fork), is included on the list of waterbodies considered impaired, or not meeting the CWA water quality standards. Hayho Creek is also on the Washington State Water Quality Assessment (303(d)/305(b) list) for poor dissolved oxygen (Category 5, polluted water that requires a water improvement project), and fecal coliform (Category 4a, impaired water that already has an approved TMDL). Hayho Creek is part of the TMDL for fecal coliform approved in 2002 (WDOE, 2024c).

Water quality issues identified in Quilceda Creek are dissolved oxygen and bacteria. Fecal coliform, low dissolved oxygen, and elevated stream temperatures were identified in the West Fork Quilceda, Middle Fork, and mainstem Quilceda. High levels of nutrients were identified overall in the Quilceda watershed. Nutrient levels were often associated with algal production and contributed to low dissolved oxygen levels. Water samples from a multi-year monitoring site at the confluence of Hayho Creek with the mainstem had elevated fecal coliform and low dissolved oxygen, while stream temperature, turbidity, and potential of hydrogen (pH) were typically in an acceptable range. Quilceda Creek has a TMDL for fecal coliform that was approved in 2002 (WDOE, 2024c). A TMDL for dissolved oxygen has not yet been implemented.

3.1.2.3 Wetlands

There is one wetland area at NFSC Smokey Point, at the northern end of the property, between the gas station and north parking lot, oriented east-west (location 11 on Figure 3-2). This small 1.6-acre wetland drains toward the west into Hayho Creek. This wetland predates the construction of NFSC Smokey Point and was likely a legacy drainage ditch constructed for agricultural purposes. There is no surface water connection between the stormwater drainage system and the wetland, although there may be some

percolation through the ground (NAVFAC Northwest, 2022c). Additional wetlands are located off-site to the west and south, adjacent to Hayho Creek (Figure 3-6).

Figure 3-6 Hayho Creek and Wetlands South of Project Site

3.1.2.4 Floodplains

The entire NFSC Smokey Point facility is classified as Zone X, an area of minimal flood hazard (FEMA, 2024).

3.1.3 Environmental Consequences

In this EA, the analysis of water resources looks at the potential impacts on groundwater, surface water, wetlands, and floodplains. Groundwater analysis focuses on the potential for impacts to the quality, quantity, and accessibility of the water. The analysis of surface water quality considers the potential for impacts that may change the water quality, including both improvements and degradation of current water quality. The impact assessment of wetlands considers the potential for impacts that may change the local hydrology, soils, or vegetation that support a wetland. The analysis of floodplains considers if any new construction is proposed within a floodplain or may impede the functions of floodplains in conveying floodwaters.

Analysis of potential impacts considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment that result in adverse impacts to water resources, ecosystems, and species. Indirect effects to water resources are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable.

3.1.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline water resources. Therefore, no changes to water resources compared to existing conditions would occur with implementation of the No Action Alternative.

3.1.3.2 PPV Military Housing at NFSC Smokey Point (Preferred Alternative) Potential Impacts

The study area for the analysis of effects to water resources associated with the Preferred Alternative includes the NFSC Smokey Point facility and downstream creeks that receive stormwater runoff discharges from the site. Stormwater runoff from the project site enters Hayho Creek, which seasonally flows into the Middle Fork Quilceda Creek and then into the mainstem Quilceda Creek about a mile downstream from the facility.

The Preferred Alternative would re-develop existing paved parking areas and grass baseball fields within the project site. In addition, stormwater management facilities would be upgraded to current flow management standards under the SWMMWW and use bioretention cells or other WDOE General Use Level Designation (GULD) stormwater technologies (WDOE 2024a; WDOE 2024b). The proposed bioretention cells (Figure 3-7) meet the T7.30 BMP specifications in the SWMMWW and have been shown to reduce metal contamination, oil, total suspended solids, and have also been rated as having a high potential to treat 6PPD-Quinone (6PPD-Q)[1] (Nazarpour et al., 2023; WDOE, 2022). Operational BMPs include street sweeping and stormwater system maintenance, which are source control BMPs with high potential to treat 6PPD-Q (WDOE, 2022). These contaminants are closely monitored due to their potential effects on aquatic species. (See Section 3.2.3.2 for details). Additional required operational BMPs include painting galvanized metals and pet waste management.

[1] 6PPD-Q is an organic compound widely used as a stabilizing additive to rubbers, such as those found in car tires and has been found to be toxic to native fish species when transported into streams.

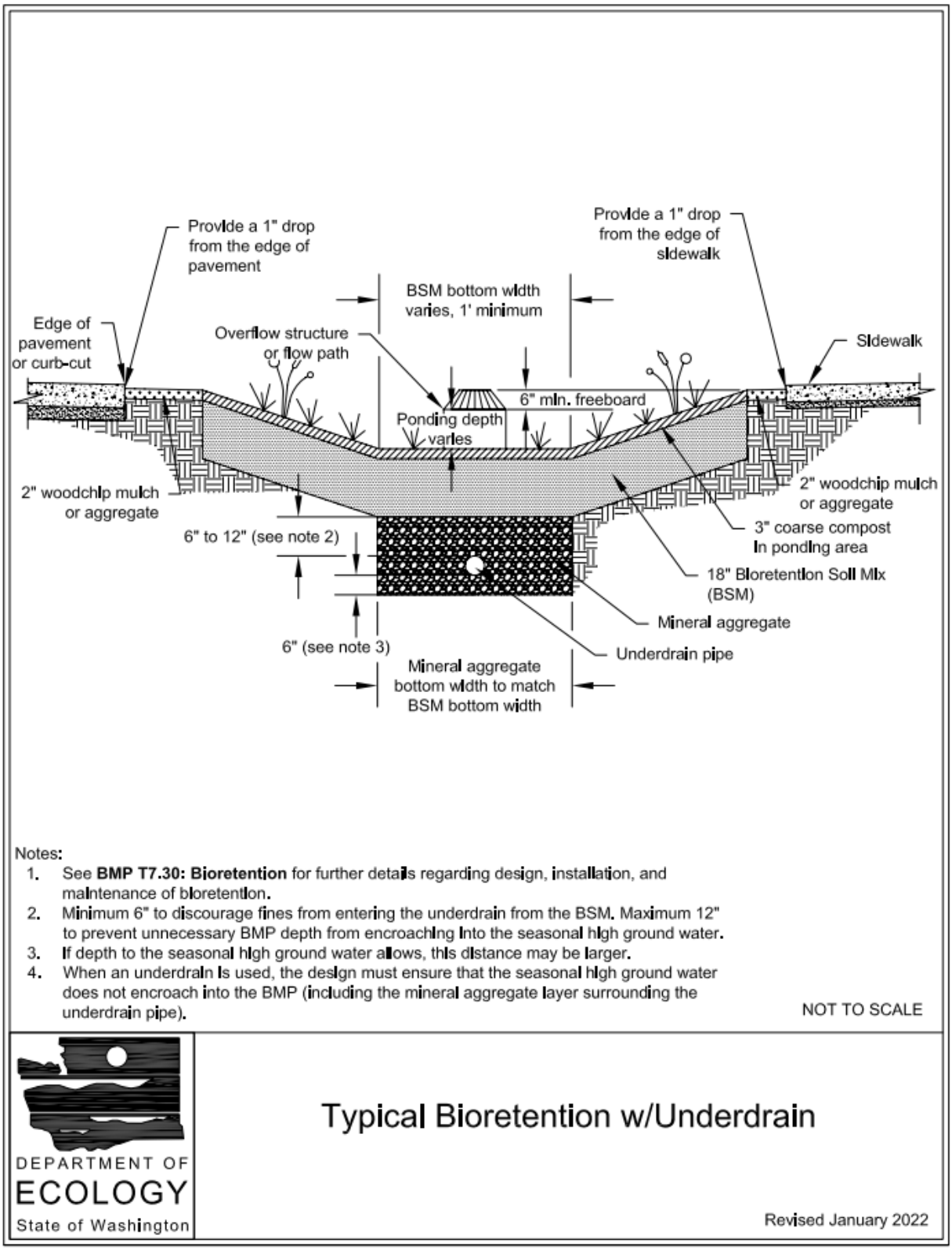


Figure 3-7 Typical Bioretention with Underdrain

Groundwater

There are no groundwater wells at the NFSC Smokey Point facility, and none are proposed as part of the Proposed Action. Construction and operation of the Preferred Alternative would not affect groundwater resources at NFSC Smokey Point because the project would not extract groundwater, interfere with groundwater supply, or alter existing groundwater quality. There are no known current issues with groundwater quality at the site. Stormwater management systems would be upgraded to meet current standards and surface water would continue to infiltrate from stormwater detention basins and pervious surfaces to the water table. Changes from baseline conditions are expected to be insignificant resulting in no effects on beneficial uses of groundwater.

Surface Water

Stormwater runoff from the project site enters Hayho Creek, which is a tributary to the Middle Fork Quilceda Creek and the mainstem Quilceda Creek.

Construction at the site would involve earth-moving activities to remove the existing parking lot at the northern portion of the project site and the baseball fields at the southern portion of the project site. Prior to the start of construction, as a requirement for the CGP that will be sought for the project, a SWPPP would be prepared and approved, and the appropriate BMPs installed to control and manage surface runoff during construction (Section 2.5). Additionally, an EPP will be prepared and submitted prior to construction commencing. With the implementation of construction BMPs, potential impacts to water resources associated with stormwater runoff during construction would not be significant.

The completed project would result in a slight reduction in impervious surface (less than 1 acre), improvements in stormwater treatment with implementation of bioretention cells or GULD stormwater technologies, and changes in land use from the existing recreational vehicle parking lot and ball fields to multi-family housing. The number of vehicles parked outside would be reduced with 176 garage parking spaces provided for the housing units and the eliminated recreational vehicle parking at the northern portion of the project site. Only a portion of the proposed impervious surface would be used for vehicular traffic (the rest would be rooftops and sidewalks) and traffic volumes would be low in the residential area. The proposed implementation of bioretention cells or GULD stormwater technologies have higher demonstrated contaminant removal rates than the existing stormwater treatment facilities at the project site and in combination with the other BMPs listed in Section 2.5 and BMPs associated with the required site-specific SWPPP, would potentially result in reduced levels of contaminants such as zinc, copper, polycyclic aromatic hydrocarbons (PAHs) and 6PPD-Q leaving the project area.

With the additional BMPs associated with operation of this project (Section 2.5), BMPs associated with the required site-specific SWPPP, and improvements using bioretention cells or GULD stormwater technologies, the Preferred Alternative would result in no expected changes in stormwater discharge volumes, temperature, dissolved oxygen, turbidity, and pH from baseline conditions and potentially slight improvements for chemical constituents of concern including PAHs, zinc, copper, and 6PPD-Q. The Preferred Alternative would have no significant effect on surface water resources adjacent to the project site.

Wetlands

The one wetland area at NFSC Smokey Point is located outside the boundary of the proposed construction on the northern portion of the project site and there are no anticipated changes in hydrology or function of the wetland. Runoff leaving the project site that would enter adjacent wetlands

associated with Hayho Creek would be treated using bioretention cells or GULD stormwater technologies to maintain or improve existing water quality. Adherence to flow requirements for the off-site wetlands would ensure no change to the existing wetland hydrology. Therefore, wetlands on the project site would not be affected by implementation of the Preferred Alternative.

Floodplains

No part of the current existing facility or Preferred Alternative is located within a special flood hazard area. There would be no construction in or changes to floodplains as part of the Preferred Alternative and therefore no impacts to floodplains would occur.

3.2 Biological Resources

Biological resources include native or naturalized plant and animal species and the habitats within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as fish and wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

Within this EA, biological resources are divided into three categories: (1) terrestrial vegetation, (2) wildlife, and (3) fisheries. Threatened, endangered, and other special status species are discussed in their respective categories.

3.2.1 Regulatory Setting

Special status species, for the purposes of this assessment, are those species listed as threatened or endangered under the ESA and species afforded federal protection under the Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act, or the MSFCMA.

The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend and to conserve and recover listed species. Section 7(a)(2) of the ESA requires federal agencies to consult with the USFWS or NMFS Fisheries to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or result in the destruction or adverse modification of designated critical habitat. Critical habitat cannot be designated on any areas owned, controlled, or designated for use by the DoD where an INRMP has been developed that, as determined by the Department of the Interior or Department of Commerce Secretary, provides a benefit to the species subject to critical habitat designation, pursuant to ESA Section 4(3)(B)(i).

Birds, both migratory and most native-resident bird species, are protected under the MBTA, and their conservation by federal agencies is mandated by EO 13186 (Migratory Bird Conservation). Under the MBTA it is unlawful by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by regulation. The 2003 National Defense Authorization Act gave the Secretary of the Interior authority to prescribe regulations to exempt the Armed Forces from the incidental taking of migratory birds during authorized military readiness activities. The final rule authorizing the DoD to take migratory birds in such cases includes a requirement that the Armed Forces must confer with the USFWS to develop and implement appropriate conservation measures to minimize or mitigate adverse effects of the proposed action if the action will have a significant negative effect on the sustainability of a population of a migratory bird species.

Bald and golden eagles are protected by the Bald and Golden Eagle Protection Act. This act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

The MSFCMA provides for the conservation and management of the fisheries. Under the Act, EFH consists of the waters and substrate needed by fish to spawn, breed, feed, or grow to maturity.

See Section 3.6.1 for discussion regarding the CZMA.

3.2.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under biological resources at NFSC Smokey Point. Threatened and endangered species are discussed in each respective section below with a composite list applicable to the Proposed Action provided in Table 3-1. The region of influence (ROI) for biological effects from the preferred alternative includes the north and south parcel areas within the project footprint, the area surrounding the project footprint that may be subject to noise from construction activities (approximately ¼ mile surrounding the construction zones), and the downstream waterbodies that receive stormwater discharges from the site. Aquatic species, including salmonids, can be particularly sensitive to some pollutants in stormwater discharges that can persist and be carried downstream (WDOE, 2022). Therefore, the ROI includes Hayho Creek, Middle Fork Quilceda Creek, the mainstem Quilceda Creek, and the area around the mouth of Quilceda Creek in Ebey Slough (Figure 3-8; See Section 3.1 for more details regarding water quality and stream descriptions).

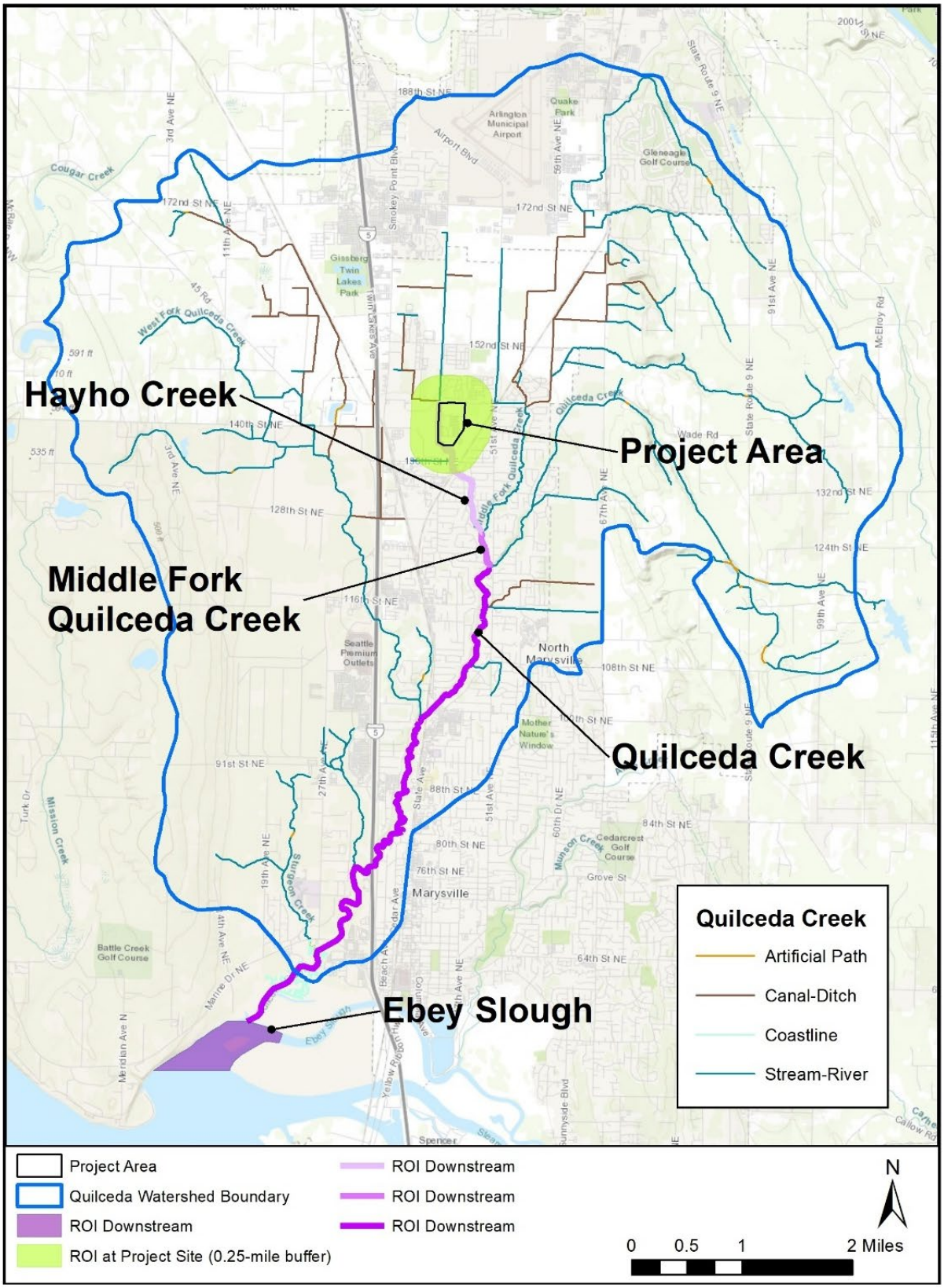


Figure 3-8 ROI for Biological Resources

3.2.2.1 Terrestrial Vegetation

Vegetation includes terrestrial plant communities as well as freshwater aquatic communities and constituent plant species.

Prior to development by the Navy, the project site was a cleared pasture-like area. As a result, there are no natural vegetation communities retained. The extensive stormwater ponds were developed along the eastern side of the property and currently support native and invasive species of shrubs and emergent plants. On the western side of the property, the buffer around Hayho Creek has well established tree and shrub cover between NFSC Smokey Point and the U.S. Army Reserve center and another parcel, owned by the Tulalip Tribes of Washington, located immediately to the west of the site. Common species in the buffer include western red cedar (*Thuja plicata*), grand fir (*Abies grandis*), western hemlock (*Tsuga heterophylla*), Douglas fir (*Pseudotsuga menziesii*), red alder (*Alnus rubra*), black cottonwood (*Populus trichocarpa*), Pacific willow (*Salix lucida*), Sitka willow (*Salix sitchensis*), red elderberry (*Sambucus racemosa*), and invasive Himalayan blackberry (*Rubus armeniacus*) (Naval Station Everett, 2022). Landscaping at NFSC Smokey Point includes ornamental trees and shrubs around buildings (particularly the NGIS) and in parking lot islands around the perimeter of the main parking lot in the southern half of the installation (Naval Station Everett, 2022). The southern extent of the project area is presently developed with two ballfields, which are vegetated with lawn and regularly mowed.

Three species listed as Class C noxious weeds on the Washington State Noxious Weed List have been documented at NFSC Smokey Point: reed canarygrass (*Phalaris arundinacea*), evergreen blackberry (*Rubus laciniatus*), and Himalayan blackberry (*Rubus aremeniacus*). In 2015, common reed (*Phragmites australis*), a Class B noxious weed, was detected in one of the stormwater ponds at NFSC Smokey Point and was treated and eradicated by Snohomish County in 2016 (Naval Station Everett, 2022).

3.2.2.2 Wildlife

Wildlife includes all animal species (i.e., insects and other invertebrates, amphibians, reptiles, birds, and mammals). This assessment focuses on the species and habitat features of greatest importance or interest.

The site is populated by numerous mammals including raccoons (*Procyon lotor*), Eastern gray squirrels (*Sciurus carolinensis*), beavers (*Castor* canadensis), and coyotes (*Canis latrans*). Other species, such as shrews (*Sorex spp.),* voles (*Microtus spp.),* deer mice (*Peromyscus maniculatus*), Norway rats (*Rattus norvegicus*), and bats of the genus *Myotis* may occur, but have not been specifically documented at the site. Coyotes (*Canis latrans*) have been observed in the fields directly across from the east side of the NFSC Smokey Point and may hunt on the property at night (Naval Station Everett, 2022). Historical beaver activity has been documented in Hayho Creek south of the NFSC Smokey Point facility and measures were installed by local agencies to discourage continued beaver activity (called a beaver deceiver, which allows flows despite dam-building activities) (Naval Station Everett, 2022). Signs of beaver activity occur along Hayho Creek along the west side of the NFSC Smokey Creek (Paul Rudell, personal communication, February 7, 2025).

The water features and riparian areas in the vicinity of the NFSC Smokey Point support palustrine (marshland birds) and passerine (perching songbirds) species. These species include violet-green swallow (*Tachycineta thalassina*), tree swallow (*Tachycineta bicolor*), barn swallow (*Hirundo rustica*), mallard (*Anas platyrhynchos*), northern shoveler (*Spatula clypeata*), gadwall (*Anas strepera*), cinnamon teal (*Anas cyanoptera*), blue-winged teal (*Anas discors*), red-tailed hawk (*Buteo jamaicensis*), great blue

heron (*Ardea herodias*), European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhynchos*), marsh wren (*Cistothorus palustris*), American robin (*Turdus migratorius*), common yellowthroat (*Geothlypis trichas*), bushtit (*Psaltriparus minimus*), house sparrow (*Passer domesticus*), red-winged blackbird (*Agelaius phoeniceus*), song sparrow (*Melospiza melodia*), savannah sparrow (*Passerculus sandwichensis*), and American goldfinch (*Spinus tristis*) (Naval Station Everett, 2022).

The NFSC Smokey Point property includes wetlands and stormwater ponds, which support populations of amphibians or reptiles. During the sampling effort in May 2013 at NFSC Smokey Point, the stormwater ponds had the highest sampling success for amphibians. Pacific treefrogs (*Pseudacris regilla*), northern red-legged frogs (*Rana aurora*), and non-native American bullfrogs (*Lithobates catesbeianu*) were captured during this effort (Naval Station Everett, 2022).

3.2.2.3 Fisheries

Washington Department of Fish and Wildlife's (WDFW) SalmonScape mapping tool indicates the following for Hayho Creek: fall chum (*Oncorhynchus keta*; documented spawning), resident coastal cutthroat trout (*O. clarkii*; documented presence), coho (*O. kisutch;* presumed presence), fall Chinook (*O. tshawytscha*; gradient accessible), winter steelhead (*O. mykiss*; gradient accessible), odd year pink salmon (*O. gorbuscha*; gradient accessible), and bull trout (*Salvelinus confluentus*; presumed presence) (WDFW, 2024). The map also indicated two potential fish barriers between the project area and Middle Fork Quilceda Creek: a culvert at the BNSF Railway tracks and a culvert at 47th Drive NE (WDFW, 2024).

Field investigations by Navy biologists in August and September 2020 at NFSC Smokey Point found that the summer water levels in Hayho Creek were very low (only a few inches), that the creek had little or no flow, and that the water was impounded in certain locations due to berms constructed across the creek channel, such as the one created for a "beaver deceiver" adjacent to the southern boundary of the property. Water appeared stagnant, of poor quality, and insufficient to support salmonids (Naval Station Everett, 2022). During winter adult migration studies in 2024 when flows were higher, biologists observed coho and chum salmon in Hayho Creek above the "beaver deceiver", but no indication of spawning (Paul Rudell, personal communication, February 7, 2025).

The WDFW SalmonScape mapping tool (WDFW, 2024) indicates the following species in the mainstem of Quilceda Creek: summer Chinook (documented presence), winter steelhead (documented rearing), summer steelhead (documented presence), fall Chinook (documented spawning), coastal cutthroat (documented presence), coho (documented rearing), pink odd year (gradient accessible), bull trout (documented rearing), fall chum (documented presence). Chum and coho are the most common salmonid species that spawn and cutthroat are year-round residents (Snohomish County, 1999).

The Pacific Fisheries Management Council (PFMC) has designated EFH for Pacific coast salmon with management objectives for three federally managed species that potentially occur within Hayho Creek, adjacent to the project site: Chinook salmon, coho salmon, and odd-numbered year pink salmon (PFMC 2024). EFH includes other salmonid species, such as chum salmon, sea-run cutthroat, and Puget Sound Steelhead, although management objectives for these species have not yet been developed. EFH of Pacific coast salmon includes Hayho Creek, as it is accessible to salmon, as well as Quilceda Creek downstream from the confluence with Hayho Creek to its mouth at Ebey Slough. EFH for the small portion of Ebey Slough within the ROI includes Pacific coast salmon, coastal pelagic species, and Pacific Coast groundfish. Ebey Slough is located within the Snohomish River estuary, which supports designated EFH for these fisheries.

3.2.2.4 Federally Listed Threatened and Endangered Species

No federally listed threatened or endangered species have been observed within the project footprint and habitat is poor for non-urban adapted species. However, downstream from the project area critical habitat is designated for Puget Sound Chinook salmon and Puget Sound steelhead in Quilceda Creek, and Puget Sound bull trout in Ebey Slough (Table 3-1). Puget Sound/Georgia Basin bocaccio (*Sebastes paucispinis)*, Southern Resident killer whale (*Orcinus orca)*, southern DPS of the North American green sturgeon (*Acipenser medirostris)* are present in the marine environment of Puget Sound, downstream from the ROI. Puget Sound/Georgia Basin yelloweye rockfish (*Sebastes ruberrimus*), Southern DPS Eulachon (*Thaleichthys pacificus*), Humpback whale: Mexico and Central America DPSs (*Megaptera novaeangliae)*, and Sunflower sea star (*Pycnopodia helianthoides)*, may occur within Puget Sound, however they do not occur near the vicinity of the ROI. Although nesting, roosting, and foraging habitat for the marbled murrelet (*Brachyramphus Marmoratus)* does not occur at or near NFSC Smokey Point, marbled murrelets could fly over the site between Puget Sound and preferred forested habitats in the Cascade Mountains to the east.

Table 3-1 ESA Species Evaluated, Conservation Status, and Designated Critical Habitats

Common Name	*Scientific Name*	*Federal Listing Status*	*State Listing Status*	*Critical Habitat Present?*
Puget Sound Chinook salmon ESU	*(Oncorhynchus tshawytscha)*	FT	NL	Yes (Quilceda Creek, Ebey Slough)
Puget Sound Steelhead DPS	*(Oncorhynchus mykiss)*	FT	NL	Yes (Quilceda Creek, Ebey Slough)
Puget Sound Bull Trout DPS	*(Salvelinus confluentus)*	FT	C	Yes (Ebey Slough)

Selections for Listing Status Column include: C = candidate species FE = federal endangered, FT = federal threatened, NL = not listed
Key: DPS = distinct population segment, ESU = evolutionarily significant unit

Chinook salmon juveniles outmigrate from natal rivers and streams as sub-yearlings or yearlings, and return to spawn as adults, generally after 3 to 7 years of marine residence. Most Puget Sound Chinook head to coastal waters, but some remain in Puget Sound for a portion or all of their marine residence (Healy, 1991). Chinook salmon use the mainstem Quilceda Creek for spawning and rearing (City of Marysville, 2024). The mouth of Hayho Creek is located on the Middle Fork of Quilceda Creek about 1/3 of a mile above the mainstem Quilceda Creek. Chinook salmon have not been observed in Hayho Creek, potentially due to poor habitat, water quality, and potential barriers, but also because the creek has not been regularly surveyed (Paul Rudell, personal communication, February 7, 2025).

Steelhead spawning habitats typically include fast-flowing, well-oxygenated rivers and streams with spawning gravel largely clear of fine sediment. Following hatching, juvenile steelhead typically spend approximately one to three years, but as many as seven years, in freshwater before outmigrating. Steelhead then migrate rapidly through estuaries, bypassing coastal migration routes of other salmonids, moving into offshore oceanic feeding grounds (Daly et al., 2014; Quinn and Myers, 2004). The mainstem Quilceda is considered rearing habitat and the Middle Fork is listed as having steelhead present (City of Marysville, 2024). Steelhead have not been documented in Hayho Creek by local fish biologists, potentially due to poor habitat and water quality particularly during summer months; however, steelhead have not been actively studied within Hayho Creek (Paul Rudell, personal communication, February 7, 2025).

