4.8 Air Quality and Greenhouse Gases

This section describes the existing air quality in the study area. It also describes impacts on air quality that could result under the No Action Alternative or as a result of the construction and routine operation of the proposed Project. Finally, this section presents any measures identified to mitigate impacts of the proposed Project for potential significant adverse impacts.

4.8.1 Study Area

The study area for evaluating impacts on air quality is within and near the Project site that could be affected by construction and operation activities in the Project site. The Project site is in the UGA of the City of Puyallup approximately 2 miles east-northeast of the center of the City and within Pierce County. The Puyallup River borders the Project site along the northeast portion of the property. The City of Sumner is located within one-half mile across the Puyallup River to the north-northeast of the Project site. For the evaluation of climate and greenhouse gases, the study area is discussed in terms of regional air quality, as changes in climate are realized more broadly. The immediate area surrounding the Project site is composed mainly of residential and commercial use with some light industrial property. There are two schools located approximately 0.6 mile to the east-northeast and another school located approximately 0.8 mile southwest of the Project site. Van Lierop Park and Foothills Trail are located near the Project site.

4.8.2 Relevant Plans, Policies, and Regulations

This section summarizes federal, state, and local regulations related to air quality that are applicable to the Project. The relevant federal, state, and local laws, regulations, plans, and policies that establish the regulatory framework regarding air quality and greenhouse gases (GHGs) are provided in Table 4-25. Air quality and GHGs are defined further below after Table 4-25 and in Section 4.8.3, Affected Environment.

Table 4-25. Relevant Air Quality and GHG Laws, Regulations, Plans, and Policies

Laws, Regulations and Plans	Description
Federal	
Clean Air Act and Amendments	Enacted in 1970, as amended in 1977 and 1990, requires the USEPA to develop and enforce regulations to protect the public from air pollutants and their health impacts.
National Ambient Air Quality Standards (NAAQS)	Established by USEPA. Specifies the maximum acceptable ambient air concentrations for seven criteria air pollutants: carbon monoxide (CO), ozone, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, and particulate matter ($PM_{2.5}$ and PM_{10}). Primary NAAQS set limits to protect public health, and secondary NAAQS set limits to protect public welfare. Geographic areas where concentrations of a given criteria pollutant violate the NAAQS are classified as nonattainment areas for that pollutant; maintenance areas have reduced pollution to achieve standards but have long-term requirements to ensure that they maintain attainment.

Laws, Regulations and Plans	Description
GHG Reporting Program Rule (40 Code of Federal Regulations [CFR] 98)	The GHG Reporting Program requires reporting of GHG data and other relevant information from large GHG stationary emission sources, fuel and industrial gas suppliers, and CO_2 injection sites in the United States. The numeric reporting threshold is 25,000 metric tons per year of GHG in terms of CO_2 equivalent emissions.
GHG Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles (numerous parts under 40 CFR and 49 CFR)	The USEPA and the Department of Transportation's National Highway Traffic Safety Administration jointly finalized standards for medium- and heavy-duty vehicles that would improve fuel efficiency and cut carbon pollution to reduce the impacts of climate change.
State	
Washington State General Regulations for Air Pollution Sources (WAC 173-400); Washington State Clean Air Act (RCW 70.94)	Establishes the rules and procedures to control or prevent the emissions of air pollutants; provides the regulatory authority to control emissions from stationary sources, reporting requirements, emissions standards, permitting programs, and the control of air toxic emissions.
Washington State Ambient Air Quality Standards (WAC 173-476)	Establishes maximum acceptable levels in the ambient air for particulate matter, lead, SO_2, NO_2, ozone, and CO; Washington adopts current federal NAAQS in state regulations.
Washington State Greenhouse Gas Reporting Regulation (WAC 173-441)	Requires some facilities and transportation fuel suppliers to annually report their greenhouse gas emissions; 10,000 metric tons per year is the numeric threshold.
Washington State Controls for New Sources of Toxic Air Pollutants (WAC 173-460)	Establishes controls for new and modified sources of toxic air pollutants.
Limiting Greenhouse Gas Emissions (RCW 70.235)	Requires state to reduce overall GHG emissions as compared to a 1990 baseline and to report emissions to the governor biannually.
Reporting of Green House Gas Emissions (WAC 173-441)	Requires facilities that emit at least 10,000 metric tons of carbon pollution yearly from stationary sources to report their greenhouse gas emissions.
Local	
Puget Sound Clean Air Agency Regulations (Regulations I through III, activated by RCW 70.94)	Regulate stationary sources of air pollution in Pierce, King, Snohomish, and Kitsap counties. Include emissions standards and permitting, evaluating toxic air contaminant impacts, and SEPA requirements.
Pierce County Comprehensive Plan	The Pierce County Comprehensive Plan (Pierce County 2021d) outlines strategies for improving air quality in order to reduce adverse health impacts and improve visibility for scenic views. For this Project, the relevant policies include: • ENV-3.1. Continue to work to meet federal and state air quality requirements.

