

Memorandum

To	Peterson Z. Vollmann, Planner III	Page	1
Subject	Air Quality Health Risk Assessment Screening Memorandum – Broadstone on Broadway Project		
From	Michael Kay, Project Manager		
Date	July 18, 2016		

This memorandum contains the air quality assessment of the Broadstone on Broadway Project (Project) based on the requirements of the Broadway Valdez District Specific Plan (BVDSP) Area Environmental Impact Report (EIR). AECOM assessed the project in accordance with the requirements of the mitigation measures and Standard Conditions of Approval (SCAs) identified for air quality impacts in the BVDSP EIR. These measures are described below.

Health Risk Assessment of Project Impacts on Sensitive Receptors and Risk Reduction Plan (SCA 21 Stationary Sources of Air Pollution [Toxic Air Contaminants] and BVDSP EIR Mitigation Measure AIR-4)

BVDSP EIR Mitigation Measure AIR-4 (SCA 21) states that applicants for projects that would include a backup generator shall prepare and submit to the City a Risk Reduction Plan for City review and approval. The applicant shall implement the approved plan. This Plan shall reduce cumulative localized cancer risks to the maximum feasible extent. The Risk Reduction Plan may contain, but is not limited to the following strategies:

- Demonstration using screening analysis or a health risk assessment that project sources, when combined with local cancer risks from cumulative sources with 1,000 feet would be less than 100 in one million.
- Installation of non-diesel fueled generators.
- Installation of diesel generators with an EPA-certified Tier 4 engine or Engines that are retrofitted with an ARB Level 3 Verified Diesel Emissions Control Strategy.

Rather than a backup generator, the Project would use inverters for emergency power supplies. The inverters would not be a source of localized toxic air contaminant emissions. Therefore, BVDSP EIR Mitigation Measure AIR-4 is not applicable to the Project, and a Risk Reduction Plan is not required.

**Health Risk Assessment of Offsite Sources on Project-Sensitive Receptors
(SCA 20: Exposure to Air Pollution [Toxic Air Contaminants])¹**

Standard Condition of Approval 20 applies to projects that meet all of the following criteria:

- a. The project involves either of the following sensitive land uses:
 - i. New residential facilities or new dwelling units; or
 - ii. New or expanded schools, daycare centers, parks, nursing homes, or medical facilities; and

- b. The project is located within 1,000 feet of one or more of the following sources of air pollution:
 - i. Freeway
 - ii. Roadway with significant traffic (at least 10,000 vehicles per day);
 - iii. Rail line (except BART) with over 30 trains per day;
 - iv. Distribution center that accommodated more than 100 trucks per day, more than 40 trucks with operating Transportation Refrigeration Units (TRU) per day, or where the TRU unit operations exceed 300 hours per week;
 - v. Major rail or truck yard (such as the Union Pacific rail yard adjacent to the Port of Oakland);
 - vi. Ferry terminal;
 - vii. Stationary pollutant source requiring a permit from BAAQMD (such as a diesel generator);
 - viii. Within 0.5 miles of the Port of Oakland or Oakland Airport;
 - ix. Within 300 feet of a gas station; or
 - x. Within 300 feet of a dry cleaner with a machine using PERC (or within 500 feet of a dry cleaner with two or more machines using PERC); and

- c. The project exceeds the health risk screening criteria after a screening analysis is conducted in accordance with the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines.

If the Project meets these criteria, the Health Risk Reduction Measures listed in the BVDSP EIR would be required.

AECOM compared the Project to the SCA 20 criteria to assess the applicability of the condition. The Project would involve the construction of new residential dwelling units (SCA 20 Criteria a-i), and would be located within 1,000 feet of stationary sources and roadways with at least 10,000 vehicles per day (including Broadway, 27th Street, and Harrison Street) (SCA 20 Criteria b-vii and Criteria b-ii). Therefore, a screening analysis in accordance with BAAQMD CEQA Guidelines was conducted to determine if the project exceeds the health risk screening criteria (SCA 20 Criteria c). The results of the health risk screening analysis are discussed below.

