

Air Quality Assessment

Ashland Family Apartments/Mixed Use
Ashland, California

October 10, 2012

Prepared for:
Alameda County & Eden Housing

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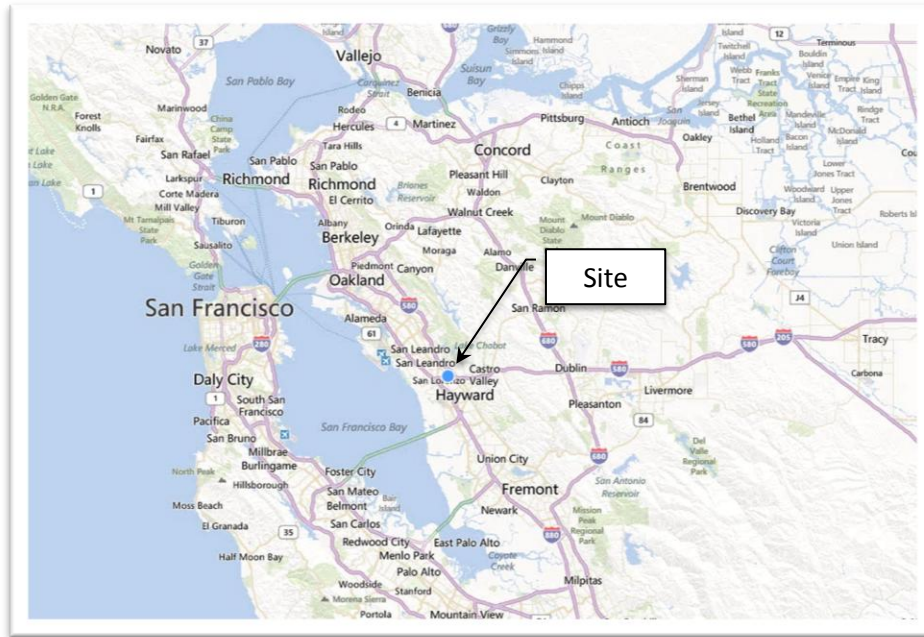
INTRODUCTION

This report presents the results of the environmental air quality evaluation of the Ashland Mixed Use Development project in the unincorporated community of Ashland, in Alameda County California. Recourses for Community Development proposes to develop 85 units of affordable housing with 3200 square feet of commercial space. The project envisions demolition of existing structures and new construction of 85 affordable rental apartments for seniors, emancipated foster youth and families who earn income of 30% to 50% of Area Median Income (AMI). In keeping with the renaissance of the Ashland and Cherryland Business Districts Specific Plan, commercial space will be placed along the East 14th Street frontages. In addition to the mixed-uses stated here, a community room, classrooms, computer room, office and garden community room will be constructed. A total of 96 parking spaces will be provided onsite.

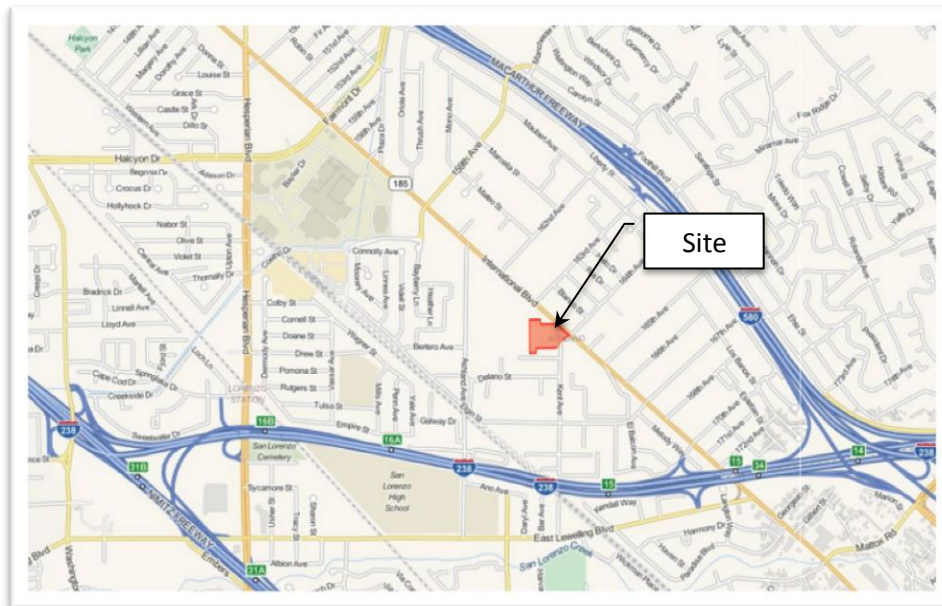
Project Location

Project Location

16309-16331 Kent Avenue
San Lorenzo, CA 94580



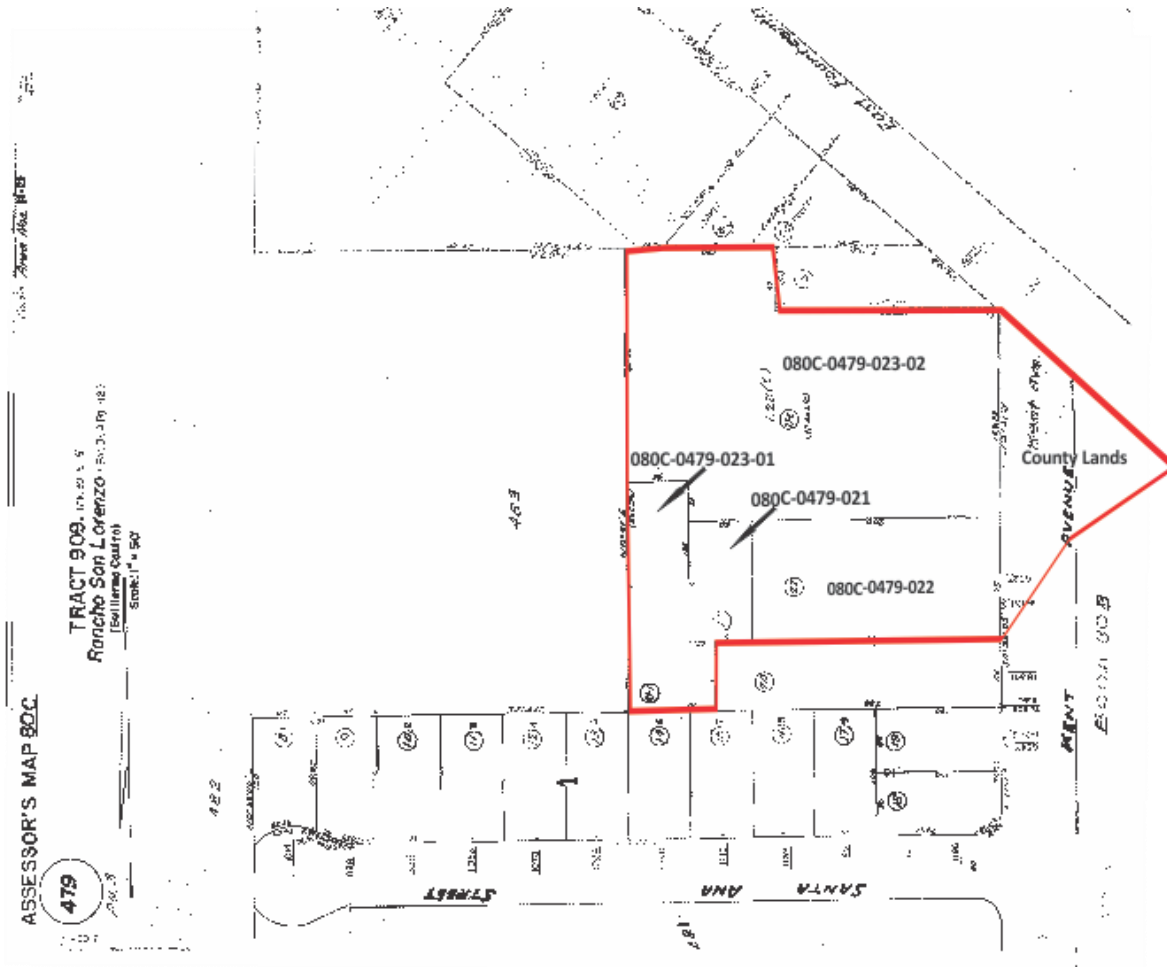
Map 1 Region



Map 2 Detail

Project Location

16309-16331 Kent Avenue
San Lorenzo, CA 94580



Map 3 Assessor's Parcel Map

Project Location

Ashland Mixed use Commercial & Family Apts
16309-16331 Kent Avenue San Lorenzo, CA 94580



Photo 1 Aerial View ** Courtesy Google Earth

SETTING

Regulatory Setting

The Federal Clean Air Act governs air quality in the United States. In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act. At the Federal level, the United States Environmental Protection Agency (USEPA) administers the Clean Air Act (CAA). The California Clean Air Act is administered by the California Air Resources Board (CARB) at the State level and by the Air Quality Management Districts at the regional and local levels. The Bay Area Air Quality Management District (BAAQMD) regulates air quality at the regional level, which includes the nine-county Bay Area.

For consistency with local air quality management, the Bay Area Air Quality Management District BAAQMD standards were used to evaluate impacts for several pollutants. For air quality, the analysis considers whether the Proposed Action or alternatives would:

- a) Conflict with or obstruct implementation of the applicable air quality plan?
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
- c) 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)?
- d) Expose sensitive receptors to substantial pollutant concentrations?
- e) Create objectionable odors affecting a substantial number of people?

