

Appendix E – Air Quality Assessment

MEMORANDUM

Project No: 12209.000.0

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Project: King County's Bow Lake Transfer/Recycling Station Upgrade
Subject: Air Quality Assessment

This memo describes the air quality assessment conducted by Geomatrix Consultants, Inc. (Geomatrix) for the King County Bow Lake Transfer/Recycling Station Upgrade project. This assessment provides a review of potential project-related air quality implications resulting from the proposed facility improvements. The analysis included consideration of existing conditions in the project vicinity and a qualitative review of potential impacts under future facility redevelopment conditions.

1.0 SUMMARY/CONCLUSION

Anticipated emissions from new or expanded sources related to the facility upgrade and expansion are unlikely to impact local or regional air quality. Expected project-related increases in traffic are unlikely to affect the nearest off-site intersections, where expected delays and traffic volumes in 2025 are about the same in the future both with and without facility expansion. Potential emissions from on-site operations are unlikely to impact air quality because the upgraded facility would be designed to minimize dust and odor emissions. For example, the transfer station would be enclosed and incorporate a dust suppression/misting system coupled with a mechanical exhaust ventilation system, and the proposed site design would provide more efficient on-site traffic flows to reduce vehicle queuing. Finally, odor impacts at off-site locations are unlikely because of the distance to nearby residences and because the potential to generate odors would be minimized by removing storage trailers on a daily basis. Therefore, no significant air quality impacts are expected due to the proposed facility expansion and upgrade.

2.0 PROJECT DESCRIPTION

Solid waste planning efforts for King County have recommended rebuilding and upgrading the existing Bow Lake Transfer/Recycling Station to better serve commercial and self-haul

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customers and to prepare for future out-of-county waste export. Improved site access is one of many challenges addressed with the proposed upgrade. For example, without improvements, by 2030 traffic queuing to enter the facility would likely extend into the nearest off-site roadway intersection. Potential means to address this issue include separating commercial haulers from self-haul customers and adding new scales to reduce vehicle queuing. Other proposed facility and operational changes include replacing the existing transfer building with an enclosed transfer building that would incorporate hydraulic compactors and a mechanical exhaust ventilation/misting system for dust collection and odor reduction; expanding fee and free recycling; using a covered yard waste drop-off area; adding a refueling station for facility vehicles; expanding the trailer storage and maneuvering yard; and adding wheel-wash areas for exiting commercial haulers.

3.0 EXISTING CONDITIONS

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 with a margin of safety. 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.

In order to measure existing air quality, Ecology and PSCAA maintain a network of monitoring stations throughout the Puget Sound region. Based on monitoring information collected over a period of years, the state (Ecology) and federal (EPA) agencies designate regions as being either "attainment" or "nonattainment" for particular air pollutants. Attainment status is therefore a measure of whether air quality in an area complies with the National Ambient Air Quality Standard (NAAQS). The project area is considered a maintenance area for carbon monoxide and attainment for all other monitored air pollutants.

There are special requirements in federal and state air quality rules for nonattainment and maintenance areas to ensure that proposed projects that may affect the regional transportation system do not cause or contribute to existing air quality problems. These so called "conformity rules" require analyses to demonstrate compliance with existing air quality control plans and programs. The specific requirements for air quality conformity are discussed later in this memo.

Typical existing sources of air pollution near the facility include automobile and truck traffic traveling on local roads and on I-5, few commercial enterprises, and residential wood-burning devices. Residential wood burning produces a variety of air contaminants, including relatively large quantities of fine particulate matter (PM₁₀ and PM_{2.5}). Pollutant emissions from diesel sources (e.g., most heavy-duty truck engines) include PM_{2.5} and a variety of toxic air pollutants. Non-diesel vehicle emissions are comprised primarily of CO, but also include small amounts of sulfur dioxide (SO₂), toxic air pollutants, and both hydrocarbons and nitrogen oxides, which can transform to become ground-level ozone.

Vehicles emit PM₁₀ and PM_{2.5} directly in their exhaust and indirectly as a function of their tires acting on paved and unpaved surfaces, but the amounts of particulate matter generated by individual vehicles are small compared with other sources (e.g., a wood-burning stove). Because vehicles are a significant pollutant source in the project vicinity, an increase in traffic due to facility growth and redevelopment could be a potential source of air quality impacts.

Solid waster transfer stations also can be sources of odor, depending in great part on the overall cleanliness of the facility and the residence time of stored garbage. During a number of site visits to the study area, Geomatrix observers did not detect any off-site odors related to the existing facility. PSCAA Rule 1, Section 9.11 addresses odor strictly as a nuisance and responds to the issue on a complaint basis.

4.0 IMPACTS

4.1 POTENTIAL AIR QUALITY IMPACTS DURING CONSTRUCTION

Proposed improvements would occur in three phases over several years and not all construction activities would occur simultaneously. This discussion focuses on construction activities that could occur throughout the phased construction process.

