5.2 AIR QUALITY

INTRODUCTION

The proposed project is located in Contra Costa County, California, on the west side of Kirker Pass Road, immediately south of the existing Pittsburg City limits. The proposed project generally consists of a request for rezoning of the main project site from HPD (Hillside Planned Development) to RS-6 (Single-Family Residential, with 6,000-square-foot minimum lot sizes) and approval of the preliminary grading plan for 356 single-family homes. Construction is anticipated to begin in April 2015, and continue to be built in phases, through March 2018. Assuming an aggressive construction schedule, the proposed project would be fully constructed by 2018.

Air quality regulations applicable to this analysis are generally administered by the United States Environmental Protection Agency (US EPA), the California Air Resources Board (CARB), and the Bay Area Air Quality Management District (BAAQMD), with each agency responsible for different aspects of the proposed project's activities. (The role of each agency is discussed in detail in the Regulatory Framework section below). Air pollutant emission calculations conducted for the proposed project are contained in **Appendix 5.2** of this EIR.

ENVIRONMENTAL SETTING

Climate and Meteorology

The project area is located adjacent to the City of Pittsburg, within the boundaries of the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties as well as the southern half of Sonoma County and the southwestern portion of Solano County.

The climate of the Bay Area is Mediterranean in character, with mild, rainy winter weather from November through March and warm, dry weather from June through October. In the summer, the Pacific high-pressure system typically remains near the coast of California; subsidence of warm air over the cooler marine air associated with the Pacific high creates frequent summer atmospheric temperature inversions. Subsidence of warm air over the cooler marine air associated with the Pacific high creates frequent summer atmospheric temperature inversions. Subsidence inversions may be several hundred to several thousand feet deep, effectively trapping pollutants in a stagnant volume of air near the ground with little dispersion ability. Typically, May through October is considered the ozone smog season when transport studies have shown precursor emissions generated in Oakland and Berkeley are often transported to other regions of the Bay Area and beyond (e.g., Central Valley) that are more conducive to

the formation of ozone. In winter, the Pacific high-pressure system moves southward, allowing ocean-formed storms to move through the region. The frequent storms and infrequent periods of sustained sunny weather are not conducive to ozone formation. Radiational cooling during the evening, however, sometimes creates thin inversions and concentrates air pollutant emissions near the ground.

Mean minimum temperatures in the project area range from high 50s in the summer to low 40s in the winter. The average temperature in the area is in the mid-50s with mean maximum summer temperatures in the low 80s and winter temperatures in the low 60s. Annual and daily temperatures in the region have fairly small oscillations due to the moderating effects of the nearby ocean. In contrast to the steady temperature regime, rainfall is highly variable and confined almost exclusively to the "rainy" period from November through April. The area receives approximately 30 inches of rainfall annually, of which about 95 percent occurs during November to April. Precipitation may vary widely from year to year as a shift in the annual storm tracks of a few hundred miles can mean the difference between a very wet year and drought conditions. Winds in the project area typically vary diurnally. The usual pattern consists of daytime winds originating offshore from the west and northwest as air is funneled through the Golden Gate, and nighttime winds originating from the east and southeast due to the cooling of land areas. Summer afternoon sea breezes can often exceed 20 miles per hour. Peak annual winds occur during winter storms. South and southeast winds typically also precede weather systems passing through the region.

Regional Air Quality

The determination of whether a region's air quality is healthful or unhealthful is made by comparing contaminant levels in ambient air samples to national and state standards. Health-based air quality standards have been established by California and the federal government for the following criteria[1] air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter less than 10 microns in diameter (PM10), fine particulate matter less than 2.5 microns in diameter (PM2.5), and lead (Pb). These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The state and national ambient air quality standards for each of the monitored pollutants and their effects on health are summarized in **Table 5.2-1, Ambient Air Quality Standards**.