The bull trout is a char native to western North America, predominantly inhabiting pristine cold-water streams. The ESA-listed Coastal-Puget Sound Distinct Population Segment (DPS) is the only population from which anadromy has been documented, with spawning and rearing occurring in rivers and streams, and subadult rearing and adult phases in nearshore marine waters. Bull trout are highly sensitive to habitat degradation or destruction, and the health of this species can serve as a good indicator of water quality (Naval Station Everett, 2022). Requirements for freshwater spawning habitat are variable, but generally include streams with deep pools, riffles, undercut banks, and numerous large logs (USFWS, 2015). The mainstem Quilceda below the West Fork is considered rearing habitat for Puget Sound bull trout and the Middle Fork is listed as having bull trout present (City of Marysville, 2024). Bull trout may occur in Quilceda Creek during winter months when flows are higher and water temperatures are lower (Paul Rudell, personal communication, February 7, 2025). Like steelhead, bull trout presence in Hayho Creek is unlikely due to poor habitat conditions, including very low flows and higher temperatures (Paul Rudell, personal communication, February 7, 2025). Ebey Slough, which is part of the Snohomish River estuary, is considered a core area within the coastal recovery unit for the bull trout (USFWS, 2015).

On April 28, 2010, NMFS published a final rule listing the Puget Sound/Georgia Basin DPSs bocaccio as endangered under the ESA (75 FR 22276). Bocaccio rockfish are long-lived, slow-growing, and late-to-mature, with a maximum age of about 50 years (Drake et al., 2010). Juvenile Bocaccio are found in shallower waters, often in kelp beds or nearshore areas, while adults move to deeper waters, typically on rocky bottoms. Juveniles tend to be found nearshore in macroalgae and eelgrass habitats before moving offshore. Bocaccio are found at water depths ranging from (66 to 1,578 feet), but tend to be most abundant from 312 to 738 feet) in depth. Due to the species habitat preferences, rarity in Ebey Slough and unlikelihood of effects from the proposed action reaching the marine environment, the Navy determined that there would be no effect to Bocaccio.

The Southern Resident Killer Whale was federally listed as endangered in 2005 (NMFS, 2005). Three pods of whales comprise the whale's population (J-, K-, and L-pods). The J-pod typically inhabits inland waters of the Salish Sea and Strait of Juan de Fuca (Ford et al., 2000). K- and L-pods are known to spend more time offshore from northern California to southern Alaska, particularly during the winter months (Carretta et al., 2019). Southern Resident killer whales spend several months of the summer and fall each year in Puget Sound. While transient killer whales have been sighted in Ebey Slough hunting seals, no records of Southern Resident killer whales have been made for this area. The Southern Resident killer whale DPS members specialize in eating fish, primarily Chinook salmon (78 percent of identified prey), and use echolocation to locate their prey (Barrett-Lennard et al., 1996; Hanson et al., 2005; Ford and Ellis 2006). Other species eaten include coho, steelhead, sockeye, and some demersal fishes (such as *Hippoglossus stenolepis*) (Ford et al., 2009). Based on the lack of presence of the Southern Resident killer whale in the ROI, and that no effects of the action are expected to reach the marine environment or adversely affect the whale's primary food source – Chinook salmon, the Navy determined that the proposed action would have no effect to the Southern Resident killer whale or to their critical habitat.

The Southern DPS of North American green sturgeon was listed as threatened under the ESA in 2006 (NMFS, 2006). The southern DPS consists of coastal and Central Valley populations south of the Eel River California, with the only known spawning population occurring in the Sacramento River (NMFS, 2015). As adults, southern green sturgeon migrate seasonally along the West Coast. During summer and early fall subadult and adult green sturgeon congregate in coastal bays and estuaries (NMFS, 2015). Acoustic tracking surveys from 2002 to 2008 indicated that green sturgeon use the Strait of Juan de Fuca as a corridor (Moser et al., 2020). A few of the tagged fish were detected at Admiralty Inlet, suggesting that

most of the acoustically tagged population move northward into the Strait of Georgia after transiting the Strait of Juan de Fuca. Even though green sturgeon have the potential to be present in Puget Sound near the ROI, there is a very low likelihood the species will be present in Ebey Slough.

The marbled murrelet is a small, robin-sized, diving seabird that ranges from the Aleutian Archipelago in Alaska to central California. Marbled murrelets spend most of their lives in the marine environment, generally within 0.6 to 1.2 miles of shore (USFWS, 1997). Marbled murrelets are regularly observed foraging in the waters of Possession Sound to the west of Everett, in the fall and winter, and during the breeding season (Naval Station Everett, 2022). Nesting habitat for the marbled murrelet includes old-growth forests or mature forests with moss or duff covered tree limbs large enough to provide nesting platforms. Nesting takes place from March to late September, during which time the adults make multiple trips daily between nesting areas and marine foraging areas to incubate their eggs or deliver food to the chicks (USFWS, 1997). Marbled murrelets may occasionally fly over the project area near dawn or sunset on the way to nesting locations in old-growth forest habitat, which does not occur in the vicinity of the project area (Naval Station Everett, 2022).

3.2.3 Environmental Consequences

Analysis of potential impacts considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a habitat. Indirect effects to biological resources are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable. This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law or statute.

3.2.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to current and anticipated activities at the site. Stormwater treatment infrastructure that would be implemented under the Preferred Alternative would not be implemented under the No Action Alternative and therefore those water quality benefits would not occur. However, stormwater quality would be expected to improve over time due to compliance with the MS4 permit and habitat conditions could improve for protected species from projects implemented under the INRMP. Although water quality and habitats may improve due to these activities, they are considered part of the baseline condition and therefore no changes from existing conditions or additional impacts to biological resources would occur with implementation of the No Action Alternative.

3.2.3.2 PPV Military Housing at NFSC Smokey Point (Preferred Alternative) Potential Impacts

The ROI for the analysis of effects to biological resources associated with the Preferred Alternative includes the NFSC Smokey Point facility and downstream creeks that receive stormwater runoff discharges from the site (Section 3.2.2). Proposed demolition, staging, and construction activities have the potential to impact terrestrial wildlife and fisheries as described in the next sections.

Terrestrial Vegetation

Landscaping at NFSC Smokey Point includes ornamental trees and shrubs around buildings (particularly the NGIS) and in parking lot islands around the perimeter of the main parking lot in the southern half of the installation (Naval Station Everett, 2022). All natural vegetation communities that remain within the Preferred Alternative footprint have been heavily disturbed by past developments. The Preferred Alternative would remove existing parking lots, baseball fields, and maintained landscapes and replace it

with housing, roads, parking areas, playgrounds, and maintained landscapes. There would be an increase in maintained vegetated area when compared to the existing condition at the North Parcel (currently a paved parking lot), and a decrease in grassy maintained ball fields at the South Parcel, which would be replaced with housing and some maintained landscaping. There is no expected improvement or degradation in habitat quality for species that are not adapted to urban environments.

Terrestrial Wildlife

Local species would be displaced during construction and likely would return once construction has ended. The noise disturbance distance was estimated based on the distance construction noise attenuates to background levels using the equation D = Do*10^(construction noise – ambient sound level in dBA/a), where D=distance from the noise source, Do=the reference measurement distance (50 feet), a=ground surface noise reduction factor (25 for soft ground), construction noise estimate of 91 dBA (jackhammer plus excavator usage), and an ambient sound level of 55 dBA based on a population density in Marysville of 3,400 people/square mile (U.S. Census Bureau, 2023). The resulting distance is 1,377 feet, or 0.26 miles before construction noise is reduced to background levels (Washington State Department of Transportation, 2025).

Bird species that are routinely observed at NFSC Smokey Point may be present during demolition and construction. If individual birds become disrupted by increased noise environments during construction activities, potential impacts from noise may result in temporary avoidance of foraging locations or may mask the ability of birds to effectively communicate with mates or to locate predators/prey (Caltrans, 2016). In such an instance, affected bird species would likely move to similar nearby habitats if disturbed. The change in the noise environment is expected to be short-term, occurring only intermittently during construction. Because bald eagles and other migratory birds would be expected to be habituated to the existing environment of the project area, temporary foraging disruptions would not be expected to be substantial or result in take.

As described in the vegetation section, there would be a slight increase in maintained landscape areas relative to the existing condition and minimal change to the quality of terrestrial habitat at the site. There would be an increase in human activity in the residential areas such as children playing, dog-walking, and free-roaming cats in the area that could suppress local wildlife populations in the long-term. Due to the lack of natural terrestrial habitats and the suburban nature of the installation, construction and associated increases in human activity would not be expected to have a measurable impact on terrestrial wildlife that may occur in the ROI. In summary, implementation of Action Alternative would have no significant impacts on terrestrial wildlife.

Fisheries

Construction at the site would adhere to the construction BMPs described in Section 2.5, which would result in the containment of sediments and/or chemical contaminants such as oil or gas at the project site. In the very unlikely event of a BMP failure, work will stop in the area until the BMP is repaired.

The completed project would result in a slight reduction in impervious surface (less than 1 acre), improvements in stormwater treatment, and changes in land use from the existing recreational vehicle parking lot and ball fields to multi-family housing. Only a portion of the proposed impervious surface would be used for vehicular traffic (the rest would be rooftops and sidewalks) and traffic volumes would be low in the residential area.

With the additional BMPs associated with operation of this project (Section 2.5) and improvements using bioretention cells or GULD stormwater technologies, the Preferred Alternative would result in no expected changes in stormwater discharge volumes, temperature, dissolved oxygen, turbidity, and pH from baseline conditions and potentially slight improvements for chemical constituents of concern including PAHs, zinc, copper, and 6PPD-Q (see Section 3.1.3.2 for details on how BMPs would reduce contaminants). Therefore, there would be no expected negative impacts to fish and aquatic species within the ROI.

The Proposed Action may cause small-scale adverse effects on EFH through construction and operational stormwater runoff that may cause direct or indirect chemical or biological alteration of the water and habitats. Therefore, the Proposed Action may adversely affect the Pacific Coast Salmon EFH. However, with the BMPs associated with construction and operation of this project and improvements using bioretention cells or GULD stormwater technologies, the Proposed Action will result in no expected changes in stormwater discharge volumes, temperature, dissolved oxygen, turbidity, and pH from baseline conditions and potentially slight improvements for chemical constituents of concern including PAHs, zinc, copper, and 6PPD-Q.

Once mixed in the intertidal zone of Ebey Slough, any potential contaminants from the project site would be fully dispersed within the larger body of water and therefore undetectable. The Preferred Alternative would not alter the physical or chemical characteristics of waters and substrate necessary to support coastal pelagic or Pacific Coast groundfish in lower Quilceda Creek or Ebey Slough and there would be no significant on EFH for these species.

3.2.3.3 Federally Listed Threatened and Endangered Species

Construction

Construction would occur in previously disturbed or developed areas resulting in no loss of habitat for listed species.

Construction at the site would adhere to the construction BMPs described in Table 2-2, which would result in the containment of sediments or chemical contaminants such as oil or gas at the project site. In the very unlikely event of a BMP failure, work will stop in the area until the BMP is repaired. Once mixed in the intertidal zone of Ebey Slough, any potential contaminants from the project site would be fully dispersed within the larger body of water and therefore undetectable.

Construction of the project would have no effect on Puget Sound/Georgia Basin bocaccio, Southern Resident killer whale, southern DPS of the North American green sturgeon, Puget Sound/Georgia Basin yelloweye rockfish, Southern DPS Eulachon, Humpback Whale, and Sunflower sea star or their critical habitats since the species and their critical habitat occur in the marine environment of Puget Sound, which is outside the ROI and area of effect for this project. Although Chinook salmon are one of the primary prey species for the Southern Resident killer whale, the proposed action is not expected to result in detectable changes in salmon stocks and would therefore have no effect on Southern Resident killer whale critical habitat.

As described under Fisheries, the use of BMPs during construction would prevent adverse impacts to the Puget Sound Chinook, steelhead, and bull trout or their critical habitat. As described under the terrestrial wildlife section, increases in noise levels from construction activities would decrease to ambient levels approximately 0.26 miles from the construction site. Marbled murrelets are not known

to roost, forage, or nest within that area but may occasionally fly over. Therefore, in the rare chance that murrelets may fly over, they could likely avoid the site resulting in no effect on marbled murrelets.

Operations

As described in the Water Resources Section 3.1.3.2, with the additional BMPs associated with the operation of this project (Section 2.5) and improvements using bioretention cells or GULD stormwater technologies, the Proposed Action would result in no expected changes in stormwater discharge volumes, temperature, dissolved oxygen, turbidity, and pH from baseline conditions and potentially slight improvements for chemical constituents of concern including PAHs, zinc, copper, and 6PPD-Q.

Once constructed, the project would have no effect on Puget Sound/Georgia Basin bocaccio, Southern Resident killer whale, southern DPS of the North American green sturgeon, Puget Sound/Georgia Basin yelloweye rockfish, Southern DPS Eulachon, Humpback Whale, and Sunflower sea star, or their critical habitats since the species and their critical habitat occur in the marine environment of Puget Sound, where the distance from the project area and slight improvements in water quality when compared to the baseline would have no detectable effect.

Likewise, the operation of the preferred alternative would not result in insignificant impacts on Puget Sound Chinook, steelhead, and bull trout or their critical habitat. Although the chemical constituents of concern have been identified to affect the water quality component of the physical and biological factors for spawning and rearing, water quality would slightly improve under the Proposed Action when compared to the baseline. In accordance with Section 7 of the ESA, the Navy made an effect determination of may affect not likely affect and has requested informal consultation and concurrence with the determinations (Appendix A).

3.3 Air Quality

This discussion of air quality includes criteria pollutants, standards, sources, permitting, and greenhouse gases. Air quality in a given location is defined by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

Most air pollutants originate from human-made sources, including mobile sources (e.g., cars, trucks, buses) and stationary sources (e.g., factories, refineries, power plants), as well as indoor sources (e.g., some building materials and cleaning solvents). Air pollutants are also released from natural sources such as volcanic eruptions and forest fires.

3.3.1 Regulatory Setting

3.3.1.1 Criteria Pollutants and National Ambient Air Quality Standards

Under the CAA (42 U.S.C. 7401-7671q), the EPA establishes the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for six pollutants of concern, called criteria pollutants — carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter less than or equal to 10 micrometers (PM_{10}), particulate matter less than or equal to 2.5 micrometers ($PM_{2.5}$), and lead (Pb). NAAQS represent the maximum background concentrations of pollutants that are considered safe, with an adequate margin of safety, to protect public health, including sensitive populations such as children and the elderly, and human welfare.

Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly adding to the pollutant concentrations measured in the ambient air or through transformation of precursor pollutants in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, Nitrogen Oxides (NOX), SO_2, Pb, and some particulates, are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as O_3, NO_2, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. Suspended particulate matter, PM_{10} and $PM_{2.5}$, are generated as primary pollutants by various mechanical processes (for example, abrasion, erosion, mixing, or atomization) or combustion processes. However, $PM_{2.5}$ can also be formed as a secondary pollutant through chemical reactions or by gaseous pollutants that condense into fine aerosols. In general, the level of the secondary pollutants in ambient air is controlled through regulation of emissions of pollutants that are considered "precursors" to secondary pollutants in the atmosphere (such as volatile organic compounds [VOCs] and NO_X, which are considered precursors for O_3).

Areas that meet the NAAQS for a criteria pollutant are designated "attainment" areas, and those where a criteria pollutant level exceeds the NAAQS are "nonattainment" areas. A maintenance area is one that has been re-designated from nonattainment status after submitting a clean ambient monitoring data set to EPA and has an approved maintenance plan under Section 175 of the CAA. Each state has the authority to adopt standards stricter than those established under the federal program. Washington state has adopted the Federal NAAQS (Table 3-2).

Table 3-2 National Ambient Air Quality Standards

Pollutant		***Primary/ Secondary***	***Averaging Time***	***Level***	***Form***
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)[1]		primary and secondary	Rolling 3-month average	0.15 µg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)[2]		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)[3]		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	9.0 µg/m^3	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years

Table 3-2 National Ambient Air Quality Standards

Pollutant		*Primary/ Secondary*	*Averaging Time*	*Level*	*Form*
	PM_{10}	primary and secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)[4]		primary	1 hour	75 ppb [(4)]	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	1 year	10 ppm	Not to be exceeded more than once per year

Notes:
(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.
(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.
(3) Final rule signed 1 October 2015 and effective 28 December 2015. The previous (2008) O_3 standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O_3 standards.
(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is a EPA action requiring a state to resubmit all or part of its SIP to demonstrate attainment of the required NAAQS.
µg/m^3 = Microgram(s) per cubic meter
ppb = Part(s) per billion
ppm = Part(s) per million
Source: EPA 2024

NFSC Smokey Point is in Snohomish County, which is in the Puget Sound Intrastate AQCR. The PSCAA, along with the WDOE is responsible for implementing and enforcing state and federal air quality regulations in the state of Washington. The WDOE monitors criteria air pollutants through a network of air quality monitoring sites throughout the state, known as the Washington Air Quality Advisory. Based on data collected from these monitoring sites, EPA prepares annual summaries of local air quality that identify areas that exceed NAAQS for one or more air pollutants.

3.3.1.2 General Conformity

EPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS.

In Washington, EPA has delegated the authority for ensuring compliance with the NAAQS to the WDOE and Puget Sound Clean Air Agency (PSCAA). In accordance with the CAA, each state must develop a State Implementation Plan (SIP), which is a compilation of program elements including emission inventories, regulations, policies, and infrastructure such as monitoring networks, designed to enable the state to achieve compliance with the NAAQS within established timeframes.

The General Conformity Rule (at 40 CFR 93 Subpart B) requires that any federal action conforms with the requirements of an approved SIP or Federal Implementation Plan. More specifically, CAA Conformity is ensured when a federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS,

interim progress milestones, or other milestones toward achieving compliance with the NAAQS. The General Conformity Rule applies only to federal actions in non-attainment or maintenance areas. The affected area of the proposed project lies within Snohomish County, Washington, within the Puget Sound Intrastate AQCR. EPA classifies Snohomish County as being in attainment for all NAAQS (EPA, 2022a); therefore, a General Conformity evaluation is not required, however it serves as a guide for air emissions significance. At the time of this applicability analysis, emissions generated by the building of 108 housing units at NFSC Marysville would not occur within a Federal CAA designated nonattainment and/or maintenance area. General Conformity de minimis threshold emissions are presented in Table 3-3.

Table 3-3 General Conformity *de minimis* levels

Pollutant	***Area Type***	***Tons per Year (tpy)***
Ozone (VOC or NOx)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NOx)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon monoxide, SO_2 and NO_2	All nonattainment and maintenance	100
PM_{10}	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
$PM_{2.5}$ Direct emissions, SO_2, NOx (unless determined not to be a significant precursor), VOC or ammonia (if determined to be significant precursors)	All nonattainment and maintenance	100
Lead (Pb)	All nonattainment and maintenance	25

3.3.1.3 Greenhouse Gases

GHGs are gas emissions that trap heat in the atmosphere. These emissions arise from natural processes and human activities.

As part of its environmental goals, the Navy has initiated programs aimed at reducing GHG emissions, including energy-efficient construction, thermal and photovoltaic solar systems, geothermal power plants, and wind energy projects. These initiatives are part of a broader commitment to reducing energy consumption and enhancing energy resilience.

3.3.2 Affected Environment

Snohomish County generally maintains good air quality, as indicated by maintaining attainment status in the county since 1996. While Snohomish County was previously designated as a maintenance area for O_3 and CO (since 1996), EPA currently classifies Snohomish County as being in attainment for all NAAQS (EPA 2022). Air quality in Snohomish County has been relatively stable, with long-term trends indicating improvements due to stricter emissions controls and regulatory measures. Seasonal variations, such as wildfire smoke events during the summer months, can temporarily degrade air quality. Wildfires in the Pacific Northwest have become an air quality concern leading to episodic increases in $PM_{2.5}$ levels that can impact human health, particularly for sensitive populations.

Continued monitoring and implementation of state and federal air quality regulations have helped to maintain good air quality conditions in Snohomish County. Future air quality management efforts focus on reducing emissions from transportation, industrial sources, and energy production.

3.3.3 Environmental Consequences

Effects on air quality are based on estimated direct and indirect emissions associated with the Proposed Action. The region of influence (ROI) for assessing air quality impacts is the air basin in which the project is located, Snohomish County and the Puget Sound AQCR.

This analysis evaluated potential air quality impacts with respect to relevant environmental information, including regulations, guidelines, and scientific documentation. In the case of criterial pollutants for which the ROI is in attainment of NAAQS, the analysis used the EPA General Conformity de minimis levels for maintenance areas of the respective criteria pollutants as indicators of the significance of projected air quality impacts. Although the project area is in attainment, this criterion was used because it provides an indicator of the level below which emissions are not likely to exceed the NAAQS and thus would not be considered significant. Similarly, for GHG emissions, this analysis evaluates project-related emissions against the Washington State mandatory reporting threshold of 10,000 metric tons (Washington Administrative Code 173-441-030). Although GHG reporting requirements would not apply to this project because it is not a type of activity subject to mandatory reporting, the reporting threshold is used as a reference threshold to assess significance.

3.3.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline air quality. Therefore, no significant impacts to air quality or air resources would occur with implementation of the No Action Alternative.

3.3.3.2 PPV Military Housing at NFSC Smokey Point (Preferred Alternative) Potential Impacts

The Action Alternative would result in air quality impacts from construction and post-construction vehicle use and energy system-related emissions. The purpose of this analysis is to evaluate whether the Proposed Action is likely to interfere with maintaining compliance with NAAQS. This analysis evaluated direct emissions from construction activities, land disturbance, heavy equipment use, and material use for residential development, along with indirect emissions from energy-related emissions and increased vehicle activity as a result of operation of the residential development.

Method for Evaluating Impacts

The U.S. Air Force (USAF) Air Conformity Applicability Model (ACAM) Version 5.0.17a was used to estimate direct emissions for the Action Alternative. ACAM is an air-emissions estimating model that is used to assess potential air quality impacts in accordance with the General Conformity Rule (40 CFR 93 Subpart B) and environmental compliance regulations. This analysis estimated anticipated emissions of criteria pollutants and GHGs generated from construction and land use, accounting for proposed building types and using default ACAM values for emissions from construction equipment. The results illustrate the relative difference in emissions that would be expected under the Action Alternative compared to the No Action Alternative.

Total net direct and indirect emissions associated with the Proposed Action were estimated through ACAM on a calendar-year basis for the start of construction through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the relevant emissions guides for stationary, mobile, and transitory sources.

Indirect energy-related emissions were calculated utilizing the number of proposed residential units, considering the average unit square footage, and estimating the energy usage per square-foot per year. These figures were used to calculate the total residential energy consumption. The indirect energy-related emissions calculations can be found in Appendix B.

Construction Phase Impacts

The air quality impacts from construction of the Proposed Action were determined by estimating anticipated emissions of criteria pollutants and GHG emissions from construction activities. The total emissions were compared with reference thresholds for each year of the planned construction schedule.

During construction, soil-disturbing activities, operations of heavy equipment, commuting workers, and the laying of asphalt may generate emissions that would temporarily affect air quality. The total emissions and timing vary depending on the project phasing and other options chosen for the project.

Typical sources of emissions during construction projects include:

- Fugitive dust generated during excavation and grading activities.
- Engine exhaust emissions from construction vehicles, worker vehicles, and diesel fuel-fired construction equipment.
- Increased motor vehicle emissions associated with increased traffic congestion during construction.
- Ozone precursors (NOX and VOCs) emitted during asphalt paving.

The calculations were performed for each year of construction. Data for the estimated equipment type and hours related to the construction phase of each area, as well as estimated timelines, was incorporated into the analysis. The model input data, a summary of the equipment type and estimated hours, and other relevant emissions calculation information is provided in Appendix B.

The calculated construction-related emissions were estimated using ACAM by factoring in a range of inputs essential to accurate emissions calculations. These included the area and duration of land disturbance, types and operating schedules of construction equipment, estimated number of construction worker trips, transport methods, and volumes of material deliveries and waste removal.

Each of these factors contributes to a realistic projection of emissions over the project's construction timeline. Additional details on assumptions and input data used in ACAM are provided in Appendix B, offering an overview of the parameters considered in the analysis.

Construction phase assumptions include:

- Project Schedule: Demolition and construction phase activities are scheduled to occur between January 2026 and May 2027. Work schedules are assumed to be 8 hours per day, 5 days per week.
- Demolition Activities: Demolition of existing structures and initial site preparation work will be approximately 3 months for both the North and South parcel.
- Construction Activities: It is assumed the North parcel will include the construction of 60 units with a footprint of approximately 1,630 square feet each, with a total of 18 buildings, 2 stories in height. The South parcel will include the construction of 28 units with a footprint of approximately 1,630 square feet each, with a total of 7 buildings, 2 stories in height.
- Renovation Activities: Renovation activities include the conversion of a 72-room hotel that would be converted into 20 apartments estimated at 1,400 square feet each.
- Site Grading: Site grading activities are assumed to extend to the property boundary, including 10 acres (425,600 square feet) on the North parcel, and 7 acres (304,920 sq ft) on the South parcel.
- Paving (Asphalt): Roadway paving activities were estimated to be completed during the first month of construction, with an estimated 57,590 sq ft of paving on the North parcel, and 24,453 sq ft of paving on the South parcel.

Table 3-4 presents emissions associated with the construction phase of the Proposed Action.

Table 3-4 Estimated Direct Emissions from Construction Phase – Action Alternative

Year	*NO_X (tpy)*	*VOC (tpy)*	*CO (tpy)*	*PM_{10} (tpy)*	*$PM_{2.5}$ (tpy)*	*SO_2 (tpy)*	*CO2e [(1)] (tpy)*
2026	4.35	0.84	6.84	23.47	0.15	0.02	1,584
2027	1.01	0.62	6.96	0.43	0.03	0.01	772
Reference Threshold [(2)]	50	50	100	100	100	100	11,023 [(3)]

Notes:
(1) CO2e – carbon dioxide equivalent
(2) 40 CFR 93.153 and 40 CFR 98
(3) 11,023 short tpy is equivalent to 10,000 metric tpy
tpy = tons per year

As shown by Table 3-4, above, construction activities are expected to emit 1,584 tons of GHG during the first year of construction, and approximately 772 tons of GHG during the second year of construction. The Preferred Alternative would not result in any annual emissions exceedances relative to the General Conformity de minimis thresholds for any of the criteria pollutants. Emissions from the Action Alternative are also not expected to exceed the reference threshold of 10,000 metric tons of carbon dioxide equivalent (CO2e).

Operational Impacts

The operational air emissions were calculated using a combination of data sources, emission factors, and assumptions based on preliminary operational data. These estimates are intended to provide a

representation of potential emissions from the NFSC Smokey Point development, accounting for energy-related emissions as well as transportation-related emissions.

Energy related emissions from residential buildings, including both newly constructed townhomes and renovated apartments, are projected to increase emissions of air pollutants of concern. The total residential energy consumption was estimated for the Proposed Action based on the proposed number of units, the average unit square footage, and the average energy usage per square foot per year. Emission factors from EPA's energy consumption estimates were applied to quantify these emissions. Table 3-5 presents the estimated residential energy-related criteria pollutant emissions from energy use associated with the newly constructed townhomes and renovated apartments and compares these emissions to the reference thresholds.

Table 3-5 Estimated Criteria Pollutant Emissions from Operational Phase – Energy

Year	*NO_X (tpy)*	*VOC (tpy)*	*CO (tpy)*	*PM_{10} (tpy)*	*$PM_{2.5}$ (tpy)*	*SO_2 (tpy)*	*CO2e (1) (tpy)*
Annual Emissions	1.72	0.01	0.44	0.03	0.01	5.05	1,447
Reference Threshold (2)	50	50	100	100	100	100	11,023 (3)

Notes:
(1) CO2e – carbon dioxide equivalent
(2) 40 CFR 93.153 and 40 CFR 98
(3) 11,023 short tpy is equivalent to 10,000 metric tpy
tpy = tons per year

As shown by Table 3-5 above, energy-related emissions from the proposed new and renovated housing units is estimated at 1,447 tons (1,313 metric tons) of CO2e per year. The emissions analysis resulted in no exceedances to the reference thresholds. Energy-related emissions calculations are provided in Appendix B.

In addition to energy use, transportation-related emissions associated with personal vehicle use by residents of the proposed development is one of the primary sources of operational air emissions. The emissions associated with operational activities are attributed to vehicle trips generated by residents. Transportation-related metrics presented in the Smokey Point Naval Support Complex Expansion Traffic Impact Analysis (TIA) were used to assess traffic generation and circulation impacts (Appendix E). The findings from the TIA concluded that the residential development is anticipated to generate approximately 420 new weekday daily trips. These trips account for both incoming and outgoing travel associated with the Proposed Action.

