APPENDIX A

AIR QUALITY ASSESSMENT

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August 6, 2012

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VIA email:lhumble@ddaplanning.com

SUBJECT: Harker School Project in San Jose, CA – Air Quality and GHG Emissions Analyses

Dear Leianne:

The purpose of this letter is to address air quality impacts associated with the proposed Harker School project in San Jose, California. We understand that the project proposes a new school at the current location of the Santa Clara County Children's Center at 4525 Union Ave. The school will have a maximum enrollment of 600 students in grades K (kindergarten) through 5 and 100 faculty and staff. The proposed site design will retain 9 of the existing buildings, convert 5 of the buildings into classrooms and demolish two of the buildings. A new multi-purpose building would be constructed.

Air quality impacts would occur due to temporary construction emissions and as a result of direct and indirect emissions from users of the new school. In addition, there are sources of toxic air contaminant (TAC) emissions in the area that would affect the sensitive receptors using the site. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD)[1]. Our report is as follows:

Setting

The project is located in the northern portion of the Santa Clara County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$).

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NOx). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate

[1] BAAQMD 2011. BAAQMD CEQA Air Quality Guidelines. May.

respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and Federal level.

Diesel exhaust, characterized as diesel particulate matter (DPM), is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the state's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles[2]. The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

Sensitive receptors are people who are particularly susceptible to the adverse effects of air pollution. CARB has identified the following people who are most likely to be affected by air pollution: children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases. Residential areas are also considered sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, day care facilities, hospitals, and schools. There are residences adjacent to the project site on the west side along Esther Drive and north side along Barrett Ave. In addition, there are residences across Union Ave.

The Bay Area Air Quality Management District (BAAQMD) is the regional agency tasked with managing air quality in the region. At the State level, the California Air Resources Board (a part of the California Environmental Protection Agency) oversees regional air district activities and regulates air quality at the

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[2] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: July 11, 2012.

State level. The BAAQMD has recently published CEQA Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects[3].

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These Thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the Air District's updated CEQA Guidelines (updated May 2011). The significance thresholds identified by BAAQMD and used in this analysis are summarized in Table 1.

Table 1 Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
Project Screening Size (in dwelling units):	*240*	*451*	*451*
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82	82	15
$PM_{2.5}$	54	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards for New Sources			
Excess Cancer Risk	10 per one million	10 per one million	
Chronic or Acute Hazard Index	1.0	1.0	
Incremental annual average $PM_{2.5}$	0.3 $\mu g/m^3$	0.3 $\mu g/m^3$	
Health Risks and Hazards for Sensitive Receptors (Cumulative from all sources within 1,000 foot zone of influence) and Cumulative Thresholds for New Sources			
Excess Cancer Risk	100 per one million		
Chronic Hazard Index	10.0		
Annual Average $PM_{2.5}$	0.8 $\mu g/m^3$		
Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, and $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less.			

[3] Bay Area Air Quality Management District. 2011. BAAQMD CEQA Air Quality Guidelines. May.

BAAQMD's adoption of the thresholds was called into question by an order issued March 5, 2012, in California Building Industry Association v. BAAQMD (Alameda Superior Court Case No. RGI0548693). The order requires BAAQMD to set aside its approval of the thresholds until it has conducted environmental review under CEQA. The claims made in the case concerned the environmental impacts of adopting the thresholds, that is, how the thresholds would indirectly affect land use development patterns. Those issues are not relevant to the scientific basis of BAAQMD's analysis of what levels of pollutants should be deemed significant. This analysis considers the science informing the thresholds as being supported by substantial evidence. Scientific information supporting the thresholds was documented in BAAQMD's proposed thresholds of significance analysis[4]. Moreover, the thresholds will not cause any indirect impact in terms of land use development patterns insofar as this project is concerned, because the proposal to construct the project is not influenced by the BAAQMD guidelines. Accordingly, the analysis herein uses the thresholds and methodologies from BAAQMD's May 2011 CEQA Air Quality Guidelines to determine the potential impacts of the project on the existing environment.

