

3.2 AIR QUALITY

This section of the DEIS describes existing air quality conditions on the site and in the site vicinity. Potential impacts associated with the EIS Alternatives are evaluated and mitigation measures are identified. This section is based on the *Air Quality Assessment* (September 2022) prepared by Landau Associates and peer reviewed by EA Engineering (see **Appendix C**).

3.2.1 Affected Environment

Regulatory Context

Air quality is generally assessed in terms of whether concentrations of air pollutants are higher or lower than ambient air quality standards established to protect human health and welfare. Three agencies have jurisdiction over ambient air quality in the project area: the U.S. Environmental Protection Agency (EPA), the Washington Department of Ecology (Ecology), and the Puget Sound Clean Air Agency (PSCAA). These agencies establish regulations that govern both the concentrations of pollutants in the outdoor air and contaminant emissions from air pollution sources. Although their regulations are similar in stringency, each agency has established its own standards. Unless the state or local jurisdiction has adopted more stringent standards, the EPA standards pertain.

To track air quality conditions over time, Ecology and PSCAA maintain a network of monitoring stations throughout the Puget Sound region. These stations are typically located where air quality problems may be expected to occur, and so are usually in or near urban areas or close to specific large air pollution sources. Other stations are used to indicate regional air pollution levels. Based on monitoring information collected over a period of years, the EPA and Ecology designate regions as being "attainment" or "nonattainment" for particular air pollutants. Attainment status is therefore a benchmark of whether air quality in an area complies with the National Ambient Air Quality Standard (NAAQS) for one or more "criteria" air pollutants.¹ Regions once designated nonattainment that have since attained the standard are considered air quality "maintenance" areas through two 10-year cycles of review, after which the area achieves "attainment" if the ambient standards have been maintained.

The site area is considered in attainment for all monitored air pollutants. This suggests that air quality in the site vicinity is generally good. Pertinent air pollutants are discussed in greater detail below.

¹ The criteria air pollutants are particulate matter, CO, SO₂, NO₂, ozone, and lead.

Existing Air Quality

Carbon Monoxide

Carbon monoxide (CO) is a by-product of incomplete combustion. CO is generated by vehicular traffic and other fuel-burning activities, such as residential space heating, especially space heating using solid fuels such as coal or wood. There are two short-term air quality standards for CO: a 1-hour average standard of 35 ppm and an 8-hour average standard of 9 ppm.

The impacts of CO are usually localized near the source(s), with the highest ambient concentrations typically occurring near congested roadways and intersections during periods of cold temperatures (autumn and winter months), light winds, and stable atmospheric conditions. Such weather conditions reduce the atmospheric mechanisms that disperse and dilute pollutants.

The site is located next to a past CO maintenance area where the 20-year maintenance period ended in 2016. Due to violations of the federal 1-hour CO standard, the Puget Sound region was designated as nonattainment for CO. In 1996, EPA determined that the Puget Sound ozone nonattainment area had attained the health-based CO standard in effect at that time. EPA then reclassified the Puget Sound region as attainment for CO and approved the associated air quality maintenance plan. Under present plans and policies, the CO attainment/nonattainment status of the area would have no direct effects on the proposed Pioneer Aggregates South Parcel Project.

Ozone

Ozone is a reactive form of oxygen created by sunlight-activated chemical transformations of nitrogen oxides and volatile organic compounds (hydrocarbons) in the atmosphere. Ozone problems tend to be regional in nature because the atmospheric chemical reactions that produce ozone occur over a period of time, during which ozone precursors can be transported far from their sources. Transportation sources like automobiles and trucks are among the sources that produce ozone precursors.

The site is located next to a past ozone maintenance area within the Puget Sound region where the 20-year maintenance period ended in 2016. In the past, due to violations of the federal 1-hour ozone standard, the Puget Sound region was designated as nonattainment for ozone. In 1997, EPA determined that the Puget Sound ozone nonattainment area had attained the health-based ozone standard in effect at that time. EPA then reclassified the Puget Sound region as attainment for ozone and approved the associated air quality maintenance plan. In 2005, EPA revoked the 1-hour ozone standard in most areas of the US including the Puget Sound region, which ended the ozone maintenance status of this region. In March of 2008, the EPA adopted a new more stringent 8-hour average ozone standard of 75 parts per billion (ppb). The 8-hour standard was later strengthened to 70 ppb for most

areas, effective December 2015.² Under present plans and policies, the ozone attainment/nonattainment status of the area would have no direct effects on the proposed Pioneer Aggregates South Parcel Project.