The federal Clean Air Act requires each state to identify areas that have ambient air quality in violation of federal standards. States are required to develop, adopt, and implement a state implementation plan (SIP) to achieve, maintain, and enforce federal ambient air quality standards in these nonattainment areas. SIP elements are developed on a pollutant-by-pollutant basis whenever one or more air quality standards are being violated. In California, local and regional air pollution control agencies have primary responsibility for developing SIPs, generally in coordination with local and regional land use and transportation planning agencies. The Bay Area Air Quality Management District (BAAQMD) is the responsible regional air pollution control agency in the San Francisco Bay Area.

An area's compliance with national ambient air quality standards under the Clean Air Act is categorized as nonattainment, attainment (better than national standards), unclassifiable, or attainment/cannot be classified. The unclassified designation includes attainment areas that comply with federal standards, as well as areas for which monitoring data are lacking. Unclassified areas

are treated as attainment areas for most regulatory purposes. Simple attainment designations generally are used only for areas that transition from nonattainment status to attainment status. Areas that have been reclassified from nonattainment to attainment of federal air quality standards are automatically considered maintenance areas, although this designation is seldom noted in status listings. The San Francisco Bay Area is designated as nonattainment for the federal 8-hour ozone standard and the 24-hour fine particulate matter (PM_{2.5}) standard. The San Francisco Bay Area is designated as attainment or unclassified for the other national ambient air quality standards.

With respect to the state ambient air quality standards, California classifies areas as attainment, nonattainment, nonattainment-transitional, or unclassified. The San Francisco Bay Area is designated as nonattainment for the state ozone, inhalable particulate matter (PM₁₀) and PM_{2.5} standards and as attainment or unclassified for the other state ambient air quality standards. The predominant regulation that guides assessment of air quality impacts of federal actions is the General Conformity Rule, established under the Clean Air Act (Section 176(c)(4)). The General Conformity Rule ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state's plans to meet national standards for air quality. The project area is located within the San Francisco Bay Area Air Basin, which is designated as a nonattainment area for the federal 8-hour ozone standard and the federal fine particulate matter (PM_{2.5}) standard. The air basin is designated as a maintenance area with respect to the federal carbon monoxide (CO) standards.

Physical Setting: Southwestern Alameda County

This subregion encompasses the southeast side of San Francisco Bay, from Dublin Canyon to north of Milpitas. The subregion is bordered on the east by the East Bay hills and on the west by the bay. Most of the area is flat. This subregion is indirectly affected by marine air flow. Marine air entering through the Golden Gate is blocked by the East Bay hills, forcing the air to diverge into northerly and southerly paths. The southern flow is directed down the bay, parallel to the hills, where it eventually passes over southwestern Alameda County. These sea breezes are strongest in the afternoon. The further from the ocean the marine air travels, the more the ocean's effect is diminished. Although the climate in this region is affected by sea breezes, it is affected less so than the regions closer to the Golden Gate.

The climate of southwestern Alameda County is also affected by its close proximity to San Francisco Bay. The Bay cools the air with which it comes in contact during warm weather, while during cold weather the Bay warms the air. The normal northwest wind pattern carries this air onshore. Bay breezes push cool air onshore during the daytime and draw air from the land offshore at night.

Winds are predominantly out of the northwest during the summer months. In the winter, winds are equally likely to be from the east. Easterly-southeasterly surface flow into southern Alameda County passes through three major gaps: Hayward/Dublin Canyon, Niles Canyon and Mission Pass. Areas north of the gaps experience winds from the southeast, while areas south of the gaps experience winds from the northeast. Wind speeds are moderate in this subregion, with annual average wind speeds close to the Bay at about 7 mph, while further inland they average 6 mph.

Air temperatures are moderated by the sub region's proximity to the Bay and to the sea breeze. Temperatures are slightly cooler in the winter and slightly warmer in the summer than East Bay cities to the north. During the summer months, average maximum temperatures are in the mid-70's. Average maximum winter temperatures are in the high-50's to low-60's. Average minimum temperatures are in the low 40's in winter and mid-50's in the summer.

Pollution potential is relatively high in this subregion during the summer and fall. When high pressure dominates, low mixing depths and Bay and ocean wind patterns can concentrate and carry pollutants from other cities to this area, adding to the locally emitted pollutant mix. The polluted air is then pushed up against the East Bay hills. In the wintertime, the air pollution potential in southwestern Alameda County is moderate. Air pollution sources include light and heavy industry, and motor vehicles. Increasing motor vehicle traffic and congestion in the subregion

Criteria Air Pollutants & Effect

Air quality studies generally focus on five pollutants that are most commonly measured and regulated: CO, O₃, NO₂, SO₂, and suspended particulate, i.e., PM₁₀ and PM_{2.5}.

Carbon Monoxide. CO, a colorless and odorless gas, interferes with the transfer of oxygen to the brain. It can cause dizziness and fatigue, and can impair central nervous system functions. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. Automobile exhausts release approximately 70 percent of the CO in the Bay Area. A substantial amount also comes from burning wood in fireplaces and wood stoves. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follows the spatial and temporal distributions of vehicular traffic. The highest CO concentrations measured in the Bay Area are typically recorded during the winter.

Ozone. O₃, a colorless toxic gas, is the chief component of urban smog. O₃ enters the blood stream and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. Although O₃ is not directly emitted, it forms in the atmosphere through a chemical reaction between reactive organic gas (ROG) and nitrogen oxides (NO_x) under sunlight.¹ ROG and NO_x are primarily emitted from automobiles and industrial sources. O₃ is present in relatively high concentrations within the Bay Area, and the damaging effects of photochemical smog are generally related to the concentration of O₃. Highest O₃ concentrations occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. This pollutant is addressed at the regional level.

Nitrogen Dioxide. NO₂, a reddish-brown gas, irritates the lungs. It can cause breathing difficulties at high concentrations. Like O₃, NO₂ is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO₂ are collectively referred to as nitrogen oxides (NO_x) and are major contributors to O₃ formation. NO₂ also contributes to the formation of PM₁₀ (see discussion of PM₁₀ below). NO₂ concentrations in the Bay Area are relatively low and do not warrant analysis from land use type projects.

¹ ROG and NO_x are emitted from automobiles and industrial sources.

Sulfur Oxides. Sulfur oxides, primarily SO₂, are a product of high-sulfur fuel combustion. The main sources of SO₂ are coal and oil used in power stations, in industries, and for domestic heating. SO₂ is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO₂ concentrations have been reduced to levels well below the state and national standards, but further reductions in emissions are needed to attain compliance with standards for PM₁₀, of which SO₂ is a contributor. In the Bay Area, SO₂ is primarily an issue for oil refining.

Suspended Particulate Matter. Particulate matter pollution consists of very small particles suspended in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when industry and gaseous pollutant undergo chemical reactions in the atmosphere. Respirable particulate matter (PM₁₀) and fine particulate matter (PM_{2.5}) represent fractions of particulate matter. PM₁₀ refers to particulate matter less than 10 microns in diameter and PM_{2.5} refers to particulate matter that is PM_{2.5} microns or less in diameter. Major sources of PM_{2.5} results primarily from diesel fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. PM₁₀ include all PM_{2.5} sources as well as emissions from dust generated by construction, landfills, and agriculture; wildfires and brush/waste burning, industrial sources, windblown dust from open lands, and atmospheric chemical and photochemical reactions. PM₁₀ and PM_{2.5} pose a greater health risk than larger-size particles, because these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract increasing the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Whereas, larger particles tend to collect in the upper portion of the respiratory system, PM_{2.5} are so tiny that they can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