To quantify the total annual GHG emissions from transportation sources associated with the Proposed Action, ACAM was used to calculate the total CO_2 equivalent emissions associated with vehicular travel, assuming a fleet mix of passenger vehicles and light-duty trucks. Table 3-6 presents the estimated criteria pollutant emissions from transportation-related activities.

Table 3-6 Estimated Criteria Pollutant Emissions from Operational Phase – Transportation

Year	*NO_X (tpy)*	*VOC (tpy)*	*CO (tpy)*	*PM_{10} (tpy)*	*$PM_{2.5}$ (tpy)*	*SO_2 (tpy)*	*CO_2e (1) (tpy)*
Annual Emissions	0.79	0.87	10.21	0.02	0.02	0.00	911.9
Reference Threshold (2)	50	50	100	100	100	100	11,023 (3)

Notes:
(1) CO_2e – carbon dioxide equivalent
(2) 40 CFR 93.153 and 40 CFR 98
(3) 11,023 short tpy is equivalent to 10,000 metric tpy
tpy = tons per year

As shown by Table 3-6, above, the indirect criteria pollutant emissions of transportation-related operations are estimated at 912 tons of CO_2e per year. The emissions analysis resulted in no exceedances to the reference thresholds.

Air Quality impacts are expected to occur under the Proposed Action due to additional growth capacity associated with new residential development and use, and increased transportation volumes. Building energy emission projections are based on net developable acres and estimated square footage under the Proposed Action. Increased fuel burning associated with transportation-related emissions contributes to several air quality pollutants, such as particulate matter, carbon monoxide, nitrogen oxides, and sulfur oxides. Table 3-7 identifies total annual aggregate GHG emissions from operational energy and transportation emissions.

Table 3-7 Total Annual Aggregate Operational GHG Emissions

	Metric Tons of CO2e (Indirect)	*Transportation Metric Tons of CO2e*	*Total Metric Tons of CO2e*
Annual Operational Emissions	1,313	912	2,225

As shown in Table 3-7 above, the combined annual operational GHG emissions from both energy use and transportation-related activities are approximately 2,225 metric tons of CO2e. These figures include the GHG emissions associated with the operation of the residential units, as well as the emissions from transportation activities related to residential development.

Emissions of all criteria pollutants are expected to remain below General Conformity de minimis thresholds, with their impacts considered minor. In terms of GHG emissions, the operational-related emissions are projected at approximately 2,225 tons of GHG annually, which remains below the reference threshold of 11,023 tons (10,000 metric tons) per year.

This analysis has determined that the Proposed Action would not exceed the General Conformity de minimis thresholds for criteria pollutants. Adverse impacts from the Proposed Action on air quality would be, in general, localized throughout the anticipated years of construction, and are expected to be minimal. Therefore, Implementation of the Preferred Alternative would not result in significant impacts to air quality.

3.4 Cultural Resources

The term "cultural resources" is a term that is not defined under the National Historic Preservation Act (NHPA), however throughout this EA the term "cultural resources" is used to include historic properties and other cultural items not yet evaluated for eligibility under the National Register of Historic Places. Under the NHPA, historic properties are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion into the NRHP. In addition, the term Historic property includes the artifacts, records, and remains related to and located within such properties. Properties of religious and cultural importance to Native American Tribes and Native Hawaiian organizations are also included (36 CFR 800.16(l)(1)).

3.4.1 Regulatory Setting

Cultural resources are governed by federal laws and regulations, including the NHPA and the Native American Graves Protection and Repatriation Act (NAGPRA). The NHPA requires federal agencies to consider the effects of their undertaking on historic properties and lays out the Section 106 process which federal agencies follow (36 CFR 800). Under Subpart B of NAGPRA a federal agency must report any discovery of human remains or cultural items and that a plan of action must be prepared any planned activity that is likely to result in a discovery or excavation of human remains or cultural items (43 CFR Part 10). The Navy will prepare and consult with the tribes on a Plan of Action prior to construction..

The Navy has consulted with the Washington SHPO, Tulalip Tribes of Indians, and the Stillaguamish Tribe of Indians. The SHPO agreed with the Navy determination of no historic properties affected with the condition of monitoring below four feet. To date, no response has been received from the Tribes.

3.4.2 Affected Environment

The Navy has determined and documented the area of potential effects (APE) as required at 36 CFR 800.4. The APE was defined as 24 acres of the 52-acre installation and includes proposed housing locations, access and staging area.

3.4.2.1 Archaeological Resources

Archaeological monitoring was conducted during geotechnical explorations on the site and no subsurface archaeological resources were identified during this process (Equinox Research and Consulting International, Inc., 2024). There are no known archaeological site within the APE, but there is a moderate probability of encountering archaeological deposits and features during ground-disturbing activities beneath the existing fill. Development of NFSC Smokey Point required placing four feet of fill over the property to raise it above the wetter low-lying areas (Naval Station Everett, 2014).

3.4.2.2 Architectural Resources

The existing facilities at NFSC Smokey Point were constructed between 1994 and 2004. The Navy consulted the Washington State Historic Preservation Officer (WA SHPO) in 2013 and asserted a determination that the installation is not eligible for the NRHP. The installation post-dates the Cold War era and has not achieved exceptional significance as required by Criteria Consideration G for properties less than 50 years of age. The WA SHPO concurred with the determination and stated that no further consultation was necessary until the resources become fifty years of age.

Subsequently, one historic property was identified adjacent to the Proposed Action area. This is the Dudley Carter Totem Pole (Palmer, 2020) (Figure 3-9). Carved in 1960, the Dudley Carter Totem Pole was moved to NFSC Smokey Point in 1995 from its former location at Naval Air Station Sand Point in Seattle. The Navy consulted WA SHPO in 2021 and asserted a determination that the Dudley Carter Totem Pole is eligible for the NRHP under Criterion C. The WA SHPO concurred with the determination. The Proposed Action does not entail the removal or any physical alteration of this historic property.

Figure 3-9 Location of Dudley Carter Totem Pole in relation to the project.

3.4.3 Environmental Consequences

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment that contribute to the importance of the resource, introducing visual, atmospheric, or audible elements that are out of character for the period the resource represents (thereby altering the setting), or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect effects to historic properties are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable. There are no known historic properties located within the APE, and the project will not affect any known historic properties.

3.4.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no impacts to cultural resources. Therefore, no significant impacts to cultural resources would occur with implementation of the No Action Alternative.

3.4.3.2 PPV Military Housing at NFSC Smokey Point (Preferred Alternative) Potential Impacts

Implementing the Preferred Alternative would not affect any known cultural resources. Geotechnical explorations for the project were monitored by an archaeologist and no archaeological sites were found (Equinox Research and Consulting International, Inc., 2024). If the Navy excavates below four feet, the excavations will be monitored by an archaeologist to ensure identification of archaeological material that may exist *in situ* following the installation's inadvertent discovery plan (U.S. Navy n.d.).

One historic property, the Dudley Carter Totem Pole, is present adjacent to the APE. The Preferred Alternative does not entail the removal or any physical alteration of this historic property. The proposed redevelopment will cause a minimal change to the visual setting of the Totem Pole. However, it will remain prominently visible in the plaza that was designed to house it, and no changes to the plaza are proposed. The project will not impact any known cultural resources.

3.5 American Indian Traditional Resources

This analysis addresses potential impacts from the Proposed Action on federally recognized American Indian protected tribal resources. Protected tribal resources, as defined in DoD Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes* (DoD, 2018), are "those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by or reserved by or for Indian tribes through treaties, statutes, judicial decisions, or EOs, including tribal trust resources." These resources may include plants, animals, and locations associated with hunting, fishing, and gathering activities. For the purposes of this section, the term "traditional resources" will be used to encompass protected tribal resources.

3.5.1 Regulatory Setting

3.5.1.1 The Department of Defense and Navy Policies

DoD policy for interactions with federally recognized tribes is detailed in DoD Instruction 4710.02, which requires organizational entities within the DoD (i.e., DoD Components) to consult with tribes whenever proposing an action that may have the potential to significantly affect protected tribal resources, tribal

rights, or Indian lands. The Navy policy for consultation with federally recognized American Indian tribes is outlined in the Secretary of the Navy Instruction 11010.14B, *Department of the Navy Policy for Consultation with Federally Recognized Indian Tribes, Alaska Native Tribal Entities, and Native Hawaiian Organizations.* Commander, Navy Region Northwest Instruction 11010.14A, *Policy for Consultation with Federally Recognized American Indian and Alaska Native Tribes* sets forth policy, procedures, and responsibilities for consultations with federally recognized American Indian and Alaska Native tribes in the Navy Region Northwest area of responsibility.

Consultation with potentially affected tribal governments of federally recognized American Indian tribes is required whenever proposing an action that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands, per DoD Instruction 4710.02. Installations meet with tribes in their area, including tribes historically or culturally affiliated with the lands managed by the installation. The Navy has invited government-to-government consultation with the Tulalip Tribes of Washington.

3.5.1.2 Laws, Executive Orders, and Memoranda Mandating Consultation

Other federal laws, EOs, and memoranda include policies requiring consultation with American Indian tribes. These include the following: EO 13175, *Consultation and Coordination with Indian Tribal Governments*; the Presidential Memorandum dated November 5, 2009, emphasizing agency needs to comply with EO 13175; EO 13007, *Indian Sacred Sites*; and the presidential memorandum dated April 29, 1994, *Government-to-Government Relations with Native American Governments*.

In 2021, the Advisory Council on Historic Preservation, the EPA, the U.S. Office of Personnel Management, and thirteen federal departments, including DoD, entered into a *Memorandum of Understanding (MOU) Regarding Interagency Coordination and Collaboration for the Protection of Tribal Treaty Rights and Reserved Rights*. In the MOU, the signatories commit to protect tribal treaty rights, reserved rights, and similar tribal rights to natural and cultural resources.

3.5.1.3 Government-to-Government Consultation

Federal agencies engage in government-to-government consultation with federally recognized American Indian tribes regarding traditional resources, tribal rights, and other concerns, in recognition of tribal sovereignty. In accordance with DoD and Navy policy, the Navy sent letters to tribal government representatives from the Tulalip Tribes of Washington to invite them to initiate government-to-government consultation on the Proposed Action (Appendix D).

3.5.2 Affected Environment

A single federally recognized tribe has reserved off-reservation fishing rights at their Usual and Accustomed (U&A) fishing grounds and stations in the vicinity of NFSC Smokey Point based on the Treaty of Point Elliott of 1855, negotiated between the tribes and the U.S. government: the Tulalip Tribes of Washington. The Tulalip Tribes are the direct descendants of the Snohomish, Snoqualmie, Skykomish, and other allied tribes and bands signatory to the Treaty of Point Elliott. The Tulalip Reservation's boundaries enclose a 22,000-acre land base north of Everett and the Snohomish River and west of Marysville (Tulalip Tribes, 2025). The Navy and the Tulalip Tribes signed a Memorandum of Agreement in 1987 that provided for cooperation between the two parties in fish and water quality protection and support of tribal resource enhancement efforts.

Harvesting traditional resources from U&A fishing grounds and stations can be for ceremonial and subsistence uses as well as for commercial enterprises. Procurement of traditional resources is based on applicable geographical area (e.g., U&A fishing grounds and stations), fishing methods, season, and species limits per day or per size. Tribal fisheries are place oriented, limited to the adjudicated U&A fishing grounds and stations. This results in immobile fisheries that cannot move to a new location if the resources or habitats are depleted.

NFSC Smokey Point is located along Hayho Creek, which runs along the western property boundary of the project site, with a 50-foot native vegetation buffer zone on Navy property. Hayho Creek is a seasonal tributary of Quilceda Creek, which ultimately discharges into the Ebey Slough, a side channel of the Snohomish River. During summer and early fall months, Hayho Creek has minimal flow and high water temperatures. Due to these conditions, salmonid occurrence in the stream could at best be seasonal. Salmonids, specifically coho and chum salmon, are documented to occur within Hayho Creek with predatory species, such as steelhead, likely to also occupy the creek when water levels and temperature permit.

3.5.3 Environmental Consequences

The evaluation of impacts on traditional resources considers whether the resource itself is affected or if there is a change in access to the resource. Analysis of potential impacts considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment that contribute to the importance of the resource, or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect effects on American Indian Traditional Resources are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable.

3.5.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to traditional resources near NFSC Smokey Point nor would there be a change in access to such resources. Therefore, no significant impacts to American Indian traditional resources would occur with implementation of the No Action Alternative.

3.5.3.2 PPV Military Housing at NFSC Smokey Point (Preferred Alternative) Potential Impacts

Under the Preferred Alternative, the project site would be developed as a new residential community for DoD enlisted personnel and their dependents. The Preferred Alternative would include the demolition and associated site work to prepare the project site for residential development. These activities will alter the existing stormwater management conditions on the property. The Preferred Alternative would minimize adverse effects through the implementation of GULD technologies or bioretention cells that will improve stormwater quality.

The Navy has invited government-to-government consultation with the Tulalip Tribes of Washington. Pending input from the government-to-government consultation, the Navy anticipates no objections to the Proposed Action.

3.6 Land Use

This discussion of land use includes current and planned uses and the regulations, policies, or zoning that may control the proposed land use. The term land use refers to real property classifications that

indicate either natural conditions or the types of human activity occurring on a parcel. Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational.

3.6.1 Regulatory Setting

Through the CZMA, Congress established national policy to preserve, protect, develop, restore, or enhance resources in the coastal zone. This Act encourages coastal states to properly manage use of their coast and coastal resources, prepare and implement coastal management programs, and provide for public and governmental participation in decisions affecting the coastal zone. To this end, CZMA imparts an obligation upon federal agencies whose actions or activities affect any land or water use or natural resources of the coastal zone to be carried out in a manner consistent to the maximum extent practicable with the enforceable policies of federally approved state coastal management programs. However, Federal lands, which are "lands the use of which is by law subject solely to the discretion of the Federal Government, its officers, or agents," are statutorily excluded from the State's "coastal uses or resources." If, however, it is reasonably foreseeable that impacts that occur outside of the coastal zone will affect uses and resources of the coastal zone, the federal consistency requirements of the CZMA will apply. As a federal agency, the Navy is required to determine whether its proposed activities would affect uses and resources of the coastal zone. This takes the form of a consistency determination, a negative determination, or a determination that there would be no effect to coastal zone resources and no further action is required.

The DoD Directive O-2000.16, "DoD Antiterrorism Program," requires all DoD Components to adopt and adhere to common criteria and minimum construction standards to mitigate antiterrorism vulnerabilities and terrorist threats. The intent of these building standards is to integrate greater resistance to a terrorist attack into all inhabited buildings. Because a part of the redevelopment project would be occupied by Navy personnel, the applicability of Anti-Terrorist Force Protection (ATFP) requirements is evaluated in Section 3.6.2.1, Anti-terrorism and Force Protection Standards, of this EA.

The Proposed Action is on federally owned property in Snohomish County, WA, and is not subject to local zoning or land use controls. This section presents local zoning of surrounding land for information purposes only, to provide context about the compatibility of the Proposed Action with surrounding land uses.

3.6.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under land use resources at NFSC Smokey Point. Land uses surrounding the project site are generally defined by light- to medium-industrial uses, stockpiling, and commercial activities. Land uses to the immediate north includes single-family detached residential dwelling units and an apartment complex. More distant land uses include agricultural uses, single-family detached dwellings, and passive open space.

Current land uses at the project site include commercial, financial, and recreational uses, and supporting infrastructure, such as parking facilities. The largest and principal use of the project site is the Navy Exchange shopping facility.

3.6.2.1 Land Use Compatibility

The Coastal Zone Management Act (CZMA) applies to the State's 15 coastal counties, of which Snohomish County is included. Although NFSC Smokey Point is located within the coastal zone of the State of Washington, tribal lands and lands owned, leased, or held in trust by the federal government, or for which the federal government has sole discretion to determine their use are explicitly excluded. The Navy has determined there are no effects to coastal resources, and therefore no further action under the CZMA (see Table 5-1).

2016 Naval Station Everett Installation Development Plan

The current IDP for Naval Station Everett was adopted in May 2016 and covers development on the Main Site of Naval Station Everett (located in Everett, Washington) and NFSC Smokey Point (located in Marysville, Washington). The IDP is the official planning document which guides the physical development of the installation in accordance with the UFC 2-100-01, *Installation Master Planning*, and the Navy's *Installation Development Plan Consistency Guide*. The IDP provides development priorities for the installation over the short-, intermediate-, and long-range periods.

The 2016 IDP identifies the future land uses for NFSC Smokey Point, including the North and South Sites of the Proposed Action. The North Site is identified as Community and Operations (Training). The South Site is identified as Recreation/Open Space.

Because the proposed housing would be occupied by Navy personnel, the applicability of ATFP requirements is evaluated in this EA. ATFP standards consist of restrictions on site planning, including standoff distances, building separation, unobstructed space, drive-up and drop-off areas, access roads, and parking; structural design; structural isolation; and electrical and mechanical design. UFC 4-010-01 provides DoD minimum ATFP standards for buildings. These standards protect personnel against terrorist attacks through cost effective, implementable, and enforceable construction standards.

Local Zoning

The project site is surrounded by the City of Marysville and adjacent land is zoned primarily for residential and light industrial uses.

3.6.3 Environmental Consequences

Factors affecting a proposed action in terms of land use include its compatibility with on-site and adjacent land uses, restrictions on public access to land, or change in existing land use that is valued by the community. Other considerations are given to proximity to a proposed action, the duration of a proposed activity, and its permanence. Analysis of potential impacts considers both direct and indirect impacts.

3.6.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to land use. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.6.3.2 PPV Military Housing at NFSC Smokey Point (Preferred Alternative) Potential Impacts

The Preferred Alternative includes the development of up to 108 low-rise multifamily housing units (88 townhomes and 20 apartments). The 88 townhomes will be distributed among 13 fourplexes and 12 triplexes. An existing 72-room hotel will be adaptively reused and converted into 20 apartments.

2016 Naval Station Everett Installation Development Plan

The Navy is undertaking updates and revisions to the adopted IDP for Naval Station Everett, and the next revision to the IDP will recognize residential uses for the portions of NFSC Smokey Point planned to be developed as housing under the Proposed Action. This change in land use identification is not required prior to implementation of the Proposed Action.

The UFC provides that family housing with 12 units or fewer per building are considered "low occupancy family housing." UFC 4-010-01 Section 1-7 "Exceptions," Item 1-7.2 indicates that low-occupancy family housing is exempt from the ATFP standards of the UFC. It is acknowledged that the low density of such units reduces the likelihood of mass causalities and the fact that these types of developments have rarely been directly targeted by terrorists. These triplexes and fourplexes proposed meet the UFC definition of low-occupancy family housing and are exempt from ATFP standards.

The Preferred Alternative will renovate the existing NGIS facility into 20 apartments. The NGIS Facility is comprised of two distinct but interconnected buildings. Neither building will exceed 12 units and so both meet the UFC definition of "low occupancy housing." The adaptive reuse of the NGIS facility is exempted from the ATFP standards of the UFC. The NGIS facility will also incorporate a new community center with retail, health, and community services such as offices, storage, and gathering spaces for community residents. The community center meets the UFC definition of a "town center," which is also exempt from ATFP standards.

UFC 4-010-01 Appendix A provides recommended ATFP measures for new and existing buildings. Appendix A, Section A-7 "Recommendation 6" provides that for new family housing areas, space can be allocated at the perimeters of the housing area for an entry control facility or access control point designed in accordance with UFC 4-022-01, which can be constructed if the need arises. The Proposed Action includes adequate space around the perimeter for an entry control facility if the Navy determines it to be needed.

Local Zoning

Although the project site is not located in an incorporated city or town, it is fully surrounded by properties within the jurisdictional boundaries of the City of Marysville. The federal government is not bound by local zoning requirements, however, the following discussion of Marysville zoning is provided for context to assess the compatibility of the Proposed Action with surrounding land uses. The Marysville zoning regulations are codified as Marysville Municipal Code Title 22C.

Land uses surrounding the project site consist of single- and multi-family dwellings, light industrial uses, and passive open space. The neighboring parcels to the east, west, and south are all in the Marysville Light Industrial Zoning District. These neighboring parcels are also in the Cascade Industrial Center, which is a joint industrial master plan area between Marysville and the City of Arlington to the north. While the Project area is generally surrounded by industrial zoned parcels, multiple parcels comprising a nearby residential community—located directly north of the Project area across 144th Street NE—are in the Marysville R18 Multi-Family Medium zoning district. This area is developed with multi-family and

single-family dwelling units. Other nearby properties are in the Marysville R-4.5 Singly-Family Medium zoning district and are developed with single-family dwelling units.

The Proposed Action includes the development of up to 108 dwelling units, comprising 25 new triplex and fourplex structures and 20 redeveloped apartment units in the existing NGIS structure. Although the project site is in the northeastern portion of an area mostly developed with light industrial uses, adjacent residential uses exist north of the project site and a large residential neighborhood exists less than ¼-mile southeast of the project site. Therefore, the Proposed Action is compatible with the surrounding land uses.

3.7 Infrastructure

This section discusses infrastructure such as utilities (including drinking water production, storage, and distribution; wastewater collection treatment and disposal; stormwater management, solid waste management, energy production, transmission, and distribution; and communications), and facilities (including, buildings, housing, etc.) Transportation systems and traffic both are addressed separately in Section 3.8.

3.7.1 Regulatory Setting

UFC 2-100-01 (Installation Master Planning) provides comprehensive planning strategies for facility and infrastructure development, including planning, programming, engineering and design, construction, reuse, real estate actions, public private ventures, operations and maintenance, and disposal. The first of ten strategies highlighted in UFC 2-100-01 to support the DoD-wide overarching installation planning philosophy is sustainability planning. Sustainable development makes the most effective use of limited resources and creates more compact, sustainable, and resilient communities while meeting security and safety requirements. UFC 2-100-01 encourages infill development on previously developed land to conserve limited land resources and building reuse to minimize the installation's real property operations costs.

3.7.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under infrastructure at NFSC Smokey Point. NFSC Smokey Point is in the City of Marysville and most utilities are provided by the City, including potable water, wastewater collection, and solid waste collection. Snohomish County Public Utility District No. 1 (SNOPUD) provides electricity to all of Snohomish County, including the project site, and has a generating capacity of 132 megawatts. Puget Sound Energy (PSE) supplies natural gas to over 900,000 customers, including the existing facilities at NFSC Smokey Point.

3.7.2.1 Utilities

The following sections describe existing conditions for utilities at NFSC Smokey Point.

Potable Water

The project site connects to the City of Marysville public water system via three 12-inch connections along 45th Street NE and one along 144th Street NE (NAVFAC Northwest, 2016). Fire hydrants are spaced in accordance with requirements per UFC 3-600-01 (NAVFAC Northwest, 2016).

Wastewater

Three sanitary mains serve facilities at the project site. All three connect to a 12-inch city main on 45th Street NE that flows north to 144th Street (NAVFAC Northwest, 2016). All sewage and wastewater is treated at the City of Marysville Water Quality and Wastewater Treatment Plant (NAVFAC Northwest, 2016).

Stormwater

Stormwater within the 52-acre NFSC Smokey Point facility is collected from impervious surfaces, routed through ditches, pipes, and detention ponds and discharged to Hayho Creek. Hayho Creek runs along the western and southern property boundary of NFSC Smokey Point, with a 50-foot native vegetation buffer on Navy property. The north parking lot, currently used as recreational vehicle storage that would be developed as housing under the Proposed Action, drains through grates and subsurface drains to the stormwater ponds, then through a vegetated swale, and discharges to Hayho Creek on the west side of the property. The ballfields in the southern part of the property, which would be developed as housing under the Proposed Action, are drained by underground pipes with an outlet to Hayho Creek at the south edge of the property on the west side of the city stormwater facility.

Solid Waste Management

The City of Marysville Public Works Solid Waste Division provides garbage pick-up to about 22,500 homes, hauling 2,300 tons of garbage per month, and is one of only two cities in Snohomish County that provide citizens with service at a rate competitive with regional private solid waste companies.

Energy

The project site is connected to the City of Marysville power supply provided by SNOPUD, a publicly owned utility. The need for a substation at this site does not exist; all facilities operate on a standard power supply (NAVFAC Northwest, 2016). PSE provides natural gas service to the project site. Site utilities connect to the public service at two locations along 45th Street NE. All existing facilities on-site use natural gas for heating except for NGIS, which uses electricity (NAVFAC Northwest, 2016).

Communications

Telephone service at the project site utilizes a modest fiber optics network and is controlled by Naval Computer and Telecommunications Area Master Station, Pacific. No secure network services are currently provided at this location. Infrastructure exists to expand or enhance communication capability to meet future mission requirements (NAVFAC Northwest, 2016).

3.7.2.2 Facilities

All facilities at the project site are between 11 and 21 years old (built between 1994 and 2004) and generally are in good or excellent condition. No existing facilities were located at Marysville prior to Navy ownership (NAVFAC Northwest, 2016). Current facilities at NFSC Smokey Point include the FFSC, Commissary, NEX, Navy Federal Credit Union, Navy Marine Corps Relief Society, the Navy Lodge, and the NGIS.

3.7.3 Environmental Consequences

This section analyzes the magnitude of anticipated increases or decreases in public works infrastructure demands considering historic levels, existing management practices, and storage capacity, and evaluates

potential impacts to public works infrastructure associated with implementation of the Proposed Action. Impacts are evaluated by whether they would result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, or require development of facilities and sources beyond those existing or currently planned.

3.7.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the existing infrastructure of NFSC Smokey Point. Therefore, no significant impacts to transportation (discussed further in Section 3.8 below), utilities, or facilities would occur with implementation of the No Action Alternative.

3.7.3.2 PPV Military Housing at NFSC Smokey Point (Preferred Alternative) Potential Impacts

Under the Preferred Alternative, NFSC Smokey Point would continue to be provided most utilities by the City, including potable water, wastewater collection, and solid waste collection. SNOPUD would continue to provide electricity to the project site. PSE supplied natural gas would also continue.

The current population of the City of Marysville is approximately 73,000 people. Implementation of the proposed project would add an estimated 250-350 new residents to the project site, housed in up to 108 low-rise multifamily housing units. Most of the people who would occupy the new housing units would relocate from private sector housing units in the surrounding area.

Estimated water demand for the proposed project is approximately 38,000 gallons per day, which represents approximately 0.6 percent of the 6.9 million gallons per day the City provides to more than 23,000 connections. The proposed project would generate an estimated 28,000 gallons of wastewater per day, and initial discussions with the City of Marysville indicate the existing sewer mains have sufficient capacity to serve the proposed project. The proposed project would require approximately 5,200 kilowatt hours of electricity per day, and initial discussions with SNOPUD indicate sufficient electricity supply is available to serve the project site.

No new public utility infrastructure (such as wastewater treatment facilities, pump stations, water mains, sewer mains, electrical transmission lines) would be required to serve the proposed project. New utility work would be limited to on-site utilities and small areas at the points of connection adjacent to the project site.

Renovation of the NGIS to create 20 apartments would not disrupt the use of existing facilities because the NGIS is currently vacant and not in use. A small 5,000-square-foot warehouse on the northern portion of the project site would be demolished, and the metal components of the structure would be recycled. Demolition of the small warehouse would not affect the Navy's mission or operations because warehouse storage demand on site is low and there are other storage locations available.

Therefore, overall demand for utilities provided by the City of Marysville or regional utility providers would not exceed capacity after implementation of the Proposed Action.

3.8 Transportation

This discussion of transportation includes all the air, land, and sea routes with the means of moving passengers and goods. A transportation system can consist of any or all of the following: roadways, bus routes, railways, subways, bikeways, trails, waterways, airports, and taxis, and can be looked at on a local or regional scale.

Traffic is commonly measured through average daily traffic and design capacity. These two measures are used to assign a roadway with a corresponding LOS. The LOS designation is a professional industry standard used to describe the operating conditions of a roadway segment or intersection. The LOS is defined on a scale of A to F that describes the range of operating conditions on a particular type of roadway facility. LOS A and LOS B indicate free flow travel. LOS C indicates stable traffic flow. LOS D indicates the beginning of traffic congestion. LOS E indicates the nearing of traffic breakdown conditions. LOS F indicates stop-and-go traffic conditions and represents unacceptable congestion and delay.

3.8.1 Regulatory Setting

The City of Marysville's Comprehensive Plan Transportation Element includes LOS standards for city streets and intersections. The standard for arterial-arterial and arterial-collector intersections along State Route 529 and State Route 528 between I-5 and State Route 9 is LOS E "mitigated," which means that the congestion should be mitigated through improvements, transit, ridesharing, or other travel modes when the intersection falls below LOS E. The standard for all other arterial-arterial and arterial-collector intersections is LOS D. Intersections that are not an arterial-arterial or arterial-collector intersection are not subject to the city's LOS standard.