1 "Criteria" pollutants are air pollutants for which the US EPA has established air quality standards. They are so named because the US EPA periodically publishes criteria documents to help establish the federal air quality standards.

Table 5.2-1
Ambient Air Quality Standards

Air Pollutant	Concentration/Averaging Time: State Standard (CAAQS)	Concentration/Averaging Time: Federal Primary Standard (NAAQS)	Most Relevant Health Effects
Ozone	0.09 ppm, 1-hr. avg. 0.070 ppm, 8-hour avg.	0.075 ppm, 8-hour avg. (three-year average of annual 4th-highest daily maximum)	(a) Pulmonary function decrements and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; and (f) Property damage
Nitrogen Dioxide[1]	0.18 ppm, 1-hour avg. 0.030 ppm, annual arithmetic mean	0.100 ppm, 1-hour avg. (three-year avg. of the 98th percentile of the daily maximum 1-hour avg.) 0.053 ppm, annual arithmetic mean	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extrapulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration
Carbon Monoxide	20 ppm, 1-hour avg. 9.0 ppm, 8-hour avg.	35 ppm, 1-hour avg. (not to be exceeded more than once per year) 9 ppm, 8-hour avg. (not to be exceeded more than once per year)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses
Sulfur Dioxide[2]	0.25 ppm, 1-hr. avg. 0.04 ppm, 24-hour avg.	0.075 ppm, 1-hour avg. (three-year avg. of the 99th percentile)	Bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Respirable Particulate Matter (PM10)	50 μg/m^3, 24-hour avg. 20 μg/m^3, annual arithmetic mean	150 μg/m^3, 24-hour avg. (not to be exceeded more than once per year on average over three years)	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; and (c) Increased risk of premature death from heart or lung diseases in the elderly
Fine Particulate Matter (PM2.5)	12 μg/m^3, annual arithmetic mean	35 μg/m^3, 24-hour avg. (three-year average of 98th percentile) 15 μg/m^3, annual arithmetic mean (3-year average)	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; and (c) Increased risk of premature death from heart or lung diseases in the elderly
Lead[3]	1.5 μg/m^3, 30-day avg.	1.5 μg/m^3, calendar quarter 0.15 μg/m^3, three-month rolling average	(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	Reduction of visual range to less than 10 miles at relative humidity less than 70%, 8-hour avg. (10:00 AM–6:00 PM)	None	Visibility impairment on days when relative humidity is less than 70%.

Air Pollutant	Concentration/Averaging Time: State Standard (CAAQS)	Concentration/Averaging Time: Federal Primary Standard (NAAQS)	Most Relevant Health Effects
Sulfates	25 μg/m³, 24-hour avg.	None	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage
Hydrogen Sulfide	0.03 ppm, 1-hour avg.	None	Odor annoyance
Vinyl Chloride[3]	0.01 ppm, 24-hour avg.	None	Known carcinogen

Source: South Coast Air Quality Management District, Final Program Environmental Impact Report for the 2007 Air Quality Management Plan, (2007) Table 3.1-1, p. 3.1-3.
μg/m³ = microgram per cubic meter.
ppm = parts per million by volume.
[1] *On January 25, 2010, the US EPA promulgated a new 1-hour NO_2 standard. The new 1-hour standard is 0.100 parts per million (188 micrograms per cubic meter [μg/m³]) and became effective on April 12, 2010.*
[2] *On June 3, 2010, the US EPA issued a new 1-hour SO_2 standard. The new 1-hour standard is 0.075 parts per million (196 μg/m³). The US EPA also revoked the existing 24-hour and annual standards citing a lack of evidence of specific health impacts from long-term exposures. The new 1-hour standard becomes effective 60 days after publication in the Federal Register.*
[3] *CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*

Air quality of a region is considered to be in attainment of the National Ambient Air Quality Standards (NAAQS) if the measured ambient air pollutant levels are not exceeded more than once per year, except for O_3, PM10, PM2.5 and those based on annual averages or arithmetic mean. The NAAQS for O_3, PM10, and PM2.5 are based on statistical calculations over one- to three-year periods, depending on the pollutant. The SFBAAB is currently designated as a nonattainment area with respect to the national standard for 8-hour O_3, and nonattainment for 24-hour PM2.5; and is designated as attainment or unclassifiable for all other pollutants. Additional details regarding the attainment status are provided later in this section.