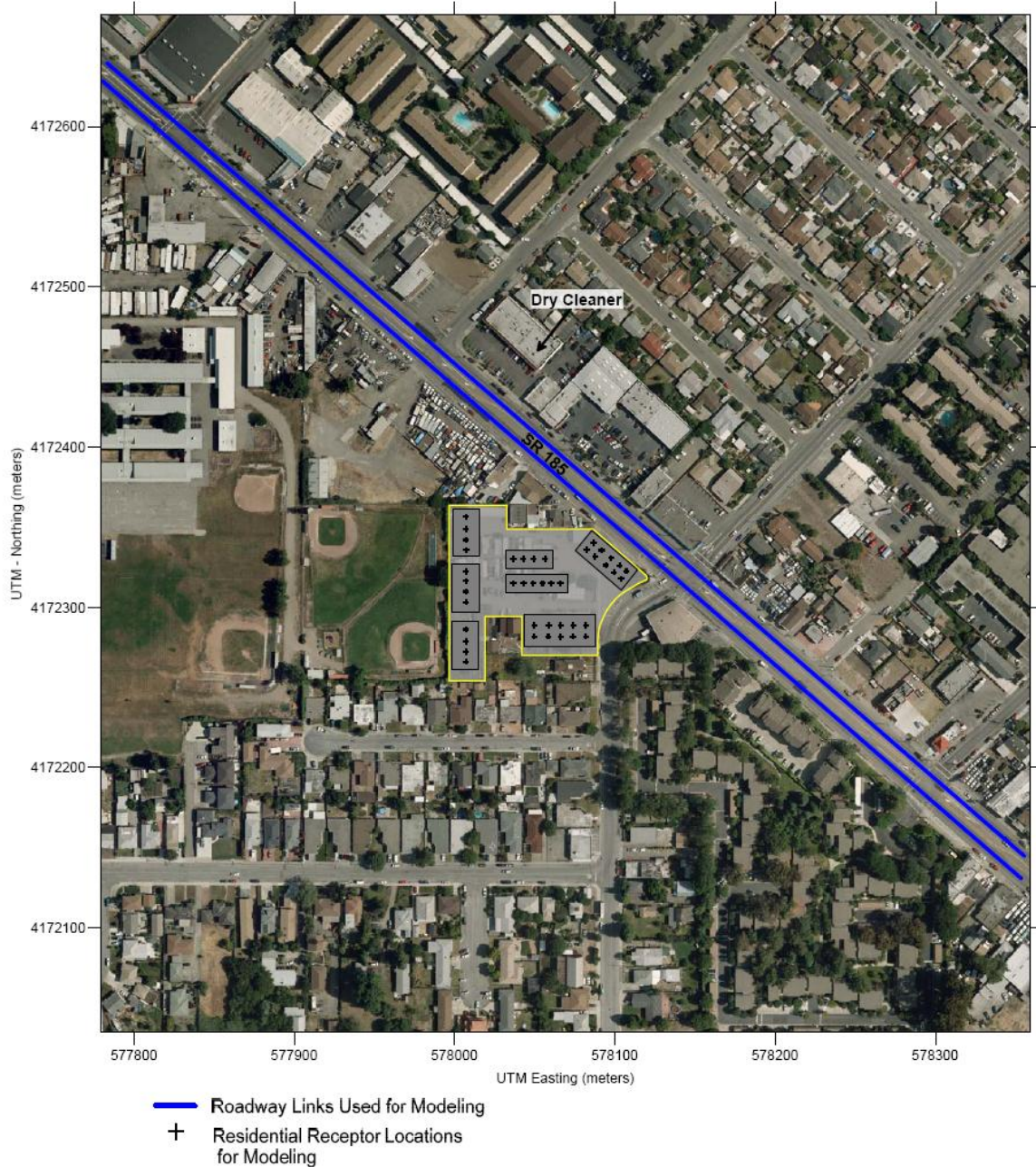


Figure 1 Project Site, Modeling Receptors, and Roadway Links

Community Air Contaminants and their Health Effects

Fine Particulate Matter (PM2.5)

Particulate matter pollution consists of very small particles suspended in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when industry and gaseous pollutant undergo chemical reactions in the atmosphere. Respirable particulate matter (PM10) and fine particulate matter (PM2.5) represent fractions of particulate matter. PM10 refers to particulate matter less than 10 microns in diameter and PM2.5 refers to particulate matter that is 2.5 microns or less in diameter. Major sources of PM2.5 results primarily from diesel fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. PM10 include all PM2.5 sources as well as emissions from dust generated by

construction, landfills, and agriculture; wildfires and brush/waste burning, industrial sources, windblown dust from open lands, and atmospheric chemical and photochemical reactions. PM10 and PM2.5 pose a greater health risk than larger-size particles, because these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract increasing the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Whereas, larger particles tend to collect in the upper portion of the respiratory system, PM2.5 are so tiny that they can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

Toxic Air Contaminants

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 is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide 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 reports that recent air pollution studies have shown an association that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. DPM emitted by diesel-fueled engines was found to comprise much of that risk. DPM can be distributed over large regions, thus leading to widespread public exposure. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. The vast majority of diesel exhaust particles (over 90 percent) consist of PM2.5, which are particles that can be inhaled deep into the lung. Like other particles of this size, a portion will eventually become trapped within the lung possibly leading to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce DPM emissions 85 percent by 2020. The U.S. EPA and CARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially.

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 regula-

tions include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations.

In December 2008 CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles². The regulation requires affected vehicles to meet specific performance requirements between 2011 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.

Non-diesel vehicles also emit TACs, primarily in the form of organic compounds. A fraction of the total organic gas (TOG) emissions from vehicles are TACs. Organic compounds that have been identified as TACs associated with the emissions from vehicles include acetaldehyde, benzene, 1,3-butadiene, ethyl benzene, formaldehyde, hexane, naphthalene, toluene, and xylenes. These TACS are emitted from vehicle exhaust and from evaporative emissions that emanate from hoses, fittings or canisters, while the vehicle is being operated.

Common stationary source types of TAC and PM_{2.5} emissions include gasoline stations, dry cleaners, and diesel backup generators, which are subject to BAAQMD permit requirements. The other, often more significant, common source type is on-road motor vehicles on freeways and roads such as trucks and cars, and off-road sources such as construction equipment, ships and trains.

Area of Influence

The BAAQMD recommends that general plans include buffer zones (Area of Influence) to separate sensitive receptors from sources of air toxic contaminants and odors. In April 2005, CARB released the final version of the Air Quality and Land Use Handbook, which is intended to encourage local land use agencies to consider the risks from air pollution prior to making decisions that approve the siting of new sensitive receptors (e.g., schools, homes or daycare centers) near sources of air pollution.

² <http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm>

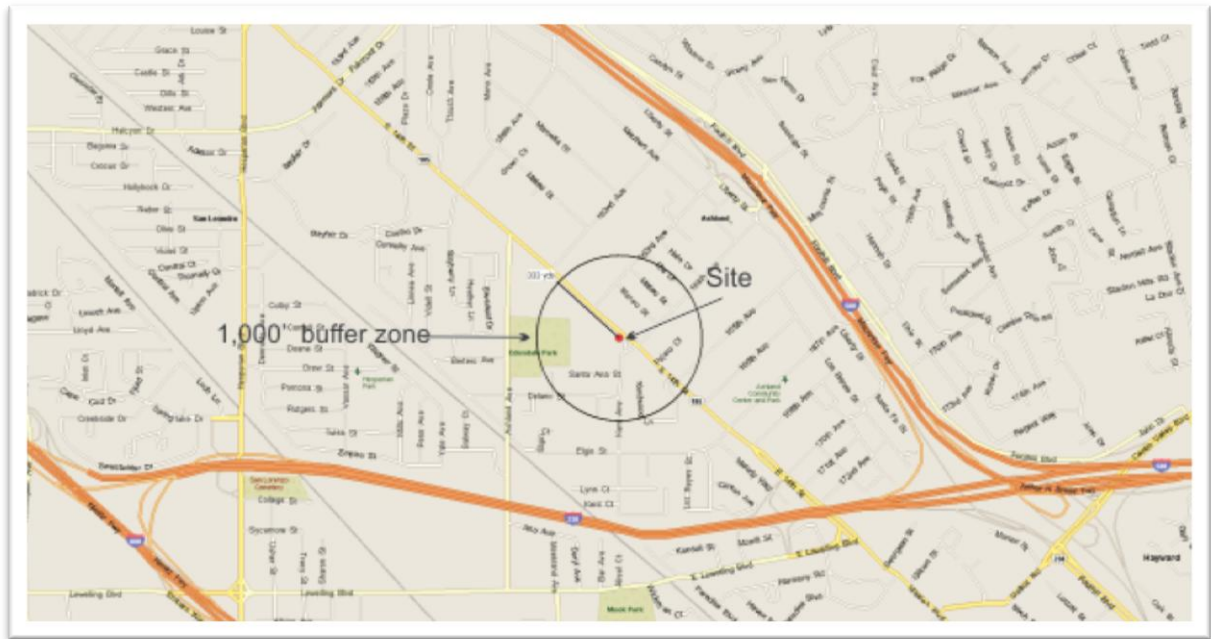


Figure 2- Area map showing 1,000' Area of Influence

Unlike industrial or stationary sources of air pollution, siting of new sensitive receptors does not require air quality permits, but could create air quality problems. The primary purpose of the handbook is to highlight the potential health impacts associated with proximity to common air pollution sources, so that those issues are considered in the planning process. CARB makes recommendations regarding the siting of new sensitive land uses near freeways, truck distribution centers, dry cleaners, gasoline dispensing stations, and other air pollution sources. These "advisory" recommendations include setbacks of 500 feet between new residences and freeways. The setbacks are based primarily on modeling information and are not reflective of site-specific conditions in the San Lorenzo area. Siting of new sensitive land uses within these recommended distances may be possible, but only after Air Quality screening and site-specific studies are conducted to identify the actual health risks. CARB acknowledges that land use agencies have to balance other siting considerations such as housing and transportation needs, economic development priorities and other quality of life issues.

BAAQMD Significance Thresholds

The BAAQMD adopted "Thresholds of Significance" for local community risk and hazard impacts that apply to both the siting of a new source and to the siting of a new receptor. Local community risk and hazard impacts are associated with TACs and PM_{2.5} because emissions of these pollutants can have significant health impacts at the local level³.

³ The BAAQMD Thresholds of Significance effective May 2011.

Table 1 BAAQMD Thresholds of Significance

Analysis	New Source	New Receptor
Individual Project	<p>Compliance with qualified community risk reduction plan</p> <p>OR</p> <p>To the nearest receptor (resident) regardless of distance:</p> <p>Increased Cancer Risk > 10 in a million Increased Chronic and Acute Hazard Index > 1.0</p> <p>Ambient PM_{2.5} concentration increase > 0.3 ug/m³</p>	<p>Compliance with qualified community risk reduction plan</p> <p>OR</p> <p>From the source with the highest cancer risk, PM_{2.5} concentration, or hazard in comparison to other sources within the 1,000 foot radius of the receptor:</p> <p>Increased Cancer Risk > 10 in a million Increased Chronic and Acute Hazard Index > 1.0</p> <p>Ambient PM_{2.5} concentration increase > 0.3 ug/m³</p>
Cumulative Impacts	<p>Compliance with qualified community risk reduction plan</p> <p>OR</p> <p>Common sources within 1,000 foot radius of the individual project modeled to the maximum likely exposed individual (resident) based on the individual source analysis:</p> <p>Cancer Risk > 100 in a million Chronic Hazard Index > 10.0</p>	<p>Compliance with qualified community risk reduction plan</p> <p>OR</p> <p>Major sources within 1,000 foot radius of the receptor:</p> <p>Cancer Risk > 100 in a million Chronic Hazard Index > 10.0 PM_{2.5} concentration > 0.8 ug/m³</p>

If emissions of TACs or PM_{2.5} exceed any of the Thresholds of Significance listed in Table 1, the proposed project would result in a significant impact.

Alameda County does not have a qualified risk reduction plan. The site, and any future project to be constructed on that site, would be located near a freeway or major arterial highway, an analysis of TAC and PM_{2.5} impacts upon sensitive receptors is necessary.