Laws, Regulations and Plans	Description
	• ENV-3.4. Develop land use practices which improve air quality, including infill development and concentrating high density land uses which reduce vehicle trips. • ENV-3.5. Recognize the relationship between reducing vehicle trips and reducing carbon emissions. • ENV-3.6. Encourage development and implementation of transportation-based strategies that reduce pollutants, smog, and diesel air-toxins. • ENV-3.7. Pursue the use of alternative cleaner-burning fuels. • ENV-4.1. Coordinate with local agencies and jurisdictions to develop transportation control measures and similar mobile source emission reduction programs that may be warranted to attain or maintain air quality health standards. • ENV-4. 2. Coordinate with agencies to provide information on air quality problems and measures to improve air quality.
City of Puyallup Comprehensive Plan	The City of Puyallup Comprehensive Plan (City of Puyallup 2015a) outlines strategies for protecting clean air and the climate for present and future generations through reduction of greenhouse gas emissions and promotion of efficient and effective solutions for transportation, clean industries, and development. For this Project, the relevant policies include: • NE 11.1. Promote compliance with federal and state air pollution control laws and improvements to regional air quality in cooperation with the Puget Sound Air Pollution Control Agency and the Puget Sound Regional Council. • NE 11.2. Achieve criteria air pollutant reductions in both municipal operations and the community at large, with attention given to social equity. • NE 11.3. Maintain high air quality through land use and transportation planning and management. • NE 11.4. Implement commute trip reduction programs as a means to limit or reduce vehicle trips as a key strategy for reducing vehicle-related air pollution. • NE 11.5. Reduce the amount of airborne particulates through a street sweeping program, dust abatement on construction sites, street trees, covered loads of hauled materials, and other methods to reduce the dust sources. • NE 11.6. Address Puyallup's contribution to climate change by, at a minimum, committing to comply with state initiatives and directives regarding climate change and the reduction of GHG. • NE 11.7. Include analysis of climate change impacts when conducting environmental review under SEPA.

Laws, Regulations and Plans	Description
	• NE 11.8. Promote the reduction of GHG by encouraging conservation and the use of alternative energy sources and reducing vehicles miles traveled by increasing alternatives to driving alone. Consider the implementation of a complete streets ordinance to ensure that City capital projects will integrate and promote multimodal transportation options to the extent feasible. • T-6.2. Meet or exceed federal and state air quality requirements by working with state, regional, and local agencies and jurisdictions to develop transportation control measures and/or similar mobile source emission reduction programs to attain or maintain air quality requirements: a. Conform to federal and state Clean Air Acts by following the guidance of the Puget Sound Regional Council's Transportation 2040 Plan. b. Encourage walking, bicycling, and riding public transit in order to reduce energy consumption and air pollution. c. Require air quality impact analysis of major new developments which might adversely impact air quality levels in their vicinity. d. Encourage and promote the use of electric vehicles; provide a broad range of opportunities for vehicle recharge.

Source: Ecology 2020

Federal, State, and Local Standards

The 1970 Federal Clean Air Act and subsequent amendments required the USEPA to establish regulations for controlling the nations' air quality. These regulations set criteria for the National Ambient Air Quality Standards (NAAQS). The primary NAAQS are protective of public health. The secondary NAAQS are protective of public welfare and the environment. Both primary and secondary standards specify ambient air concentration limits, with a safety margin, for pollutants to avoid adverse health and environmental effects. These standards are designed to protect the most susceptible public populations such as those with respiratory illnesses, the very young, the elderly, and those engaging in strenuous work or exercise.

The USEPA identified eight pervasive criteria air pollutants and established health-based ambient air quality standards for them. Ozone (O_3), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb) were the initial criteria pollutants followed by PM_{10} (particulate matter less than or equal to 10 microns in diameter) and $PM_{2.5}$ (particulate matter less than or equal to 2.5 microns in diameter), which are subsets of particulate matter and more commonly regulated. Ozone is a pollutant that is not typically directly emitted, but it forms in the lower atmosphere from direct emissions of NOx and volatile organic compounds (VOC) and their photochemical reactions with sunlight.

Geographic areas of the United States that do not meet the NAAQS for any one or more of the criteria pollutants are designated by the USEPA as nonattainment areas. Areas that were once designated nonattainment but are now achieving the NAAQS are termed maintenance areas. Areas that have pollutant levels below the NAAQS are termed attainment areas. In nonattainment areas, states must develop plans to reduce emissions and bring the area back into attainment with NAAQS. Maintenance areas have requirements that last for at least 20 years to ensure that they stay in attainment. The Knutson Farms proposed Project is in Pierce County, Washington, which is classified as in attainment with the NAAQS for all criteria pollutants but is also classified as a maintenance area for $PM_{2.5}$ (USEPA 2021a). As of May 14, 2021, Pierce County went from maintenance status to attainment status for PM_{10} as the 20-year maintenance period lapsed on that date.

One of the ambient air monitors located in Pierce County and considered representative of air quality at the Knutson Farms site is located at 1802 S. 36th Street, Tacoma, Washington. The $PM_{2.5}$ values from this monitoring station for the period of 2018 through 2020 have shown the ambient annual mean $PM_{2.5}$ concentrations in this location have been between 7.2 micrograms per cubic meter ($\mu g/m^3$) and 9.3 $\mu g/m^3$ compared to the standard of 12 $\mu g/m^3$, approximately 60 to 78 percent of the standard. The 24-hour $PM_{2.5}$ 98th percentile concentrations from this station for the period of 2018 through 2020 have ranged from 18 $\mu g/m^3$ to 41 $\mu g/m^3$ with a 3-year average of 29 $\mu g/m^3$. approximately 83 percent of the ambient standard. The NO_2 values from this monitoring station for the period of 2018 through 2020 have shown the ambient annual mean NO_2 concentrations in this location have been between 12.5 parts per billion (ppb) and 16 ppb compared to the standard of 53 ppb; approximately 23 to 30 percent of the standard. The 1-hour NO_2 98th percentile concentrations from this monitoring station for the period of 2018 through 2020 have ranged from 40 ppb to 47 ppb with a 3-year average of 44.3 ppb, 44.3 percent of the standard (USEPA 2020).