Air quality of a region is considered to be in attainment of the state standards if the measured ambient air pollutant levels for O_3, CO, SO_2 (1- and 24-hour), NO_2, PM10, PM2.5, and visibility reducing particles are not exceeded, and all other standards are not equaled or exceeded at any time in any consecutive three-year period. The SFBAAB is currently designated as a nonattainment area with respect to the state standards for O_3, PM10, and PM2.5 and is designated as attainment or unclassified for all other pollutants. Additional details regarding the attainment status are provided later in this section.

SFBAAB is affected by the pollutants generated by dense population centers, heavy vehicular traffic, and industry. However, as mentioned above, coastal sea breezes tend to transport pollutants generated within the SFBAAB to inland locations such as the Central Valley.

The air pollutants within the Basin are generated by two categories of sources: stationary and mobile. Stationary sources comprise "point sources," which have one or more emission sources at a single facility, or "area sources," which are widely distributed and produce many small emissions. Point sources are usually associated with manufacturing and industrial uses and include sources such as refinery boilers or combustion equipment that produce electricity or process heat. Examples of area sources include residential water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products, such as barbecue lighter fluid or hair spray. "Mobile sources" refer to operational and evaporative emissions from on- and off-road motor vehicles.

Local Air Quality

To identify ambient concentrations of the criteria pollutants, the BAAQMD operates more than 30 air quality monitoring stations throughout the SFBAAB. The nearest monitoring station to the project site are located at 2975 Treat Blvd in Concord, approximately 7.5 miles west-southwest of the project site, where O_3, PM10, PM2.5, CO, NO_X, and SO_2 are monitored.

Table 5.2-2, Ambient Pollutant Concentrations Measured Nearest the Project Site, lists the concentrations registered and the exceedances of California Ambient Air Quality Standards (CAAQS) and the NAAQS that have occurred at this monitoring station from 2010 through 2012, the most recent years for which data is available. During this period (i.e., 2010 through 2012), the station registered days above the state 1-hour and federal 8-hour ozone standard, state 24-hour PM10 standard, and federal 24-hour PM2.5 standard. No other exceedances of the state or federal standards were registered at this station between 2010 and 2012.

Surrounding Land Uses and Sensitive Receptors

Sensitive land uses in the vicinity of the project site include residential neighborhoods. The proposed project is located on Kirker Pass Road approximately 2 miles to the south of State Route (SR) 4 between Buchanan Road and Nortonville Road. The surrounding land is mostly undeveloped, with residential land uses to the north. Regional access to the project site is provided by SR 4.