Initial Air Quality Screening

A 1,000 foot radius was identified around the project site as the Area of Influence. An identification of significant sources and receptors within the Area of Influence was conducted using the BAAQMD recommended screening method. The initial screening for the project compared the screening values based on distances to the nearest major roadway and/or emissions from significant sources to the CEQA thresholds. The BAAQMD provides screening tables for California designated highways and certain existing permitted, stationary sources as an initial screen to determine if nearby sources or roadways may have a significant impact on a project. An evaluation of

the cumulative impacts from all TAC and PM_{2.5} sources was also considered in the initial screen. The cumulative impacts are the summation of the cancer risks, hazards, and PM_{2.5} concentrations from all significant sources identified within 1,000 foot radius of the project.

Emissions Modeling⁴

This analysis involved the development of future DPM, organic TAC and PM_{2.5} emissions for traffic on SR-185 using the latest version of the CARB EMFAC2007 emission factor model with the traffic mix developed from Caltrans and model defaults for Alameda County. EMFAC2007 is the most recent version of the CARB motor vehicle emission factor model. DPM emissions are predicted by the model to decrease in the future. However, the current version of EMFAC2007 does not incorporate the effects of the recent on-road diesel vehicle regulations, which will substantially reduce DPM emissions even further. The requirements for diesel trucks are phased in for future years and depend on the model year of the trucks. Since this analysis assesses the long-term risk of proposed sensitive uses to future exposures, the lower future emissions were taken into account. The diesel truck age distribution used in the EMFAC2007 model was adjusted to reflect the effects of the new regulations. These adjustments include recent action by CARB to delay some of the requirements of the regulation.

The current version of EMFAC2007 does not incorporate the effects of the recent on-road diesel vehicle regulations that will substantially reduce emissions even further. CARB recently adopted new regulations that will require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet new 2010 engine standards that have much lower DPM and PM_{2.5} emissions. This regulation will substantially reduce these emissions between 2013 and 2023, with the greatest reductions occurring in 2013 through 2015. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road, or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads much quicker. CARB anticipates a 68 percent reduction in PM_{2.5} (including DPM) emission from trucks in 2014 with this regulation.

The requirements for diesel trucks are phased in for future years and depend on the model year of the trucks. Since this analysis assesses the risk of proposed sensitive uses to future exposures, the lower future emissions were taken into account. The diesel truck age distribution used in the EMFAC2007 model for years 2015 and beyond were adjusted to reflect the effects of the new regulations. The EMFAC2007 results were then adjusted to the traffic volume and mix on SR-185 reported by Caltrans⁵. Average daily traffic volumes were assumed to increase by 1 percent per year.

Emission factors were developed for the year 2013 which is the assumed year construction of the proposed project will be completed using the calculated mix of cars and trucks on SR-185. Default

⁴ Air Quality Model Runs by Illingworth & Rodkin, May 2011. Reyeff, James

⁵ Caltrans, Based on 2009 Average Annual Daily Truck Traffic on the California State Highway System - <http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/>

EMFAC2007 vehicle model years were assumed for 2013. The DPM emission calculations and emission factors are shown in Table 3 for SR-185.

Emissions of total organic gases (TOG) were also calculated for 2013 using the EMFAC2007 model. These TOG emission were then used in the modeling the organic TACs. TOG emissions from both exhaust and from running evaporative loses from all vehicle types were calculated using EMFAC2007 default model values for Alameda County along with the traffic volumes and vehicle mixes for SR-185. The model year adjustments for diesel vehicles, discussed above, were not used when calculating TOG emissions.

The EMFAC2007 model was also used to develop average hourly traffic distributions for Alameda County roadways, which were then applied to the average daily traffic volumes for SR-185 to obtain hourly traffic volumes. The County average and hourly traffic distributions used in this analysis are shown in Table 5 and 6. Average travel speed of 25 mph for SR-185 was applied.

Roadway Sources

A review of traffic information reported by Caltrans indicates there is one roadway within the Area of Influence of the project with average daily traffic in excess of 10,000 average daily trips: SR-185 ADT of 17,800 vehicles, 2.2% trucks and 0.3% heavy-duty trucks. According to the BAAQMD CEQA Air Quality Guidelines, modeling of SR-185 traffic emissions to predict health risk and PM2.5 is necessary to identify the significance of long-term residential exposures.

Table 2 Highway 185 Traffic Data and Average DPM, PM2.5 and TOG Emission Factors

Analysis Year = 2013

Vehicle Type	2009 CalTrans Number Vehicles (vech/day)	2013 Number Vehicles (vech/day)	2013 Percent Diesel	2013 Number Diesel	Avg. DPM EF (g/VMT)	Vehicle Speed (mph)	Total Vehicle Emissions (g/mi)
LDA	10,903	11,339	0.19%	21	0.13100	25	2.79
LDT	6,505	6,765	0.63%	43	0.0620	25	2.64
MDT	315	328	6.10%	20	0.0440	25	0.88
HDT	77	80	96.15%	77	0.3403	25	26.20
Total	17,800	18,512	-	161	-	25	32.50
				6.69992			
Diesel Vech Avg DPM EF					0.20214		
Mix Avg DPM EF					0.00176		
Increase From 2009		1.04					
Vehicles/Direction		9,256		80			
Vehicles/Hour/Direction		386		3.3			

Traffic Data Year = 2009

Caltrans Truck AADT Data		Total Truck	Truck by Axle			
	Total		2	3	4	5
SR 185 B Jct Rte 238	17800	392	315	28	21	28
	% of Total	2.20%	1.77%	0.16%	0.12%	0.16%

Traffic Increase per Year (%) = 1.0%

Table 3 PM2.5 and TOG

Analysis Year = 2013

Vehicle Type	2009 CalTrans Number Vehicles (vech/day)	2013 Number Vehicles (vech/day)	Emission Factors			Vehicle Speed (mph)	Total Vehicle Emissions		
			Exhaust PM2.5 (g/VMT)	Exhaust TOG (g/VMT)	Running TOG (g/VMT)		Exhaust PM2.5 (g/mi)	Exhaust TOG (g/mi)	Running* TOG (g/mi)
LDA	10,903	11,339	0.0120	0.0880	0.089	25	136	998	1007
LDT	6,505	6,765	0.0239	0.1355	0.143	25	162	917	965
MDT	315	328	0.0263	0.1427	0.099	25	9	47	32
HDT	77	80	0.3180	0.8294	0.013	25	25	66	1.0
Total	17,800	18,512	-	-	-	25	332	2,028	2,005
Mix Avg Emission Factor			0.01794	0.10953	0.10830				
Increase From 2009 Vehicles/Direction		1.04							
Vehicles/Hour/Direction		9,256							
		386							

Traffic Data Year = 2009

Caltrans Truck AADT Data	Total	Total Truck	Truck by Axle			
			2	3	4	5
SR 185 B Jct Rte 238	17800	392	315	28	21	28
	% of Total	2.20%	1.77%	0.16%	0.12%	0.16%

Traffic Increase per Year (%) = 1.0%
* Based on engine run time (min) = 30

Table 4 Highway 185 Hourly Traffic Volumes and DPM & PM2.5 Emission Rates

2013 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - SR 185

Hour	% Per Hour	Diesel VPH	g/mile	Hour	% Per Hour	Diesel VPH	g/mile	Hour	% Per Hour	Diesel VPH	g/mile
1	2.76%	2.2	0.2355	9	6.47%	5.2	0.1940	17	6.06%	4.9	0.1905
2	1.81%	1.5	0.1766	10	5.82%	4.7	0.2327	18	5.56%	4.5	0.1335
3	2.20%	1.8	0.1613	11	5.63%	4.5	0.2187	19	4.17%	3.4	0.1471
4	2.21%	1.8	0.3179	12	6.65%	5.3	0.2091	20	2.54%	2.0	0.1288
5	1.47%	1.2	0.2622	13	6.14%	4.9	0.2116	21	3.20%	2.6	0.1989
6	2.29%	1.8	0.3075	14	6.15%	4.9	0.2092	22	3.58%	2.9	0.2230
7	4.58%	3.7	0.2666	15	5.79%	4.7	0.1965	23	2.54%	2.0	0.1852
8	5.77%	4.6	0.1889	16	4.93%	4.0	0.1681	24	1.69%	1.4	0.1555
Total										80.4	

2013 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - SR 185

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.07%	99.4	0.0208	9	7.06%	653.9	0.0180	17	7.40%	685.1	0.0176
2	0.35%	32.7	0.0225	10	4.23%	391.9	0.0191	18	8.32%	770.4	0.0171
3	0.29%	27.0	0.0252	11	4.59%	424.5	0.0185	19	5.83%	539.5	0.0172
4	0.17%	15.7	0.0464	12	5.83%	539.4	0.0183	20	4.39%	406.1	0.0171
5	0.44%	40.9	0.0228	13	6.17%	571.5	0.0179	21	3.29%	304.7	0.0178
6	0.80%	73.9	0.0235	14	6.03%	558.3	0.0180	22	3.31%	306.0	0.0181
7	3.75%	347.2	0.0188	15	7.09%	656.5	0.0176	23	2.48%	229.4	0.0177
8	7.94%	734.6	0.0174	16	7.25%	671.0	0.0173	24	1.91%	176.4	0.0172
Total										9,256	

Table 5 CAL3QHCR Modeling Parameters and Maximum Cancer Risks

**CAL3QHCR Risk Modeling Parameters and Maximum Cancer Risk in Project Area
Ashland Apts, San Lorenzo, CA**

Receptor Information

Number of Receptors	42
Receptor Height =	1.5 m
Receptor distances =	variable

Meteorological Conditions

Union City Hourly Met Data	1990 - 1994
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