3.8.2 Affected Environment

NFSC Smokey Point is located on the west side of 45th Ave NE and south of 144th Street NE. The nearest principal arterial roadway is Smokey Point Boulevard-State Avenue, a north-south arterial to the west of the project site that runs parallel to I-5 with 4-5 travel lanes, no street parking, intermittent sidewalks, no bicycle facilities, and a speed limit of 40 miles-per-hour (mph). The primary east-west corridor in the area is 136th Street NW, a minor arterial to the south of the project site with 3 travel lanes, no street parking, sidewalks on both sides of the street, bicycle lanes, and a speed limit of 35 mph.

The nearest local roadway is 45th Avenue NE, which runs north-south along the eastern boundary of the project site and has 3 travel lanes, no street parking, sidewalks on both sides of the street, no bicycle facilities, and a speed limit of 25 mph. The northern side of the project site is bounded by 144th Street NE, an east-west local roadway with 2 travel lanes, no street parking, sidewalks on both sides of the street, no bicycle facilities, and a speed limit of 25 mph. Despite many of the local roadways providing sidewalks, observed pedestrian activity is minimal in the project vicinity.

Public transit in the project vicinity is provided by Community Transit, which operates two nearby bus routes between Smokey Point and Lynwood. Route 201 runs along Smokey Point Boulevard-State Avenue and Route 202 runs along 51st Avenue NE, east of the project site. The nearest bus stops are within approximately one-mile walking distance of the project site.

A Traffic Impact Analysis was prepared in December 2023 for the proposed PPV housing at NFSC Smokey point (Appendix E). Existing traffic volumes in the project area were measured at four nearby intersections. Traffic volumes were measured during the weekday PM peak hour, which represents the highest one-hour period between 4:00 PM and 6:00 PM. The four study intersections are shown on Figure 3-10 and include:

1. Smokey Point Blvd - State Avenue/136th Street NE (signal)
2. 45th Ave NE/136th Street NE (stop controlled)
3. 45th Ave NE/South Site Access (stop controlled)

4. 45th Ave NE/144th Street NE (stop controlled)

Figure 3-10 shows existing PM peak hour traffic at each study intersection, including left turning, right turning, and through traffic. Based on these existing traffic volumes, a PM peak hour LOS was calculated for each study intersection. For Smokey Point Boulevard-State Avenue, the City of Marysville requires mitigation if the LOS falls below LOS E. For all other arterial-arterial or arterial-collector intersections, the LOS standard is LOS D or better. Intersections not classified as arterial-arterial or arterial-collector do not fall under the city's LOS standard. All the study intersections currently operate at LOS C or better during the weekday PM peak hour.

Roadways in the project area meet City of Marysville safety standards for frequency of crashes. The city's guidelines establish a threshold of 1.0 crashes per million entering vehicles at intersections and 10.0 crashes per million vehicle miles along roadway segments. All intersections and roadway segments near the project site are below these thresholds.

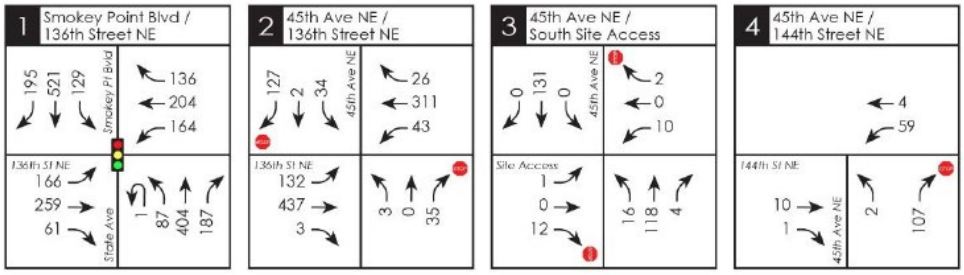


Figure 3-10 Study Intersections with Weekday PM Peak Hour Traffic Volumes

3.8.3 Environmental Consequences

Impacts to ground traffic and transportation are analyzed by considering the possible changes to existing traffic conditions and the capacity of area roadways from proposed increases in commuter and construction traffic. Analysis of potential impacts considers both direct and indirect impacts. Direct impacts may be the result of physical changes to the roadway network. Indirect effects to traffic and transportation are the result of increased traffic from commuters to and from the project site.

3.8.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur, but other regional development would continue. By 2032, LOS is projected to worsen at two of the study intersections but will remain within applicable LOS standards. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.8.3.2 PPV Military Housing at NFSC Smokey Point (Preferred Alternative) Potential Impacts

The Proposed Action would add up to 250-350 new residents to the project site. Access to the site would be provided via existing driveways on 45th Avenue NE. The traffic analysis is based on full project buildout by 2026, with a horizon year of 2032 (buildout + 6 years) evaluated, consistent with local agency requirements. Future weekday PM peak hour conditions in 2032 (horizon year) were evaluated for the surrounding roadway network using the four study intersections described in Section 3.8.2.

There are no near-term planned transportation improvements in the immediate study area. Therefore, traffic added by the Proposed Action would travel on the same roadway network that exists today. The Proposed Action is estimated to add 420 daily trips (210 entering the site and 210 leaving the site). During the PM peak hour, 41 new trips are estimated, with 28 entering the site and 13 leaving the site. These new trips were distributed along the surrounding roadway network based on existing and anticipated travel patterns. Construction traffic would not have a significant impact to LOS or existing roadway conditions. Construction would be temporary (approximately 16 months) and would include fewer than 100 workers during peak construction. The minor, short-term increase in traffic during construction is not expected to result in a substantial change to existing conditions.

Future LOS was projected for the year 2032, both with and without implementation of the Proposed Action. Without project implementation, future traffic volumes were estimated by applying a three percent annual growth rate to the measured 2023 peak hour traffic volumes. Future traffic volumes with project implementation were estimated by adding the projected project-related trip generation and distribution to the estimated background traffic increases that would occur independently of project implementation. By 2032, LOS is projected to worsen at two of the study intersections but will remain within applicable LOS standards. This deterioration is projected to occur because of background traffic volume increases.

The future LOS is the same with or without project implementation (Table 3-8). All study intersections are anticipated to operate at LOS E or better with or without project implementation, meeting applicable LOS standards. The LOS at study intersection #1 (Smokey Point Boulevard and 136th Street NE) is projected to drop to LOS D, which is above the LOS E level that would trigger the need for mitigation. The southbound approach at study intersection #2 (45th Avenue NE and 136th Avenue NE) is projected to drop to LOS E, but it is not an arterial-arterial or arterial-collector intersection and therefore is not subject to the city's LOS standard. All other study intersections would continue to

operate at LOS C or better for all directions of travel. Therefore, implementation of the Proposed Action would not result in significant impacts to transportation.

Table 3-8 Study Intersection Current and Future PM Peak Hour LOS Summary

Study Intersection	*2023 Weekday PM Peak Hour LOS*	*No Action 2032 Weekday PM Peak Hour LOS*	*With Project 2032 Weekday PM Peak Hour LOS*
Smokey Point Blvd - State Avenue/136th Street NE	**C**	**D**	**D**
45th Ave NE/136th Street NE	**A** (EB and WB left-turn), **B** (NB approach), **C** (SB approach)	**A** (EB and WB left-turn), **C** (NB approach), **E** (SB approach)	**A** (EB and WB left-turn), **C** (NB approach), **E** (SB approach)
45th Ave NE/South Site Access	**A** (EB approach, NB and SB left-turn), **B** (WB approach)	**A** (EB approach, NB and SB left-turn), **B** (WB approach)	**A** (EB approach, NB and SB left-turn), **B** (WB approach)
45th Ave NE/144th Street NE	**A**	**A**	**A**

Notes: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

3.9 Summary of Potential Impacts to Resources

A summary of the potential impacts associated with Preferred Alternative and the No Action Alternative is presented in Table 3-9. The analysis contained in this EA has determined the Proposed Action and alternatives would not result in significant environmental impacts. Therefore, no mitigation actions are needed.

This page intentionally left blank.

Table 3-9 Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*NFSC Smokey Point PPV Housing (Preferred Alternative)*
Water Resources	No change from existing conditions	Impacts to water resources during construction activities and operations would not be significant with implementation of appropriate stormwater infrastructure, BMPs, and compliance with permit conditions. No significant impacts to water resources.
Biological Resources	No change from existing conditions	The Navy has determined that the Preferred Alternative may affect but is not likely to adversely affect Puget Sound Chinook, steelhead, and bull trout, and that it may affect, but is not likely to adversely affect critical habitat for Puget Sound Chinook, steelhead and bull trout in the mainstem Quilceda Creek. The Navy is consulting with USFWS and NMFS on this determination (Appendix A). For bald eagles and other migratory birds, temporary foraging disruptions due to construction noise would not be expected to be substantial or result in take. With the implementation of minimization and avoidance measures, there would be no significant impacts to biological resources.
Air Quality	No impact	The Preferred Alternative would result in short-term, air quality impacts during construction. Emissions of all criteria pollutants are expected to remain below General Conformity de minimis thresholds, with their impacts considered minor. For greenhouse gas (GHG) emissions, the operational-related emissions (e.g., energy use, vehicle use) are projected at approximately 2,225 tons of GHG annually, which remains below the reporting threshold of 27,500 tons per year. No significant impacts.
Cultural Resources	No impact	There are no known archaeological historic properties within the APE, therefore the Proposed Action will have no impact. In the case of an inadvertent discovery of archaeological resources in the course of construction, the Navy would stop work in the immediate area and follow the installation Inadvertent Discovery Plan. No significant impacts.
American Indian Traditional Resources	No impact	The Preferred Alternative could result in a potential slight improvement to long-term water quality in fishing areas important to Tribes. The Navy invited the Tulalip Tribes of Washington to initiate government-to-government consultation on the Proposed Action (Appendix D).
Land Use	No impact	The Proposed Action is compatible with existing adjacent land uses. The Installation Development Plan (IDP) for Naval Station Everett does not identify the project area for residential uses. However, an update to the

Resource Area	*No Action Alternative*	*NFSC Smokey Point PPV Housing (Preferred Alternative)*
		IDP is being prepared and the updated plan will recognize residential uses in the project area. The Proposed Action would have no effect on coastal uses or resources. No significant impacts.
Infrastructure	No impact	The Preferred Alternative would have no impact to public utility infrastructure as no new public utility infrastructure would be required, and there would be no significant impact to utility capacity because existing and planned utility capacity exists to serve the proposed project in addition to other anticipated population growth in the area.
Transportation	Natural baseline traffic volume increases would result in minor reductions of LOS at some study intersections.	The Preferred Alternative would result in minor reductions of LOS at some study intersections, primarily from natural baseline traffic volume increases. Construction traffic would not have a significant impact to LOS or existing roadway conditions. No significant impact to transportation.

4 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions (RFFAs) include those federal and non-federal activities not yet undertaken, but sufficiently likely to occur, that could interact with effects of the Proposed Action. RFFAs generally include activities for which there are existing decisions, funding, or proposals. RFFAs do not include actions that are highly speculative or indefinite.

Interaction between Proposed Action impacts and impacts from RFFAs is most likely when to the actions occur in a similar location or during a similar time period. Actions overlapping with or near the Proposed Action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would have a higher potential for interaction. To identify relevant RFFAs, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the Proposed Action might interact with the affected resource areas of reasonably foreseeable actions?
- If one or more of the affected resource areas of the Proposed Action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

4.1 Scope of Reasonable Foreseeable Future Actions Analysis

The study area for analysis of interaction with effects from RFFAs includes those areas previously identified in Chapter 3 for the respective resource areas. The time frame centers on the timing of the Proposed Action., with consideration for potential overlap with expected RFFA construction timelines. Public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify RFFAs include notices of intent for EISs and EAs, management plans, land use plans, and other planning related studies.

4.2 Reasonably Foreseeable Future Actions

This section will focus on reasonably foreseeable future projects at and near the Proposed Action locale. In determining which projects to include in the analysis, a preliminary determination was made regarding the RFFA. Specifically, using the first fundamental question included in Section 4.1, it was determined if a relationship exists such that the affected resource areas of the Proposed Action (included in this EA) might interact with the affected resource area of a RFFA. If no such potential relationship exists, the project was not carried forward for analysis. Projects included in this analysis are listed in Table 4-1 and briefly described in the following subsections.

Table 4-1 Reasonably Foreseeable Future ActionsEvaluation

Action	*Level of NEPA Analysis Completed*
Reasonably Foreseeable Future Actions	
Grading Activity	
Catapult Grading	N/A
Salacia Processing Phase 3 Grading	N/A
Industrial Development	
Cascade Business Park BSP	N/A
Residential Development	
English Crossing	N/A
Lakewood Heights	N/A
Marysville 10 Degrees	N/A
Marysville 172 Multi-family	N/A
Sather Farms	N/A
The Lodge Phase 5	N/A

Project descriptions and status based on City of Marysville Development Activity Map

4.2.1 Reasonably Foreseeable Future Actions

RFFAs generally are a continuation of past development, with proposed projects consisting primarily of residential and industrial development. The projects included in this analysis were identified through the City of Marysville's Development Activity Map and were selected based on their geographic or temporal proximity to the Proposed Action.

4.2.1.1 Catapult Grading

This grading project is listed as currently under construction and includes 52,000 cubic yards of fill on a parcel southwest of the project site and north of 136th Street NE.

4.2.1.2 Salacia Processing Phase 3 Grading

This grading project is listed as having obtained preliminary approval to strip approximately 7,800 cubic yards of topsoil and import 88,000 cubic yards of structural fill on a 5.64-acre site directly east of the project site, across 45th Avenue NE.

4.2.1.3 Cascade Business Park BSP

This industrial building project is listed as having obtained preliminary approval to construct 7 new industrial buildings totaling approximately 2,915,300 square feet. This industrial development is located northeast of the project site, west of 67th Avenue NE, and both south and north of 152nd Street NE.

4.2.1.4 English Crossing

This 247-unit townhome development on approximately 19.5 acres is located northwest of the project site, west of I-5 and south of State Route 531. The project is listed as having obtained preliminary approval.

4.2.1.5 Lakewood Heights

This 182-lot residential development on approximately 29.5 acres is located northwest of the project site, west of Interstate 5 and north of State Route 531. This project will include clearing, grading, and utility and roadway extensions. The project is listed as having obtained preliminary approval.

4.2.1.6 Marysville 10 Degrees

This 328-lot planned residential development consisting of 165 townhouse units and 163 detached single-family homes is located northwest of the project site between 156th Street NE and 164th Street NE, west of Interstate 5. The project is listed as under construction.

4.2.1.7 Marysville 172 Multi-family

This 474-unit apartment complex, including 15 apartment buildings on approximately 19 acres, is located northwest of the project site, west of Interstate 5 and south of State Route 531. The project includes surface parking, carports, and recreational amenities. The project is listed as under construction.

4.2.1.8 Sather Farms

This 199-lot planned residential development is located northwest of the project site, west of Interstate 5 and south of State Route 531. The project is listed as under review.

4.2.1.9 The Lodge Phase 5

This 204-unit multi-family apartment complex is located northwest of the project site, west of Interstate 5 and north of State Route 531. The project is listed as under construction.

4.3 Reasonably Foreseeable Future Actions Analysis

Where feasible, impacts were assessed using quantifiable data; however, for many of the resources included for analysis, quantifiable data is not available, and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for a RFFA has not been completed, assumptions were made regarding potential impacts. The analytical methodology presented in Chapter 3, which was used to determine potential impacts to the various resources analyzed in this document, was also used to determine potential impacts from RFFAs.

4.3.1 Water Resources

The ROI for water resources is Hayho Creek (which is adjacent to the project site) and its downstream receiving waters (Quilceda Creek). All the RFFAs included in this analysis may affect water resources within the ROI because all the projects are within the Quilceda Creek watershed. RFFAs within the ROI would be required to implement BMPs to protect water quality during construction and operation, including a required SWPPP for projects that disturb more than one acre. New development must comply with the Snohomish County Stormwater Manual and provide treatment to stormwater. The required water quality measures for the Proposed Action and RFFAs will ensure that existing water quality will not be degraded. The Proposed Action would have no impacts on wetlands or groundwater and therefore would not interact with the effects of other projects. Therefore, implementation of the Proposed Action combined with RFFAs would not result in significant impacts within the ROI.

4.3.2 Biological Resources

The ROI for biological resources is Hayho Creek (which is adjacent to the project site) and its downstream receiving waters (Quilceda Creek and a portion of Ebey Slough). All the RFFAs included in this analysis may affect biological resources (terrestrial and aquatic species and their habitats) within the ROI because all the projects are within the Quilceda Creek watershed. RFFAs within the ROI would be required to implement BMPs to protect aquatic species and their habitats during construction and operation, including a required SWPPP for projects that disturb more than one acre. New development must comply with the Snohomish County Stormwater Manual and provide treatment to stormwater. The required water quality measures for current and future development will ensure that existing water quality will not be degraded, thus protecting aquatic species and their habitats. Construction noise would be temporary and short-term and would not combine with noise from RFFAs to create a significant impact on wildlife. The project site is already developed and implementation of the Proposed Action would not result in the loss of critical habitat or combine with the effects of RFFAs to result in a significant impact to critical habitat. Therefore, implementation of the Proposed Action combined with RFFAs would not result in significant impacts within the ROI.

4.3.3 Air Quality

NFSC Smokey Point is in Snohomish County, which is in the Puget Sound Intrastate AQCR. Effects on air quality are based on estimated direct and indirect emissions associated with the Proposed Action. The ROI for assessing air quality impacts is the air basin in which the project is located, Snohomish County and the Puget Sound AQCR. Snohomish County generally has good air quality, as indicated by maintaining attainment status in the county since 1996. While Snohomish County was previously designated as a maintenance area for ozone and CO (since 1996), EPA currently classifies Snohomish County as being in attainment for all NAAQS (EPA 2022). All RFFAs would produce emissions that would combine with the emissions of the Proposed Action to affect air quality. RFFAs would generate emissions during construction and operational emissions upon project completion.

RFFAs would generate emissions that could combine with the emissions of the Proposed Action to adversely affect air quality. During construction, soil-disturbing activities, operations of heavy equipment, commuting workers, and the laying of asphalt may generate emissions that would temporarily affect air quality. The total emissions and timing vary depending on the project phasing and other options chosen for the project. Energy related emissions in residential buildings would increase emissions of air pollutants of concern. In addition to energy use, transportation-related emissions associated with personal and commercial vehicle use by residents and industrial users of the proposed developments are one of the primary sources of operational air emissions, including greenhouse gas emissions. The emissions associated with operational activities are attributed to vehicle trips generated by residents and industrial users.

Air quality effects from RFFAs within the ROI are not anticipated to result in an exceedance of the NAAQS. The City of Marysville plans to track, measure, and reduce greenhouse gas emissions. Future development in the city will be planned in a manner that minimizes greenhouse gas emissions, primarily through the reduction of energy use and fuel consumption. Therefore, implementation of the Proposed Action combined with RFFAs would not result in significant impacts within the ROI.

4.3.4 Cultural Resources

No cultural resources occur within the APE and the Proposed Action would not affect cultural resources. None of the RFFAs have the potential to interact with the Proposed Action to affect cultural resources.

4.3.5 American Indian Traditional Resources

The ROI for American Indian traditional resources includes fishing grounds that may be important to local tribes, including Hayho Creek and its downstream receiving waters (Quilceda Creek). All the RFFAs may affect habitat quality within the ROI because all the projects are within the Quilceda Creek watershed. RFFAs within the ROI would be required to implement BMPs to protect water quality during construction and operation, including a required SWPPP for projects that disturb more than one acre. New development must comply with the Snohomish County Stormwater Manual and provide treatment to stormwater. The required water quality measures for RFFAs will ensure that existing water quality in fishing areas important to tribes will not be degraded. Therefore, implementation of the Proposed Action combined with RFFAs is not expected to result in significant impacts to American Indian traditional resources within the ROI.

4.3.6 Land Use

The ROI for land use includes the City of Marysville. All the RFFAs would affect land use in the City of Marysville. RFFAs within the ROI are subject to building permit approval to ensure consistency with the City of Marysville Comprehensive Plan, which guides appropriate development in the ROI. The Proposed Action would be compatible with RFFA land uses.

4.3.7 Infrastructure

The ROI for infrastructure is the City of Marysville because the utilities at the project site (including potable water, wastewater conveyance, and electricity) are provided through municipal connections. Although electricity is produced by SNOPUD, the project site connects to the city's electricity grid. All the RFFAs would affect demand for public infrastructure in the City of Marysville. Infrastructure impacts from RFFAs within the ROI combined with the Proposed Action would not be significant because the Proposed Action would not individually result in the need for new public infrastructure and the growing demand for new public infrastructure driven by growth in the city is anticipated in the City's Comprehensive Plan. Capital improvement projects in the city are planned to keep pace with anticipated population growth and public utility demand.

4.3.8 Transportation

The ROI for transportation includes roadways and intersections near the project site that would be affected by project-related traffic. All the RFFAs would affect traffic and traffic congestion in the project area. The RFFAs located nearest to the project site would have the greatest potential to affect roadways and intersections affected by the Proposed Action. The traffic modeling conducted for this project predicted a substantial increase in background traffic congestion, which is an indicator of population growth in the area. Transportation impacts from RFFAs within the ROI combined with the Proposed Action would not be significant because although traffic congestion is predicted to increase, transportation improvements are planned in the City's Comprehensive Plans to mitigate traffic congestion and improve regional transportation

This page intentionally left blank.

5 Other Considerations Required by NEPA

5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

Analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state and local land use plans, policies, and controls. Table 5-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action and describes briefly how compliance with these laws and regulations would be accomplished.

Table 5-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	*Status of Compliance*
National Environmental Policy Act (NEPA); Navy procedures for Implementing NEPA	This EA has been prepared in accordance with the Navy NEPA procedures. Appropriate public participation and review are being conducted in compliance with NEPA. Signing of the decision document, anticipated to be a Finding of No Significant Impact (FONSI), concludes compliance with NEPA.
Clean Air Act	The applicable regulatory setting and impact analysis is discussed in Section 3.3, Air Quality. Annual air emissions are anticipated to be below de minimis levels for all pollutants.
Clean Water Act	The applicable regulatory setting and impact analysis is discussed in Section 3.1, Water Resources. The Proposed Action will conform to NPDES permit number WAS026620 requirements for the project site.
Coastal Zone Management Act	The Navy determined there would be no effect to any coastal use or resource.
National Historic Preservation Act	The Navy determined that there would be no historic properties affected by the Proposed Action. WA SHPO concurred with the Navy's findings. Correspondence with WA SHPO and tribal governments is included in Appendix C and Appendix D, respectively.
Endangered Species Act	The applicable regulatory setting and impact analysis is discussed in Section 3.2, Biological Resources. The Navy anticipates that the Proposed Action may affect, but is not likely to adversely affect, Puget Sound Chinook, Puget Sound steelhead, and bull trout, and would have no effect on other federally listed species. The Navy anticipates that the Proposed Action may affect, but is not likely to adversely affect critical habitat for Puget Sound Chinook, Puget Sound steelhead, and bull trout. Due to no detectable changes in salmon stocks from the Proposed Action, the Navy anticipates that the Proposed Action will have no effect to the critical habitat of the Southern Resident killer whale. The Navy is consulting with USFWS and NMFS on these determinations (Appendix A).
Magnuson-Stevens Fishery Conservation and Management Reauthorization Act	The applicable regulatory setting and impact analysis is discussed in Section 3.2, Biological Resources. The Navy determined that the Proposed Action would not adversely affect EFH for Pacific Coast Salmon or other salmonoid species. The Navy determined that there would be no affect to coastal pelagic or groundfish species.

Table 5-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	***Status of Compliance***
	The Navy is consulting with NMFS on this determination (Appendix A).
Marine Mammal Protection Act	The Proposed Action is not anticipated to affect Marine Mammals.
Migratory Bird Treaty Act	The applicable regulatory setting and impact analysis is discussed in Section 3.2, Biological Resources. For bald eagles and other migratory birds, temporary foraging disruptions due to construction noise would not be expected to be substantial or result in take.
Bald and Golden Eagle Protection Act	The applicable regulatory setting and impact analysis is discussed in Section 3.4, Biological Resources. The Proposed Action is not anticipated to result in a take of bald or golden eagles.
Comprehensive Environmental Response, Compensation, and Liability Act	The Proposed Action is not anticipated to affect Environmental Restoration Program sites. Construction would be conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act and other federal, state, and local environmental laws, regulations, and Navy instructions.
Emergency Planning and Community Right-to-Know Act	The Proposed Action would not store, use, or release hazardous materials.
Native American Graves Protection and Repatriation Act	In accordance with NAGPRA the Navy will consult with the tribes on a Plan of Action on how human remains, funerary objects and sacred objects will be handled should they be found during construction.
Executive Order 11988, Floodplain Management	The project site is in Flood Zone X, an area of minimal flood hazard. The Proposed Action is not anticipated to affect floodplains.
Executive Order 12088, Federal Compliance with Pollution Control Standards	The applicable regulatory setting and impact analysis is discussed in Section 3.3, Air Quality and Appendix B. The Proposed Action would not exceed NAAQS established by the EPA under the CAA. Therefore, the Proposed Action would comply with EO 12088.
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks	The applicable regulatory setting and impact analysis is discussed at the beginning of Chapter 3.0, Affected Environment and Environmental Consequences. The Navy concludes the Proposed Action would not result in environmental health risks or safety risks that may disproportionately affect children.
Executive Order 13175, Consultation and Coordination with Indian Tribal Governments	The applicable regulatory setting and impact analysis is discussed in Section 3.5, American Indian Traditional Resources. The Navy invited Indian tribal governments to initiate government-to-government consultation on the Proposed Action (Appendix D). The Proposed Action is anticipated to result in slight beneficial effects to fishing areas important to Tribes.
State of Washington Administrative Code, Chapter 173-201A, Water Quality Standards for Surface Waters of the State of Washington	The applicable regulatory setting and impact analysis is discussed in 3.6, Land Use. The Proposed Action would not exceed applicable state surface water quality standards.

5.2 Irreversible or Irretrievable Commitments of Resources

NEPA requires that environmental analysis include identification of "any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented" (42 U.S.C. section 4332). Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Implementation of the Proposed Action would involve human labor and the consumption of fuel, oil, and lubricants for construction vehicles. Implementing the Proposed Action would not result in significant irreversible or irretrievable commitment of resources. Human labor and fuel use for construction vehicles would be short term and limited to the construction of Proposed Action. Implementation of the Proposed Action would not result in the destruction of natural resources.

5.3 Unavoidable Adverse Impacts

This EA has determined that the alternatives considered would not have any significant impacts. Implementing the Proposed Action would result in the following minor but unavoidable environmental impacts: air emissions, construction noise, and minor deterioration of traffic conditions at nearby intersections.

5.4 Relationship between Short-Term Use of the Environment and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

In the short-term, effects to the human environment with implementation of the Proposed Action would primarily relate to the construction activity itself. Air quality and noise would be impacted in the short term. The construction of the facility and operation would not significantly impact the long-term natural resource productivity of the area. The Proposed Action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

This page intentionally left blank.

6 References

Barrett-Lennard L.G., J.K.B. Ford, and K.A. Heise. 1996. The mixed blessing of echolocation: differences in sonar use by fish-eating and mammal-eating killer whales. Anim. Behav. 51: 553–565.

Caltrans. 2016. Technical Guidance for Assessment and Mitigation of the Effects of Traffic Noise and Road Construction Noise on Birds. June.

Carretta, J.V., K. Forney, E. Oleson, D. Weller, A. Lang, J. Baker, M. Muto, B. Hanson, A. Orr, H. Huber, M. Lowry, J. Barlow, J. Moore, D. Lynch, L. Carswell, and R. Brownell Jr. 2019. U.S. Pacific Marine Mammal Stock Assessments: 2018. U.S. Department of Commerce, September 2023 Biological Assessment— Willapa Bay Maintenance Dredging 58 NOAA Technical Memorandum NMFS-SWFSC-617. Southwest Fisheries Science Center. 346 pp. + Appendices.

City of Marysville. (2024). Salmonid Distribution Maps. Accessed online at: https://www.marysvillewa.gov/326/Maps.

Daly, E.A., J.A. Scheurer, R.D. Brodeur, L.A. Weitkamp, B.R. Beckman, and J.A. Miller. 2014. Juvenile Steelhead Distribution, Migration, Feeding, and Growth in the Columbia River Estuary, Plume, and Coastal Waters. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 6: 62–80.