Demolition of existing structures could require the removal and disposal of building materials that could contain asbestos. The demolition contractors would be required to comply with U.S. EPA and PSCAA regulations related to the safe removal and disposal of any asbestos-containing materials.

During construction activities such as excavation, grading, sloping, and filling, dust would contribute to localized increases in ambient concentrations of suspended particulate matter. The

construction contractor(s) would be required to comply with the PSCAA Regulation I, Section 9.15, requiring reasonable precautions to avoid dust emissions.

Construction would require the use of heavy trucks and could require smaller equipment such as generators and compressors. These engines could emit air pollutants that would slightly degrade local air quality, but these emissions and the resulting concentrations would be far outweighed by emissions from traffic around the project. Nonetheless, emissions from such sources and especially from diesel-fueled engines are coming under increasing scrutiny because of their suspected risk to human health. So, even though there is little or no danger of such emissions resulting in pollutant concentrations that would exceed an ambient air quality standard, pollution control agencies are now urging that such emissions be minimized to the extent practicable in order to reduce health risks.

Some construction phases would cause odors, particularly during paving operations using tar and asphalt. The construction contractor(s) would be required to comply with the PSCAA regulations requiring the control of odorous emissions so as to prevent undue interference with nearby uses (Regulation I, Section 9.11). Such odors would be short-term and unlikely to affect the nearest residences. In addition, no slash or demolition burning would be permitted in association with this project.

Construction activities would not be expected to significantly affect air quality.

4.2 POTENTIAL AIR QUALITY IMPACTS DURING OPERATION

4.2.1 Off-Site Traffic Impacts

One air pollutant of concern for projects with transportation components is carbon monoxide (CO). Of the various vehicular emissions that are regulated, CO is the pollutant emitted in the largest quantity. Therefore, potential changes in emissions that could affect CO levels are the focus of this part of the review. Because the project area is in a CO maintenance area, any major changes affecting the transportation system would be subject to project-level review under the federal transportation conformity rules. To determine whether conformity review applies to this project, Geomatrix reviewed the traffic analysis report.⁽¹⁾ Specifically, intersection Level of Service (LOS) analysis, traffic delay, and traffic volume were used to compare traffic conditions

⁽¹⁾ Local Street Traffic Impact Evaluation for King County Transfer Stations, HDR Engineering, Inc., 2005

in 2025 with and without the planned improvements. **Table 1** presents the LOS, delay, and volume at the two *signalized* intersections most likely to be affected by the project.⁽²⁾

Table 1. Level of Service and Intersection Delay (seconds) at Project-affected Signalized Intersections

Intersection	2025 Baseline		2025 Facility Expansion	
	LOS/ Delay (sec)	Traffic Volume	LOS/ Delay (sec)	Traffic Volume
S188th St/I-5 NB Ramps	F / 115	6,140	F / 117	6,184
S188th St/ Military Rd	D / 51	4,818	D / 51	4,840

As shown in **Table 1**, the LOS at both signalized intersections remains the same with and without the planned expansion. However, an additional 2-second intersection delay is predicted at the S.188th Street / I-5 northbound ramp intersection. Typically, Geomatrix assumes increases in delay of at least 5 seconds are necessary to trigger a comprehensive review. In addition, the increase in traffic volumes at the most-affected intersection is less than significant: 44 total vehicles or <1% of the total traffic. Because the proposed facility upgrades would result in a minimal increase in delay and a less-than-significant increase in the number of vehicles, the proposed facility expansion is unlikely to affect the operation of the nearest intersections. Consequently, the proposed project is unlikely to significantly impact air quality due to increased vehicular emissions. In addition, because the proposed project would not affect the structure of and/or the traffic on state-controlled or regionally significant facilities, the proposed facility is not subject to a transportation air quality conformity review for CO.

4.2.2 On-site Operational Impacts

Operations at the upgraded Bow Lake Transfer/Recycling Facility have the potential to affect local air quality. Specifically, fugitive dust emissions (in the form of PM10 and PM2.5) could increase due to waste unloading and handling, on-site traffic emissions, and re-entrained dust from vehicular wheels on the facility roadways. Although the proposed project would expand the facility’s capacity, several proposed design features would reduce the potential for increased dust emissions. New design features include the following:

⁽²⁾ Based on EPA guidance, only signalized intersections with LOS D or worse are subject to air quality analyses. In this instance, the unsignalized intersection at the transfer facility driveway is not considered for conformity purposes.

- The transfer station would be fully enclosed except the entry/exit points while the current transfer building is open on all sides.
- The proposed transfer building would incorporate a mechanical exhaust ventilation system for dust and odor control. This system, coupled with a high-pressure, low volume misting system would likely reduce dust emissions due to waste off-loading in the transfer building.
- The proposed hydraulic compactor system with the upgraded facility will eliminate the need to macerate the waste in the receiving pit, thereby reducing dust created during the maceration process.
- The new design will incorporate additional weigh scales and will segregate commercial, business, and self haulers by using designated entrances and lanes. This provides more efficient on-site movement and reduces vehicle queuing, despite the anticipated increase in customers. In addition, commercial haulers will exit the facility after passing through wheel-washers to reduce the potential to carry dust off-site.