Cancer Risk Calculation Method

Inhalation Dose = $C_{air} \times DBR \times A \times EF \times ED \times 10^{-6} / AT$

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

Inhalation Dose Factors

Exposure Type	Value ¹							
	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 C_{air}

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

Unit Risk Factors for DPM and Organic TACs from Vehicle TOG Exhaust & Evaporative Emissions

Exposure Type	CPF ($\text{mg}/\text{kg}\text{-day}$) ⁻¹	CRAF (-)	Exhaust DPM	Exhaust TOG TACs	Evaporative TOG TACs
Residential (70-Yr Exposure)	1.10E+00	1.7	541.5	3.1	0.18

MEI Cancer Risk Calculations During Project Operation

Meteorological Data Year	Maximum DPM Concentration ($\mu\text{g}/\text{m}^3$)			Maximum Exhaust TOG Concentration ($\mu\text{g}/\text{m}^3$)			Maximum Evaporative TOG Concentration ($\mu\text{g}/\text{m}^3$)		
	2013	2015	2020	2013	2015	2020	2013	2015	2020
1990	0.0065	-	-	0.3439	-	-	0.3399	-	-
1991	0.0070	-	-	0.3844	-	-	0.3800	-	-
1992	0.0071	-	-	0.3934	-	-	0.3889	-	-
1993	0.0072	-	-	0.3852	-	-	0.3808	-	-
1994	0.0073	-	-	0.3993	-	-	0.3948	-	-
Average	0.0070	-	-	0.3813	-	-	0.3769	-	-
Cancer Risk ^a	3.8	-	-	1.2	-	-	0.1	-	-
70-yr Cumulative Risk ^b	3.80			1.17			0.07		

Total Risk From All TACs = 5.0 per million

Notes:

Receptor Heights = 1.5 m

Maximum DPM & TOG concentrations occur at the eastern most corner of the building adjacent to SR 185 (Receptor No. 5)

a Cancer risk (per million) calculated assuming constant 70-year exposure to concentration for year of analysis.

b Cumulative cancer risk (per million) calculated assuming variable exposure over a 70-year period due to decreased concentrations over time.

Table 6 Summary of Annual PM2.5 Concentrations

Emission Source	Receptor Location	PM2.5 Concentration ($\mu\text{g}/\text{m}^3$)	
		Maximum*	Average**
		Annual	Annual
Highway 185	Receptor No. 5	0.07	0.06

* Highest modeled concentration over all emission years (2013) and meteorological data years (1990 – 1994)

** Average concentration for all emission years and meteorological data years.

Using the modeled long-term average DPM and organic gas concentrations, the individual cancer risks were computed using the most recent methods recommended by BAAQMD⁶ and the California Office of Environmental Health Hazard Assessment (OEHHA)⁷

The factors used to compute cancer risk is highly dependent on modeled concentrations, exposure period or duration, and the type of receptor. The exposure level is determined by the modeled concentration; however, it has to be averaged over a representative exposure period. The averaging period is dependent on many factors, but mostly the type of sensitive receptor that would reside at a site.

This assessment conservatively assumed long-term residential exposures. OEHHA has developed exposure assumptions for typical types of sensitive receptors. These include nearly continuous exposures of 70 years for residences. 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. This method applies a Cancer Risk Adjustment Factor of 1.7 to the cancer risks for residential exposures to account for age sensitivity to toxic air contaminants. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. This analysis, therefore, presents the range of cancer risk for various types of exposures. Computed cancer risks are shown for SR-185 in Table 6.

Roadway Sources – Thresholds of Significance

Under the BAAQMD CEQA Air Quality Guidelines, an incremental risk of greater than 10 cases per million from a single source at the Maximally Exposed Individual (MEI) would result in a significant impact. Based on the air quality modeling discussed above, cancer risks would be considered less-than-significant for 70-year residential exposures.

⁶ BAAQMD, *Air Toxics NSR Program Health Risk Screening Analysis (HSRA) Guidelines*, January 2010.

⁷ 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.

The total cancer risk for all sources of roadway toxic air contaminants is 5.04 in a million for all compounds (DPM and organic TACs) would also **be less than the significant**.

Potential non-cancer health effects due to chronic exposure to DPM were estimated based on the BAAQMD screening tables (Link 430) at 10 feet from SR 185 and 20 feet building height. Thus, the Hazard Index (HI) would be **less than significant** for the criterion of a HI greater than 1.0.

Thresholds of Significance - Roadways			
Cancer and Non-Cancer (Chronic and Acute) Hazard Indices			
Description	Screening Value	Thresholds	Exceeds Threshold?
PM2.5 Concentration	0.07 ug/m ³	0.3 ug/m ³	No
Cancer Risk	5.04 in a million	10 in a million	No
Chronic Non-cancer Hazard Index @ 20' ht.	0.007	>1	No
Acute Non-cancer Hazard Index @ 20' ht	0.027	>1	No
Chronic Non-cancer Hazard Index @ 6' ht.	.012	>1	No
Acute Non-cancer Hazard Index @ 6' ht.	.028	>1	No

Stationary Sources

A review of BAAQMD records indicates that there are three permitted stationary sources in the located along 14th Street within Area of Influence of the project site.

Table 7 Stationary Sources within 1,000 feet of the subject property

Plant # Or Gas Dispensary #	Facility Name	Street Address	Screening Level Cancer Risk (1)	Screening Level Hazard Index (1)	Screening Level PM2.5 (1)	Permit #S (2)
12053	Tom Eplin's Body Shop	16338 E 14th Street	0.00	0.002	0.000	Permit # 19046 - New Facility/Spray Booth
15573	Windmill Cleaners	16310 E 14th Street	28.70	0.077	0.000	Permit # 15703 - Dry Cleaning Machine

12801	Supreme Rug & Carpet Co	16549 E 14th Street	0.00	0.000	0.000	Permit # 1861 - New Facility/Dry Cleaning Machine
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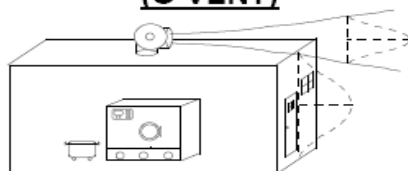
According to the BAAQMD CEQA Air Quality Guidelines, the Windmill Cleaners located 259 feet north of the projects site on 14th Street has a Cancer Screening Risk of 28.70 in a million. Further emissions analysis to predict health risk and PM2.5 is necessary to identify the significance of long-term residential exposures.

Pollutant	Daily Operation		Total Hourly Emission Rate (lb/hr)	Emission Distribution (3)		Hourly Emissions	
	Emission Rate (1) (lb/day)	Hours (2) (hr/day)		Roof Vent	Fugitive	Roof Vent	Fugitive
			(lb/hr)			(lb/hr)	
Perchloroethylene	1.42	12	0.118	60%	40%	0.071	0.047

Notes:

- 1) Daily emission rate provided by BAAQMD
- 2) Operation assumed to be from 8 am to 8 pm daily
- 3) Emission distribution from CARB 2006 for dry cleaner "General Ventilation" configuration:

Figure (d) GENERAL VENTILATION (G-VENT)



For modeling purposes, assume for typical system (< 1 change per 5 minutes): 60% capture of emissions by fan and modeled as horizontal point source, 40% of emissions are fugitive & modeled as volume source.

POINT SOURCE:

Q = 2500 CFM; V = 0.001 m/s (Exit velocity is 0.001 m/s and Q to 0.154 acfm to simulate horizontal flow, stack tip downwash off).

Stack Height = 1.5 feet + building = 13.5 feet (4.11 m).

Diameter = 0.3 meters (12 inches).

Building Height = 12 feet.

Shop Size = Approximately 1100 ft².

Building Width = 10 meters (32.8 ft.).

Building Length = 10 meters (32.8 ft.).

VOLUME SOURCE:

σ_{y0} = Length/4.3.

σ_{z0} = Height/ 2.15.

Building Height = 12 feet.

Release Ht = 0.5 Shop Ht = 6 feet.

Shop Size = Approximately 1100 ft².

Building Width = 10 meters (32.8 ft.).

Building Length = 10 meters (32.8 ft.).

Note on Site Specific Exposures

The project site is located adjacent to SR-185, a busy urban arterial highway. The project site is about 25 feet from the edge of the closest travel lanes. This evaluation predicted much lower impacts than would be concluded using the BAAQMD Risk and Hazard Screening Analysis Process

that uses risk and PM2.5 screening tables developed by BAAQMD for the different highways in the Bay Area. There are several reasons this evaluation found lower results:

The screening tables developed by BAAQMD do not use site specific traffic. This portion of SR-185 has a low volume of heavy trucks due to truck restrictions through much of San Lorenzo. Heavy-duty trucks can be an overwhelming source of particulate matter emissions and contribute to much of the cancer risk and PM2.5 concentrations along roadways.

This assessment took into account future emission rates. Emission rates of PM2.5 (including diesel particulate matter) are modeled to decrease substantially as older vehicles that emit PM2.5 at a greater rate are replaced by cleaner vehicles. CARB regulations in 2009 would accelerate this process.

The Windmill Dry Cleaners is located some 259 feet to the north on 14th Street. Initial Screening tables provided by the BAAQMD showed a Cancer Risk of 28.7 in a million. First tier screening using more refined data showed a Cancer Risk of 15.2. Both the Initial Screen provided by the BAAQMD and the first tier screen show the dry cleaners would have exceeded the threshold of significance for cancer of 10 in a million. However, a more refined model which took into account meteorological data showed a cancer risk of .77 in a million. The reason is that the prevailing wind direction is focused away from the project site. This analysis used meteorological data most representative of the site. Data collected at Union City was used.