Drake, J. S., E. A. Bertson, J. M. Cope, R. G. Gustafson, E. E. Holmes, P. S. Leving, N. Tolimieri, R. S. Waples, S. M. Sogard, and G. D. Williams. 2010. Status review of five rockfish species in Puget Sound, Washington: bocaccio (Sebastes paucispinis), canary rockfish (S. pinniger), yelloweye rockfish (S. ruberrimus), greenstriped rockfish (S. elongatus), and redstripe rockfish (S. proriger). NOAA Technical Memorandum NMFS-NWFSC-108. NOA Fisheries, Seattle, WA. 234 pp.

Equinox Research and Consulting International, Inc. (2024). *Archaeological Monitoring Report: U.S. Navy Residential Development at 13910 45th Avenue Northeast, Marysville, Snohomish County, Washington.*

Federal Emergency Management Agency (FEMA). 2024. National Flood Hazard Viewer. Accessed online at: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html ?id=8b0adb51996444d4879338b5529aa9cd

Ford, J.K.B. and G.M. Ellis. 2006. Selective foraging by fish-eating killer whales Orcinus orca in British Columbia. Marine Ecology Progress Series 316: 185–199.

Ford, J.K.B., B.M. Wright, G.M. Ellis, and J.R. Candy. 2009. Chinook salmon predation by resident killer whales: seasonal and regional selectivity, stock identity of prey, and consumption rates. Fisheries and Oceans Canada (DFO), Nanaimo, BC.

Ford, J.K.B., G.M. Ellis, and K.C. Balcomb. 2000. Killer Whales: The Natural History and Genealogy of Orcinus orca in British Columbia and Washington. 2nd edition. University of British Columbia Press, Vancouver, BC, and University of Washington Press, Seattle. 104 pp.

Good, T. P., Waples, R. S., and Adams, P. (Eds.). (2005). Updated status of federally listed ESUs of West Coast salmon and steelhead. NOAA Tech Memo NMFS-NWFSC-66. Seattle, WA.

Hanson, B., R.W. Baird, and G. Schorr. 2005. Focal behavioral observations and fish-eating killer whales: improving our understanding of foraging behavior and prey selection. Abstract at the 16th Biennial Conference on the Biology of Marine Mammals, San Diego, California.

Healey, M.C. 1991. Life history of Chinook salmon (Oncorhynchus tshawytscha). In Groot, C. and L. Margolis (Eds) Pacific Salmon Life Histories. UBC Press: Vancouver. pp 311–394.

Lowry, D, Selleck, J, Andrews, K, and J Cope. (2024). Yelloweye Rockfish (Sebastes ruberrimus) and Bocaccio (Sebastes paucispinis) of the Puget Sound/Georgia Basin 5-Year Review: Summary and Evaluation. NOAA National Marine Fisheries Service. Seattle, WA. 50 pp. + App.

Moser, M. L., K. S. Andrews, S. Corbett, B. E. Feist and M. E. Moore. 2020.Occurrence of green sturgeon in Puget Sound and the Strait of Juan de Fuca: a review of detection data from 2002 to 2019. Report of the National Marine Fisheries Service to the U.S. Navy Pacific Fleet Environmental Readiness Division. Pearl Harbor, Hawaii

National Marine Fisheries Service (NMFS). 2005. Endangered and Threatened Wildlife and Plants: Endangered Status for Southern Resident Killer Whales. Final Rule. Federal Register 70(222): 69903-6991.

NMFS. 2006. Endangered and Threatened Wildlife and Plants: Threatened Status for Southern Distinct Population Segment of North American Green Sturgeon. Final Rule. 71(67):17757-17766.

NMFS. (2011). *5-Year Review: Summary and Evaluation of Puget Sound Chinook, Hood Canal Summer Chum, Puget Sound Steelhead.* Northwest Region, Portland, OR.

NMFS. 2015. Southern Distinct Population Segment of the North American Green Sturgeon (Acipenser medirostris) 5-Year Review: Summary and Evaluation. West Coast Region, Long Beach, California. 42 pp.

Naval Facilities Engineering Systems Command Northwest (NAVFAC Northwest). (2016). *Installation Development Plan Naval Station Everett*.

NAVFAC Northwest. (2021). *Hazardous Waste Management Plan for Naval Station Everett, Navy Support Complex Smokey Point, Naval Radio Station (T) Jim Creek, Pacific Beach Resort and Conference Center, and Acoustic Research Detachment Bayview.*

NAVFAC Northwest. (2022a). *Naval Station Everett Phase II Stormwater Management Program Plan.* Naval Station Everett and Naval Complex Smokey Point. February.

NAVFAC Northwest. (2022b). *Naval Station Everett Early Action Projects Plan.* February.

NAVFAC Northwest. (2022c). *MS4 Early Action Projects Smokey Point Pond Study Dye Testing and Sampling Results Naval Support Complex Smokey Point.* June.

NAVFAC Northwest. (2023). *Environmental Condition of Property Smokey Point Public-Private Venture, Marysville, Washington.*

Naval Station Everett. (2014). *Naval State Everett and Special Areas Integrated Cultural Resources Management Plan. Volume 1 and 2*.

Naval Station Everett. (2022). *Integrated Natural Resources Management Plan for Naval Station Everett.*

Nazarpour, S., I. Gnecco, and A. Palla. 2023. *Evaluating the Effectiveness of Bioretention Cells for Urban Stormwater Management: A Systematic Review*. Water, 15,913. https://doi.org/10.3390/w15050913

Pacific Fisheries Management Council (PFMC). (2024). *Pacific Coast Salmon Fishery Management Plan*. February. Accessed online at: https://www.pcouncil.org/fishery-management-plan-andamendments-3/

Palmer, K. (2020). State of Washington Historic Property Inventory Form, Dudley Carter Totem Pole (DAHP Property #723587). On file at Washington Department of Archaeology and Historic Preservation, Olympia.

Quinn, T.P., and K.W. Myers. 2004. Anadromy and the marine migrations of Pacific salmon and trout: Rounsefell revisited. Reviews in Fish Biology and Fisheries 14: 421-442.

Snohomish County. 1999. Quilceda/Allen Watershed Management Plan. Accessed online at: https://marysvillewa.gov/318/AllenQuilceda-Watershed-Action-Team

Transportation Engineering NorthWest. (2023). *Smokey Point Naval Support Complex Expansion Traffic Impact Analysis.*

U.S. Census Bureau. 2023. *American Community Survey 1-year estimates.* Retrieved from *Census Reporter Profile page for Marysville, WA*. http://censusreporter.org/profiles/16000US5343955-marysville-wa/

U.S. Department of Defense. (2021). 2021 Demographics Profile of the Military Community. Department of Defense. Accessed February 2025 at: https://download.militaryonesource.mil/12038/MOS/Reports/202 1-demographics-report.pdf

U.S. Environmental Protection Agency. (2019). Fact Sheet The U.S. Environmental Protection Agency (EPA) Proposes to Issue a National Pollutant Discharge Elimination System (NPDES) Permit for Municipal Stormwater Discharges to Naval Station Everett, Washington WAS026620. https://www.epa.gov/sites/default/files/2019-09/documents/r10-npdes-naval-station-everettms4-was026620-fact-sheet-2019.pdf

U.S. Environmental Protection Agency. (2021). Authorization to Discharge under the National Pollutant Discharge Elimination System (NPDES), Permit #WAS026620.

U.S. Fish and Wildlife Service (USFWS). 1997. Recovery Plan for the Threatened Marbled Murrelet in Washington, Oregon, and California. U.S. Fish and Wildlife Service, Portland, OR.

USFWS. 2015. Final Recovery Plan for the Coterminous United States Population of Bull Trout (Salvelinus confluentus). Pacific Region, U.S. Fish and Wildlife Service, Portland, OR. 195 pp.

U.S. Navy. (n.d.). *Inadvertent Discovery Plan for Naval Station Everett (Naval Station Everett) Smokey Point Fleet and Family Support Center, Arlington, Snohomish County, Washington. Everett, Washington: Naval Station Everett.*

Washington State Department of Archaeology and Historic Preservation. (2025). Washington Information System for Architectural and Archaeological Records Data database. Electronic database, https://secureaccess.wa.gov/dahp/wisaard, accessed January 2, 2025.

Washington State Department of Ecology (WDOE). 2022. *Stormwater Treatment of Tire Contaminants Best Management Practices (BMP) Effectiveness.* Final Report. https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/Content/Resources/DocsForDownload/2022_SWTreatmentOfTireContaminants-BMPEffectiveness.pdf

WDOE. (2024a). Stormwater Management Manual for Western Washington. Publication Number 24-10-013. Accessed online at: https://ecology.wa.gov/regulations-permits/guidance-technical-assistance/stormwaterpermittee-guidance-resources/stormwater-manuals

WDOE. (2024b). Emerging stormwater treatment technologies (TAPE). Accessed online at: https://ecology.wa.gov/regulations-permits/guidance-technical-assistance/stormwater-permittee-guidance-resources/emerging-stormwater-treatment-technologies

WDOE. (2024c). Washington State Water Quality Assessment website. Accessed online at: https://apps.ecology.wa.gov/ApprovedWQA/ApprovedPages/ApprovedSearchResults.aspx

Washington State Department of Fish and Wildlife (WDFW). 2024. SalmonScape. Accessed December 20, 2024. https://apps.wdfw.wa.gov/salmonscape/map.html

Washington State Department of Transportation. 2025. Biological Assessment Preparation Manual. Chapter 7.0 Construction Noise Impact Assessment. https://wsdot.wa.gov/sites/default/files/2022-11/BA-Manual-Chapter7.pdf

7 List of Preparers

This EA was prepared collaboratively between the Navy and contractor preparers.

Naval Facilities Engineering Systems Command, Northwest
Hayley Becker, NEPA Project Manger
Jennifer Steele, NEPA Coordinator
Jarrett Schuster, NEPA Supervisor
Kara Kanaby, Cultural Resources/Archaeologist
Kevin Palmer, Architectural Historian
Julia Long, Tribal Liaison
Katherine Cousins, Lead Biologist
Paul Rudell, Fish Biologist
Tiffany Selbig, ESA Coordinator
William Hefner, Remedial Project Manager
Monika Glandorff, Water Resources
Matt Hamilton, P.E., Air Quality
Mathew Hamilton, GIS
Andrew Phillips, Environmental Counsel
LT Jonathan James, OPSEC
Amanda Surmeier, PAO

Commander, Navy Region Northwest
Heather Henderson, Region Environmental Counsel
Julianne Leinenveber, Environmental PAO
Russell Byrd, CPLO

Navy PPV and Partner
Taryn Rampley, Region PPV Program Manager N93
Elizabeth Malhiot PPV Program Manager
Rick Atkins PPV Project Manager
Brent Arakaki, PPV Partner, Hunt Military Communities

Naval Station Everett
LCDR William Short, Public Works Officer
Richard Blair, Deputy Public Works Officer
Alicia Higgs, Natural Resources Manager
Kaytee Villafranca, Stormwater Manager
Kevin Palmer, Cultural Resources Manager
Alicia Higgs, Natural Resources Manager/Tribal
Andrew Lee, Compliance (DW, Air, NRC)
Kaytee Villafranca, IW/SW/Tanks
Glynis Casey, CPLO
Rima Blackwell, Facilities Management Director
Joseph Torelli, Community Planner

Contractors

Matthew Long (HHF Planners)
Master of Environmental Science, Master of Public Policy, Bachelor of Arts (Comparative Literature)
Years of Experience: 14
Section(s) person is responsible for: Project Manager, Environmental Assessment Lead Analyst

John Hagihara (HHF Planners)
Master of Urban and Regional Planning, Bachelor of Arts (Economics)
Years of Experience: 14
Responsible for: Principal in charge; Overall Quality Assurance/Quality Control

Geoffry Spangler, AICP (HHF Planners)
Master of Urban and Regional Planning, Bachelor of Arts (Anthropology)
Years of Experience: 4
Responsible for: Sections 3.5 and 3.6

Eric Harlow
Master of Science (Hydrology), Bachelor of Science (Geology, Resource Development)
Years of Experience: 21
Responsible for: Sections 3.1 and 3.2

Sierra Barr
Bachelor of Science (Biology)
Years of Experience: 5
Responsible for: Section 3.3

Margaret Berger
Master of Arts (Anthropology), Bachelor of Arts (Archaeological Studies and Anthropology)
Years of Experience: 19
Responsible for: Section 3.4

Appendix A
Endangered Species Act Documentation

Correspondence with agencies will be included in the Final EA.

This page intentionally left blank.

Appendix B
Air Quality Methodology and Calculations

NSC Smokey Point Air Quality Emissions Calculations Assumptions

Direct

- Relied on construction schedule provided in the PDF document dated 17 August 2024, titled "PNC Phase III Report and Turnover Schedule – SCENARIO 3." Demolition and construction phases are scheduled to occur between January 2026 and May 2027.

- Construction equipment utilization was based on the project schedule for each individual activity, assuming work schedules are an average of 8 hours per day, 5 days per week.

- Default ACAM values related to the types of construction equipment were utilized for demolition and construction activities.

- It is assumed the North parcel will include the construction of 60 units with a footprint of approximately 1,630 square feet each, with a total of 18 buildings, 2 stories in height. The South parcel will include the construction of 28 units with a footprint of approximately 1,630 square feet each, with a total of 7 buildings, 2 stories in height.

- Renovation activities include the conversion of a 72-room hotel that will be converted into 20 apartment-style residential units estimated at 1,400 square feet each.

- Site grading activities are assumed to extend to the property boundary, including 10 acres (425,600 square feet) on the North parcel, and 7 acres (304,920 sq ft) on the South parcel.

- Roadway paving activities were estimated to be completed during the first month of construction, with an estimated 57,590 square feet of paving on the North parcel, and 24,453 square feet of paving on the South parcel.

Indirect

- Master project schedule estimates the end of construction will occur in May 2027.

- It is assumed that all new residences will utilize electric heat pumps for comfort cooling and heating. Indirect energy-related emissions were calculated utilizing the number of residential units expected for each new residential neighborhood, considering the average unit square footage, and estimating the energy usage per square-foot per year utilizing the EPA's energy consumption estimates. These figures were used to calculate the total residential energy consumption using AP-42 emissions factors derived from EPA's Chapter 3.1 Stationary Gas Turbines.

- Transportation-related emissions were calculated using the findings from the Smokey Point Naval Support Expansion Transportation Impact Analysis (TIA). The TIA concluded that the residential development is anticipated to generate approximately 420 new weekday daily trips. These trips account for both incoming and outgoing travel associated with the results of the Action Alternative. To quantify the total annual GHG emissions from transportation sources associated with the Action Alternative, ACAM was used to calculate the total CO2 equivalent emissions associated with vehicular travel, assuming a fleet mix of passenger vehicles and light-duty trucks. These estimates do not consider potential emissions reductions from future fuel economy factors or electric vehicle use.

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: NO BASE
State: Washington
County(s): Snohomish
Regulatory Area(s): Seattle-Tacoma, WA

b. Action Title: NSC Smokey Point

c. Project Number/s (if applicable):

d. Projected Action Start Date: 2 / 2026

e. Action Description:

Under the Preferred Alternative, the Navy proposes several construction, demolition, and renovation actions to develop two new residential neighborhoods, renovate existing hotel suites to 20 apartment units, and include parks, a community center, and nature trails (Figure 2-1). The proposed expansion project would add up to 108 low-rise multifamily housing units (88 townhomes + 20 apartments). The 88 townhome-style units would be developed surrounding the existing Naval family support complex. Adaptive uses on the site include a former 72-room hotel that would be converted into 20 apartment style residential units.

f. Point of Contact:

Name: Sierra Barr
Title: Scientist
Organization: EA Engineering, Science, and Technology, Inc., PBC
Email: sbarr@eaest.com
Phone Number: 478-308-7372

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

Conformity Analysis Summary:

2026

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Seattle-Tacoma, WA			
VOC	0.840		
NOx	4.348		
CO	6.841	100	No
SOx	0.016		
PM 10	23.475		

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

PM 2.5	0.154		
Pb	0.000		
NH3	0.004		
CO2e	1584.0		

2027

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Seattle-Tacoma, WA			
VOC	0.625		
NOx	1.010		
CO	6.960	100	No
SOx	0.006		
PM 10	0.430		
PM 2.5	0.030		
Pb	0.000		
NH3	0.034		
CO2e	772.0		

2028 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Seattle-Tacoma, WA			
VOC	0.870		
NOx	0.792		
CO	10.206	100	No
SOx	0.006		
PM 10	0.023		
PM 2.5	0.021		
Pb	0.000		
NH3	0.058		
CO2e	911.9		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Sierra Barr — 01/29/2025

Sierra Barr, Scientist — DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: NO BASE
State: Washington
County(s): Snohomish
Regulatory Area(s): Seattle-Tacoma, WA

- Action Title: NSC Smokey Point

- Project Number/s (if applicable):

- Projected Action Start Date: 2 / 2026

- Action Purpose and Need:

The Northwest Region Phase III Military Housing Privatization Initiative (MHPI) aims to utilize private sector resources to provide high-quality, affordable rental housing for military families near NAVSTA Everett. This initiative seeks to address housing shortages in the area cost-effectively.

- Action Description:

Under the Preferred Alternative, the Navy proposes several construction, demolition, and renovation actions to develop two new residential neighborhoods, renovate existing hotel suites to 20 apartment units, and include parks, a community center, and nature trails (Figure 2-1). The proposed expansion project would add up to 108 low-rise multifamily housing units (88 townhomes + 20 apartments). The 88 townhome-style units would be developed surrounding the existing Naval family support complex. Adaptive uses on the site include a former 72-room hotel that would be converted into 20 apartment style residential units.

- Point of Contact

Name: Sierra Barr
Title: Scientist
Organization: EA Engineering, Science, and Technology, Inc., PBC
Email: sbarr@eaest.com
Phone Number: 478-308-7372

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Warehouse Demolition
3.	Construction / Demolition	Community Center Construction
4.	Construction / Demolition	North Parcel Residential Construction
5.	Construction / Demolition	South Parcel Residential Construction
6.	Personnel	Personnel
7.	Construction / Demolition	NGIS Renovation

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location

County: Snohomish

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Regulatory Area(s): Seattle-Tacoma, WA

- Activity Title: Warehouse Demolition

- Activity Description:
Warehouse in the North parcel will be demolished.

- Activity Start Date
Start Month: 5
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 7
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.030121
SO_x	0.000542
NO_x	0.180495
CO	0.287947
PM 10	0.032569

Pollutant	Total Emissions (TONs)
PM 2.5	0.006295
Pb	0.000000
NH_3	0.000204
CO_2e	53.6

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 3
Number of Days: 0

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 5000
Height of Building to be demolished (ft): 25

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0336	0.0006	0.2470	0.3705	0.0093	0.0093	0.0030	58.539
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: Snohomish
Regulatory Area(s): Seattle-Tacoma, WA

- Activity Title: Community Center Construction

- Activity Description:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Community center construction

- Activity Start Date
Start Month: 5
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 7
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.029617
SO_x	0.000619
NO_x	0.145076
CO	0.255707
PM 10	0.004613

Pollutant	Total Emissions (TONs)
PM 2.5	0.004590
Pb	0.000000
NH_3	0.000203
CO_2e	59.8

3.1 Building Construction Phase

3.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 3
Number of Days: 0

3.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Commercial or Retail
Area of Building (ft^2): 6000
Height of Building (ft): 25
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

3.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

3.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.32 / 1000): Conversion Factor ft^3 to trips (0.32 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.05 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.05 / 1000): Conversion Factor ft^3 to trips (0.05 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4. Construction / Demolition

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

4.1 General Information & Timeline Assumptions

- Activity Location
County: Snohomish
Regulatory Area(s): Seattle-Tacoma, WA

- Activity Title: North Parcel Residential Construction

- Activity Description:
North parcel residential development of 60 units, 18 total structures

- Activity Start Date
Start Month: 5
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 4
End Month: 2027

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.405365
SO_x	0.008207
NO_x	1.979715
CO	3.296846
PM 10	13.965908

Pollutant	Total Emissions (TONs)
PM 2.5	0.070489
Pb	0.000000
NH_3	0.001507
CO_2e	786.7

4.1 Site Grading Phase

4.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 3
Number of Days: 0

4.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 435600
Amount of Material to be Hauled On-Site (yd^3): 1000
Amount of Material to be Hauled Off-Site (yd^3): 1000

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day

Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.2 Trenching/Excavating Phase

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

4.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 8
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 9
Number of Days: 0

4.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 10000
Amount of Material to be Hauled On-Site (yd^3): 100
Amount of Material to be Hauled Off-Site (yd^3): 100

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89

Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.3 Building Construction Phase

4.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 8
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 9
Number of Days: 0

4.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Multi-Family
Area of Building (ft^2): 13040
Height of Building (ft): N/A
Number of Units: 18

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

4.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = NU * 0.36 * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
NU: Number of Units
0.36: Conversion Factor units to trips
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = NU * 0.11 * HT$

VMT_{VT}: Vender Tips Vehicle Miles Travel (miles)
NU: Number of Units
0.11: Conversion Factor units to trips
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.4 Paving Phase

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

4.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 8
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

4.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 57590

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

4.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / $acre)^2$ / acre)

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

- Activity Location
County: Snohomish
Regulatory Area(s): Seattle-Tacoma, WA

- Activity Title: South Parcel Residential Construction

- Activity Description:
South parcel residential development of 28 units, 7 total structures

- Activity Start Date
Start Month: 2
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 11
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.317577
SO_x	0.006336
NO_x	1.573032
CO	2.526485
PM 10	9.853145

Pollutant	Total Emissions (TONs)
PM 2.5	0.056731
Pb	0.000000
NH_3	0.001127
CO_2e	608.8

5.1 Site Grading Phase

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

5.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 3
Number of Days: 0

5.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 304920
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 100

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e

Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

5.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5.2 Trenching/Excavating Phase

5.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration

Number of Month: 7
Number of Days: 0

5.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 10000
Amount of Material to be Hauled On-Site (yd^3): 100
Amount of Material to be Hauled Off-Site (yd^3): 100

- Trenching Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

5.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment

WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5.3 Building Construction Phase

5.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 7
Number of Days: 0

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

5.3.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Multi-Family
Area of Building (ft^2): 13040
Height of Building (ft): N/A
Number of Units: 7

- Building Construction Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

5.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

5.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = NU * 0.36 * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
NU: Number of Units
0.36: Conversion Factor units to trips
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = NU * 0.11 * HT$

VMT_{VT}: Vender Tips Vehicle Miles Travel (miles)
NU: Number of Units
0.11: Conversion Factor units to trips
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5.4 Paving Phase

5.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

5.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 24453

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

5.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / $acre)^2$ / acre)

6. Personnel

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Snohomish
Regulatory Area(s): Seattle-Tacoma, WA

- Activity Title: Personnel

- Activity Description:

- Activity Start Date

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 6
Start Year: 2027

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.869531
SO_x	0.006324
NO_x	0.792340
CO	10.206210
PM 10	0.023121

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.020581
Pb	0.000000
NH_3	0.058168
CO_2e	911.9

6.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 420
Civilian Personnel: 0
Support Contractor Personnel: 0
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule
Active Duty Personnel: 5 Days Per Week (default)
Civilian Personnel: 5 Days Per Week (default)
Support Contractor Personnel: 5 Days Per Week (default)
Air National Guard (ANG) Personnel: 4 Days Per Week (default)
Reserve Personnel: 4 Days Per Month (default)

6.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

6.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

6.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year
$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year
$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year
$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7. Construction / Demolition

7.1 General Information & Timeline Assumptions

- Activity Location
County: Snohomish
Regulatory Area(s): Seattle-Tacoma, WA

- Activity Title: NGIS Renovation

- Activity Description:
Renovation of existing NGIS into 20 residential units.

- Activity Start Date
Start Month: 2
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 10
End Month: 2026

- Activity Emissions:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Pollutant	Total Emissions (TONs)
VOC	0.175552
SO_x	0.003257
NO_x	1.017399
CO	1.480311
PM 10	0.035206

Pollutant	Total Emissions (TONs)
PM 2.5	0.034480
Pb	0.000000
NH_3	0.001301
CO_2e	315.2

7.1 Demolition Phase

7.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

7.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 100
Height of Building to be demolished (ft): 25

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0336	0.0006	0.2470	0.3705	0.0093	0.0093	0.0030	58.539
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

7.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards ($1\ yd^3 / 27\ ft^3$)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7.2 Building Construction Phase

7.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 8
Number of Days: 0

7.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 28000
Height of Building (ft): 25
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6

Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

7.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0287	0.0006	0.2329	0.2666	0.0080	0.0080	0.0025	61.057
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0214	0.0003	0.1373	0.1745	0.0051	0.0051	0.0019	25.650

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

7.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

GHG Emissions

NSC Smokey Point PPV Housing, GHG Impacts from electricity use

MTCO2e Emissions based on square footage, average energy usage, and kWh emission factor for electric usage

Proposed Alternative

	Number of Units	Average Unit Square Feet (sq ft/unit)	Average Energy Usage (kWh/sq ft/year)	Total Residential Energy Consumption (kWh/year)	EF (MTCO2/kWh)	**Total Annual MTCO2e**
North Parcel	60	3,260	10	1,956,000	0.000417	815.7
South Parcel	28	3,260	10	912,800	0.000417	380.6
Renevated Space	20	1,400	10	280,000	0.000417	116.8
Total						**1,313.05**

Sources : Washington Utilities and Transportation Commission https://www.utc.wa.gov/news/2022/state-regulators-approve-puget-sound-energy-rate-case-settlements

EPA Energy Consumed (kilowatt-hours): https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references

Assumptions: North and South parcel includes the construction of 88 residential units with a footprint of 1,630 sq feet, and a total of 2 stories in height. Rennovation space assumes 20 units at 1,400 square feet each.

AP-42 Emission Factors for Criteria Pollutants and GHG from stationary natural-gas fired turbines

CO	8.20E-02	lb/MMBtu
NOX	3.20E-01	lb/MMBtu
SO2	0.94	lb/MMBtu
PM10	4.70E-03	lb/MMBtu
PM2.5	1.90E-03	lb/MMBtu
VOC	2.10E-03	lb/MMBtu

Emissions factors assume uncontrolled, from EPA Stationary Gas Turbines, Chapter 3, Tables 3.1-1 and 3.1-2a.

1kWh	3.421	Btu
1 MMBtu	1,000,000	Btu

	Energy Consumption (kWh/year)	Energy Consumption (MMBtu/year)
	1,956,000	6,673.87
	912,800	3,114.47
	280,000	955.36
total	3,148,800	**10,743.71**

Pollutant	Total Energy Consumption (MMBtu/yr)	Emission Factor (lb/MMBtu)	Energy (lb/year)	**Annual Emissions (tons/year)**
CO	10,743.71	8.20E-02	880.98	**0.44**
NOx	10,743.71	3.20E-01	3,437.99	**1.72**
SO2	10,743.71	0.94	10,099.08	**5.05**
PM10	10,743.71	4.70E-03	50.50	**0.03**
PM2.5	10,743.71	1.90E-03	20.41	**0.01**
VOC	10,743.71	2.10E-03	22.56	**0.01**

This page intentionally left blank.

Appendix C
National Historic Preservation Act Section 106 Documentation

Correspondence with SHPO and Tribes will be included in the Final EA.

This page intentionally left blank.

Appendix D
Tribal Government-to-Government Documentation

Correspondence with Tribes will be included in the Final EA.

This page intentionally left blank.

Appendix E
Traffic Impact Assessment

Smokey Point Naval Support Complex Expansion

Marysville, WA

Traffic Impact Analysis

December 19, 2023

Prepared for:

Hunt MH CM, LLC
PO Box 2137
Silverdale, WA 98383

Prepared by:

TENW

Transportation Engineering NorthWest

11400 SE 8th Street, Suite 200
Bellevue, WA 98004
(425) 889-6747

Table of Contents

Appendices

List of Figures and Tables

FINDINGS/CONCLUSIONS

This Traffic Impact Analysis (TIA) has been prepared for the proposed expansion of the *Smokey Point Naval Support Complex* project in Marysville, WA.

Project Proposal. The *Smokey Point Naval Support Complex* site is located on federally-owned property on the west side of 45th Ave NE and south of 144th Street NE. The proposed project would expand the facility to add up to 110 low-rise multifamily housing units (22 apartments + 88 townhomes). Existing uses on the site include a former 72-room hotel that would be converted into 22 apartment style residential units. Up to 88 townhome-style units would be developed surrounding the existing Naval family support complex. Access to the site would be provided via existing driveways on 45th Avenue NE.

Trip Generation. The proposed expansion of the *Smokey Point Naval Support Complex* project is estimated to generate a net increase of approximately 420 new weekday daily trips, with 31 new trips (4 in, 27 out) occurring during the weekday AM peak hour and 41 new trips (28 in, 13 out) occurring during the PM peak hour when considering conversion of the existing hotel into apartments.