¹ SCA 20 is equivalent to SCA B referenced in the BVDSP EIR.

Health Risk Screening

A screening analysis was conducted in accordance with BAAQMD guidelines to evaluate the potential for siting new sensitive receptors that would result in exposures to (a) a cumulative cancer risk level greater than 100 in a million, (b) a cumulative non-cancer risk hazard index greater than 10.0, or (c) an increase of annual average PM_{2.5} concentrations greater than 0.8 micrograms per cubic meter (µg/m³). The health risk screening was conducted to review risks from nearby stationary sources, roadways, and freeways, as described below.

Stationary Sources

The Project would be located in the BVDSP North End subarea. The BVDSP EIR identified two stationary sources within this subarea (Plant 7780 and Plant 7781), and included a refined modeling analysis to characterize the cancer risk within the North End subarea from these two sources. The modeled health risks from these sources are listed in Table 1.

The BVDSP EIR also identified three future or foreseeable projects within 1,000 feet of the BVDSP area that could contribute to potential health risks: Alta Bates Medical Center, Kaiser Permanente Hospital at Broadway and MacArthur Boulevard, and Kaiser Center at 300 Lakeside Drive. Of these three sources, only the project at the Alta Bates Medical Center is located within 1,000 feet of the Project. The health risk from this source is also listed in Table 1.

Additional projects that are planned or under construction in the vicinity of the Project site were identified using the City of Oakland's list and map of major development projects (City of Oakland 2016). These projects include Broadway & 27th, 3000 Broadway, Shops at Broadway, 2425 Valdez Street, 2400 Valdez Street, and 265 27th Street. For the purposes of this analysis, each of these projects is conservatively assumed to include a backup diesel generator, except for the Shops at Broadway, which would not include a backup generator or other toxic air contaminant source (ESA 2013b). Because the BAAQMD does not issue stationary source permits for equipment that contributes a cancer risk greater than 10 in a million, this screening analysis conservatively assumes that each source would contribute a maximum cancer risk of 10 in a million to the Project receptors. These conservatively assumed health risks are listed in Table 1. In addition to these sources, the most recent version of the BAAQMD Stationary Source Screening Tool (May 2012) was used to identify other stationary sources within 1,000 feet of the Project site. Plant 19269 was found to be located within 1,000 feet of the Project site, and health risks from this source are listed in Table 1. Note that Plants 15483, 15919, 3676, G9464, and 12498 were also found to be located within 1,000 feet of the Project; however, the health risks for these sources were listed as "0" or "na" in the BAAQMD Stationary Source Screening Tool, and were therefore not included in Table 1.

Roadways and Freeways

The Project site is not located within 1,000 feet of any freeways, but is located within 1,000 feet of high volume roadways, including Broadway, 27th Street, and Harrison Street. The BAAQMD Roadway Screening Analysis Calculator was used to calculate health risks from traffic sources on these roadways based on average daily traffic volumes. The BAAQMD recommended tool for obtaining traffic volumes (California Environmental Health Tracking Program [CEHTP] traffic volume linkage tool) has been retired as of the date of this analysis, and a new tool is planned to be launched in late 2016 (CEHTP 2016). Average daily traffic volumes on the roadways were therefore estimated

from peak hour traffic counts collected in February 2016 by Fehr & Peers (email communication, April 21, 2016). Potential health risks from these roadway sources are listed in Table 1.