Table 4-26 identifies the primary and secondary NAAQS for the criteria pollutants under federal and Washington State law. Washington has adopted the federal primary and secondary standards.

Table 4-26. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard	Secondary Standards	Form
Ozone	8 hours	0.070 ppm[a]	0.070 ppm	Annual 4th-highest daily max. 8-hour concentration, averaged over 3 years
Carbon monoxide (CO)	1 hour	35 ppm	No applicable standard	Not to be exceeded more than once/year
	8 hours	9 ppm	No applicable standard	
Nitrogen dioxide (NO_2)	1 hour	0.100 ppm (100 ppb)	No applicable standard	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Annually	0.053 ppm (53 ppb)	0.053 ppm (53 ppb)	Annual mean
Sulfur dioxide (SO_2)	1 hour	0.075 ppm	No applicable standard	99th percentile of 1-hour daily maximum

Pollutant	Averaging Time	Primary Standard	Secondary Standards	Form
				concentrations, averaged over 3 years
	3 hours	0.5 ppm for state, no applicable standard for federal	0.5 ppm	Not to be exceeded more than once/year
	Annually	0.02 ppm for state, no applicable standard for federal	No applicable standard	Not to be exceeded
	24 hours	0.14 ppm for state, no applicable standard for federal[b]	No applicable standard	Not to be exceeded more than once/year
Particulate matter (PM_{10})	24 hours	150 µg/m^3 [c]	150 µg/m^3	Not to be exceeded more than once/year on average over 3 years
Fine particulate matter ($PM_{2.5}$)	24 hours	35 µg/m^3 [d]	35 µg/m^3	98th percentile, averaged over 3 years
	Annually	12 µg/m^3	15 µg/m^3	Annual mean, averaged over 3 years
Lead	Rolling 3-month average	0.15 µg/m^3	0.15 µg/m^3	Not to be exceeded

Sources: USEPA 2021b; WAC Chapter 173-476

[a] This 2015 NAAQS is the most stringent NAAQS still in effect for ozone. A 2008 8-hour ozone standard of 0.075 ppm also remains in effect. The 2015 8-hour ozone standard is attained when the 3-year average of the fourth highest daily concentration is 0.070 ppm or less.

[b] The 24-hour average concentration for sulfur oxides in the ambient air must not exceed 0.14 ppm by volume more than once per calendar year (WAC 173-476-130).

[c] The 24-hour PM10 standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than the standard.

[d] The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of the 98th percentile is less than the standard.

Note: ppm: parts per million; µg/m^3: micrograms per cubic meter.

The USEPA General Conformity Rule (40 Code of Federal Regulations [CFR] 51 and 93) applies to federal actions or federally funded actions (non-transportation agency actions) occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year [tpy]) vary by pollutant and depend on the severity of the nonattainment status for the air quality management area in question. These *de minimis* levels represent the quantity of emissions above which the need for a conformity assessment with the State Implementation Plan (SIP) is required. The SIP is the state's plan for meeting and maintaining the NAAQS, which must be approved by the USEPA, including revisions. Although the USEPA General Conformity rule does not apply to the Knutson Farms proposed Project, the *de minimis* levels that would apply to an applicable federal action in Pierce County were used as a surrogate to assess the potential significance of Project-related criteria air pollutant emissions. The only *de minimis* levels for Pierce County that is applicable is 100 tpy of $PM_{2.5}$ due to its maintenance status. The precursors to $PM_{2.5}$ include SO_2, NOx, and potentially VOC; therefore, 100 tpy has also been used as

a surrogate for potential air quality significance indication for these criteria pollutants as well. The Prevention of Significant Deterioration (PSD) major source threshold of 250 tpy is being used as a surrogate for potential air quality significance indication for CO and PM_{10} because they are attainment pollutants and are not a precursor to other criteria pollutants.

The Clean Air Act identifies 187 compounds that are known to cause cancer or serious health effects. This group of compounds is called air toxics or hazardous air pollutants (HAPs). The USEPA has identified 21 HAPs emitted from mobile sources, referred to as mobile source air toxics (MSAT), within a few final rules: Control of Emissions of Hazardous Air Pollutants from Mobile Sources (40 CFR 80, 85, 86). These rules mainly regulate fuel and vehicle manufacturers. The USEPA designated seven priority MSAT due to their potential for causing cancer and serious health effects when exposures are long enough and at sufficient concentrations: acrolein, benzene, formaldehyde, diesel particulate matter (DPM)/diesel exhaust organic gases, naphthalene, polycyclic organic matter, and 1,3-butadiene. These priority MSAT are analyzed in this EIS regarding operational emissions from truck hauling to and from the Warehouse Complex Facility.