Intersection Level of Service (LOS). The LOS analyses documented in this report were assessed at four (4) study intersections in the vicinity of the site during the weekday PM peak hour. Each of the study intersections are anticipated to operate at LOS E or better in the 2032 horizon year without or with the buildout of the proposed expansion meeting applicable locally adopted level of service standards.

Site Access Evaluation. The LOS results indicate that the individual movements at the site access locations on 45th Avenue NE are expected to operate at LOS A with minimal queuing during the weekday PM peak hour in 2032 (horizon year).

Mitigation. Based on the analysis document in this TIA, no off-site mitigation is recommended or required.

INTRODUCTION

This Traffic Impact Analysis (TIA) documents the traffic impacts associated with the proposed expansion of the *Smokey Point Naval Support Complex* project. The site is located on federally-owned property in Marysville, WA. A site vicinity map is provided in Figure 1.

Project Description

The *Smokey Point Naval Support Complex* site is located on federally-owned property on the west side of 45th Ave NE and south of 144th Street NE. The proposed expansion project would add up to 110 low-rise multifamily housing units (22 apartments + 88 townhomes). Existing uses on the site include a former 72-room hotel that would be converted into 22 apartment style residential units. Up to 88 townhome-style units would be developed surrounding the existing Naval family support complex. Access to the site would be provided via existing driveways on 45th Avenue NE. A preliminary site plan is provided in Appendix A. The traffic analysis is based on full project buildout by 2026, with a horizon year of 2032 (buildout + 6 years) evaluated consistent with local agency requirements.

Study Area

Four study intersections were evaluated during future weekday PM peak hour conditions in 2032 (horizon year):

1. Smokey Point Blvd - State Avenue/136th Street NE (signal)
2. 45th Ave NE/136th Street NE (stop controlled)
3. 45th Ave NE/South Site Access (stop controlled)
4. 45th Ave NE/144th Street NE (stop controlled)

Project Approach

The following tasks were undertaken to evaluate traffic impacts associated with the proposed *Smokey Point Naval Support Complex* expansion project:

- Assessment of existing conditions through field reconnaissance and review of existing planning documents.
- Review of City planning documents to evaluate long-term road improvement plans in the project vicinity.
- Estimated weekday vehicular AM peak hour, PM peak hour, and daily trips generated by the proposed expansion.
- Documented traffic forecasts and assumptions for the future year 2032 (horizon year) without and with project conditions.
- Evaluation of weekday PM peak hour level of service (LOS) at four (4) study intersections.
- Evaluation of weekday PM peak hour operations at the site access locations including LOS and queuing.

Primary Data and Information Sources

- Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition, 2021.
- *Highway Capacity Manual (HCM 7th Edition)*, 2022.
- 2023 weekday PM peak hour traffic counts, All Traffic Data (ATD).
- City of Marysville 2023-2028 Six Year Transportation Improvement Plan (TIP).

Figure 1: Project Site Vicinity

EXISTING CONDITIONS

This section describes existing transportation system conditions in the study area. Existing conditions described include an inventory of existing roadways, transit services, non-motorized transportation facilities, existing traffic volumes, and intersection levels of service (LOS).

Roadway Network

The existing street characteristics in the vicinity of the *Smokey Point Naval Support Complex* site are described below in Table 1.

Table 1
Existing Roadway Network Summary – Project Site Vicinity

Roadway	Orientation	Classification	Speed Limit	Number of Travel Lanes	Street Parking	Sidewalks	Bicycle Facilities
Smokey Point Blvd - State Ave	North-South	Principal Arterial	40 mph	4-5	None	Intermittent	None
136th St NE	East-West	Minor Arterial	35 mph	3	None	Both Sides	Bike Lanes
45th Ave NE	North-South	Local	25 mph	3	None	Both Sides	None
144th St NE	East-West	Local	25 mph	2	None	Both Sides	None

Non-Motorized Transportation Facilities

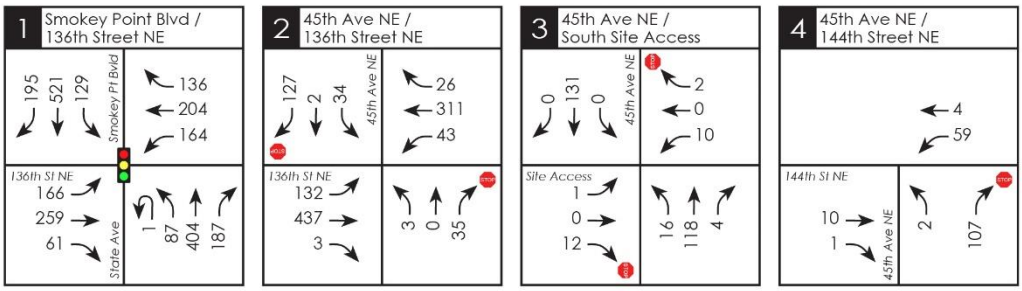
Non-motorized transportation facilities in the project vicinity include sidewalks on both sides 136th Street NE, 45th Ave NE, and 144th Street NE. On Smokey Point Blvd - State Avenue, sidewalks are available along the east side of the street north of 136th Street NE and on both sides of the street south of 136th Street NE. Marked crosswalks with pedestrian push buttons are provided on the south and east legs of the Smokey Point Blvd/136th Street NE signalized intersection. Observed pedestrian activity is minimal in the project vicinity.

Transit Service

Public transit in the project vicinity is provided by Community Transit. The closest bus stops are located within approximately a 1-mile walking distance from the project site along 51st Ave NE in the vicinity 135th Place NE and 142nd Place NE. These bus stops serve Community Transit Route 202. Bus stops are also located along Smokey Point Blvd – State Avenue in the vicinity of 136th Street NE. These bus stops serve Community Transit Route 201. Routes 201 and 202 provide service between Smokey Point and Lynnwood throughout the day with approximately 20 to 40-minute headways.

Existing Traffic Volumes

Existing weekday PM peak hour traffic volumes at the four (4) off-site study intersections were based on counts collected by All Traffic Data in November 2023. The PM peak hour represents the highest one-hour time period between 4:00 and 6:00 PM. Figure 2 illustrates the 2023 existing weekday PM peak hour traffic volumes at the study intersections. Appendix B includes the existing weekday PM peak hour traffic count sheets.



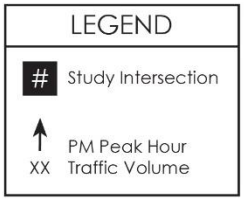


Figure 2: 2023 Existing Weekday PM Peak Hour Traffic Volumes

Existing Levels of Service

An existing weekday PM peak hour level of service (LOS) analysis was conducted at the following study intersections:

1. Smokey Point Blvd - State Avenue/136th Street NE
2. 45th Ave NE/136th Street NE
3. 45th Ave NE/South Site Access
4. 45th Ave NE/144th Street NE

Level of service calculations at the intersections were based on the use of the *Synchro 12* traffic analysis software. Existing signal timing was provided by the City of Marysville. The existing weekday PM peak hour LOS results are summarized in **Table 2**. The LOS methodology and existing LOS summary worksheets are provided in **Appendix C**.

Local City of Marysville LOS Standard include the following (per the City's Comprehensive Plan Transportation Element (June 2015):

1. **LOS E "mitigated"** for arterial-arterial or arterial-collector intersections along the following corridors (LOS E "mitigated" means that the congestion should be mitigated through improvements, transit, ridesharing, or other travel modes when the intersection falls below LOS E).
    - SR 529/State Avenue/Smokey Point Boulevard between the south City limits and north City limits
    - 4th Street/64th Street NE (SR 528) between I-5 and SR 9
2. **LOS D** for arterial-arterial or arterial-collector intersections along the remaining City corridors

Table 2
2023 Existing Weekday PM Peak Hour LOS Summary

Study Intersection	LOS	Delay (sec)
Signalized Intersection:		
1. Smokey Point Blvd/136th Street NE	C	21.6
Stop-Controlled Intersections:		
2. 45th Ave NE/136th Street NE		
Northbound Approach (stop controlled)	B	13.7
Southbound Approach (stop controlled)	C	18.0
Eastbound Left-Turn	A	8.4
Westbound Left-Turn	A	8.6
3. 45th Ave NE/South Site Access		
Eastbound Approach (stop controlled)	A	9.2
Westbound Approach (stop controlled)	B	10.9
Northbound Left-Turn	A	7.6
Southbound Left-Turn	A	0.0
4. 45th Ave NE/144th Street NE		
Northbound Approach (stop controlled)	A	8.9
Westbound Left-Turn	A	7.4

As shown in **Table 2**, each of the study intersections currently operate at LOS C or better during the weekday PM peak hour.

Crash History

Crashes at the study intersections and roadway segments within the study area were summarized for the three-year period from 2020 to 2022. Crash data was provided by WSDOT. Summaries of the total, yearly average, and collisions per million entering vehicles (MEV) at intersections and crashes per million vehicle miles (MVM) on roadway segments are provided in Table 3.

Table 3
Three-Year Crash Data Summary 2020 – 2022

Location	2020	2021	2022	3-Year Total Collisions	Average Annual Collisions	Collisions per MEV or MVM[1]
Study Intersections:						
1. Smokey Point Blvd/136th St NE	5	7	8	20	6.67	0.73
2. 45th Ave NE/136th Street NE	0	0	0	0	0.00	0.00
3. 45th Ave NE/South Site Access	0	0	0	0	0.00	0.00
4. 45th Ave NE/144th Street NE	1	0	0	1	0.33	0.49
Roadway Segments:						
136th Street NE						
From Smokey Point Blvd to 45th Ave	1	2	1	4	1.33	0.58
45th Ave NE						
From 136th Street to 144th Street	0	0	1	1	0.33	0.71

1. MEV = Million Entering Vehicles (intersections). MVM = Million Vehicle Miles (segments).

Based on City of Marysville TIA guidelines, potential safety inadequacies are intersections with a crash rate greater than 1.0 crashes per MEV or roadway segments with a crash rate greater than 10.0 crashes per MVM. As shown in Table 3, no study intersection or road segment in the project study area exceed these thresholds.

FUTURE CONDITIONS AND PROJECT IMPACTS

The following section of the report describes the traffic impacts of the proposed *Smokey Point Naval Support Complex* expansion project on the surrounding arterial network and identified study intersections in the project vicinity. The analysis of traffic impacts includes project trip generation, distribution and assignment of project trips, and LOS evaluation at study intersections. The analysis was conducted during the weekday PM peak hour for future 2032 (horizon year) conditions, consistent with local agency requirements.

Planned Transportation Improvements

This section documents the known transportation improvements in the study area. Based on review of the *City of Marysville 2024-2029 Six Year Transportation Improvement Plan (TIP)*, there are no planned transportation improvements in the immediate study area.

Project Trip Generation

Trip generation estimates associated with the proposed project for weekday daily, AM peak hour, and PM peak hour were based on methodology documented in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition for Land Use Code (LUC) 220 (Multifamily Housing (Low-Rise)). In addition, trip credit for the removal of the existing 72-room hotel was applied based on ITE LUC 312 (Business Hotel).

Table 4 summarizes the net new weekday daily, AM peak hour, and PM peak hour trip generation estimates when considering conversion of the existing hotel into apartments. Detailed trip generation estimates are provided in Appendix D.

Table 4
Trip Generation Summary

	Net New Trips Generated		
Weekday Time Period	In	Out	Total
Daily	210	210	420
AM Peak Hour	4	27	31
PM Peak Hour	28	13	41

Project Trip Distribution and Assignment

The distribution of project-generated trips during the weekday PM peak hours was estimated based on existing and anticipated travel patterns in the vicinity of the site. The new PM peak hour project-generated trips were distributed and assigned to the surrounding street network based on the following distribution:

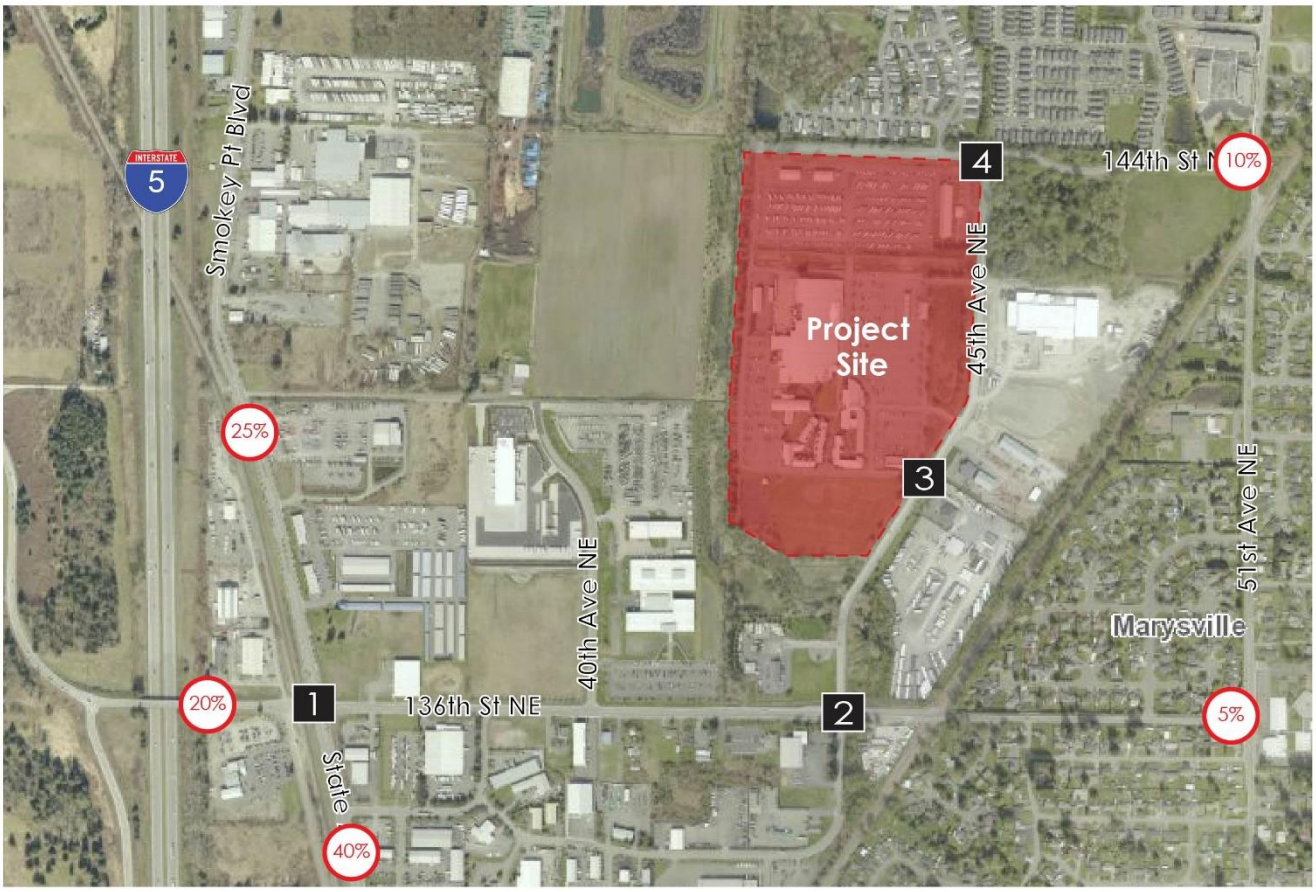
- 40 percent to/from the south on State Avenue
- 25 percent to/from the north on Smokey Point Blvd
- 20 percent to/from the west on 136th Street NE (west of I-5)
- 10 percent to/from the east on 144th Street NE
- 5 percent to/from the east on 136th Street NE

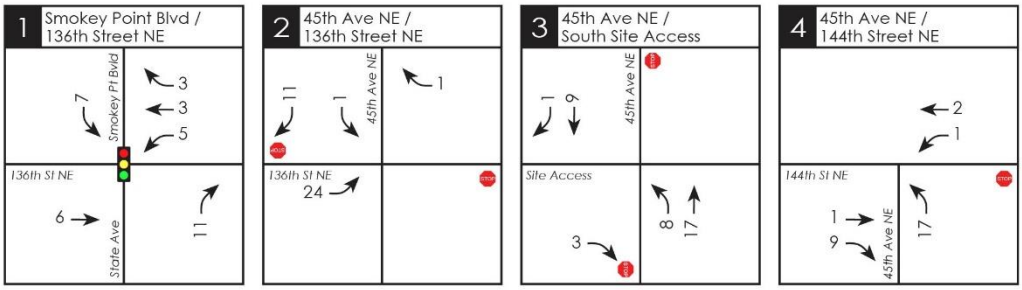
Based on the trip distribution percentages, the net new weekday PM peak hour project trips were assigned through the study intersections. The resulting assignment of the net new weekday PM peak hour project trips through the study intersections is shown in Figure 3.

Future Traffic Volumes

Future year 2032 (horizon year) No Action (without project) PM peak hour traffic volumes were estimated by applying a three (3) percent annual growth rate to the existing 2023 peak hour traffic volumes. This growth rate is intended to account for background growth in traffic and any future developments in the vicinity of the site. The resulting 2032 No Action weekday PM peak hour traffic volumes at the study intersections are shown in Figure 4.

The 2032 With Project traffic volumes were determined by adding the trip assignment from the proposed development (shown in Figure 3) to the future 2032 No Action traffic volumes (shown in Figure 4). The 2032 With Project traffic volumes are shown in Figure 5.





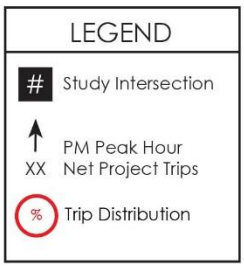
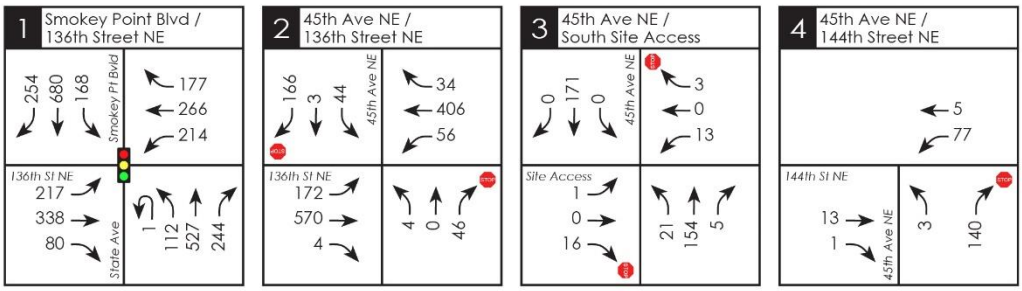


Figure 3: Weekday PM Peak Hour Net Project Trip Assignment



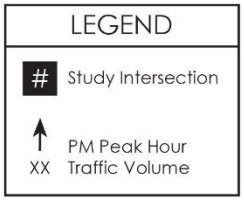
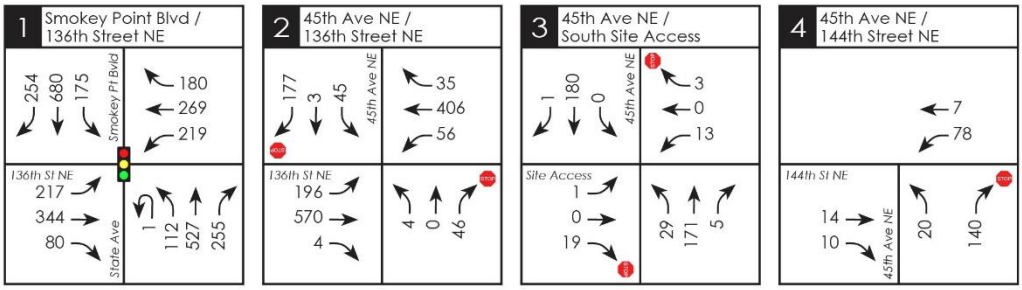


Figure 4: 2032 No Action Weekday PM Peak Hour Traffic Volumes



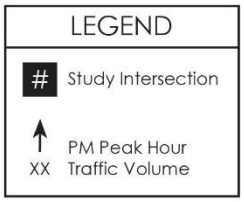


Figure 5: 2032 With Project Weekday PM Peak Hour Traffic Volumes

Future Levels of Service

Future weekday PM peak hour intersection LOS analyses were evaluated at the four (4) study intersections for future year 2032 (horizon year) conditions with and without the *Smokey Point Naval Support Complex* expansion project. Since there are no capacity-related planned transportation improvements in the study area, the roadway network assumed in the future 2032 LOS analyses was based on existing intersection geometry. The signal timing data used at the signalized study intersection was based on data provided by the City of Marysville. The LOS results for future year 2032 (horizon year) are summarized in Table 5. Detailed LOS worksheets are provided in Appendix C.

Table 5
2032 Weekday PM Peak Hour LOS Summary

	No Action		With Project	
Study Intersection	LOS	Delay (sec)	LOS	Delay (sec)
Signalized Intersection:				
1. Smokey Point Blvd/136th Street NE	D	35.9	D	37.6
Stop-Controlled Intersections:				
2. 45th Ave NE/136th Street NE				
Northbound Approach (stop controlled)	C	19.4	C	20.6
Southbound Approach (stop controlled)	E	39.4	E	45.9
Eastbound Left-Turn	A	9.0	A	9.1
Westbound Left-Turn	A	9.1	A	9.1
3. 45th Ave NE/South Site Access				
Eastbound Approach (stop controlled)	A	9.5	A	9.5
Westbound Approach (stop controlled)	B	12.0	B	12.6
Northbound Left-Turn	A	7.7	A	7.7
Southbound Left-Turn	A	0.0	A	0.0
4. 45th Ave NE/144th Street NE				
Northbound Approach (stop controlled)	A	9.1	A	9.2
Westbound Left-Through	A	7.4	A	7.5

As shown in Table 5 signalized study intersection and the stop-controlled approaches at the unsignalized study intersections are anticipated to operate at LOS E or better in 2032 without or with the proposed project, meeting applicable locally adopted level of service standards.

It should be noted that the 45th Ave NE/136th Street NE intersection is not an arterial-arterial or arterial-collector intersection, and thus does not fall under the City's LOS standard.

Site Access Evaluation

Vehicular access to the proposed *Smokey Point Naval Support Complex* expansion project is provided via existing driveways on 45th Avenue NE (study intersections #3 and #4).

To assess operations at the site access locations, LOS and queuing were conducted during the PM peak hour for the future 2032 (horizon year) conditions. The reported queues for the individual movements at each of the proposed site access locations are 95th-percentile queues, which are only exceeded five (5) percent of the time. The 2032 with project PM peak hour traffic volumes at the site access locations (study intersections

#3 and #4) were shown previously in Figure 5. The weekday PM peak hour site access analysis for the future year 2032 is summarized below in Table 6.

Table 6
Future Weekday PM Peak Hour Site Access LOS and Queue Summary

	2032 (Horizon Year)		
Site Access / Movement	LOS	Delay (sec)	95th % Queue (ft)
#3. 45th Ave NE/South Site Access			
Eastbound Approach (stop controlled)	A	9.5	< 25'
Northbound Left-Turn	A	7.7	< 25'
#4. 45th Ave NE/144th Street Access			
Northbound Approach (stop controlled)	A	9.2	25'

As shown in Table 6, the individual movements at each of the site access locations are expected to operate at acceptable levels (LOS A) during the weekday PM peak hour in 2032 (horizon year). Additionally, 95th-percentile queues are anticipated to be statistically 25 feet or less.

MITIGATION

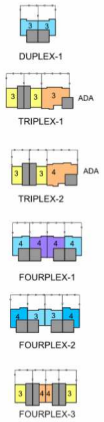
Based on the analysis document in this TIA, no off-site mitigation is recommended or required.

Appendix A

Preliminary Site Plan

PORTIONS OF NE 1/4 SEC 4, TWN 30 N., RGE 5 E., & SE 1/4 SEC 33, TWN 31 N., RGE 5 E., W.M.

BUILDING TYPE LEGEND

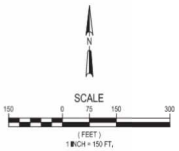


PARKING COUNT

- 88 UNITS ON SITE
- 176 GARAGE SPACES (2 PER UNIT)
- 128 DRIVEWAY SPACES
- 33 GUEST SPACES ON THE NORTH LOT
- 34 GUEST SPACES ON THE WEST LOTS
- 17 GUEST SPACES ON THE SOUTH LOT

SMOKEY POINT NAVY SUPPORT COMPLEX

CONCEPTUAL - PHASE III - SITE PLAN



SHEET INDEX

DAVID EVANS AND ASSOCIATES INC.
1620 W. Marine View Dr.
Suite 200
Everett, WA 98201
425.259.4099

SMOKEY POINT NAVY SUPPORT COMPLEX
PHASE III - SITE PLAN
HUNT MILITARY COMMUNITIES
OVERALL SITE PLAN
NAVAL STATION EVERETT WA

NO	DATE	REVISION	BY	CK
			DATE:	DATE

CONCEPTUAL

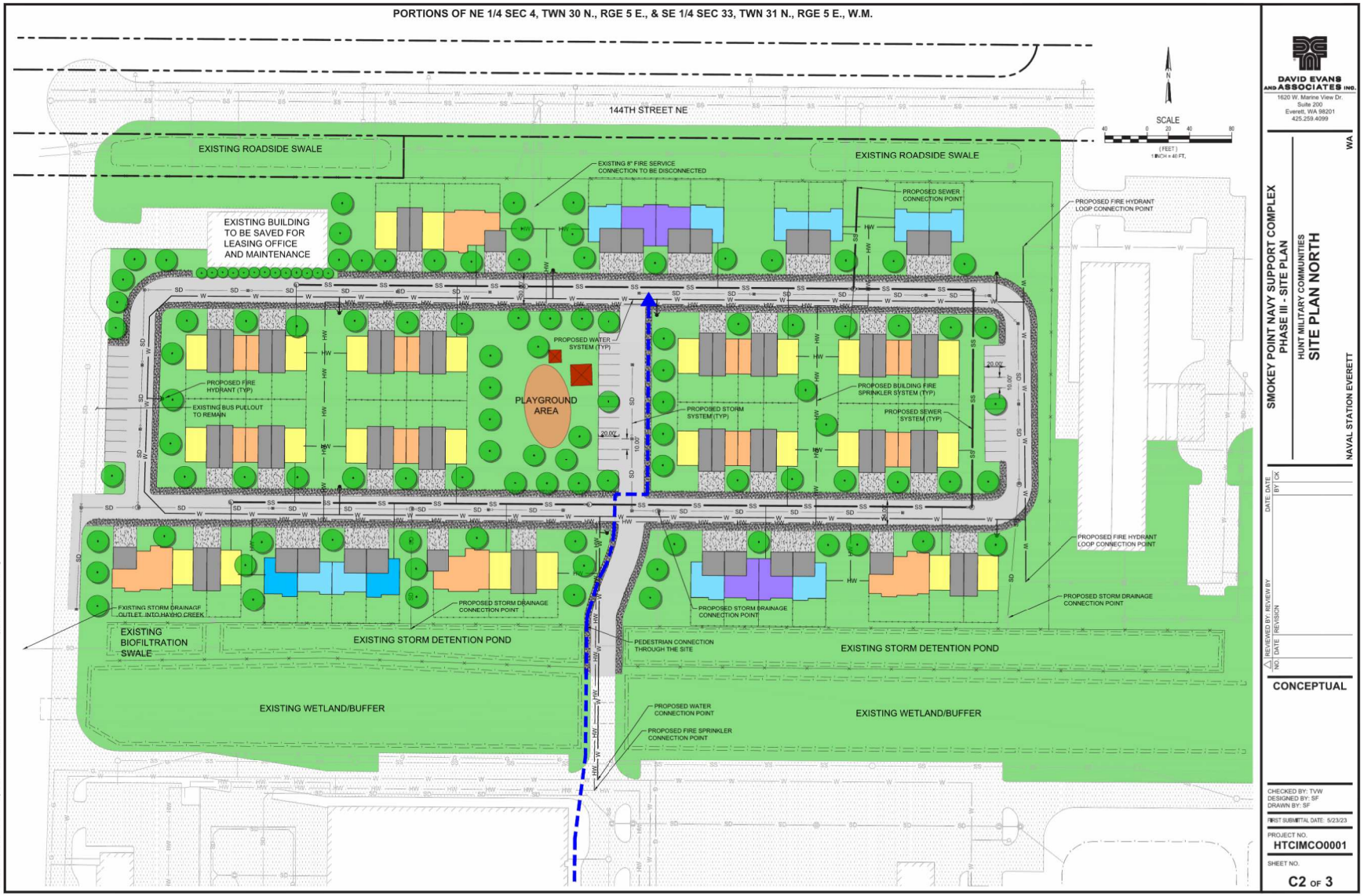
CHECKED BY: TVW
DESIGNED BY: SF
DRAWN BY: SF