Each of these design measures is likely to reduce and control dust and particulate emissions from the transfer facility.

The proposed refueling station would produce volatile emissions from fuel handling during storage tank refueling as well as equipment fueling. Because this station would be utilized solely by on-site facility vehicles, it is unlikely that the volume of fuel used and stored at the facility would be sufficient to trigger an air quality permit (i.e., the fuel tank's storage capacity is <20,000 gallons for gasoline or <40,000 gallons for other organic liquids with vapor pressures of 2.2 to 4.0 psia). If the fueling facility is too small to warrant an air permit, emissions from this source are unlikely to affect air quality.

4.2.3 On-site Odors

Another air quality issue associated with the transfer station is the potential for odors from waste processed on the site. Solid waste is most prone to generate odors after it begins to decompose, which generally does not occur until it has been disposed in a landfill for some time. However, fresh solid waste can also be a source of odor. Odors can occur when the waste is exposed to the atmosphere, or when gases generated by the waste are released to the atmosphere. Some odors

are typically present on the property of most solid waste transfer stations. Impacts to the community only occur when the odors from a facility actually leave the site and are detected in surrounding areas to which the public has access.

The degree of odor production at a transfer station is not related to the waste throughput of the facility. Instead, the potential to emit odors are based on the size of areas of exposed waste, and the length of time waste is stored on site. A primary location of potential odors is the facility tipping area and yard waste drop-off area. On-site storage areas with filled or dirty containers are a second potential source of odor. The longer waste is stored on-site, the greater is the potential for the generation of odors that may then be carried to off-site locations. The strength of odorous gases is diluted by mixing with the surrounding air, so odors typically dissipate with increasing distance from solid waste handling facilities. In many cases, odors may not be observed at distances greater than 50 feet from active sources of odor.

Odors can be minimized by enclosing odorous sources as much as possible, by minimizing the extent and length of on-site storage, and by keeping the facility clean. Because the haul-out of full storage containers will occur on a daily basis, and because the facility would be thoroughly cleaned on a regular basis, the potential for major odor emissions from the proposed facility is small. And given the relatively large distances to off-site receptor locations, odor impacts would be unlikely.

5.0 MITIGATION

5.1 CONSTRUCTION

Possible mitigation measures for reducing the potential for air quality impacts during construction include measures for reducing both exhaust emissions and fugitive dust. The Washington Associated General Contractors brochure *Guide to Handling Fugitive Dust from Construction Projects* and the PSCAA suggest a number of methods for controlling dust and reducing the potential exposure of people to emissions from diesel equipment. A brief list of some of the possible mitigation measures that could be implemented to reduce potential air quality impacts from construction activities follows:

- Use only equipment and trucks that are maintained in optimal operational condition
- Implement restrictions on construction truck idling (e.g., limit idling to a maximum of 5 minutes)

- Spray exposed soil with water or other suppressant to reduce emissions of M10 and deposition of particulate matter
- Pave or use gravel on staging areas and roads that would be exposed for long periods
- Cover all trucks transporting materials, wetting materials in trucks, or providing adequate freeboard (space from the top of the material to the top of the truck bed), to reduce PM10 emissions and deposition during transport
- Provide wheel washers to remove particulate matter that would otherwise be carried off site by vehicles to decrease deposition of particulate matter on area roadways
- Cover dirt, gravel, and debris piles as needed to reduce dust and wind blown debris
- Route and schedule construction trucks to reduce delays to traffic during peak travel times to reduce air quality impacts caused by a reduction in traffic speeds

5.2 OPERATION

The following proposed design and operational features would mitigate air quality and odor impacts during operation of the facility:

- The transfer building will be fully enclosed except the entry/exit points, reducing off-site dust and odor impacts
- The transfer building will incorporate a mechanical exhaust ventilation system for dust and odor control
- The hydraulic compactor system with the upgraded facility will eliminate the need to macerate the waste in the receiving pit, thereby reducing dust produced by the maceration process
- The new design will incorporate additional weigh scales and will segregate commercial, business, and self haulers, thereby reducing vehicle queuing into the facility and reducing vehicular emissions resulting from idling vehicles
- Wheel-washers will be provided for commercial haulers exiting the facility to reduce the potential to carry dust off-site
- The haul-out of full storage containers will occur daily, minimizing the extent and length of on-site storage and potential odor impacts related to long-term storage of waste
- The facility will be thoroughly cleaned on a regular basis, reducing the potential for odor emissions

With the design features proposed, no operational air quality impacts were identified. Therefore, no additional mitigation is proposed.