Stationary Sources – Thresholds of Significance

Second tier Screen modeling of the dry cleaners near the Ashland Apts project had a cancer risk of 15.2 per million from Perchloroethylene. Refined modeling with the ISCST3 model and 5 years of meteorological data from Union City were used to refine the model. Perchloroethylene emissions for modeling were calculated based on the daily emission rate of 1.42 lb/day, provided by the BAAQMD, and assuming that the dry cleaning operations occurred over 12 hours per day (from 8am - 8pm). The dry cleaner emissions were modeled as coming from a roof vent (60% of the emissions) and fugitive emissions (40% of the emissions) for 12 hours per day, 365 days per year.

Since Perchloroethylene must be phased out of use by January 1, 2023, the cancer risks were calculated assuming 10 years of exposure (2013 - 2022). The maximum cancer risks were calculated for a child exposure (using age sensitivity factors) and an adult exposure (age sensitivity factor of 1). The maximum child cancer risk is 0.75 per million and the adult cancer risk is 0.09 per million. Acute and chronic hazard indexes were also calculated and are included in a summary table. These HIs were well below 1.0 and therefore considered Less than Significant

Table 8 - Thresholds of Significance – Stationary Sources

<p>Thresholds of Significance – Stationary Sources</p> <p>Cancer and Non-Cancer (Chronic and Acute) Hazard Indices</p>
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Description	Screening Value	Thresholds	Exceeds Threshold?
PM2.5 Concentration	0.0982 ug/m ³	0.3 ug/m ³	No
Cancer Risk	.75 in a million	10 in a million	No
Chronic Non-cancer Hazard Index	.077	>1	No
Acute Non-cancer Hazard Index	0.77	>1	No

Cumulative Air Contaminant Exposure

A project would have a significant cumulative impact if the total of all past, present, and foreseeable future sources within a 1,000 foot radius (or beyond where appropriate) from the fence line of a source, or from the location of a receptor, plus the contribution from the project, exceeds the following:

- Non-compliance with a qualified Community Risk Reduction Plan;
- An excess cancer risk levels of more than 100 in one million or a chronic hazard index greater than 10 for TACs; or
- 0.8 µg/m³ annual average PM2.5.

This analysis used anticipated cumulative traffic conditions and the predicted risk reflecting the cumulative risk from all sources near the site.

Table 9 Cumulative Thresholds of Significance

Thresholds of Significance Cumulative Air Contaminant Exposure – All Sources Cancer and Non-Cancer (Chronic and Acute) Hazard Indices			
Description	Screening Value	Thresholds	Exceeds Threshold?
PM2.5 Concentration	0.1682 ug/m ³	0.8 ug/m ³	No
Cancer Risk	5.75 in a million	100 in a million	No

Table 12 shows the cumulative cancer risk and PM2.5 concentrations associated with each source affecting the project site. The sum of impacts from cumulative sources (i.e., sources within 1,000 feet of the project) are below the thresholds used by BAAQMD.

Operational and Construction Related Emissions

Method

CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model incorporates Pavley standards and Low Carbon Fuel standards into the mobile source emission factors. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user. The GHG mitigation measures were recently developed and adopted by the California Air Pollution Control Officers Association (CAPCOA).

CalEEMod Version 2011.1.1 was used to analyze the potential emissions resulting from project operation and construction. CalEEMod is designed to estimate air emissions from land use development projects. CalEEMod allows for estimations of construction emissions. CalEEMod also allows the user to select mitigation measures for construction emissions. The CalEEMod results are attached as Appendix A. The model uses data supplied by the CalEEMod entry. In places where incomplete dataset was available (for example there is no information readily available on the type of heavy construction excavators to be employed) the model defaults were used. The results of the modeling appear in Appendix A.

Construction Emissions

Projects of this size do not normally generate operational emissions in sufficient quantity to exceed established thresholds. With the small number of additional vehicle trips generated coupled with the availability of transit, traffic generated by the project would have a less-than-significant impact to local and regional air quality operational emissions. Therefore the following analysis focuses on construction impacts only.

Although the project-generated traffic would not result in a significant long-term impact on local or regional air quality, short-term construction impacts could represent an adverse impact without mitigation. Sources of air emissions and dust include activities such as grading, vehicle travel on paved and unpaved surfaces, and vehicles and equipment exhaust.

The project's construction activities are not expected to substantially change existing air quality standards or contribute to any existing or projected air quality violation. With the implementation of standard construction practices required by Alameda County, and any mitigation measures that may be required by the BAAQMD and contained in the conditions of approval, potential air quality related impacts would be consistent with the County's LCP/LUP and would be reduced to a less than significant level.

According to the BAAQMD CEQA Guidelines, a project that would not individually have a significant air quality impact may have significant cumulative impacts. The determination as to whether a project would have a significant cumulative impact is based on the evaluation of the consistency

of the project with the local General Plan and the consistency of the General Plan with the Bay Area Clean Air Plan (CAP). The project, with mitigation measures, would be consistent with the County's LCP/LUP. The LCP/LUP is consistent with the CAP, therefore, the project would pose no significant cumulative air quality impacts.

Sources of air emissions and dust that could result from the construction of the project include activities such as grading, vehicle travel on paved and unpaved surfaces, and vehicles and equipment exhaust.

Emissions Due To Construction Activity

Construction of the project would result in the temporary generation of NO_x and PM₁₀ emissions. Short-term air quality impacts are mostly due to dust (PM₁₀) generated by construction and development activities, and emissions from equipment and vehicle engines (NO_x) operated during these activities. Dust generation is dependent on soil type and soil moisture, as well as the amount of total acreage actually involved in clearing, grubbing and grading activities. Clearing and earth-moving activities comprise the major source of construction dust generation, but traffic and general disturbance of the soil also contribute to the problem. Sand, lime or other fine particulate materials may be used during construction, and stored on-site. If not stored properly, such materials could become airborne during periods of high winds. The effects of construction activities include increased dust fall and locally elevated levels of suspended particulates. PM₁₀ is considered unhealthy because the particles are small enough to inhale and damage lung tissue, which can lead to respiratory problems. PM₁₀ emissions during project construction can be reduced through compliance with institutional requirements for dust abatement and erosion control. See Appendix A for CAL EE MOD Construction related mitigated and Unmitigated data.

Carbon Monoxide Hotspots

The BAAQMD CEQA Air Quality Guidelines indicate that project analyses should follow the University of California Davis Transportation Project-Level Carbon Monoxide Protocol (CO Protocol). According to the CO Protocol, intersections with Level of Service (LOS) E or F require detailed analysis. A project contributing to CO concentrations exceeding the California Ambient Air Quality Standard of 9 parts per million (ppm) averaged over 8 hours and 20 ppm for 1 hour would be considered to have a significant impact.

Under *Existing Conditions*, all study intersections are operating at level of service (LOS) D or better during weekday peak hours, and LOS C or better during Saturday peak hours. These existing service levels meet current County of Alameda LOS standards.

Under *Existing plus Approved Projects Conditions*, with the addition of traffic for nearby County-approved projects, all study intersections are expected to continue operating at an acceptable LOS D or better during all peak hours, with minor increases in average delay.

Under *Existing plus Approved Projects plus Proposed Project Conditions*, all study intersections are expected to continue operating acceptably at LOS D or better during all peak hours, just as under Existing plus Approved Projects Conditions, with minor changes in average vehicle delay. Therefore, no mitigations due to project traffic are necessary at the study intersections.

No CO hotspots are anticipated as a result of traffic generated emissions by the proposed project in combination with existing or cumulative traffic. Therefore, the mobile-related emissions from the project are not anticipated to contribute substantially to an existing or projected air quality violation and would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be less than significant.

Summary Overall Construction

Table 10 Unmitigated Construction Impacts

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive Dust PM2.5	Exhaust PM2.5	PM2.5 Total	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.42	2.91	1.94	0.00	0.17	0.18	0.36	0.06	0.18	0.24	0.00	305.16	305.16	0.03	0.00	305.86
2014	2.14	2.10	1.54	0.00	0.00	0.14	0.15	0.00	0.14	0.14	0.00	230.01	230.01	0.03	0.00	230.57
Total	2.56	5.01	3.48	0.00	0.17	0.32	0.51	0.06	0.32	0.38	0.00	535.17	535.17	0.06	0.00	536.43

Table 11 Mitigated Construction Impacts

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive Dust PM2.5	Exhaust PM2.5	PM2.5 Total	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.42	2.91	1.94	0.00	0.12	0.18	0.30	0.03	0.18	0.21	0.00	305.16	305.16	0.03	0.00	305.86
2014	2.14	2.10	1.54	0.00	0.00	0.14	0.15	0.00	0.14	0.14	0.00	230.01	230.01	0.03	0.00	230.57
Total	2.56	5.01	3.48	0.00	0.12	0.32	0.45	0.03	0.32	0.35	0.00	535.17	535.17	0.06	0.00	536.43

Overall Operational

Table 12 Unmitigated Operational Impacts

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive Dust PM2.5	Exhaust PM2.5	PM2.5 Total	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.70	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.07
Energy	0.01	0.05	0.02	0.00		0.00	0.00		0.00	0.00	0.00	159.60	159.60	0.01	0.00	160.59
Mobile	0.51	1.37	4.68	0.01	0.63	0.05	0.68	0.03	0.05	0.07	0.00	642.09	642.09	0.03	0.00	642.65
Waste						0.00	0.00		0.00	0.00	8.54	0.00	8.54	0.50	0.00	19.14
Water						0.00	0.00		0.00	0.00	0.00	13.59	13.59	0.19	0.00	19.02
Total	1.22	1.43	5.35	0.01	0.63	0.05	0.68	0.03	0.05	0.07	8.54	816.32	824.86	0.73	0.00	842.47