Ecology provides protection of public health and the environment by establishing and enforcing rules to prevent and reduce air pollution and approve emissions with limitations. Enforcement of most of the Clean Air Act requirements has been delegated by the USEPA to Ecology and seven clean air agencies with local authority in the state. Ecology works to improve air quality throughout the state by overseeing the development and conformity of the SIP. Ecology oversees the statewide air monitoring network and ensures that the monitoring data meets the federal requirements of 40 CFR 58. Ecology also requires facilities that have applicable emissions source categories (e.g., stationary fuel combustion, electricity generation, specific types of manufacturers, petroleum industry sources) and emit at least 10,000 metric tons of CO_2 equivalents annually to report their greenhouse gas emissions annually (WAC Chapter 173-441).

The Puget Sound Clean Air Agency (PSCAA) regulates air quality within the counties of Pierce, King, Snohomish, and Kitsap. PSCAA has local authority for setting regulations and permitting of stationary emissions sources and construction emissions.

4.8.3 Affected Environment

Ambient “air quality” refers to the condition of the outdoor air within our environment. Good ambient air quality pertains to the degree to which the air is clean, clear, and free from pollutants such as smoke, dust, and gaseous impurities in the air. Air quality is determined by the concentration of various pollutants in the atmosphere. The main pollutants of concern are called criteria pollutants and toxic air pollutants. The criteria pollutants that are regulated nationwide via NAAQS consist of CO, O_3, NO_2, SO_2, Pb, and particulate matter including PM_{10} and $PM_{2.5}$. The regulated toxic pollutants are from a list of 187 chemical compounds designated by the USEPA and over 400 toxic pollutants designated by the state and local air quality agency as posing cancer or other human health risks.

Air quality in and around the study area is generally good for roughly 75 percent of the year, with some moderate air quality for 20 percent of the year and typically only a few days per year with unhealthy air

for sensitive groups (PSCAA 2019). Air quality in this area is regulated and enforced by the USEPA, Ecology, and the PSCAA.

Climate and Greenhouse Gases

"Climate" is the average weather conditions over time for a particular region, usually taken over a period of 30 years or more. While the topic of climate can be global in nature, changes in climate for this EIS are discussed with respect to potential impacts on regional air quality in Washington for the proposed Project. Atmospheric warming associated with climate change has the potential to increase ground-level ozone in many regions, which may present challenges for compliance with the ozone standards in the future. The impact of climate change on other air pollutants, such as particulate matter, is less certain, but research is underway to address these uncertainties.

The region around the Project site experiences a maritime climate with winters that are cool and very wet with high temperatures averaging in the mid- to upper 40s Fahrenheit and lows near freezing. Snow is not very common, with occurrences typically only on a few days each year. Spring has less rain and milder temperatures, with highs regularly in the mid-50s to around 60°F. Summers are warm and dry with highs in the 70s on most days, with some days reaching the 80s and occasionally the 90s. Summer thunderstorms occur occasionally but are mostly isolated and rarely severe. These storms typically originate from the Cascade Mountains and are from warm moist air from monsoonal flow in the southwest U.S. By fall, temperatures start to drop and precipitation increases. The average rainfall in the months of October to March is 4 to 7 inches per month, with the lowest rainfall between May and September averaging between 1 and 2 inches per month (Best Places 2021; Wikipedia 2021). The wind direction is most often from the west between May and mid-September and most often from the south between mid-September through April. The average of the mean hourly wind speed does not vary significantly throughout the year and varies between 3 to 5.3 mph (Weather Spark 2021).

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the earth that would otherwise be lost to space. While the physical mechanism of this heat capture is different than for a greenhouse, it has the same effect of keeping surface temperatures warmer, and so these gases are referred to as GHGs. The accumulation of GHGs contributes to temperature increases and global climate change. Regulated GHGs include CO_2, methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Carbon dioxide, methane, and nitrous oxide are commonly emitted from sources of fuel combustion (e.g., stationary boilers, heaters, engines, and mobile sources such as construction equipment and on-road vehicles). Methane is also commonly emitted from agricultural practices such as livestock and crop farming. PFCs and HFCs can be found contained within industrial processes, electrical equipment, and building cooling systems as coolants/refrigerants, although sometimes these systems leak into the atmosphere. GHGs have long atmospheric lifetimes that vary from 1 year to thousands of years and have significantly varying potentials to trap heat that are described as their global warming potential. On a 100-year time horizon, CH_4 is estimated to be 25 times as potent as CO_2 at trapping heat, while SF_6 is 22,800 times more potent than CO_2. GHG emissions are typically reported as CO_2 equivalents (CO_2-e), which convert the quantities

of non-CO_2 emissions into an equivalent amount of CO_2 to report emissions as a single quantity, usually in metric tons.[16]

In 2018, the state of Washington produced approximately 100 million gross metric tons of CO_2-e. The transportation industry is the largest source, at 44.9 percent of the state's GHG emissions, followed by residential, commercial, and industrial energy use at 23.4 percent, and electricity consumption (both in state and out of state) at 16.3 percent. The sources of the remaining 15.4 percent of emissions are agriculture, waste management, and industrial processes (Ecology 2018b).

Some of the effects of climate change over the last 50 to 100+ years in Washington State include the following, as presented in a special report issued by the Intergovernmental Panel on Climate Change (PSI 2021):

- Average snowpack has declined by approximately 30 percent from 1955 to 2016.
- The total area occupied by glaciers in the North Cascades has declined by more than 56 percent since 1900.
- Sea level has risen in northern Puget Sound by as much as 4 inches, with other increases elsewhere.
- Peak stream flow is occurring earlier in the year by as much as 20 days when comparing 1948 data to 2002 data for the most snow-covered areas near Puget Sound.
- Coastal waters have warmed between 0.9°F and 1.8°F between 1990 and 2012, with the Pacific Ocean and Puget Sound shifting to slightly less alkaline conditions.