Table 1: Health Risks from Sources in the Project Vicinity

Source	Cancer Risk (in a million)	Hazard Index	Annual PM _{2.5} (µg/m ³)
Stationary Sources^(a)			
Plants 7780 and 7781 ⁽¹⁾⁽²⁾	12.1 ^(b)	0.16 ^(c)	0.0025 ^(d)
Plant 19269 ⁽²⁾	12.92	0.005	0.0134
Planned Source at Alta Bates Medical Center ⁽¹⁾⁽³⁾	4.0	0.0156 ^(e)	0.078 ^(e)
Planned Project: Broadway & 27 th (g)	10	0.004	0.02
Planned Project: 3000 Broadway ^(g)	10	0.004	0.02
Planned Project: 2425 Valdez Street ^(g)	10	0.004	0.02
Planned Project: 2400 Valdez Street ^(g)	10	0.004	0.02
Planned Project: 265 27th Street ^(g)	10	0.004	0.02
Roadways^(f)			
Broadway ⁽⁴⁾	15.04	0.059	0.295
Harrison Street ⁽⁴⁾	0.75	0.0026	0.013
27th Street ⁽⁴⁾	2.75	0.0102	0.051
Total	97.56	0.272	0.553
Cumulative Threshold	100	10.0	0.8
<p>Notes:</p> <p>a. Plants 15483, 15919, 3676, G9464, and 12498 were also found to be located within 1,000 feet of the Project; however, the health risks for these sources were listed as "0" or "na" in the BAAQMD Stationary Source Screening Tool, and were therefore not included here.</p> <p>b. The cancer risk from Plants 7780 and 7781 is the total estimated risk for these sources as presented in the BVDSP EIR and includes both DPM (diesel particulate matter) and non-DPM cancer risk.</p> <p>c. The hazard index from Plants 7780 and 7781 is conservatively assumed to be equal to the total Hazard Index from all pollutants as listed in the BAAQMD Screening Tool for these sources.</p> <p>d. The annual PM_{2.5} concentration from Plants 7780 and 7781 is assumed to be the total DPM concentration estimated from refined modeling analysis of these sources as presented in the BVDSP EIR.</p> <p>e. The annual PM_{2.5} concentration from the Planned Alta Bates Medical Center project includes PM_{2.5} from modeled diesel generators and vehicle traffic including diesel trucks. The hazard index from these sources was calculated from the modeled annual PM_{2.5} concentration using the DPM Chronic Reference Exposure Level (REL) of 5 µg/m³ and assuming that all PM_{2.5} is DPM.</p> <p>f. The hazard index for roadway sources was calculated from the BAAQMD Roadway Screening Analysis Calculator annual PM_{2.5} concentration using the DPM Chronic REL of 5 µg/m³.</p> <p>g. These planned projects were conservatively assumed to each contribute the BAAQMD stationary source permit limit cancer risk of 10 in a million to the Project receptors. Annual PM_{2.5} concentrations were estimated based on the 10 in a million cancer risk level and BAAQMD Health Risk Screening Analysis Guidelines (BAAQMD 2010). The hazard index from these sources was calculated from the modeled annual PM_{2.5} concentration using the DPM Chronic REL of 5 µg/m³ and assuming that all PM_{2.5} is DPM.</p> <p>Sources:</p> <p>¹ BVDSP EIR (ESA 2013a) ² BAAQMD Stationary Source Screening Tool (BAAQMD 2012) ³ ABSMC Summit Campus Seismic Upgrade and Master Plan Project EIR (ESA 2009) ⁴ BAAQMD Roadway Screening Analysis Calculator (BAAQMD 2015)</p>			

As shown in Table 1, the cumulative thresholds for cancer risk, Hazard Index, and annual $PM_{2.5}$ concentration would not be exceeded.

Because the screening analysis shows that the Project would not exceed the health risk screening criteria, SCA 20 does not apply to the Project and the additional Health Risk Reduction Measures listed in SCA 20 would not be required.