Impacts and Mitigation Measures

> **Impact 1:** Conflict with or obstruct implementation of the applicable air quality plan? ***No Impact***

The most recent clean air plan is the *Bay Area 2010 Clean Air Plan* that was adopted by BAAQMD in September 2010. The proposed project would not conflict with the latest Clean Air planning efforts since (1) the project would have emissions well below the BAAQMD thresholds (see Impact 2), (2) development of the project site would be considered urban "infill", (3) the project is a school which would serve the needs of the existing population and not affect population or vehicle travel growth. The project is too small to exceed any of the significance thresholds and thus it is not required to incorporate project-specific transportation control measures listed in the latest Clean Air Plan

> **Impact 2:** Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? ***Less than significant***

The Bay Area is considered a non-attainment area for ground-level ozone and fine particulate matter ($PM_{2.5}$) under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for respirable particulates or particulate matter with a diameter of less than 10 micrometers (PM_{10}) under the California Clean Air Act, but not the Federal act. The area has attained both State and Federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NOx), PM_{10} and $PM_{2.5}$ and apply to both construction period and operational period impacts.

Due to the project size, construction period emissions would be less than significant. In their 2011 update to the *CEQA Air Quality Guidelines*, BAAQMD identified the size of land use projects that could result in significant air pollutant emissions. That is, air pollutant emissions during construction or operation that

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[4] BAAQMD. 2009. California Environmental Quality Act Guidelines Update Proposed Thresholds of Significance. December.

would exceed 54 pounds per day of ROG, NOx or $PM_{2.5}$ exhaust and 82 pounds of PM_{10} exhaust. For construction impacts, the elementary school project size was identified in the Guidelines at 3,904 students or 277,000 square feet in size. For operational impacts, the project size was identified in the Guidelines at 2,747 students or 271,000 square feet. Since the project proposes to renovate the site and accommodate 600 students, it is concluded that emissions would be below the BAAQMD 2011 significance thresholds for both construction exhaust and operational emissions. In addition, the project would replace an existing use that produced operational emissions. Thus, the project would not result in project-specific impacts for any criteria pollutant and would not have a considerable contribution to cumulative criteria pollutant impacts.

Impact 3: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? ***Less than significant***

As discussed under Impact 2, the project would have emissions less than the significance thresholds adopted by BAAQMD for evaluating impacts related to ozone and particulate matter. Therefore, the project would not contribute substantially to existing or projected violations of those standards. Carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. There is an ambient air quality monitoring station in San Jose that measures carbon monoxide concentrations. The highest measured level over any 8-hour averaging period during the last 3 years is less than 2 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. The project would generate a small amount of traffic (less than 30 trips during the busiest hour) and intersections affected by the projects have traffic volumes less than the BAAQMD screening criteria of 44,000 vehicles per hour and thus would not cause a violation of an ambient air quality standard or have a considerable contribution to cumulative violations of these standards[5].

Impact 4: Expose sensitive receptors to substantial pollutant concentrations? ***Less than significant with construction period mitigation measures***

Operation of the project is not expected to cause any localized emissions that could expose sensitive receptors to unhealthy air pollutant levels. Construction activity would generate dust and equipment exhausts on a temporary basis. Nearby sources of air pollutant emissions are not anticipated to adversely affect new residents, which are considered sensitive receptors.

<u>Project Construction Activity</u>

Construction activity is anticipated to involve only partial construction of the site. Most buildings at the site would be utilized by the project. There would be demolition and renovation of some existing buildings and construction of a multi-purpose building. As discussed under Impact 2, the project size is well below the screening criteria developed by BAAQMD to identify the potential for significant construction emissions. Those thresholds primarily address the potential for emission to adversely affect regional air quality. However, localized emissions of dust or equipment exhaust could affect nearby

[5] For a land-use project type, the BAAQMD CEQA Air Quality Guidelines state that a proposed project would result in a less than significant impact to localized carbon monoxide concentrations if the project would not increase traffic at affected intersections to more than 44,000 vehicles per hour.

sensitive land uses. Because the site is currently developed, major grading activity that requires extensive use of heavy equipment is not anticipated. During demolition and construction activities, some dust would be generated. Most of the dust would result during demolition activities. The amount of dust generated would be highly variable and is dependent on the size of the area disturbed at any given time, amount of activity, soil conditions and meteorological conditions. Typical winds during late spring through summer are from the north. Nearby land uses could be adversely affected by dust generated during construction activities. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are employed to reduce these emissions.