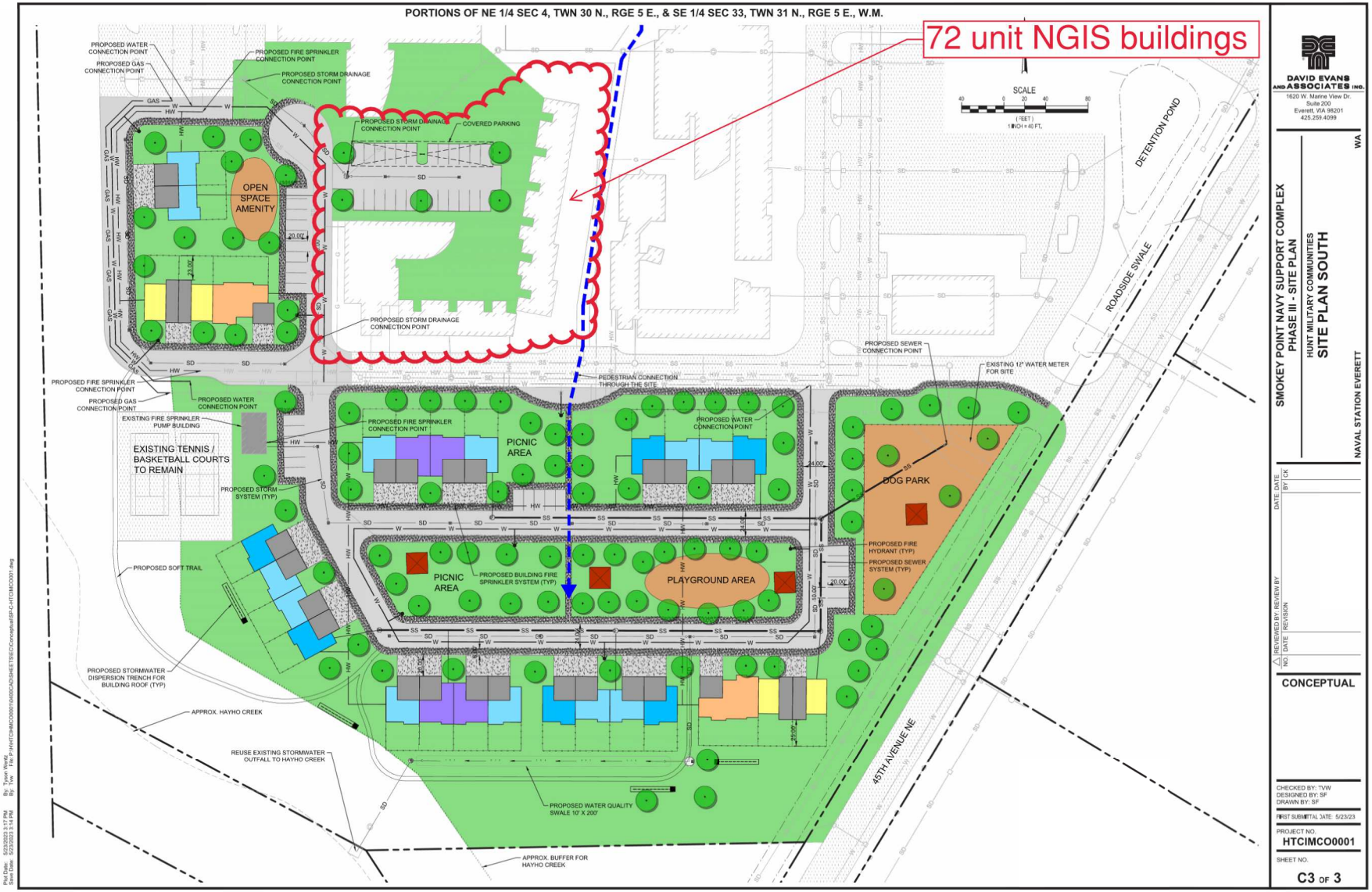
FIRST SUBMITTAL DATE: 5/23/23

PROJECT NO.
HTCIMCO0001

SHEET NO.
C1 OF 3

Plot Date: 5/23/2023 3:15 PM
Plot By: Tyson Ward
Saved Date: 5/23/2023 3:15 PM
By: Tyson Ward
File: P:\HHTCIMMCO0001\0400CAD\SHEET\SEC\Concept\al\CIVC-HTCIMCO001.dwg


PORTIONS OF NE 1/4 SEC 4, TWN 30 N., RGE 5 E., & SE 1/4 SEC 33, TWN 31 N., RGE 5 E., W.M.
144TH STREET NE
EXISTING ROADSIDE SWALE
EXISTING ROADSIDE SWALE
EXISTING 8" FIRE SERVICE CONNECTION TO BE DISCONNECTED
PROPOSED SEWER CONNECTION POINT
PROPOSED FIRE HYDRANT LOOP CONNECTION POINT
EXISTING BUILDING TO BE SAVED FOR LEASING OFFICE AND MAINTENANCE
PROPOSED WATER SYSTEM (TYP)
PROPOSED FIRE HYDRANT (TYP)
EXISTING BUS PULLOUT TO REMAIN
PLAYGROUND AREA
PROPOSED STORM SYSTEM (TYP)
PROPOSED BUILDING FIRE SPRINKLER SYSTEM (TYP)
PROPOSED SEWER SYSTEM (TYP)
PROPOSED FIRE HYDRANT LOOP CONNECTION POINT
EXISTING STORM DRAINAGE OUTLET, INTO HAMHO CREEK
PROPOSED STORM DRAINAGE CONNECTION POINT
PROPOSED STORM DRAINAGE CONNECTION POINT
PROPOSED STORM DRAINAGE CONNECTION POINT
EXISTING BIOFILTRATION SWALE
EXISTING STORM DETENTION POND
PEDESTRIAN CONNECTION THROUGH THE SITE
EXISTING STORM DETENTION POND
EXISTING WETLAND/BUFFER
PROPOSED WATER CONNECTION POINT
PROPOSED FIRE SPRINKLER CONNECTION POINT
EXISTING WETLAND/BUFFER
SCALE
(FEET)
1 INCH = 40 FT.
DAVID EVANS AND ASSOCIATES INC.
1620 W. Marine View Dr.
Suite 200
Everett, WA 98201
425.259.4099
SMOKEY POINT NAVY SUPPORT COMPLEX
PHASE III - SITE PLAN
HUNT MILITARY COMMUNITIES
SITE PLAN NORTH
NAVAL STATION EVERETT
WA
DATE: DATE
BY: CK
REVIEWED BY: REVIEW BY
NO. DATE REVISION
CONCEPTUAL
CHECKED BY: TVW
DESIGNED BY: SF
DRAWN BY: SF
FIRST SUBMITTAL DATE: 5/23/23
PROJECT NO.
HTCIMCO0001
SHEET NO.
C2 OF 3


PORTIONS OF NE 1/4 SEC 4, TWN 30 N., RGE 5 E., & SE 1/4 SEC 33, TWN 31 N., RGE 5 E., W.M.
72 unit NGIS buildings
SCALE
(FEET)
1 INCH = 40 FT.
OPEN SPACE AMENITY
COVERED PARKING
DETENTION POND
ROADSIDE SWALE
PROPOSED WATER CONNECTION POINT
PROPOSED GAS CONNECTION POINT
PROPOSED FIRE SPRINKLER CONNECTION POINT
PROPOSED STORM DRAINAGE CONNECTION POINT
PROPOSED SEWER CONNECTION POINT
EXISTING 1.5" WATER METER FOR SITE
PEDESTRIAN CONNECTION THROUGH THE SITE
EXISTING FIRE SPRINKLER PUMP BUILDING
EXISTING TENNIS / BASKETBALL COURTS TO REMAIN
PROPOSED STORM SYSTEM (TYP)
PICNIC AREA
DOG PARK
PROPOSED FIRE HYDRANT (TYP)
PROPOSED SEWER SYSTEM (TYP)
PROPOSED BUILDING FIRE SPRINKLER SYSTEM (TYP)
PLAYGROUND AREA
PROPOSED SOFT TRAIL
PROPOSED STORMWATER DISPERSION TRENCH FOR BUILDING ROOF (TYP)
APPROX. HAYHO CREEK
REUSE EXISTING STORMWATER OUTFALL TO HAYHO CREEK
PROPOSED WATER QUALITY SWALE 10' X 200'
APPROX. BUFFER FOR HAYHO CREEK
45TH AVENUE NE
DAVID EVANS AND ASSOCIATES INC.
1620 W. Marine View Dr.
Suite 200
Everett, WA 98201
425.259.4099
WA
SMOKEY POINT NAVY SUPPORT COMPLEX
PHASE III - SITE PLAN
HUNT MILITARY COMMUNITIES
SITE PLAN SOUTH
NAVAL STATION EVERETT
CONCEPTUAL
CHECKED BY: TVW
DESIGNED BY: SF
DRAWN BY: SF
FIRST SUBMITTAL DATE: 5/23/23
PROJECT NO.
HTCIMCO0001
SHEET NO.
C3 OF 3

Appendix B

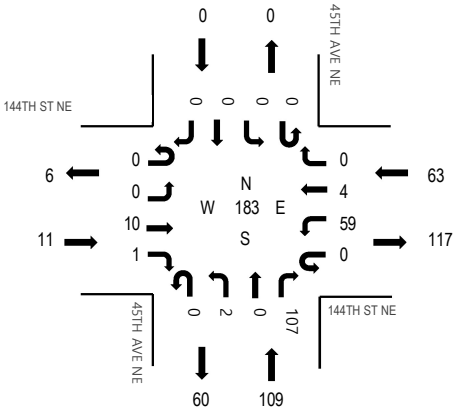
Existing Traffic Count Data

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

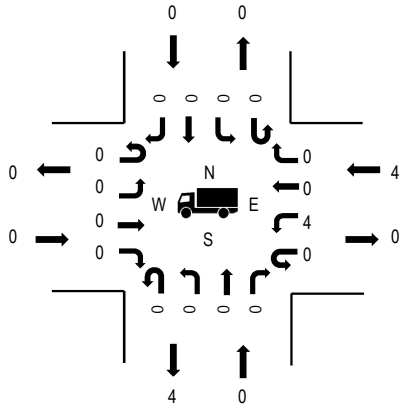
Location: 1 45TH AVE NE & 144TH ST NE PM
Date: Thursday, November 16, 2023
Peak Hour: 04:00 PM - 05:00 PM

Peak Hour

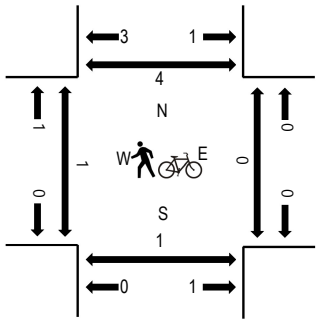
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.0%	0.46
WB	6.3%	0.88
NB	0.0%	0.78
SB	0.0%	0.00
All	2.2%	0.80

Traffic Counts - Motorized Vehicles

Interval Start Time	144TH ST NE Eastbound				144TH ST NE Westbound				45TH AVE NE Northbound				45TH AVE NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	4	0	0	18	0	0	0	0	0	35	0	0	0	0	57	183
4:15 PM	0	0	6	0	0	14	1	0	0	1	0	31	0	0	0	0	53	166
4:30 PM	0	0	0	0	0	15	1	0	0	1	0	16	0	0	0	0	33	143
4:45 PM	0	0	0	1	0	12	2	0	0	0	0	25	0	0	0	0	40	146
5:00 PM	0	0	1	1	0	8	0	0	0	0	0	30	0	0	0	0	40	138
5:15 PM	0	0	1	0	0	10	1	0	0	1	0	17	0	0	0	0	30	
5:30 PM	0	0	2	1	0	9	1	0	0	2	0	21	0	0	0	0	36	
5:45 PM	0	0	0	0	0	8	1	0	0	2	0	21	0	0	0	0	32	
Count Total	0	0	14	3	0	94	7	0	0	7	0	196	0	0	0	0	321	
Peak Hour	0	0	10	1	0	59	4	0	0	2	0	107	0	0	0	0	183	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

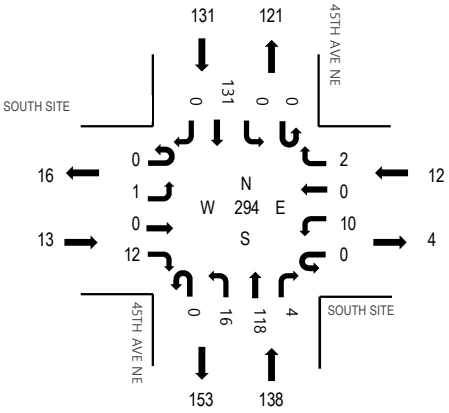
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	1	0	1	4:00 PM	0	0	0	0	0
4:15 PM	0	0	1	0	1	4:15 PM	0	0	0	1	1
4:30 PM	0	0	1	0	1	4:30 PM	0	0	0	1	1
4:45 PM	0	0	1	0	1	4:45 PM	1	1	0	2	4
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	0	0	4	0	4	Count Total	1	1	0	4	6
Peak Hour	0	0	4	0	4	Peak Hour	1	1	0	4	6

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

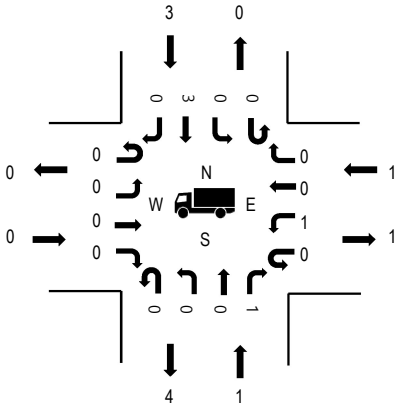
Location: 2 45TH AVE NE & SOUTH SITE PM
Date: Thursday, November 16, 2023
Peak Hour: 04:00 PM - 05:00 PM

Peak Hour

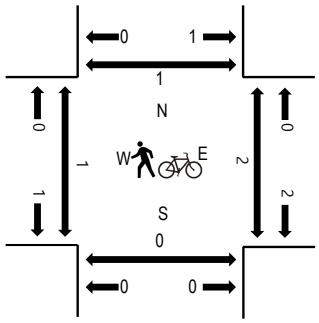
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.0%	0.41
WB	8.3%	0.60
NB	0.7%	0.88
SB	2.3%	0.84
All	1.7%	0.84

Traffic Counts - Motorized Vehicles

Interval Start Time	SOUTH SITE Eastbound				SOUTH SITE Westbound				45TH AVE NE Northbound				45TH AVE NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	1	0	7	0	4	0	0	0	2	34	1	0	0	39	0	88	294
4:15 PM	0	0	0	4	0	0	0	1	0	6	30	3	0	0	38	0	82	271
4:30 PM	0	0	0	1	0	2	0	0	0	3	25	0	0	0	26	0	57	235
4:45 PM	0	0	0	0	0	4	0	1	0	5	29	0	0	0	28	0	67	221
5:00 PM	0	0	0	5	0	1	0	0	0	1	35	0	0	0	23	0	65	204
5:15 PM	0	0	0	1	0	1	0	0	0	1	24	0	0	0	19	0	46	
5:30 PM	0	0	0	2	0	0	0	0	0	2	23	0	0	0	16	0	43	
5:45 PM	0	0	0	1	0	0	0	0	0	4	26	0	0	0	19	0	50	
Count Total	0	1	0	21	0	12	0	2	0	24	226	4	0	0	208	0	498	
Peak Hour	0	1	0	12	0	10	0	2	0	16	118	4	0	0	131	0	294	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

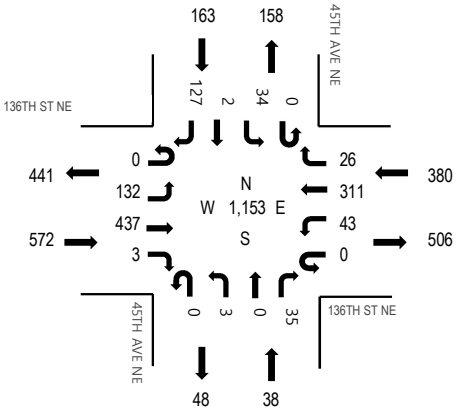
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	1	0	1	2	4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	1	1	4:30 PM	1	0	2	0	3
4:45 PM	0	0	1	0	1	4:45 PM	0	0	0	1	1
5:00 PM	0	0	0	1	1	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	0	1	1	4	6	Count Total	1	0	2	1	4
Peak Hour	0	1	1	3	5	Peak Hour	1	0	2	1	4

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

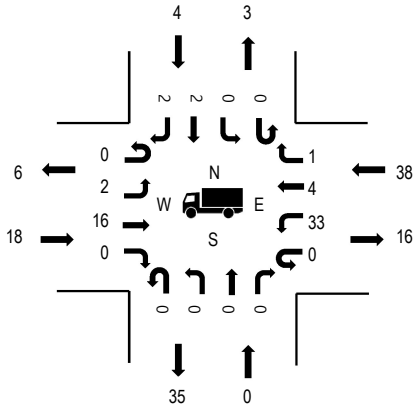
Location: 3 45TH AVE NE & 136TH ST NE PM
Date: Thursday, November 16, 2023
Peak Hour: 04:00 PM - 05:00 PM

Peak Hour

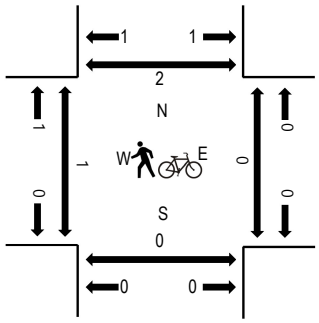
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	3.1%	0.93
WB	10.0%	0.97
NB	0.0%	0.73
SB	2.5%	0.77
All	5.2%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	136TH ST NE Eastbound				136TH ST NE Westbound				45TH AVE NE Northbound				45TH AVE NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	33	119	1	0	5	78	5	0	1	0	9	0	12	0	41	304	1,153
4:15 PM	0	36	98	0	0	8	78	10	0	1	0	7	0	7	0	37	282	1,118
4:30 PM	0	29	110	1	0	17	74	7	0	0	0	7	0	9	1	23	278	1,057
4:45 PM	0	34	110	1	0	13	81	4	0	1	0	12	0	6	1	26	289	1,004
5:00 PM	0	27	118	1	0	5	66	2	0	0	0	16	0	7	0	27	269	926
5:15 PM	0	22	87	0	0	0	70	5	0	0	1	15	0	2	1	18	221	
5:30 PM	0	22	96	0	0	0	72	4	0	1	2	10	0	5	0	13	225	
5:45 PM	0	25	102	0	0	0	59	3	0	1	1	1	0	7	0	12	211	
Count Total	0	228	840	4	0	48	578	40	0	5	4	77	0	55	3	197	2,079	
Peak Hour	0	132	437	3	0	43	311	26	0	3	0	35	0	34	2	127	1,153	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

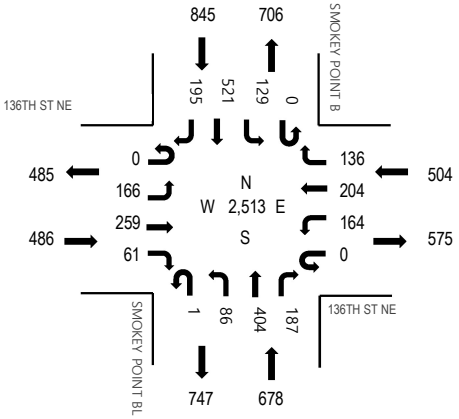
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	5	0	5	1	11	4:00 PM	1	0	0	0	1
4:15 PM	3	0	7	1	11	4:15 PM	0	0	0	0	0
4:30 PM	5	0	15	1	21	4:30 PM	0	0	0	1	1
4:45 PM	5	0	11	1	17	4:45 PM	0	0	0	1	1
5:00 PM	3	0	3	1	7	5:00 PM	0	1	0	0	1
5:15 PM	3	0	1	0	4	5:15 PM	0	0	0	0	0
5:30 PM	0	0	1	0	1	5:30 PM	0	0	1	1	2
5:45 PM	3	0	0	0	3	5:45 PM	0	0	0	0	0
Count Total	27	0	43	5	75	Count Total	1	1	1	3	6
Peak Hour	18	0	38	4	60	Peak Hour	1	0	0	2	3

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

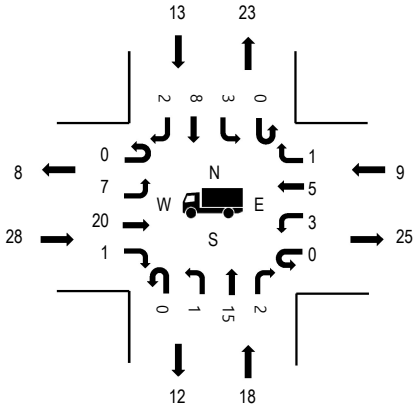
Location: 4 SMOKEY POINT BLVD & 136TH ST NE PM
Date: Thursday, November 16, 2023
Peak Hour: 04:00 PM - 05:00 PM

Peak Hour

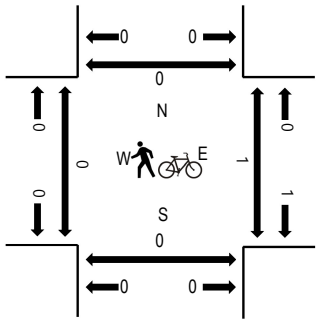
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	5.8%	0.86
WB	1.8%	0.86
NB	2.7%	0.91
SB	1.5%	0.96
All	2.7%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	136TH ST NE Eastbound				136TH ST NE Westbound				SMOKEY POINT BLVD Northbound				SMOKEY POINT BLVD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	37	69	20	0	51	54	41	0	16	92	52	0	39	123	55	649	2,513
4:15 PM	0	40	59	16	0	41	51	35	0	23	118	45	0	24	137	47	636	2,489
4:30 PM	0	33	59	12	0	37	48	35	1	23	94	44	0	37	133	49	605	2,383
4:45 PM	0	56	72	13	0	35	51	25	0	24	100	46	0	29	128	44	623	2,283
5:00 PM	0	39	52	15	0	49	33	22	0	25	106	49	0	39	144	52	625	2,108
5:15 PM	0	24	51	15	0	34	55	24	0	26	75	42	0	24	111	49	530	
5:30 PM	0	36	44	15	0	26	39	24	0	21	88	50	0	26	96	40	505	
5:45 PM	0	25	44	15	0	31	28	18	0	13	64	55	0	38	85	32	448	
Count Total	0	290	450	121	0	304	359	224	1	171	737	383	0	256	957	368	4,621	
Peak Hour	0	166	259	61	0	164	204	136	1	86	404	187	0	129	521	195	2,513	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	5	6	4	3	18	4:00 PM	0	0	0	0	0
4:15 PM	5	4	3	2	14	4:15 PM	0	0	0	0	0
4:30 PM	6	4	2	7	19	4:30 PM	0	0	1	0	1
4:45 PM	12	4	0	1	17	4:45 PM	0	0	0	0	0
5:00 PM	4	3	1	3	11	5:00 PM	0	0	0	0	0
5:15 PM	0	2	1	9	12	5:15 PM	0	0	0	0	0
5:30 PM	1	4	0	2	7	5:30 PM	0	0	0	0	0
5:45 PM	3	6	2	1	12	5:45 PM	0	0	2	0	2
Count Total	36	33	13	28	110	Count Total	0	0	3	0	3
Peak Hour	28	18	9	13	68	Peak Hour	0	0	1	0	1

Appendix C

Level of Service (LOS) Calculations

Level of Service Methodology

Level of Service (LOS) generally refers to the degree of congestion at an intersection. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. A letter scale from A to F generally describes intersection LOS.

Signalized Intersection LOS represents the average control delay (sec/veh) and can be reported for the overall intersection, for each approach, and for each lane group (additional v/c ratio criteria apply to lane group LOS only). The table below outlines the HCM (7th Edition) LOS criteria for signalized intersections.

LOS Criteria for Signalized Intersections [1]

Control Delay (sec/veh)	Level of Service [2]	General Description [3]
≤ 10	A	Exceptionally Favorable Progression (or very short cycle lengths) – Most vehicles arrive during the green indication and travel through the intersection without stopping.
> 10 to ≤ 20	B	Highly Favorable Progression (or short cycle lengths) – While more vehicles than LOS A stop, most vehicles still pass through the intersection without stopping.
> 20 to ≤ 35	C	Favorable Progression (or moderate cycle lengths) – Individual cycle failures begin to appear, but many vehicles still pass through the intersection without stopping.
> 35 to ≤ 55	D	Ineffective Progression (or long cycle lengths) – Many vehicles stop and individual cycle failures are noticeable.
> 55 to ≤ 80	E	Unfavorable Progression (and long cycle lengths) – Individual cycle failures are frequent.
> 80	F	Very Poor Progression (and long cycle lengths) – Most cycles fail to clear the queue at this level.

1 Source: Highway Capacity Manual 7th Edition, Transportation Research Board, 2022.
2 If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0, LOS F is assigned to the individual lane group. For approach-based and intersection-wide assessments at signals, LOS is defined solely by control delay.
3 Individual cycle failures: one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle.

Synchro 12 and/or HCM 2000 LOS methodology may be used when HCM 7th Edition methodology is not supported at an intersection (i.e., intersection geometry and/or custom phasing) or jurisdictional standards require use of an alternative methodology.

Unsignalized Intersection LOS (two-way stop control, all-way stop control, and roundabouts) is based on the average control delay. For two-way stop-controlled intersections, the LOS criteria apply to each controlled minor-street approach, controlled minor-street lane group, and controlled major-street movement (additional v/c ratio criteria apply to lane group LOS only). LOS is not calculated for major-street approaches or for the intersection as a whole at two-way stop-controlled intersections. For all-way stop-controlled intersections and roundabouts, LOS can be reported for the overall intersection, for each approach, and for each lane group (additional v/c ratio criteria apply to lane group LOS only). The table below outlines the HCM (7th Edition) LOS criteria for unsignalized intersections based on these methodologies.

LOS Criteria for Unsignalized Intersections[1]

Control Delay (sec/veh)	Level of Service [2]
≤ 10	A
> 10 to ≤ 15	B
> 15 to ≤ 25	C
> 25 to ≤ 35	D
> 35 to ≤ 50	E
> 50	F

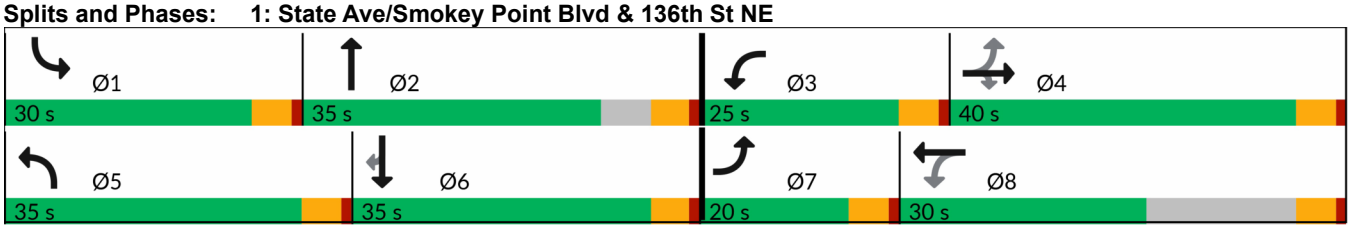
1 Source: Highway Capacity Manual 7th Edition, Transportation Research Board, 2022.
2 If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0, LOS F is assigned to the individual lane group. For approach-based and intersection-wide assessments at unsignalized intersections, LOS is defined solely by control delay.