Attachment

Roadway Screening Analysis

References

- Bay Area Air Quality Management District (BAAQMD). 2015. Roadway Screening Analysis Calculator. April. Located at: <http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools>. Accessed April 2016.
- BAAQMD. 2012. Stationary Source Screening Tool. May. Located at: <http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools>. Accessed April 2016.
- BAAQMD. 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.
- California Environmental Health Tracking Program (CEHTP). 2016. Traffic volume linkage tool. Located at: http://cehtp.org/faq/tools/tools_and_services_traffic_volume_linkage_tool. Accessed May 2016.
- City of Oakland. 2016. Major Projects April 2016. Located at: <http://www.arcgis.com/home/webmap/viewer.html?webmap=19084f90a4cd4fc5a71b9bad0f694c2a&extent=-122.3732,37.7371,-122.0865,37.8616>. Accessed July 2016.
- Environmental Science Associates (ESA). 2013a. Broadway Valdez District Specific Plan (BVDSP) Environmental Impact Report (EIR). September.
- ESA. 2013b. The Shops at Broadway Retail Project EIR. August.
- ESA. 2009. Alta Bates Summit Medical Center (ABSMC) Summit Campus Seismic Upgrade and Master Plan Project EIR. December.
- Tabibnia, Sam. 2016. Fehr & Peers. Email correspondence with Michael Kay, Project Manager, AECOM, regarding existing traffic volumes. April 21, 2016.

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 AADT and above.

- **County:** Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.
- **Roadway Direction:** Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.
- **Side of the Roadway:** Identify on which side of the roadway the project is located.
- **Distance from Roadway:** Enter the distance in feet from the nearest edge of the roadway to the project site. The calculator estimates values for distances greater than 10 feet and less than 1000 feet. For distances greater than 1000 feet, the user can choose to extrapolate values using a distribution curve or apply 1000 feet values for greater distances.
- **Annual Average Daily Traffic (ADT):** Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>.

Notes and References listed below the Search Boxes

Search Parameters	Results
County: <input type="text" value="Alameda"/>	Alameda County EAST-WEST DIRECTIONAL ROADWAY PM2.5 annual average <div style="border: 1px solid black; background-color: yellow; padding: 5px; display: inline-block;">0.051</div> ($\mu\text{g}/\text{m}^3$) Cancer Risk <div style="border: 1px solid black; background-color: yellow; padding: 5px; display: inline-block;">2.75</div> (per million)
Roadway Direction: <input type="text" value="East-West"/>	
Side of the Roadway: <input type="text" value="North"/>	
Distance from Roadway: <input type="text" value="285"/> feet	
Annual Average Daily Traffic (ADT): <input type="text" value="12,000"/>	
Data for Alameda County based on meteorological data collected from Pleasanton in 2005	

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using CALINE4 air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.

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- **Roadway Direction:** Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.
- **Side of the Roadway:** Identify on which side of the roadway the project is located.
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Search Parameters	Results
County: <input type="text" value="Alameda"/>	Alameda County NORTH-SOUTH DIRECTIONAL ROADWAY PM2.5 annual average <div style="border: 1px solid black; background-color: yellow; padding: 5px; display: inline-block;">0.295</div> ($\mu\text{g}/\text{m}^3$) Cancer Risk <div style="border: 1px solid black; background-color: yellow; padding: 5px; display: inline-block;">15.04</div> (per million)
Roadway Direction: <input type="text" value="North-South"/>	
Side of the Roadway: <input type="text" value="East"/>	
Distance from Roadway: <input type="text" value="10"/> feet	
Annual Average Daily Traffic (ADT): <input type="text" value="14,000"/>	
Data for Alameda County based on meteorological data collected from Pleasanton in 2005	

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using CALINE4 air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.

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Roadway Screening Analysis Calculator

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- **County:** Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.
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- **Annual Average Daily Traffic (ADT):** Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>.

Notes and References listed below the Search Boxes

Search Parameters	Results
County: <input type="text" value="Alameda"/>	<h2>Alameda County</h2> <p>NORTH-SOUTH DIRECTIONAL ROADWAY</p> <p>PM2.5 annual average</p> <p>0.013 ($\mu\text{g}/\text{m}^3$)</p> <p>Cancer Risk</p> <p>0.75 (per million)</p> <p>Data for Alameda County based on meteorological data collected from Pleasanton in 2005</p>
Roadway Direction: <input type="text" value="North-South"/>	
Side of the Roadway: <input type="text" value="West"/>	
Distance from Roadway: <input type="text" value="900"/> feet	
Annual Average Daily Traffic (ADT): <input type="text" value="18,000"/>	

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using CALINE4 air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.