Particulate Matter (PM₁₀ and PM_{2.5})

Particulate matter air pollution is comprised of particles either emitted directly into the air (e.g., dust) or formed when hot gases cool and condense. Such air pollution is generated primarily by industrial activities and operations involving fuel combustion and material handling, and by other fuel combustion sources like motor vehicle engines, vessel engines, and residential wood burning. Federal, state, and local regulations set limits for particle concentrations in the air (i.e., weight per unit volume) based on the size of the particles and the related potential threat to health. When first regulated, particle pollution limits were based on "total suspended particulate," which included all size fractions. As sampling technology improved and the importance of particle size and chemical composition became more apparent, ambient standards were revised to focus on the size fractions thought to be most dangerous to human health. Based on the most recent studies, EPA has redefined the size fractions and set new, more stringent standards for particulate matter based on fine and coarse inhalable particulate matter to focus control efforts on the smaller size fractions. The previous PM₁₀ maintenance area for health-based ambient air quality standards for PM₁₀, or particles less than or equal to about 10 micrometers (microns) in diameter, was for all of Pierce County. The 20-year maintenance period ended in 2021 and is now classified as an attainment area for PM₁₀. This site is close to a current maintenance area for PM_{2.5}, or particulate matter less than or equal to 2.5 microns in diameter, which was designated in 2015. The latter size fraction and even smaller (ultra-fine) particles are now considered the most dangerous size fractions of airborne particulate matter because such small particles (e.g. a typical human hair is about 100 microns in diameter) can be breathed deeply into lungs. In addition, such particles are often associated with toxic substances that are deleterious in their own right and that adsorb to the particles and be carried into respiratory system.

The nearest PM_{2.5} maintenance area encompasses Tacoma and surrounding lowland areas in Pierce County.³ The site is south of Tacoma in the lowlands of Pierce County and is considered part of this maintenance area.

In gravel excavation and processing operations, particulate matter (dust) is typically the only pollutant emitted in sufficient quantities to be a potential concern. Therefore, particulate emissions, inhalable and fine particulate matter (PM₁₀/PM_{2.5}), are a focus of this discussion.

² 80 Fed. Reg. 65,292 (Oct. 26, 2015).

³ The maintenance area is called the Tacoma – Pierce County area. See information and maps at: <https://ecology.wa.gov/Regulations-Permits/Plans-policies/State-implementation-plans/Maintenance-SIPs>.

PSCAA states that reasonable precautions must be in place to control fugitive dust if visible emissions are present. PSCAA must respond to any emission of fugitive dust that is or can be damaging to human health, plant or animal life, property, or the enjoyment of life. The Agency can respond to complaints and will take enforcement action if necessary.

Greenhouse Gases (GHGs) and Climate Change

The GHGs of primary importance are CO₂, methane, and nitrous oxide. Because CO₂ is the most abundant of these gases, GHGs are usually quantified in terms of CO₂e (carbon dioxide equivalent), based on their relative longevity in the atmosphere and the related "global warming potential" of these constituents. CO₂ is not considered an air "pollutant" that causes direct health-related effects, so it is not subject to ambient air quality standards used to gauge pollutant concentrations in the air.

Fuel combustion used for transportation is a substantial source of GHG emissions, primarily through the burning of gasoline and diesel fuels. National estimates indicate the transportation sector (including on-road, construction, airplanes, and vessels) accounts for about 29% of total domestic CO₂e emissions from fossil fuels in 2017.⁴ In a tabulation of 2017 emissions within Washington, Ecology estimated transportation accounted for about 45% of statewide GHG emissions;⁵ the higher percentage is due to lower GHG emissions from electrical generation because the state relies heavily on hydropower for electricity.

No specific federal, state, or local emission reduction requirements or targets are applicable to the site, and there are no generally accepted emission level thresholds against which to assess potential localized or global consequences of GHG emissions. Therefore, this assessment includes a qualitative consideration of GHG emissions that may be associated with emissions related to operations at the facility.

3.2.2 Impacts of the Alternatives

This section identifies and analyzes impacts to air quality on and in the vicinity of the site under the EIS Alternatives.