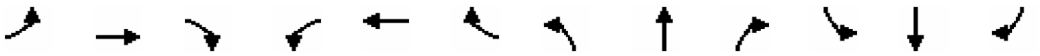
2023 Existing

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	259	61	164	204	136	87	404	187	129	521	195
Future Volume (vph)	166	259	61	164	204	136	87	404	187	129	521	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		150	225		0	250		0	275		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		280			798			679			741	
Travel Time (s)		5.5			15.5			11.6			12.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0		5.0	7.0		5.0	7.0	7.0
Minimum Split (s)	10.0	34.0	34.0	10.0	12.0		10.0	35.0		10.0	12.0	12.0
Total Split (s)	20.0	40.0	40.0	25.0	30.0		35.0	35.0		30.0	35.0	35.0
Total Split (%)	14.8%	29.6%	29.6%	18.5%	22.2%		25.9%	25.9%		22.2%	25.9%	25.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary	
Area Type:	Other
Cycle Length: 135	
Actuated Cycle Length: 84	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: State Ave/Smokey Point Blvd & 136th St NE





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	259	61	164	204	136	87	404	187	129	521	195
Future Volume (veh/h)	166	259	61	164	204	136	87	404	187	129	521	195
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1870	1870	1870	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	171	267	63	169	210	140	90	416	193	133	537	201
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	6	6	2	2	2	3	3	3	2	2	2
Cap, veh/h	341	440	373	410	251	168	117	558	256	172	953	425
Arrive On Green	0.10	0.24	0.24	0.10	0.24	0.24	0.07	0.24	0.24	0.10	0.27	0.27
Sat Flow, veh/h	1725	1811	1535	1781	1047	698	1767	2346	1076	1781	3554	1583
Grp Volume(v), veh/h	171	267	63	169	0	350	90	311	298	133	537	201
Grp Sat Flow(s),veh/h/ln	1725	1811	1535	1781	0	1745	1767	1763	1659	1781	1777	1583
Q Serve(g_s), s	4.5	8.1	2.0	4.3	0.0	11.8	3.1	10.1	10.3	4.5	8.0	6.6
Cycle Q Clear(g_c), s	4.5	8.1	2.0	4.3	0.0	11.8	3.1	10.1	10.3	4.5	8.0	6.6
Prop In Lane	1.00		1.00	1.00		0.40	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	341	440	373	410	0	419	117	419	395	172	953	425
V/C Ratio(X)	0.50	0.61	0.17	0.41	0.00	0.84	0.77	0.74	0.75	0.77	0.56	0.47
Avail Cap(c_a), veh/h	585	1027	870	811	0	707	859	857	806	721	1727	770
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.2	20.8	18.5	15.5	0.0	22.3	28.4	21.8	21.8	27.2	19.5	18.9
Incr Delay (d2), s/veh	0.4	0.5	0.1	0.2	0.0	1.7	4.0	1.0	1.1	2.8	0.2	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.2	0.7	1.6	0.0	4.5	1.3	3.8	3.6	1.9	2.9	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.6	21.3	18.5	15.8	0.0	24.0	32.3	22.8	23.0	30.0	19.7	19.2
LnGrp LOS	B	C	B	B		C	C	C	C	C	B	B
Approach Vol, veh/h		501			519			699			871	
Approach Delay, s/veh		19.3			21.3			24.1			21.1	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	19.7	11.1	20.0	9.1	21.6	11.3	19.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	30.0	20.0	35.0	30.0	30.0	15.0	25.0
Max Q Clear Time (g_c+I1), s	6.5	12.3	6.3	10.1	5.1	10.0	6.5	13.8
Green Ext Time (p_c), s	0.1	2.1	0.2	1.0	0.1	2.5	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	21.6
HCM 7th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	437	3	43	311	26	3	0	35	34	2	127
Future Volume (vph)	132	437	3	43	311	26	3	0	35	34	2	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	125		0	0		0	200		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		543			467			336			357	
Travel Time (s)		10.6			9.1			9.2			9.7	
Confl. Peds. (#/hr)	2					2	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	10%	10%	10%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

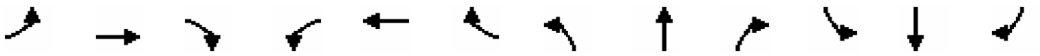
Intersection	
Int Delay, s/veh	4.3

Lane Configurations												
Traffic Vol, veh/h	132	437	3	43	311	26	3	0	35	34	2	127
Future Vol, veh/h	132	437	3	43	311	26	3	0	35	34	2	127
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	125	-	-	-	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	10	10	10	0	0	0	3	3	3
Mvmt Flow	139	460	3	45	327	27	3	0	37	36	2	134

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	357	0	0	463	0	0	1159	1187	462	1171	1175	344
Stage 1	-	-	-	-	-	-	739	739	-	434	434	-
Stage 2	-	-	-	-	-	-	420	447	-	738	741	-
Critical Hdwy	4.13	-	-	4.2	-	-	7.1	6.5	6.2	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.29	-	-	3.5	4	3.3	3.527	4.027	3.327
Pot Cap-1 Maneuver	1196	-	-	1057	-	-	174	190	604	169	191	696
Stage 1	-	-	-	-	-	-	412	426	-	599	580	-
Stage 2	-	-	-	-	-	-	615	577	-	408	421	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1194	-	-	1057	-	-	118	160	604	134	161	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	118	160	-	134	161	-
Stage 1	-	-	-	-	-	-	364	377	-	572	554	-
Stage 2	-	-	-	-	-	-	473	551	-	339	372	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	4.94	0.97	13.66	18.04
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	455	1194	-	-	1057	-	-	134	661
HCM Lane V/C Ratio	0.088	0.116	-	-	0.043	-	-	0.268	0.206
HCM Control Delay (s/veh)	13.7	8.4	-	-	8.6	-	-	41.5	11.9
HCM Lane LOS	B	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.3	0.4	-	-	0.1	-	-	1	0.8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	12	10	0	2	16	118	4	0	131	0
Future Volume (vph)	1	0	12	10	0	2	16	118	4	0	131	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	50		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		15			25			25			25	
Link Distance (ft)		101			155			352			319	
Travel Time (s)		2.3			3.5			8.0			7.3	
Confl. Peds. (#/hr)	1					1	1		2	2		1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	8%	8%	8%	1%	1%	1%	2%	2%	2%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.3

Lane Configurations												
Traffic Vol, veh/h	1	0	12	10	0	2	16	118	4	0	131	0
Future Vol, veh/h	1	0	12	10	0	2	16	118	4	0	131	0
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	2	2	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	8	8	8	1	1	1	2	2	2
Mvmt Flow	1	0	14	12	0	2	19	140	5	0	156	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	337	342	157	339	340	146	157	0	0	147	0	0
Stage 1	157	157	-	183	183	-	-	-	-	-	-	-
Stage 2	180	185	-	156	157	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.9	5.9	7.18	6.58	6.28	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	5.5	4.9	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.9	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.572	4.072	3.372	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	657	617	906	604	572	886	1429	-	-	1435	-	-
Stage 1	873	792	-	805	737	-	-	-	-	-	-	-
Stage 2	852	774	-	832	757	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	645	607	905	585	563	883	1428	-	-	1432	-	-
Mov Cap-2 Maneuver	645	607	-	585	563	-	-	-	-	-	-	-
Stage 1	872	791	-	793	726	-	-	-	-	-	-	-
Stage 2	838	762	-	819	756	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.18	10.94	0.88	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1428	-	-	878	620	1432	-	-
HCM Lane V/C Ratio	0.013	-	-	0.018	0.023	-	-	-
HCM Control Delay (s/veh)	7.6	-	-	9.2	10.9	0	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Lane Configurations						
Traffic Volume (vph)	10	1	59	4	2	107
Future Volume (vph)	10	1	59	4	2	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		250	0
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Link Speed (mph)	25			25	25	
Link Distance (ft)	226			227	329	
Travel Time (s)	6.2			6.2	7.6	
Confl. Peds. (#/hr)		1	1		1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	6%	6%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	7.7

Lane Configurations						
Traffic Vol, veh/h	10	1	59	4	2	107
Future Vol, veh/h	10	1	59	4	2	107
Conflicting Peds, #/hr	0	1	1	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	250	0
Veh in Median Storage, #0		-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	6	6	0	0
Mvmt Flow	13	1	74	5	3	134

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	15	0	168	14
Stage 1	-	-	-	-	14	-
Stage 2	-	-	-	-	154	-
Critical Hdwy	-	-	4.16	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.254	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1577	-	827	1072
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	880	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1576	-	787	1071
Mov Cap-2 Maneuver	-	-	-	-	787	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	837	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	6.93	8.86
HCM LOS			A

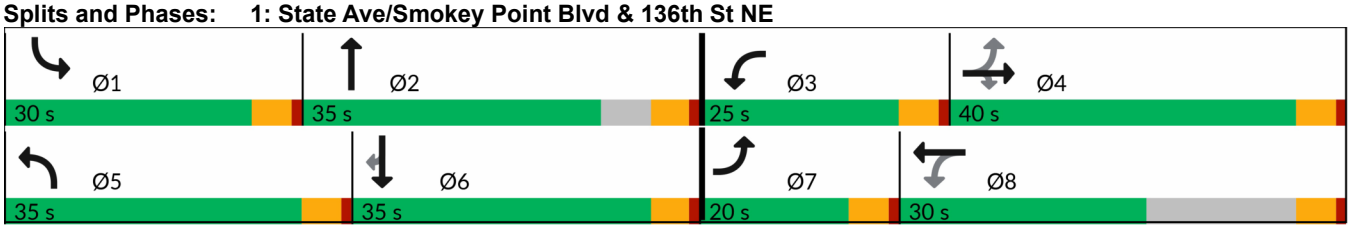
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	787	1071	-	-	1572	-
HCM Lane V/C Ratio	0.003	0.125	-	-	0.047	-
HCM Control Delay (s/veh)	9.6	8.8	-	-	7.4	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	0	0.4	-	-	0.1	-

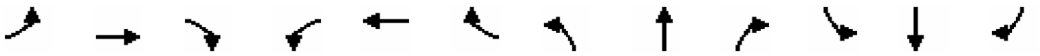
2032 No Action
(Horizon Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	217	338	80	214	266	177	113	527	244	168	680	254
Future Volume (vph)	217	338	80	214	266	177	113	527	244	168	680	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		150	225		0	250		0	275		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		280			798			679			741	
Travel Time (s)		5.5			15.5			11.6			12.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0		5.0	7.0		5.0	7.0	7.0
Minimum Split (s)	10.0	34.0	34.0	10.0	12.0		10.0	35.0		10.0	12.0	12.0
Total Split (s)	20.0	40.0	40.0	25.0	30.0		35.0	35.0		30.0	35.0	35.0
Total Split (%)	14.8%	29.6%	29.6%	18.5%	22.2%		25.9%	25.9%		22.2%	25.9%	25.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary	
Area Type:	Other
Cycle Length: 135	
Actuated Cycle Length: 104.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: State Ave/Smokey Point Blvd & 136th St NE





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	338	80	214	266	177	113	527	244	168	680	254
Future Volume (veh/h)	217	338	80	214	266	177	113	527	244	168	680	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1870	1870	1870	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	224	348	82	221	274	182	116	543	252	173	701	262
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	6	6	2	2	2	3	3	3	2	2	2
Cap, veh/h	297	508	431	382	291	193	147	629	291	209	1078	480
Arrive On Green	0.11	0.28	0.28	0.11	0.28	0.28	0.08	0.27	0.27	0.12	0.30	0.30
Sat Flow, veh/h	1725	1811	1535	1781	1049	696	1767	2339	1082	1781	3554	1583
Grp Volume(v), veh/h	224	348	82	221	0	456	116	409	386	173	701	262
Grp Sat Flow(s),veh/h/ln	1725	1811	1535	1781	0	1745	1767	1763	1658	1781	1777	1583
Q Serve(g_s), s	8.2	15.4	3.7	7.8	0.0	23.0	5.8	19.9	20.0	8.6	15.4	12.4
Cycle Q Clear(g_c), s	8.2	15.4	3.7	7.8	0.0	23.0	5.8	19.9	20.0	8.6	15.4	12.4
Prop In Lane	1.00		1.00	1.00		0.40	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	297	508	431	382	0	484	147	474	446	209	1078	480
V/C Ratio(X)	0.76	0.68	0.19	0.58	0.00	0.94	0.79	0.86	0.87	0.83	0.65	0.55
Avail Cap(c_a), veh/h	387	703	596	580	0	484	588	587	552	494	1183	527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	28.8	24.6	20.9	0.0	31.8	40.5	31.4	31.4	38.9	27.2	26.2
Incr Delay (d2), s/veh	4.1	0.6	0.1	0.5	0.0	26.7	3.5	9.2	10.0	3.2	0.8	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	6.5	1.3	3.1	0.0	12.8	2.6	9.2	8.8	3.8	6.3	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.6	29.5	24.7	21.4	0.0	58.5	44.1	40.5	41.4	42.0	28.0	26.6
LnGrp LOS	C	C	C	C		E	D	D	D	D	C	C
Approach Vol, veh/h		654			677			911			1136	
Approach Delay, s/veh		27.9			46.4			41.3			29.8	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	29.2	15.0	30.3	12.5	32.3	15.3	30.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	30.0	20.0	35.0	30.0	30.0	15.0	25.0
Max Q Clear Time (g_c+I1), s	10.6	22.0	9.8	17.4	7.8	17.4	10.2	25.0
Green Ext Time (p_c), s	0.2	2.1	0.2	1.3	0.1	2.9	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	35.9
HCM 7th LOS	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	570	4	56	406	34	4	0	46	44	3	166
Future Volume (vph)	172	570	4	56	406	34	4	0	46	44	3	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	125		0	0		0	200		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		543			467			336			357	
Travel Time (s)		10.6			9.1			9.2			9.7	
Confl. Peds. (#/hr)	2					2	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	10%	10%	10%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

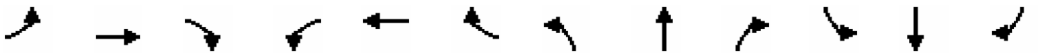
Intersection	
Int Delay, s/veh	7.6

Lane Configurations												
Traffic Vol, veh/h	172	570	4	56	406	34	4	0	46	44	3	166
Future Vol, veh/h	172	570	4	56	406	34	4	0	46	44	3	166
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	125	-	-	-	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	10	10	10	0	0	0	3	3	3
Mvmt Flow	181	600	4	59	427	36	4	0	48	46	3	175

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	465	0	0	604	0	0	1512	1547	602	1527	1531	448
Stage 1	-	-	-	-	-	-	964	964	-	565	565	-
Stage 2	-	-	-	-	-	-	548	583	-	962	966	-
Critical Hdwy	4.13	-	-	4.2	-	-	7.1	6.5	6.2	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.29	-	-	3.5	4	3.3	3.527	4.027	3.327
Pot Cap-1 Maneuver	1091	-	-	936	-	-	100	115	503	96	116	608
Stage 1	-	-	-	-	-	-	309	336	-	508	506	-
Stage 2	-	-	-	-	-	-	524	502	-	306	331	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1089	-	-	936	-	-	54	90	503	67	91	607
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	90	-	67	91	-
Stage 1	-	-	-	-	-	-	258	280	-	475	473	-
Stage 2	-	-	-	-	-	-	347	469	-	231	276	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.07	1.03	19.44	39.43
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	302	1089	-	-	936	-	-	67	551
HCM Lane V/C Ratio	0.175	0.166	-	-	0.063	-	-	0.688	0.323
HCM Control Delay (s/veh)	19.4	9	-	-	9.1	-	-	134.7	14.6
HCM Lane LOS	C	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	0.6	0.6	-	-	0.2	-	-	3.1	1.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	16	13	0	3	21	154	5	0	171	0
Future Volume (vph)	1	0	16	13	0	3	21	154	5	0	171	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	50		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		15			25			25			25	
Link Distance (ft)		101			155			352			319	
Travel Time (s)		2.3			3.5			8.0			7.3	
Confl. Peds. (#/hr)	1					1	1		2	2		1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	8%	8%	8%	1%	1%	1%	2%	2%	2%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.3

Lane Configurations												
Traffic Vol, veh/h	1	0	16	13	0	3	21	154	5	0	171	0
Future Vol, veh/h	1	0	16	13	0	3	21	154	5	0	171	0
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	2	2	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	8	8	8	1	1	1	2	2	2
Mvmt Flow	1	0	19	15	0	4	25	183	6	0	204	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	439	446	205	442	443	189	205	0	0	191	0	0
Stage 1	205	205	-	238	238	-	-	-	-	-	-	-
Stage 2	234	241	-	204	205	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.9	5.9	7.18	6.58	6.28	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	5.5	4.9	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.9	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.572	4.072	3.372	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	572	550	856	516	500	837	1373	-	-	1382	-	-
Stage 1	830	762	-	752	697	-	-	-	-	-	-	-
Stage 2	804	739	-	785	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	558	538	855	494	490	835	1372	-	-	1380	-	-
Mov Cap-2 Maneuver	558	538	-	494	490	-	-	-	-	-	-	-
Stage 1	829	761	-	737	683	-	-	-	-	-	-	-
Stage 2	785	724	-	767	721	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.45	11.98	0.9	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1372	-	-	829	535	1380	-	-
HCM Lane V/C Ratio	0.018	-	-	0.024	0.036	-	-	-
HCM Control Delay (s/veh)	7.7	-	-	9.5	12	0	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

Lane Configurations						
Traffic Volume (vph)	13	1	77	5	3	140
Future Volume (vph)	13	1	77	5	3	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		250	0
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Link Speed (mph)	25			25	25	
Link Distance (ft)	226			227	329	
Travel Time (s)	6.2			6.2	7.6	
Confl. Peds. (#/hr)		1	1		1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	6%	6%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	7.8

Lane Configurations						
Traffic Vol, veh/h	13	1	77	5	3	140
Future Vol, veh/h	13	1	77	5	3	140
Conflicting Peds, #/hr	0	1	1	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	250	0
Veh in Median Storage, #0		-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	6	6	0	0
Mvmt Flow	16	1	96	6	4	175

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	19	0	218	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	200	-
Critical Hdwy	-	-	4.16	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.254	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1572	-	775	1067
Stage 1	-	-	-	-	1010	-
Stage 2	-	-	-	-	839	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1571	-	726	1066
Mov Cap-2 Maneuver	-	-	-	-	726	-
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	786	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	6.99	9.06
HCM LOS			A

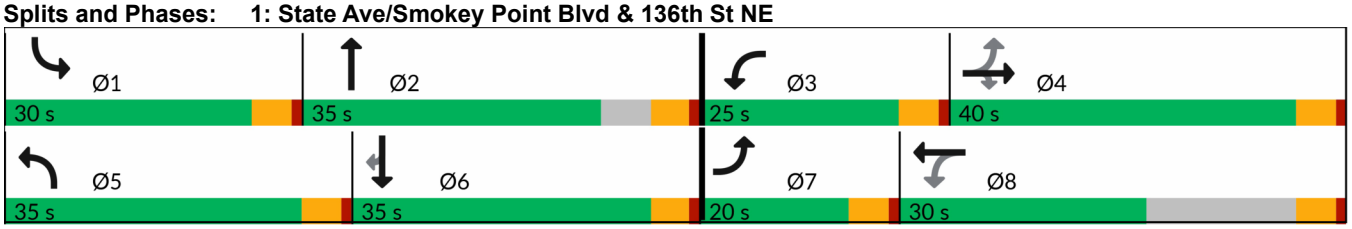
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	726	1066	-	-	1565	-
HCM Lane V/C Ratio	0.005	0.164	-	-	0.061	-
HCM Control Delay (s/veh)	10	9	-	-	7.4	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	0	0.6	-	-	0.2	-

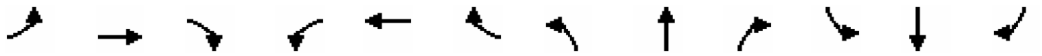
2032 With Project
(Horizon Year)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	217	344	80	219	269	180	113	527	255	175	680	254
Future Volume (vph)	217	344	80	219	269	180	113	527	255	175	680	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		150	225		0	250		0	275		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		280			798			679			741	
Travel Time (s)		5.5			15.5			11.6			12.6	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0		5.0	7.0		5.0	7.0	7.0
Minimum Split (s)	10.0	34.0	34.0	10.0	12.0		10.0	35.0		10.0	12.0	12.0
Total Split (s)	20.0	40.0	40.0	25.0	30.0		35.0	35.0		30.0	35.0	35.0
Total Split (%)	14.8%	29.6%	29.6%	18.5%	22.2%		25.9%	25.9%		22.2%	25.9%	25.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary	
Area Type:	Other
Cycle Length: 135	
Actuated Cycle Length: 105.6	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: State Ave/Smokey Point Blvd & 136th St NE





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	344	80	219	269	180	113	527	255	175	680	254
Future Volume (veh/h)	217	344	80	219	269	180	113	527	255	175	680	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1870	1870	1870	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	224	355	82	226	277	186	116	543	263	180	701	262
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	6	6	2	2	2	3	3	3	2	2	2
Cap, veh/h	286	498	422	374	286	192	147	625	302	216	1100	490
Arrive On Green	0.11	0.28	0.28	0.11	0.27	0.27	0.08	0.27	0.27	0.12	0.31	0.31
Sat Flow, veh/h	1725	1811	1535	1781	1044	701	1767	2303	1113	1781	3554	1584
Grp Volume(v), veh/h	224	355	82	226	0	463	116	415	391	180	701	262
Grp Sat Flow(s),veh/h/ln	1725	1811	1535	1781	0	1744	1767	1763	1653	1781	1777	1584
Q Serve(g_s), s	8.3	16.1	3.7	8.1	0.0	24.0	5.9	20.5	20.6	9.0	15.5	12.5
Cycle Q Clear(g_c), s	8.3	16.1	3.7	8.1	0.0	24.0	5.9	20.5	20.6	9.0	15.5	12.5
Prop In Lane	1.00		1.00	1.00		0.40	1.00		0.67	1.00		1.00
Lane Grp Cap(c), veh/h	286	498	422	374	0	478	147	478	448	216	1100	490
V/C Ratio(X)	0.78	0.71	0.19	0.60	0.00	0.97	0.79	0.87	0.87	0.83	0.64	0.53
Avail Cap(c_a), veh/h	373	694	588	563	0	478	581	579	543	488	1168	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.0	29.8	25.3	21.5	0.0	32.8	41.1	31.7	31.7	39.2	27.1	26.1
Incr Delay (d2), s/veh	5.7	0.9	0.1	0.6	0.0	33.1	3.6	10.2	11.1	3.2	0.8	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	6.9	1.3	3.3	0.0	14.0	2.6	9.6	9.1	4.0	6.3	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.7	30.7	25.4	22.1	0.0	65.8	44.6	41.9	42.8	42.4	27.9	26.4
LnGrp LOS	C	C	C	C		E	D	D	D	D	C	C
Approach Vol, veh/h		661			689			922			1143	
Approach Delay, s/veh		29.4			51.5			42.6			29.8	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.1	29.8	15.3	30.1	12.6	33.3	15.4	30.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	30.0	20.0	35.0	30.0	30.0	15.0	25.0
Max Q Clear Time (g_c+I1), s	11.0	22.6	10.1	18.1	7.9	17.5	10.3	26.0
Green Ext Time (p_c), s	0.2	2.0	0.2	1.3	0.1	2.9	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	37.6
HCM 7th LOS	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	570	4	56	406	35	4	0	46	45	3	177
Future Volume (vph)	196	570	4	56	406	35	4	0	46	45	3	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	125		0	0		0	200		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		543			467			336			357	
Travel Time (s)		10.6			9.1			9.2			9.7	
Confl. Peds. (#/hr)	2					2	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	3%	10%	10%	10%	0%	0%	0%	3%	3%	3%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

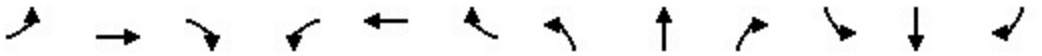
Intersection	
Int Delay, s/veh	8.9

Lane Configurations												
Traffic Vol, veh/h	196	570	4	56	406	35	4	0	46	45	3	177
Future Vol, veh/h	196	570	4	56	406	35	4	0	46	45	3	177
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	125	-	-	-	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	10	10	10	0	0	0	3	3	3
Mvmt Flow	206	600	4	59	427	37	4	0	48	47	3	186

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	466	0	0	604	0	0	1563	1599	602	1578	1583	449
Stage 1	-	-	-	-	-	-	1015	1015	-	566	566	-
Stage 2	-	-	-	-	-	-	548	584	-	1013	1017	-
Critical Hdwy	4.13	-	-	4.2	-	-	7.1	6.5	6.2	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.29	-	-	3.5	4	3.3	3.527	4.027	3.327
Pot Cap-1 Maneuver	1090	-	-	936	-	-	92	107	503	88	108	608
Stage 1	-	-	-	-	-	-	290	318	-	507	506	-
Stage 2	-	-	-	-	-	-	524	501	-	287	314	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1088	-	-	936	-	-	47	81	503	60	82	606
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	81	-	60	82	-
Stage 1	-	-	-	-	-	-	235	258	-	475	473	-
Stage 2	-	-	-	-	-	-	338	469	-	210	254	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.31	1.03	20.63	45.91
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	283	1088	-	-	936	-	-	60	548
HCM Lane V/C Ratio	0.186	0.19	-	-	0.063	-	-	0.786	0.346
HCM Control Delay (s/veh)	20.6	9.1	-	-	9.1	-	-	169.5	15
HCM Lane LOS	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.7	0.7	-	-	0.2	-	-	3.5	1.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	19	13	0	3	29	171	5	0	180	1
Future Volume (vph)	1	0	19	13	0	3	29	171	5	0	180	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	50		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		101			155			352			319	
Travel Time (s)		2.3			3.5			8.0			7.3	
Confl. Peds. (#/hr)	1					1	1		2	2		1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	0%	8%	8%	8%	1%	1%	1%	2%	2%	2%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	19	13	0	3	29	171	5	0	180	1
Future Vol, veh/h	1	0	19	13	0	3	29	171	5	0	180	1
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	2	2	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	8	8	8	1	1	1	2	2	2
Mvmt Flow	1	0	23	15	0	4	35	204	6	0	214	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	490	496	216	492	494	210	216	0	0	212	0	0
Stage 1	216	216	-	278	278	-	-	-	-	-	-	-
Stage 2	274	281	-	214	216	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.9	5.9	7.18	6.58	6.28	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	5.5	4.9	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.9	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.572	4.072	3.372	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	534	519	844	478	468	816	1359	-	-	1359	-	-
Stage 1	820	755	-	716	670	-	-	-	-	-	-	-
Stage 2	771	715	-	774	713	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	517	504	843	452	455	813	1358	-	-	1356	-	-
Mov Cap-2 Maneuver	517	504	-	452	455	-	-	-	-	-	-	-
Stage 1	819	754	-	696	652	-	-	-	-	-	-	-
Stage 2	748	696	-	754	712	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.54	12.59	1.09	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1358	-	-	818	493	1356	-	-
HCM Lane V/C Ratio	0.025	-	-	0.029	0.039	-	-	-
HCM Control Delay (s/veh)	7.7	-	-	9.5	12.6	0	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	14	10	78	7	20	140
Future Volume (vph)	14	10	78	7	20	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		250	0
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Link Speed (mph)	25			25	25	
Link Distance (ft)	226			227	329	
Travel Time (s)	6.2			6.2	7.6	
Confl. Peds. (#/hr)		1	1		1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	6%	6%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	7.7

Lane Configurations						
Traffic Vol, veh/h	14	10	78	7	20	140
Future Vol, veh/h	14	10	78	7	20	140
Conflicting Peds, #/hr	0	1	1	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	250	0
Veh in Median Storage, #0		-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	6	6	0	0
Mvmt Flow	18	13	98	9	25	175

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	31	0	230	25
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	205	-
Critical Hdwy	-	-	4.16	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.254	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1556	-	763	1057
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	834	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1554	-	714	1056
Mov Cap-2 Maneuver	-	-	-	-	714	-
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	781	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	6.86	9.23
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	714	1056	-	-	1547	-
HCM Lane V/C Ratio	0.035	0.166	-	-	0.063	-
HCM Control Delay (s/veh)	10.2	9.1	-	-	7.5	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.6	-	-	0.2	-

Appendix D

Trip Generation Calculations

Smokey Point Naval Support Complex
Weekday Trip Generation Summary

Land Use	Units [1]	ITE LUC [2]	Trip Rate or Equation [2]	Directional Distribution		Trips Generated		
				In	Out	In	Out	Total
DAILY								
Proposed Use:								
Multifamily Housing (Low-Rise)	110 DU	220	T = 6.41(X) + 75.31	50%	50%	390	390	780
Existing Use:								
Business Hotel	72 Rooms	312	T = 2.90(X) + 151.69	50%	50%	-180	-180	-360
AM PEAK HOUR								
Proposed Use:								
Multifamily Housing (Low-Rise)	110 DU	220	T = 0.31(X) + 22.85	24%	76%	14	43	57
Existing Use:								
Business Hotel	72 Rooms	312	0.36	39%	61%	-10	-16	-26
PM PEAK HOUR								
Proposed Use:								
Multifamily Housing (Low-Rise)	110 DU	220	T = 0.43(X) + 20.55	63%	37%	43	25	68
Existing Use:								
Business Hotel	72 Rooms	312	T = 0.21(X) + 12.03	55%	45%	-15	-12	-27
				Net New PM Peak Hour Trips =		**28**	**13**	**41**

Notes:
[1] DU = Dwelling Units.
[2] Based on Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 11th Edition, 2021.

This page intentionally left blank.

Appendix F
Public and Agency Participation

Correspondence with agencies will be included in the Final EA.

This page intentionally left blank.