Table 13 Mitigated Operational Impacts

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.66	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.07
Energy	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	144.08	144.08	0.01	0.00	144.98
Mobile	0.41	1.04	3.66	0.00	0.44	0.03	0.47	0.02	0.03	0.05	0.00	451.73	451.73	0.02	0.00	452.15
Waste						0.00	0.00		0.00	0.00	6.83	0.00	6.83	0.40	0.00	15.31
Water						0.00	0.00		0.00	0.00	0.00	11.67	11.67	0.16	0.00	16.29
Total	1.07	1.09	4.33	0.00	0.44	0.03	0.47	0.02	0.03	0.05	6.83	608.52	615.35	0.59	0.00	629.80

Greenhouse Gas Emissions

Similar to regulated air pollutants, GHG emissions and global climate change also represent cumulative impacts. GHG emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change. Climate change impacts may include an increase in extreme heat days, higher concentrations of air pollutants, sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts. No single project could generate enough GHG emissions to noticeably change the global average temperature. The combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

Greenhouse Gases – Thresholds of Significance

The Thresholds of Significance for operational-related GHG emissions are: For land use development projects, the threshold is compliance with a qualified GHG Reduction Strategy; or annual emissions less than 1,100 metric tons per year (MT/yr) of CO₂e; or 4.6 MT CO₂e/SP/yr (residents + employees). Land use development projects include residential, commercial, industrial, and public land uses and facilities. For stationary-source projects, the threshold is 10,000 metric tons per year (MT/yr) of CO₂e. Stationary-source projects include land uses that would accommodate processes and equipment that emit GHG emissions and would require an Air District permit to operate. If annual emissions of operational-related GHGs exceed these levels, the proposed project would result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change. (Bay Area Air Quality Management District, June 2, 2010)

Greenhouse Gases – Analysis

Mitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Area Source:	0.27	0.00	0.00	0.28	06.3%
Energy:	35.05	0.00	0.00	35.27	40.98%
Mobile	45.44	0.00	0.00	45.49	52.99%
Water & Wastewater:	1.03	0.06	0.00	2.30	1.98%
Solid Waste:	2.68	0.04	0.00	03.70	3.74%
Total:	84.47	0.10	0.00	87.04	100.00%
BAAQMD Threshold				1,100	
				(MT CO ₂ e per year)	
Significance				No	

Greenhouse Gasses – Study Results

The project would incrementally generate greenhouse gas emissions; however, these emissions would not have a significant impact on the environment. The project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. Impacts would be less than significant.

Conclusions

Toxic Air Contaminates (TAC)

Mobile Sources

Under the BAAQMD CEQA Air Quality Guidelines, an incremental risk of greater than 10 cases per million from a single source at the Maximally Exposed Individual (MEI) would result in a significant impact. Based on the air quality modeling discussed above, cancer risks would be considered less-than-significant for 70-year residential exposures.

The total cancer risk for all sources of roadway toxic air contaminants is 5.04 in a million for all compounds (DPM and organic TACs) would also **be less than the significant**.

Potential non-cancer health effects due to chronic exposure to DPM were estimated based on the BAAQMD screening tables (Link 430) at 10 feet from SR 185 and 20 feet building height. Thus, the Hazard Index (HI) would be **less than significant** for the criterion of a HI greater than 1.0.

Stationary Sources

Since Perchloroethylene must be phased out of use by January 1, 2023, the cancer risks were calculated assuming 10 years of exposure (2013 - 2022). The maximum cancer risks were calculated for a child exposure (using age sensitivity factors) and an adult exposure (age sensitivity factor of 1). The maximum child cancer risk is 0.75 per million and the adult cancer risk is 0.09 per million. Acute and chronic hazard indexes were also calculated and are included in a summary table. These HIs were well below 1.0 and therefore considered Less than Significant

Odors

The construction of the project would not be expected to create a source of any objectionable odors.

Operational Criteria Air Pollutant and Precursor Emissions Analysis

There would be an incremental increase in Operational Air Pollutant Precursor Emissions. However the amount does not rise to the level of significance per the BAAQD CEQA Guidelines. The effect is Less Than Significant

Construction Emissions

Construction of the project would result in the temporary generation of NO_x and PM₁₀ emissions. Short-term air quality impacts are mostly due to dust (PM₁₀) generated by construction and development activities, and emissions from equipment and vehicle engines (NO_x) operated during these activities. Dust generation is dependent on soil type and soil moisture, as well as the amount of total acreage actually involved in clearing, grubbing and grading activities. Clearing and earth-moving activities comprise the major source of construction dust generation, but traffic and general disturbance of the soil also contribute to the problem. Sand, lime or other fine particulate materials may be used during construction, and stored on-site. If not stored properly, such materials could become airborne during periods of high winds.

The effects of construction activities include increased dust fall and locally elevated levels of suspended particulates. PM₁₀ is considered unhealthy because the particles are small enough to inhale and damage lung tissue, which can lead to respiratory problems. PM₁₀ emissions during pro-

ject construction can be reduced through compliance with institutional requirements for dust abatement and erosion control. The effect is Less Than Significant

Carbon Monoxide Hotspots

No CO hotspots are anticipated as a result of traffic generated emissions by the proposed project in combination with existing or cumulative traffic. Therefore, the mobile-related emissions from the project are not anticipated to contribute substantially to an existing or projected air quality violation and would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be less than significant.

Greenhouse Gas Emissions

The project would incrementally generate greenhouse gas emissions; however, these emissions would not have a significant impact on the environment. The project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. Impacts would be less than significant.

Appendix A – CalEE MoD Dataset: Combined Operational and Construction related Annual and Greenhouse Gas Emissions

**Ashland Family Apts
Alameda County, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	3.2	1000sqft
Parking Lot	96	Space
Apartments Mid Rise	85	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Utility Company	Pacific Gas & Electric Company
Climate Zone	4	Precipitation Freq (Days)	63		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Estimates for Construction & Demolition are dependent on County Approvals and contingency plans

Off-road Equipment - Default values for Off Road vehicles

Trips and VMT - Default Values

Demolition -

Grading - Luk and Associates rough earthwork calculation is based on the following assumptions: Cut = ~870 Cubic Yards, Fill = ~4440 Cubic Yards, Net

Vehicle Trips - Source Kimley-Horn and Associates, Inc. (Kimley-Horn) Traffic Study for the Ashland Affordable Apartments June 2011

Default values used for weekend & commercial Trip Generation Rates

Vehicle Emission Factors - Default Values

Vehicle Emission Factors - Default Values

Vehicle Emission Factors - Default Values

Road Dust - Default Values

Woodstoves - Assumes no Woodstoves or Fireplaces in units.

Consumer Products -

Landscape Equipment -

Energy Use - Default Values

Water And Wastewater -

Solid Waste - Default Values

Land Use Change - Community Gardens

Sequestration -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - Architects estimates for Greenpoint adjustments

Water Mitigation -

Waste Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.42	2.91	1.94	0.00	0.17	0.18	0.36	0.06	0.18	0.24	0.00	305.16	305.16	0.03	0.00	305.86
2014	2.14	2.10	1.54	0.00	0.00	0.14	0.15	0.00	0.14	0.14	0.00	230.01	230.01	0.03	0.00	230.57
Total	2.56	5.01	3.48	0.00	0.17	0.32	0.51	0.06	0.32	0.38	0.00	535.17	535.17	0.06	0.00	536.43

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.42	2.91	1.94	0.00	0.12	0.18	0.30	0.03	0.18	0.21	0.00	305.16	305.16	0.03	0.00	305.86
2014	2.14	2.10	1.54	0.00	0.00	0.14	0.15	0.00	0.14	0.14	0.00	230.01	230.01	0.03	0.00	230.57
Total	2.56	5.01	3.48	0.00	0.12	0.32	0.45	0.03	0.32	0.35	0.00	535.17	535.17	0.06	0.00	536.43

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.70	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.07
Energy	0.01	0.05	0.02	0.00		0.00	0.00		0.00	0.00	0.00	159.60	159.60	0.01	0.00	160.59
Mobile	0.51	1.37	4.68	0.01	0.63	0.05	0.68	0.03	0.05	0.07	0.00	642.09	642.09	0.03	0.00	642.65
Waste						0.00	0.00		0.00	0.00	8.54	0.00	8.54	0.50	0.00	19.14
Water						0.00	0.00		0.00	0.00	0.00	13.59	13.59	0.19	0.00	19.02
Total	1.22	1.43	5.35	0.01	0.63	0.05	0.68	0.03	0.05	0.07	8.54	816.32	824.86	0.73	0.00	842.47

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.66	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.07
Energy	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	144.08	144.08	0.01	0.00	144.98
Mobile	0.41	1.04	3.66	0.00	0.44	0.03	0.47	0.02	0.03	0.05	0.00	451.73	451.73	0.02	0.00	452.15
Waste						0.00	0.00		0.00	0.00	6.83	0.00	6.83	0.40	0.00	15.31
Water						0.00	0.00		0.00	0.00	0.00	11.67	11.67	0.16	0.00	16.29
Total	1.07	1.09	4.33	0.00	0.44	0.03	0.47	0.02	0.03	0.05	6.83	608.52	615.35	0.59	0.00	629.80

2.3 Vegetation

Vegetation

	ROG	NOx	CO	SO2	CO2e
Category	tons				MT
New Trees					29.36
Vegetation Land Change					1.55
Total					30.91

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

3.2 Demolition - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.26	0.19	0.00		0.02	0.02		0.02	0.02	0.00	28.33	28.33	0.00	0.00	28.39
Total	0.04	0.26	0.19	0.00	0.00	0.02	0.02	0.00	0.02	0.02	0.00	28.33	28.33	0.00	0.00	28.39

3.2 Demolition - 2013

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	1.20	0.00	0.00	1.20
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.75	0.00	0.00	0.75
Total	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.95	1.95	0.00	0.00	1.95