4.8.4 Impacts

Methodology

The evaluation of potential impacts on air quality and GHG impacts consists of conducting the following tasks:

- Develop a qualitative assessment of the levels of direct and indirect criteria pollutants, DPM, and GHG emissions from construction activities (e.g., earthmoving/land-clearing equipment and fossil-fueled construction vehicles/equipment, asphalt paving, construction worker commuter vehicle emissions, material hauling vehicle emissions) for the Project and operational activities (e.g., space-heating emissions sources, emergency power generating sources, worker vehicle commuting). This emissions assessment is based on similar Project historical data, typical energy use data based on the region in the United States, and type of building and/or use of air quality screening models. Criteria pollutant emissions are compared to General Conformity *de minimus* threshold levels and PSD major source thresholds as a measure of Project emissions significance. Stationary source emissions that would require an air quality permit from PSCAA or Ecology would not count toward threshold comparisons, as they would comply with the SIP by obtaining a permit and following permit conditions. DPM emissions are compared to state-level thresholds

[16] Criteria pollutants and toxic pollutants are typically reported in units of short tons (English units).

and distances to sensitive receptors for assessing impacts and are assessed under MSAT pollutants below.

- Quantify MSAT pollutants from operational truck traffic emissions for the local air quality study area, defined as from the exit point(s) of the freeway system to the proposed Project. These emissions are estimated using the latest version of the USEPA's MOVES emissions model, MOVES3, together with vehicle miles travelled and vehicle speed data provided by the Project traffic analysts. The MOVES model is executed for Pierce County in a national default mode to generate emission factors for the heavy-duty trucks being analyzed for local emissions.

Characterization of Air Quality Impacts

An adverse air quality impact would be any level of expected/estimated annual criteria pollutant emissions increase in direct or indirect emissions from Project construction activities or operational activities that would exceed the General Conformity *de minimus* or major thresholds discussed above. Decreases in direct or indirect emissions would be considered beneficial impacts. A significant air quality impact during construction or operations would be an annual emission increase of criteria pollutants, after applicable and appropriate mitigation measures, that would be expected to exceed the General Conformity *de minimus* threshold levels (or PSD major source threshold for CO and PM_{10}) and would be expected to result in exceedance of an ambient air quality standard. An exceedance of an ambient air quality standard would be based on applying a percent increase in county-level emissions from the proposed Project to the current ambient monitored values nearest to the proposed Project and comparison to the ambient air quality standards.

Characterization of MSAT Impacts

The adverse impacts from operations-related emissions of mobile source criteria pollutants and air toxics pollutants would be any level of expected/estimated emissions increases in these pollutant emissions. A significant adverse impact during the proposed Project operation period would be annual emissions of MSATs, after applicable and appropriate mitigation measures, that would be greater than 25 tpy for all MSATs combined.

Characterization of GHG Impacts

An adverse GHG impact would be any level of expected/estimated annual GHG emissions increase in direct or indirect emissions from Project construction activities or operational activities. Decreases in direct or indirect emissions would be considered beneficial impacts. A significant adverse impact during construction or operations would be annual emissions of GHG, after applicable and appropriate mitigation measures, that would exceed the PSD Best Available Control Technology (BACT) threshold of 75,000 tons (short tons) per year. Exceeding the Ecology 10,000 metric tpy direct stationary emissions threshold from specific types of emission sources would require annual reporting. Although not currently required, facilities that exceed the Ecology 10,000 metric tpy threshold could be required in the future to reduce GHG emissions to contribute to meeting Washington State GHG limits from 2030 to 2050. It is anticipated that those reductions would be phased in over time, but the nature, extent, and details of these future requirements are not known.

Impacts Analysis

No Action Alternative

Under the No Action Alternative, the construction and operation of the proposed Project would not occur. Existing conditions in the study area related to air quality would continue under the No Action Alternative.

Proposed Project

Construction Impacts

Less than Significant. Construction activities generating air pollutant emissions include fuel combustion within the internal combustion engines of non-road construction equipment. This could include graders, bulldozers, backhoes, loaders, skid steers, excavators, rollers, cranes, high lifts, dump trucks, concrete trucks, paving equipment, street sweepers, and water trucks. In addition, particulate fugitive dust emissions would be generated from land clearing disturbances and soil excavations and movements, and passenger and truck delivery traffic on unpaved and paved roads. It is estimated that 400,000 to 450,000 CY of on-site excavation and fill, approximately 120,000 CY of imported fill, and 80,000 to 110,000 CY of stripping material would be moved over the course of the construction period. Most of the stripping material is planned to remain on site and be used in landscaping areas for berms. Some quantity of stripping material would be exported from the site to an approved receiving site. Asphalt paving of roads and parking areas and surface coating of building surfaces would generate VOC emissions.

The construction workers commuting in vehicles would also generate combustion emissions. The Project developer estimated that the total number of construction employees present at the job site at any single period is expected to be about 150 employees.