ALTERNATIVE 1 – PROPOSED ACTION

Construction Impacts

Construction related to the Proposed Action includes site preparation activities such as logging and clearing, topsoil removal, and construction of perimeter berms using diesel-

⁴ Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2017, February 2020, <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>

⁵ 2017 Greenhouse Gas Data, <https://ecology.wa.gov/Air-Climate/Climate-change/Greenhouse-gases/2017-greenhouse-gas-data>

powered, heavy equipment (e.g., dozers and loaders). During construction, fugitive dust from site preparation may temporarily cause a localized ambient concentration increase of particulate matter (PM₁₀ and PM_{2.5}). In addition, heavy machinery would emit diesel engine exhaust pollutants that could slightly degrade local air quality in the immediate vicinity of the activity. However, these emissions will be temporary and localized and are expected to be minimal in comparison to regional emissions considering the limited amount of this equipment.

In addition to emissions from diesel-powered equipment, logging of the site in preparation of mining may result in GHG emissions due to the removal of the trees. The extent of the GHG emissions would ultimately depend on the final use of the logs. For example, use of the trees to produce wood products used in construction would result in the storage of some of the GHG emissions. Regardless of the ultimate use of the trees, GHG emissions resulting from the logging of the site would be minimal in comparison with other local sources, such as truck and vehicular traffic.

Operational Impacts

Fugitive Dust

Fugitive dust emissions could continue to be emitted in the current and new pit, in the processing areas, and on the transport roads from a number of sources, including wind erosion over exposed surfaces and stockpiles; automobiles and off-site haul trucks; heavy equipment operation; and, on-site haul trucks. Fugitive dust emissions from these sources are likely to be greatest in the dry summer months. It is not likely that gravel extraction would significantly affect particulate matter concentrations during the winter months (when existing concentrations are typically higher due to residential wood burning and other factors) because greater precipitation keeps the material wet.

Due to the nature of the process, excavation associated with the Proposed Action may cause dust deposition in the surrounding area. Although fugitive dust deposition is not a health issue, excess dust deposition is considered a nuisance as it can increase the soiling of surfaces, such as parked cars or the exterior of buildings.

The State of Washington does not have any quantitative standards pertaining to dust deposition. However, Section 9.11 of PSCAA Regulations states that “It shall be unlawful for any person to cause or allow the emission of any air contaminant in sufficient quantities and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonably interferes with enjoyment of life and property.” Members of the public can contact PSCAA if they feel the project is interfering with the use and enjoyment of their property due to a dust deposition issue. The Agency will respond to complaints and potentially issue a Notice of Violation to the facility if the concern is determined to be valid. In that event the facility would likely have to pay a fine and provide assurances to PSCAA that measures to resolve the dust problem have been

implemented and impacts will not continue. In the event of repeated violations, PSCAA may levy an enforcement action against the facility. This scenario could result in a shutdown of the facility, criminal penalties for the operators and firm requirements for changes at the facility.

Greenhouse Gas Emissions

A GHG emission inventory was prepared for the Proposed Action which separates associated GHG emissions into three categories, or scopes. Scope 1 GHG emissions are direct emissions from sources that are owned or controlled by the facility, such as on-site fossil fuel combustion and industrial processes. Scope 2 GHG emissions are indirect emissions from the generation of electricity, heat or steam purchased by the facility from a utility provider. Scope 3 GHG emissions are all indirect emissions linked to facility operations and production that are not included in Scope 2.

GHG emissions emitted by operation of the loaders and dozer are classified as Scope 1 emissions. GHGs emitted by off-site sources that generate electricity used by the conveyor drives and water pumps are Scope 2 emissions. Because the annual production and operating time would not change, Scope 3 emissions are not expected to change as a result of the Proposed Action.

Annual Scope 1 emissions were estimated using CO₂-equivalent (CO₂e) emission factors, expected annual operating hours, and the estimated fuel usage for each piece of equipment. It is anticipated that the Proposed Action would be operated 2,080 hours per year and is expected to be the area of highest production. Total Scope 1 GHG emissions are expected to be 1,497 metric tons per year (mtpy) of CO₂e. It should be noted that the expansion of mining into the Expansion Area portion of the site would not require the addition of new equipment to the site but would instead redirect use of existing equipment into the Expansion Area. In this way, the overall annual hours of operation of the dozer and loaders are not expected to increase over current active mining operations. In this way, the emission calculations can be considered a very conservative estimation of the GHG emissions due to the Proposed Action (see **Appendix C** for details).

Scope 2 emissions were estimated using CO₂e emission factors, expected annual South Parcel operating hours, and the quantity of electricity required to operate the conveyor belt and water pumps. The South Parcel is expected to require approximately 1,200 feet of conveyors when operations begin, and approximately 5,000 feet of conveyors when operations are at their maximum expected extent (i.e., driver motors totaling approximately 1,667 HP). It was assumed that the conveyor belts would be operated the same number of hours per year as the loaders (i.e., 2,080) because they would be operated jointly with the loaders.