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known Toxic Air Contaminant (TAC) due mostly to DPM emissions. As indicated under Impacts 2 and 3, these emissions would not be considered to contribute substantially to existing or projected air quality violations. The BAAQMD has not developed any procedures or guidelines for identifying these impacts from temporary construction activities where DPM emissions are transient. They are typically evaluated for stationary sources (e.g., large compression ignition engines such as generators) in health risk assessments over the course of lifetime exposures (i.e., 24 hours per day over 70 years). Diesel exhaust poses both a health and nuisance impact to nearby receptors.

Since construction activities are not expected to involve use of heavy, diesel-powered and construction equipment that would operate for extended periods, the potential for significant health risks impacts is very low. For TAC impacts due to construction, BAAQMD recommends that these impacts be considered on a case-by-case basis that takes into consideration of the amount of activity that could emit DPM and the proximity of sensitive receptors. Although sensitive receptors are located in close proximity, the amount of construction activity involving emissions of DPM would not be substantial or last for an extended period of time. As a result, health risk impacts due to construction are considered less than significant if appropriate measures are taken to reduce impacts (see Mitigation Measure AQ-1).

Although demolition and construction activities would be temporary, they would have the potential to cause both nuisance and health air quality impacts. PM_{10} is the pollutant of greatest concern associated with dust. If uncontrolled, PM_{10} levels downwind of actively disturbed areas could possibly exceed State ambient air quality standards. In addition, dust fall on adjacent properties could be a nuisance. If uncontrolled, dust generated ground clearing, grading and construction activities represents a potentially significant impact.

Mitigation Measure AQ-1: Include measures to control dust and exhaust emissions.

Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with demolition, renovation and new construction to a less than significant. The contractor shall implement the following Best Management Practices that are required of all projects:

1. Any exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Project Operation

Operation of the project is not considered a source of TAC or $PM_{2.5}$ emissions. As a result, the project operation would not cause emissions that expose sensitive receptors to unhealthy air pollutant levels. Because the project would not be a source of TACs, it would not contribute cumulatively to unhealthy exposure to TACs.

The project would include new sensitive receptors. Substantial sources of air pollution can adversely affect sensitive receptors proposed as part of new projects. A review of the area indicates that Highway 85 (i.e., the South Valley Freeway) is located about 900 feet south of the site. There are also stationary sources of air pollution located near the site. There are thresholds that address both the impact of single and cumulative TAC sources upon projects that include new sensitive receptors. Diesel particulate matter (DPM) is the primary source of TACs and $PM_{2.5}$ emitted from these sources.

Single Source Impacts. For sources of TAC emissions, the BAAQMD has identified significance thresholds as part of their new CEQA Air Quality Guidelines. If emissions of TACs or $PM_{2.5}$ exceed any of the Thresholds of Significance listed below, the proposed project would result in a significant impact.

- An excess cancer risk level of more than 10 in one million, or a non-cancer (i.e., chronic or acute) hazard index greater than 1.0 would be a cumulatively considerable contribution;
- An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) annual average $PM_{2.5}$ would be a cumulatively considerable contribution.

Cumulative Source Impacts. According to BAAQMD, a project would have a cumulatively considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000 foot radius from the fence line of a source, or from the location of a receptor, plus the contribution from the project, exceeds the following:

- An excess cancer risk levels of more than 100 in one million or a chronic non-cancer hazard index (from all local sources) greater than 10.0; or
- 0.8 $\mu g/m^3$ annual average $PM_{2.5}$.

Table 2 shows the screening level health risks, including annual $PM_{2.5}$ concentrations, for TAC sources within 1,000 feet of the project site. For highways, BAAQMD developed an on-line highway screening

analysis tool with modeled cancer risk and $PM_{2.5}$ annual concentrations for each highway link[6]. This tool was used to predict impacts from Highway 85, which is 900 feet or further from the site. This tool provides predictions for 750 feet or 1,000 feet. Health risks at 750 feet are reported, and provide a conservative estimate of health risks from this source.

Union Avenue is a local roadway with over 10,000 average daily traffic trips (ADT). For major local roadways that are not designated State Highways, BAAQMD has developed county-specific screening tables that provide estimates of cancer risk and annual $PM_{2.5}$ concentrations. Health risks for a north-south roadway with 30,000 ADT or less at 50 feet in Santa Clara County were used to describe the impacts from Union Avenue traffic.