Based on similar sized and type of construction projects, the construction emissions from the proposed Project are not expected to cause a significant air quality impact and are not expected to cause an exceedance of the NAAQS. The construction emissions would be intermittent in nature, temporary and spatially dispersed, and are not expected to represent a significant adverse impact. A similar size and type hypothetical construction Project was entered into the U.S. Air Force Air Conformity Applicability Model (screening model) for a project in Pierce County, Washington (Department of the Air Force 2019). The resulting estimated emissions were well below the General Conformity *de minimus* thresholds of 100 tpy for CO, NOx, SO_2, VOC, PM_{10}, and $PM_{2.5}$ (Pb emissions are considered insignificant for these types of construction projects). The highest criteria pollutant was PM_{10} at just under 12 tpy, CO and NOx were less than 4.3 tpy, and all other criteria pollutants were less than 1 tpy. The emissions of CO_2 equivalent emissions were less than 1,200 tpy (1,088 metric tons per year [mtpy]), which is well below the 75,000 tpy PSD BACT threshold and the 10,000 mtpy Ecology GHG reporting threshold. While these thresholds do not apply to construction emissions, this comparison provides a sense of the minimal magnitude of the Project construction emissions in comparison to *de minimis* and insignificant thresholds for regulatory permitting or reporting.

Construction activities will operate in compliance with PSCAA Regulation I, Section 9.15 – Fugitive Dust Control Measures, which include minimizing fugitive dust through control methods such as wet or chemical suppression techniques, reducing vehicle speeds, cleaning vehicle undercarriages or wheels, and covering or wetting truckloads of soils or loose materials. The construction activities will also comply with PSCAA Regulation I, Section 9.03 – Emission of Air Contaminant: Visual Standard, which includes a 20 percent opacity standard.

The following BMPs would be implemented during construction to minimize potential for air quality impacts during construction in accordance with Perce County Comprehensive Plan Goals ENV-3 and ENV-4.2, City of Puyallup Comprehensive Plan Goal NE-11.5, and Puget Sound Clean Air Agency Regulation 1, Section 9.15:

- Apply dust suppression materials on exposed soil areas and construction paths/roadways and/or water during dust-generating construction activities to limit fugitive dust emissions.
- Require mobile construction equipment and any stationary engines be powered by USEPA-certified engines that meet applicable USEPA emission standards.
- Implement and enforce a 10- to 15-mile-per-hour speed limit for construction vehicles while moving on site.
- Provide a wheel washing and/or vehicle undercarriage cleaning system for trucks leaving the Project construction site.
- Implement commute trip reduction options for alternatives to single-occupancy vehicle commuting including offering bus passes, priority carpool parking, and shuttle buses; providing bicycle paths; and promoting bicycle commuting.
- Require all loose material truck loads to have covers and/or use wetting agents to minimize escape of dust.

Operations Impacts

Less than significant. Operational activities generating air emissions under the proposed Project include the following:

- Combustion of fuels for space heating of the 2.6-million-SF facility.
- Emergency generator fuel combustion (if necessary).
- Light industrial activities generating emissions (e.g., fuel combustion, volatile organic chemical use).
- Daily transport trucks hauling materials/products to and from the proposed facility, including idling of trucks.
- Daily worker commuting in vehicles.

The estimated total number of employees occupying the seven proposed buildings is anticipated to be up to 1,500 employees over three shifts per day. Maintenance activities including landscaping/lawn care and building maintenance would generate minimal emissions from fuel combustion and evaporation of volatile organic compounds. Any future industrial-related point source emissions from the development area are speculative and would be subject to future PSCAA or Ecology air permitting as described above.

This would also include space-heating combustion sources using distillate fuel oil, natural gas, propane, or biodiesel and greater than 10 million British Thermal Units per hour in heat input capacity, and emergency generators operating greater than 500 hours per year or operating under a demand response program contract. Therefore, these sources subject to permitting would be subject to review and compliance with the SIP and ambient air quality standards through obtaining and complying with a local or state air permit. These permitted emission sources also would not count toward comparing to General Conformity emissions thresholds. Space heating and emergency generators that fall below the air permitting thresholds would generate minor levels of pollutants that are expected to fall below General Conformity emissions thresholds and the PSD major source threshold. The General Conformity thresholds for Pierce County are 100 tpy for NOx, SO_2, VOC, and $PM_{2.5}$, and the PSD major source threshold is 250 tpy for CO and PM_{10}.

The CO_2-e emissions from future operational stationary sources at the facility were estimated to be 17,153 tons/year CO_2-e, including an emergency generator and building heating sources using natural gas. The emissions of CO_2-e emissions from future operational mobile sources (i.e., vehicle/truck traffic) were estimated to be 8,409 tons/year and are discussed in more detail below. The total CO_2-e operational emissions are expected to be below the 75,000 tpy PSD BACT threshold. Stationary source emissions would be above the 10,000-mtpy Ecology GHG reporting threshold at 15,561 mtpy. This is currently only a reporting requirement. There could be a future requirement to reduce GHG emissions for facilities that require reporting, but the nature and extent of those reductions are not known and not required at this time. Additionally, the level of estimated CO_2-e emissions is not nearly as significant as those at other types of facilities requiring reporting GHG emissions, such as industrial facilities and power plants, where there are expected to be more stringent future reduction requirements. Therefore, GHG emissions from the proposed Project would be less than significant.