There are expected to be a total of approximately 50 water pumps used at the Expansion Area portion of the site to intercept water at the edge of the pit, and each pump would be

driven by a 10 HP electric motor. Total Scope 2 emissions attributable to planned operations associated with the Proposed Action are expected to range from 2,034 to 3,062 mtpy of CO₂e as the extent of the conveyor system increases from an initial 1,200 ft to a maximum of 5,000 ft (see **Appendix C** for details).

Adding the worst-case potential Scope 1 and Scope 2 emissions at the maximum extent of mining results in overall annual GHG emissions of 4,559 mtpy of CO₂e under the Proposed Action. There are no well-established nor well-recognized thresholds for determining whether GHG emission rates from an individual project would be considered significant, although there are reporting thresholds established by the USEPA and by Ecology for stationary sources. Furthermore, GHG emission rates are reported by Ecology for the State of Washington, by USEPA for the United States, and by the World Resources Institute (and others) for the entire globe. The large-scale (United States and global) emission inventories are relevant since the impacts due to GHG emissions are considered to be global in scale. Even these maximum potential worst-case GHG emissions from the proposed sources are less than half of the reporting thresholds identified by Washington State (10,000 mtpy CO₂e) and federal agencies (25,000 mtpy CO₂e). Therefore, the GHG emissions from the Proposed Action would represent a very small percentage of the total state-wide inventory.

CUMULATIVE IMPACTS

The annual amount of mining activity, and associated air quality conditions, with the Proposed Action in combination with mining at the Existing Mine would not exceed current levels, and cumulative mining air quality impacts are not anticipated. In addition, air quality impacts associated with mining would be temporary in nature and would occur some distance from potential future development that could occur in the vicinity, and no significant cumulative air quality impacts are anticipated.

ALTERNATIVE 2 – NO ACTION

There are two No Action Alternatives- Scenario A Continuation of Existing Conditions; and Scenario B Site Development Under Existing Zoning.

Scenario A

In Scenario A, mining activities associated with the Re-Mine Area of the site and the Existing Mine would continue as currently permitted. The mining operation would continue to generate emissions as under the existing conditions. The Existing Mine has an estimated remaining life of 6 to 10 years with mining currently limited to 10 feet above groundwater. The Expansion Area portion of the site is assumed to remain undeveloped and would continue in its vegetated condition.

Scenario B

In Scenario B, the proposal would not occur. The site would be developed for urban uses consistent with the City's Future Land Use Map. The majority of the area affected is currently designated by the City of DuPont Comprehensive Plan as Manufacturing and Research, with a smaller area designated for residential uses. The corner of the property near Center Drive is designated as Residential 12, which would allow higher density residential development where multifamily density averages 12 units per acre. Urban development, as permitted under current planning and zoning designations, is assumed to occur east of the lease line demarcating existing mining operations. The timing and nature of any such development would be driven by market forces.

Development of individual parcels would result in construction-related impacts including fugitive dust emissions, exhaust emissions from equipment and vehicles, and GHG emissions from construction. Operation of development on individual parcels would also generate emissions from operational activities, including GHG emissions associated with potential manufacturing/research uses and residential development.

3.2.3 Mitigation Measures

The following mitigation measures have been included in the Proposed Action to reduce air quality impacts.

Proposed Mitigation Measures

- The use of control equipment, enclosures, and wet (or chemical) suppression techniques, as practical, and curtailment during high winds.
- Surfacing roadways and parking areas with asphalt, concrete, or gravel.
- Treating temporary, low-traffic areas (e.g., construction sites) with water or chemical stabilizers, reducing vehicle speeds, constructing pavement or rip rap exit aprons, and use of the existing wheel wash system or equivalent equipment by vehicles before they exit to prevent the track-out of mud or dirt onto paved public roadways.
- Covering or wetting truck loads or allowing adequate freeboard to prevent the escape of dust-bearing materials.

Other Possible Mitigation Measures

- Converting incandescent lighting systems to LED and implementing motion-activated lighting.

- Regenerating electricity from the conveyor belt leading downhill to the barge load-out facility.
- Participating in PSE's Schedule 258 electricity energy efficiency program.

3.2.4 Significant Unavoidable Adverse Impacts

With the application of some or all the mitigation measures described above and consistent use of best management practices, no significant air quality impacts are expected from the proposed project.