Table 2 Screening Level Health Risks and $PM_{2.5}$ Concentrations from Nearby TAC Sources

Source	Lifetime Cancer Risk[a]	Chronic Hazard	Acute Hazard	$PM_{2.5}$ Concentration ($\mu g/m^3$)
Highway 85 (at distance of 750 feet)	7.1[b]	--[c]	--[c]	0. 08[b]
Union Ave (at 50 feet with 30,000 ADT)	6.1[b]	--[c]	--[c]	<0.24[b]
XILINX, Inc. (Plant 19571) 2101 Logic Drive 450 feet	3.2[f]	<0.1[f]	<0.1[f]	<0.1[f]
County of Santa Clara (Plant 14435) 4525 Union Avenue On-Site (assumed 50 feet)	0.0[g]	0.0[g]	0.0[g]	0.0[g]
Maximum Single Source	8.9	<0.1	<0.1	<0.2
BAAQMD Single-Source Threshold	*10.0*	*1.0*	*1.0*	*0.3*
Cumulative Sources	16.4	<0.1	<0.1	<0.4
BAAQMD Cumulative-Source Threshold	*100.0*	*10.0*	*10.0*	*0.8*

[a] Cancer risk reported in excess cases per million based on lifetime risk for residential exposures. School children lifetime risk would be less due to less exposure.
[b] Data obtained from BAAQMD Highway Screening Tool or Roadway Analysis Tables
[c] Acute Hazard Indexes for each stationary source within 1,000 feet of the Project were determined to be less than significant by BAAQMD and therefore not provided
[f] Modeled using emissions reported by BAAQMD (2009 Toxic Inventory)
[g] CARB Regulations prohibit operation of standby diesel generators during school hours if located within 500 feet of the school grounds

Permitted stationary sources of air pollution near the project site are also identified in Table 2 using BAAQMD's *Stationary Source Risk & Hazard Analysis Tool*. This mapping tool uses Google Earth to identify the location of stationary sources and their estimated risk and hazard impacts. Two stationary sources were identified near the project. BAAQMD's 2009 Toxic Inventory provides annual emissions

[6] *http:\\www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx*

for each of these sources so that emissions could be modeled and potential health risk impacts could be quantified[7].

Source 11403 is a standby diesel generator currently operated by the County of Santa Clara at 4525 Union Avenue (at the project site). It is not clear if this generator would be removed with the project site as part of the project. If the generator remains, it would be prohibited to operate during school hours or during school sponsored events under CARB regulations[8]. Therefore, there would not be an impact from this source upon the school. Emissions reported by BAAQMD from this source are 1.00 pounds of diesel particulate matter per year.

Source 11403 represents two standby diesel-powered generators operated by XILINX, Inc. at 2101 Logic Drive. These generators are estimated to be located at least 450 feet from the nearest portion of the project site. Screening modeling of these generators was performed to quantify impacts.

Emissions data obtained from the BAAQMD's 2009 Toxic Air Contaminant Inventory indicate annual emissions of 2.89 pounds of diesel particulate matter (DPM) per year. Note that operation of these generators are subject to BAAQMD rules and regulations that limit the operation of the generators to no more than 50 hours annual operation for maintenance purposes and use during emergencies.

The U.S. EPA SCREEN3 model was used with screening meteorological assumptions to model a worst-hour DPM concentration. The worst-hour DPM concentration is converted to an annual concentration using a persistence factor of 0.08. Based on this exposure, the potential cancer risk associated with these exposures was computed. This assessment conservatively assumed long-term residential exposures to this source. School children risk would be less due to the shorter exposure time. Using the modeled annual DPM concentrations, the individual cancer risks were computed using the most recent methods recommended by BAAQMD[9] and the California Office of Environmental Health Hazard Assessment (OEHHA).[10] This assessment assumed the nearly continuous exposures of 70 years for residences described by OEHHA and used by BAAQMD. It should be noted that the cancer risk calculations for 70-year residential exposures reflect use of BAAQMD's most recent cancer risk calculation method, adopted in January 2010. Modeling of these two generators confirmed that the cancer risk associated with their emissions would be less than the 10 in one million cancer risk threshold (see Table 2).