A quantitative assessment was conducted of operational criteria pollutant and air toxics emissions from transport trucks hauling materials to and from the warehouses/industrial park and employee commuting once operations begin on the site. Emissions were calculated using the number of heavy-duty and light-duty vehicle trips and employee commuter data generated by a separate traffic analysis. The total daily trips for heavy-duty vehicles, light-duty vehicles, and passenger cars (includes vans/pickups) are estimated as 147 trips, 1,335 trips, and 7,242 trips, respectively (total of 8,724 trips under the project Proposal). The average speed and vehicle type data were input into the USEPA MOVES mobile source emissions model to generate emission factors for the vehicles. The emission factors were multiplied by the annual vehicle miles traveled resulting in the estimated level of annual emissions provided in Table 4-27. Additionally, truck idling emissions were calculated within MOVES and included in the emissions summary, assuming 15 minutes of idle time per truck trip. As indicated in Table 4-27, all pollutants were estimated to be below all significance indicator levels. Therefore, criteria pollutant and MSAT impacts due to operational emissions from transport trucks and employee commuting would be adverse, but less than significant. Appendix D provides the traffic analysis VMT and speed data, MOVES emission factors, and MOVES output file.

Table 4-27. Proposed Project – Operational Truck and Passenger Vehicle Annual Emissions

Vehicle Class	VMT	Emissions (tons/year)						
		CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC	MSAT
Passenger Car	6,999,801	13.70	0.42	0.01	0.25	0.04	0.11	0.01
Passenger Truck	6,999,801	15.67	0.85	0.02	0.27	0.05	0.16	0.02
Single Unit Truck	2,580,704	15.13	0.52	0.02	0.21	0.05	0.28	0.03
Combination Truck	284,167	6.54	0.59	0.00	0.08	0.02	0.17	0.02
Idling Truck	123,062	5.49	7.95	0.00	0.07	0.06	0.46	0.06
TOTALS		**56.54**	**10.33**	**0.05**	**0.87**	**0.23**	**1.19**	**0.13**
General Conformity Significance Indicator Levels		NA	100	100	NA	100	100	NA
PSD Major Source Significance Indicator Levels		250	NA	NA	250	NA	NA	NA
MSAT Significance Indicator Levels		NA	NA	NA	NA	NA	NA	25

Notes: NA = Not Applicable

The following BMPs would be implemented during operations to minimize potential for localized air quality impacts during construction in accordance with Perce County Comprehensive Plan Goals ENV-3.5 to 3.7, 3.10, and 4.1; City of Puyallup Comprehensive Plan Goal T-6.2; Title 10.50 PCC; and Chapter 21.16 PMC.

- Implement and enforce a no-idling policy for vehicles within the Project construction areas and for employees and truck transport vehicles during facility operations.
- Install electric and/or fossil fuel-powered equipment and control systems using the latest energy efficiency technology.
- Install solar water heater systems, where feasible.
- Install electric space heater systems.
- Implement commute trip reduction options for alternatives to single-occupancy vehicle commuting including bus passes, priority carpool parking, and shuttle buses; provide bicycle paths; and promote bicycle commuting.

Alternative 1 – Rail Transport

Construction Impacts

Less than Significant. The air quality construction impacts associated with Alternative 1 would be similar to those described for the proposed Project but would include construction of the new rail line and track extensions from BNSF mainline/Meeker Southern interchange. Construction would generate combustion emissions from equipment used for clearing, grading, and other construction activities. In addition, fugitive dust emissions would be generated from the disturbance of soils and movement of vehicles over unpaved areas. When compared to the proposed Project, these additional emissions

associated with the construction of the rail line would be offset by the reduction in other construction activities that would no longer occur. Overall, the construction emissions from Alternative 1 are anticipated to still be well below the General Conformity thresholds of 100 tpy for each criteria pollutant. Therefore, construction air quality impacts would be less than significant. The same BMPs identified under the proposed Project would be implemented during construction to minimize potential for localized air quality impacts.

Operations Impacts

Less than Significant. The operational air quality impacts associated with Alternative 1 would be similar to those described for the proposed Project but would include emissions from operation of the rail line. Operational emissions from rail transport of materials to or from the warehouse complex would be based on a rate of two trains per day, each with up to 55 cars per train. This was estimated to reduce the number of heavy truck transport trips by up to 330 trucks per day. Alternative 1 emissions, to be consistent with the truck traffic analysis, are from combustion of diesel fuel over the approximate 1.25-mile-long rail line from the main line to the proposed facility and travel back to the main line but without any load. The emissions calculations utilize a national rail average tons-miles/gallon of diesel fuel and a conversion factor from a brake horsepower-hours per gallon of diesel fuel for switching hauling to grams emissions per gallon of diesel fuel. Additionally, emissions from idling of trains are included in Alternative 1 emissions based on the assumption of 30 minutes of idle time per train. The resulting rail alternative operational emissions from operations under Alternative 1, accounting for the addition of trains and the reduction in truck trips, are provided in Table 4-28. As indicated in the table, all pollutants were estimated to be below all significance indicator levels and slightly less than emissions under the proposed Project. Therefore, criteria pollutant and MSAT impacts due to operational emissions from the rail alternative with reduced transport trucks and the same employee commuting would be long-term and adverse but less than significant. Appendix D also provides the rail emissions calculations and reduced truck traffic VMT for the rail alternative. The MOVES emission factors and MOVES output file are the same as for the proposed Project.