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.04	0.26	0.19	0.00		0.02	0.02		0.02	0.02	0.00	28.33	28.33	0.00	0.00	28.39
Total	0.04	0.26	0.19	0.00	0.00	0.02	0.02	0.00	0.02	0.02	0.00	28.33	28.33	0.00	0.00	28.39

3.2 Demolition - 2013

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	1.20	0.00	0.00	1.20
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.75	0.00	0.00	0.75
Total	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.95	1.95	0.00	0.00	1.95

3.3 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.39	0.21	0.00		0.02	0.02		0.02	0.02	0.00	35.13	35.13	0.00	0.00	35.22
Total	0.05	0.39	0.21	0.00	0.09	0.02	0.11	0.05	0.02	0.07	0.00	35.13	35.13	0.00	0.00	35.22

3.3 Site Preparation - 2013

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.18	0.08	0.00	0.06	0.01	0.07	0.00	0.01	0.01	0.00	24.90	24.90	0.00	0.00	24.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00	0.00	0.25
Total	0.02	0.18	0.08	0.00	0.06	0.01	0.07	0.00	0.01	0.01	0.00	25.15	25.15	0.00	0.00	25.17

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.04	0.00	0.04	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.39	0.21	0.00		0.02	0.02		0.02	0.02	0.00	35.13	35.13	0.00	0.00	35.22
Total	0.05	0.39	0.21	0.00	0.04	0.02	0.06	0.02	0.02	0.04	0.00	35.13	35.13	0.00	0.00	35.22

3.3 Site Preparation - 2013

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.18	0.08	0.00	0.06	0.01	0.07	0.00	0.01	0.01	0.00	24.90	24.90	0.00	0.00	24.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00	0.00	0.25
Total	0.02	0.18	0.08	0.00	0.06	0.01	0.07	0.00	0.01	0.01	0.00	25.15	25.15	0.00	0.00	25.17

3.4 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.33	0.23	0.00		0.02	0.02		0.02	0.02	0.00	33.54	33.54	0.00	0.00	33.62
Total	0.05	0.33	0.23	0.00	0.01	0.02	0.03	0.00	0.02	0.02	0.00	33.54	33.54	0.00	0.00	33.62

3.4 Grading - 2013

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	1.10	0.00	0.00	1.10
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	1.10	0.00	0.00	1.10

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.33	0.23	0.00		0.02	0.02		0.02	0.02	0.00	33.54	33.54	0.00	0.00	33.62
Total	0.05	0.33	0.23	0.00	0.00	0.02	0.02	0.00	0.02	0.02	0.00	33.54	33.54	0.00	0.00	33.62

3.4 Grading - 2013

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	1.10	0.00	0.00	1.10
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	1.10	0.00	0.00	1.10

3.5 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.27	1.74	1.20	0.00		0.12	0.12		0.12	0.12	0.00	179.96	179.96	0.02	0.00	180.42
Total	0.27	1.74	1.20	0.00		0.12	0.12		0.12	0.12	0.00	179.96	179.96	0.02	0.00	180.42

3.5 Building Construction - 2013

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.27	1.74	1.20	0.00		0.12	0.12		0.12	0.12	0.00	179.96	179.96	0.02	0.00	180.42
Total	0.27	1.74	1.20	0.00		0.12	0.12		0.12	0.12	0.00	179.96	179.96	0.02	0.00	180.42

3.5 Building Construction - 2013

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.29	1.86	1.37	0.00		0.12	0.12		0.12	0.12	0.00	207.64	207.64	0.02	0.00	208.14
Total	0.29	1.86	1.37	0.00		0.12	0.12		0.12	0.12	0.00	207.64	207.64	0.02	0.00	208.14

3.5 Building Construction - 2014

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.29	1.86	1.37	0.00		0.12	0.12		0.12	0.12	0.00	207.64	207.64	0.02	0.00	208.14
Total	0.29	1.86	1.37	0.00		0.12	0.12		0.12	0.12	0.00	207.64	207.64	0.02	0.00	208.14

3.5 Building Construction - 2014

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.6 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.21	0.14	0.00		0.02	0.02		0.02	0.02	0.00	18.69	18.69	0.00	0.00	18.75
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.03	0.21	0.14	0.00		0.02	0.02		0.02	0.02	0.00	18.69	18.69	0.00	0.00	18.75

3.6 Paving - 2014

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	1.76	0.00	0.00	1.76
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	1.76	0.00	0.00	1.76

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.21	0.14	0.00		0.02	0.02		0.02	0.02	0.00	18.69	18.69	0.00	0.00	18.75
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.03	0.21	0.14	0.00		0.02	0.02		0.02	0.02	0.00	18.69	18.69	0.00	0.00	18.75

3.6 Paving - 2014

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	1.76	0.00	0.00	1.76
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	1.76	0.00	0.00	1.76

3.7 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.81					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.91	1.91	0.00	0.00	1.92
Total	1.81	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.91	1.91	0.00	0.00	1.92

3.7 Architectural Coating - 2014

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.81					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.91	1.91	0.00	0.00	1.92
Total	1.81	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.91	1.91	0.00	0.00	1.92

3.7 Architectural Coating - 2014

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

- Increase Density
- Increase Diversity
- Improve Walkability Design
- Improve Destination Accessibility
- Increase Transit Accessibility
- Integrate Below Market Rate Housing
- Provide Traffic Calming Measures

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.41	1.04	3.66	0.00	0.44	0.03	0.47	0.02	0.03	0.05	0.00	451.73	451.73	0.02	0.00	452.15
Unmitigated	0.51	1.37	4.68	0.01	0.63	0.05	0.68	0.03	0.05	0.07	0.00	642.09	642.09	0.03	0.00	642.65
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	560.15	608.60	515.95	1,251,815	865,126
General Office Building	35.23	7.58	3.14	63,800	44,092
Parking Lot	0.00	0.00	0.00		
Total	595.38	616.18	519.09	1,315,615	909,218

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Mid Rise	12.40	4.30	5.40	26.10	29.10	44.80
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	98.22	98.22	0.00	0.00	98.84
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	107.23	107.23	0.00	0.00	107.90
NaturalGas Mitigated	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	45.86	45.86	0.00	0.00	46.14
NaturalGas Unmitigated	0.01	0.05	0.02	0.00		0.00	0.00		0.00	0.00	0.00	52.36	52.36	0.00	0.00	52.68
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Mid Rise	926176	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	49.42	49.42	0.00	0.00	49.73
General Office Building	55104	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.94	2.94	0.00	0.00	2.96
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	52.36	52.36	0.00	0.00	52.69

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Mid Rise	812515	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	43.36	43.36	0.00	0.00	43.62
General Office Building	46867.2	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.50	2.50	0.00	0.00	2.52
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	45.86	45.86	0.00	0.00	46.14

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Mid Rise	305537					88.88	0.00	0.00	89.44
General Office Building	63072					18.35	0.00	0.00	18.46
Parking Lot	0					0.00	0.00	0.00	0.00
Total						107.23	0.00	0.00	107.90

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Mid Rise	280260					81.53	0.00	0.00	82.04
General Office Building	57374.4					16.69	0.00	0.00	16.80
Parking Lot	0					0.00	0.00	0.00	0.00
Total						98.22	0.00	0.00	98.84

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.66	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.07
Unmitigated	0.70	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.07
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr										MT/yr						
Architectural Coating	0.18					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.49					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.02	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	0.00	1.07
Total	0.69	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	0.00	1.07

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr										MT/yr						
Architectural Coating	0.18					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.46					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.02	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	0.00	1.07
Total	0.66	0.01	0.65	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	0.00	1.07

7.0 Water Detail

7.1 Mitigation Measures Water

- Apply Water Conservation Strategy
- Install Low Flow Bathroom Faucet
- Install Low Flow Kitchen Faucet
- Install Low Flow Toilet
- Install Low Flow Shower
- Use Water Efficient Irrigation System
- Use Water Efficient Landscaping

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					11.67	0.16	0.00	16.29
Unmitigated					13.59	0.19	0.00	19.02
Total	NA	NA	NA	NA	NA	NA	NA	NA

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Mid Rise	5.53809 / 3.49141					12.33	0.17	0.00	17.26
General Office Building	0.568748 / 0.348587					1.26	0.02	0.00	1.76
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Total						13.59	0.19	0.00	19.02

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Mid Rise	4.70738 / 3.07244					10.59	0.14	0.00	14.78
General Office Building	0.483436 / 0.306757					1.08	0.01	0.00	1.51
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Total						11.67	0.15	0.00	16.29

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					6.83	0.40	0.00	15.31
Unmitigated					8.54	0.50	0.00	19.14
Total	NA	NA	NA	NA	NA	NA	NA	NA

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Mid Rise	39.1					7.94	0.47	0.00	17.79
General Office Building	2.98					0.60	0.04	0.00	1.36
Parking Lot	0					0.00	0.00	0.00	0.00
Total						8.54	0.51	0.00	19.15

8.2 Waste by Land Use

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Mid Rise	31.28					6.35	0.38	0.00	14.23
General Office Building	2.384					0.48	0.03	0.00	1.08
Parking Lot	0					0.00	0.00	0.00	0.00
Total						6.83	0.41	0.00	15.31

9.0 Vegetation

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons				MT			
Unmitigated					30.91	0.00	0.00	30.91
Total	NA	NA	NA	NA	NA	NA	NA	NA

9.1 Vegetation Land Change

Vegetation Type

	Initial/Final	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	Acres	tons				MT			
Cropland	0 / 0.25					1.55	0.00	0.00	1.55
Total						1.55	0.00	0.00	1.55

9.1 Net New Trees

Species Class

	Number of Trees	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
		tons				MT			
Mixed Hardwood	40					29.36	0.00	0.00	29.36
Total						29.36	0.00	0.00	29.36