Health risks from both single and cumulative sources are shown in Table 2. There would be no single source of TAC emissions that would result in cancer risks of 10.0 or greater or an annual $PM_{2.5}$ concentration above 0.3 $\mu g/m^3$. Cumulative health risks were computed by summoning the impacts of the sources in Table 2. The cumulative health risks from these sources would have a excess cancer risk of less than 100 chances per million and annual $PM_{2.5}$ concentrations of less than 0.8 $\mu g/m^3$. Acute and chronic hazards (i.e., non-cancer health risks) would be well below the thresholds that are based on Hazard Indexes of 1.0 for single sources and 10.0 for cumulative sources. As a result, this would be a *less-than-significant* impact.

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[7] See *http://www.baaqmd.gov/Divisions/Engineering/Air-Toxics/Toxic-Air-Contaminant-Control-Program-Annual-Report.aspx*

[8] CARB Airborne Toxic Control Measure (ATCM) § 93115.6 - *ATCM for Stationary CI Engines – Emergency Standby Diesel-Fueled CI Engine (>50 bhp) Operating Requirements and Emission Standards*

[9] BAAQMD, *Air Toxics NSR Program Health Risk Screening Analysis (HSRA) Guidelines*, January 2010.

[10] OEHHA 2003. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. August 2003.

Impact 5: Create objectionable odors affecting a substantial number of people? ***Less-than-significant***

The project would generate localized emissions of diesel exhaust during construction equipment operation and truck activity. These emissions may be noticeable from time to time by adjacent receptors. However, they would be localized and are not likely to adversely affect people off site by resulting in confirmed odor complaints. The project would not include any sources of significant odors that would cause complaints from surrounding uses. This would be a *less-than-significant* impact.

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This concludes our assessment of the air quality impacts from this project. If you have any questions or comments, please feel free to contact me at (707) 766-7700 x24. Thank you for the opportunity to assist you with this project.

Sincerely,

James A. Reyff
Project Scientist

Illingworth & Rodkin

12-075

Attachment 1: Screening Health Risk Analysis for Source 11403

Attachment 1: Screening Health Risk Analysis for Source 11403

DPM Cancer Risk From Diesel Emergency Generators

DPM Emission Rates			
	Annual	DPM Emissions	
	Operation	Daily*	Annual
Source Type	(hr)	(lb/day)	(lb/yr)
Emergency Generators (2)	-	0.0079	2.89

* BAAQMD Source #11403

Modeling Information	
Model:	SCREEN3
Source	Generator
Source Type	Point
Distance to Residences (ft)	450 ft to sensitive receptor
Receptor Height (m)	1.5 m
Meteorological Data	SCREEN3 default
Point Source Stack Parameters	
Generator engine size (hp)	unknown
Stack Height** (ft)	6
Stack Diameter** (ft)	0.25
Stack Exit Velocity** (ft/sec)	164
Exhaust Temperature** (F)	656
Hourly Emission Rate (lb/hr)***	0.00033
Building Downwash Information	
Water Co. Building	
Building Height (ft)	30
Building Length (ft)	300
Building Width (ft)	400

** BAAQMD default generator parameters

*** Hourly emission rate based on annual emissions and 8,760 hours per year.

Cancer Risk Calculation Method

Inhalation Dose = C_{air} x DBR x A x HD x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air (µg/m^3)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
HD = daily exposure (hours/day/24)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Inhalation Dose Factors

	Value[1]							
Exposure Type	DBR (L/kg BW-day)	A (-)	Exposure (hr/day)	Exposure (days/week)	Exposure (week/year)	EF (days/yr)	ED (Years)	AT (days)
Residential (70-Year)	302	1	24	7	50	350	70	25,550

[1] Default values recommended by OEHHA& Bay Area Air Quality Management District

Cancer Risk (per million) = Inhalation Dose x CRAF x CPF x 10^6
= URF x Cair

Where: CPF = Cancer potency factor (mg/kg-day)$^{-1}$
CRAF = Cancer Risk Adjustment Factor
URF =Unit risk factor (cancer risk per µg/m^3)

Unit Risk Factor for DPM

Exposure Type	CPF (mg/kg-day)$^{-1}$	CRAF (-)	URF *DPM*
Residential (70-Yr Exposure)	1.10E+00	1.7	**541.5**

Model Results and Cancer Risks

			DPM/PM2.5		DPM
			Max 1-Hr	Annual Ave	Cancer Risk
Exposure Type	Distance		(µg/m^3)	(µg/m^3)	(per million)
Residential (70-Yr Exposure)	450 feet	137 meters	0.05712	0.00571	**3.09**

Note: Conversion factor of 0.1 to convert annual concentration from 1-hour maximum