The emissions of CO_2-e emissions from future operational mobile sources (i.e., vehicle/truck traffic) were estimated to be 7,758 tons/year and are discussed in more detail below. The total CO_2-e operational emissions are expected to be below the 75,000 tpy PSD BACT threshold. The operational stationary source emissions from an emergency generator and heating of buildings would be the same as under the proposed Project, including for GHG emissions. Therefore, as stated previously, GHG emissions reporting would be required, but GHG emissions from Alternative 1 would be less than significant.

The same BMPs identified under the proposed Project would be implemented during operations to minimize potential for localized air quality impacts.

Table 4-28. Alternative 1 – Operational Rail Alternative with Reduced Heavy-Duty Trucks plus Light-Duty Truck and Passenger Vehicle Annual Emissions

Vehicle Class	VMT	Emissions (tons/year)						
		CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC	MSAT
Passenger Car	6,999,801	13.70	0.42	0.01	0.25	0.04	0.11	0.01
Passenger Truck	6,999,801	15.67	0.85	0.02	0.27	0.05	0.16	0.02
Single Unit Truck	2,103,226	12.33	0.42	0.01	0.17	0.04	0.22	0.02
Combination Truck	230,041	5.29	0.48	0.00	0.06	0.02	0.14	0.01
Idling Truck	100,226	4.47	6.47	0.00	0.06	0.05	0.38	0.05
Rail	5,758 ton-miles/ train round trip	0.50	2.20	0.03	0.05	0.05	0.24	0.00
TOTALS		**51.97**	**10.84**	**0.08**	**0.86**	**0.25**	**1.26**	**0.11**
General Conformity Significance Indicator Levels		NA	100	100	NA	100	100	NA
PSD Major Source Significance Indicator Levels		250	NA	NA	250	NA	NA	NA
MSAT Significance Indicator Levels		NA	NA	NA	NA	NA	NA	25

Notes: NA = Not Applicable

Alternative 2 – Reduced Intensity Alternative

Alternative 2 considers the potential impacts that would result if the mitigation measures that reduce the site footprint of the facility (AES-2, LU-1, REC-1, and SW-4) as outlined in this Draft EIS for the proposed Project) were adopted by the Applicant. As noted below, Alternative 2 would still require BMPs to reduce air quality impacts.

Construction Impacts

Less than Significant. The air quality construction impacts associated with Alternative 2 would be similar to but less than those described for the proposed Project due to the reduced size of building construction. Construction would generate combustion emissions from equipment used for clearing, grading, and other construction activities. In addition, fugitive dust emissions would be generated from the disturbance of soils and movement of vehicles over unpaved areas. Overall, the construction emissions from Alternative 2 are anticipated to be well below the General Conformity thresholds of 100 tpy for each criteria pollutant. Therefore, construction air quality impacts would be less than significant. The same BMPs identified under the proposed Project would be implemented during construction to minimize potential for localized air quality impacts.

Operations Impacts

Less than Significant. The operational air quality impacts associated with Alternative 2 would be similar to but less than those described for the proposed Project because of the smaller operational footprint of the buildings. There would be less vehicle traffic than under the proposed Project at 98 heavy-duty truck trips per day, 890 light duty truck trips per days, and 4,828 passenger car (includes vans/pickups) trips per day. The resulting operational emissions from operations under Alternative 2 are provided in Table

4-29. As indicated in the table, all pollutants were estimated to be below all significance indicator levels. Therefore, criteria pollutant and MSAT impacts due to operational emissions from the proposed Project with reduced building footprint and reduced vehicle traffic would be long-term and adverse but less than significant. Appendix D also provides the emissions calculations for Alternative 2. The MOVES emission factors and MOVES output file are the same as for the proposed Project.

The emissions of CO_2-e emissions from future operational mobile sources (i.e., vehicle/truck traffic) were estimated to be 5,606 tons/year and are discussed in more detail further below. The total CO_2-e operational emissions are expected to be below the 75,000 tpy PSD BACT threshold. The operational stationary source GHG emissions from an emergency generator and heating of buildings would be less than under the proposed Project due to a smaller total building footprint; they are estimated at 10,180 mtpy CO_2-e, which is below the 75,000 tpy (68,039 mtpy) PSD BACT threshold. Therefore, GHG emissions reporting would be required, but GHG emissions from Alternative 2 would be less than significant.

Table 4-29. Alternative 2 - Operational Truck and Passenger Vehicle Annual Emissions

Vehicle Class	VMT	Emissions (tons/year)						
		CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC	MSAT
Passenger Car	4,666,534	9.14	0.28	0.01	0.17	0.03	0.07	0.01
Passenger Truck	4,666,534	10.45	0.57	0.01	0.18	0.03	0.11	0.01
Single Unit Truck	1,720,473	10.08	0.34	0.01	0.14	0.03	0.18	0.02
Combination Truck	189,447	4.36	0.39	0.00	0.05	0.02	0.11	0.01
Idling Truck	82,041	3.66	5.30	0.00	0.05	0.04	0.31	0.04
TOTALS		**37.69**	**6.88**	**0.03**	**0.58**	**0.15**	**0.79**	**0.09**
General Conformity Significance Indicator Levels		NA	100	100	NA	100	100	
PSD Major Source Significance Indicator Levels		250	NA	NA	250	NA	NA	
MSAT Significance Indicator Levels		NA	NA	NA	NA	NA	NA	

Notes: NA = Not Applicable

The same BMPs identified under the proposed Project would be implemented during operations to minimize potential for air quality impacts.