Table 5.2-2
Ambient Pollutant Concentrations Measured Nearest the Project Site

Pollutant	Standards [1]	Year 2010	2011	2012
OZONE (O_3)				
Maximum 1-hour concentration (ppm)		0.103	0.099	0.093
Maximum 8-hour concentration (ppm)		0.087	0.078	0.085
Number of days exceeding state 1-hour standard	0.09 ppm	2	2	0
Number of days exceeding federal 8-hour standard	0.075 ppm	1	2	2
CARBON MONOXIDE (CO)				
Maximum 8-hour concentration (ppm)		0.95	1.24	0.82
Number of days exceeding state 8-hour standard	9.0 ppm	0	0	0
Number of days exceeding federal 8-hour standard	9 ppm	0	0	0
NITROGEN DIOXIDE (NO_2)				
Maximum 1-hour concentration (ppm)		0.042	0.042	0.040
Annual Average (ppm)		0.008	0.009	--
Number of days exceeding state 1-hour standard	0.18 ppm	0	0	0
SULFUR DIOXIDE (SO_2)				
Maximum 1-hour concentration in ppm		0.009	0.009	0.009
Maximum 24-hour concentration in ppm		0.002	--	--
Annual arithmetic mean concentration (ppm)		0.000	0.000	--
Number of days exceeding state 1-hour standard	0.25 ppm	0	0	0
Number of days exceeding state 24-hour standard	0.04 ppm	0	0	0
Number of days exceeding federal 24-hour standard	0.14 ppm	0	0	0
PARTICULATE MATTER (PM10)				
Maximum 24-hour concentration ($\mu g/m^3$)[2]		41.3	58.8	35.4
Maximum 24-hour concentration ($\mu g/m^3$)[3]		39.7	55.9	33.7
Annual arithmetic mean concentration ($\mu g/m^3$)[2]		13.5	15.3	12.3
Number of samples exceeding state 24-hour standard	50 $\mu g/m^3$	0	1	0
Number of samples exceeding federal 24-hour standard	150 $\mu g/m^3$	0	0	0
PARTICULATE MATTER (PM2.5)				
Maximum 24-hour concentration ($\mu g/m^3$)		36.4	47.5	32.2
Annual arithmetic mean concentration ($\mu g/m^3$)		7.0	7.8	6.6
Number of samples exceeding federal 24-hour standard	35 $\mu g/m^3$	1	2	0

Sources:
California Air Resources Board Air Quality Database http://www.arb.ca.gov/adam/welcome.html
US Environmental Protection Agency Air Quality Database http://www.epa.gov/air/data/

[1] *Parts by volume per million of air (ppm), micrograms per cubic meter of air ($\mu g/m^3$) or annual arithmetic mean (aam).*
[2] *Using state methods for sampling.*
[3] *Using federal methods for sampling.*

Localized Carbon Monoxide Concentrations

Traffic congestion along roadways and at intersections has the potential to generate localized high levels of CO. The BAAQMD monitoring stations have not recorded any exceedances of the state or federal CO standards since 1991. However, because elevated CO concentrations are generally localized, heavy traffic volumes and congestion at specific intersections or roadway segments can lead to high levels of CO, or hotspots, while concentrations at the nearest air quality monitoring station may be below state and federal standards.

REGULATORY FRAMEWORK

Air quality within the SFBAAB is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly as well as individually to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs. With respect to the proposed project, the BAAQMD would administer most of the air quality requirements affecting the proposed project. The agencies primarily responsible for improving the air quality within the San Francisco Bay Area Air Basin (SFBAAB) are discussed below along with their individual responsibilities.

US Environmental Protection Agency

Criteria Pollutants

The US EPA is responsible for enforcing the federal Clean Air Act (CAA) and the NAAQS. The NAAQS identify the concentrations of seven criteria pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The seven criteria pollutants are O_3, CO, NO_2, SO_2, PM10, PM2.5, and lead. The federal ambient air quality standards and the relevant health effects of the criteria pollutants are summarized above in **Table 5.2-1**.

The SFBAAB is currently classified by the US EPA as a nonattainment area for the 8-hour standard for O_3 and a nonattainment area for PM2.5. Additionally, it has been designated as an attainment/unclassifiable area for the 1-hour and 8-hour standards for CO and the annual standard for NO_2, and as an attainment area for the quarterly lead standard and 24-hour and annual SO_2 standards. The Basin is currently designated as unclassifiable for the 24-hour PM10 standard. In response to its enforcement responsibilities, the US EPA requires each state to prepare and submit a State Implementation Plan (SIP) describing how the state would achieve the federal standards by specified dates, depending on the severity of the air quality within the state or air basin. The BAAQMD has been delegated the

responsibility for implementing many of the CAA requirements for the region, which includes the location of the proposed project. The status of the SFBAAB with respect to attainment with the NAAQS is summarized in **Table 5.2-3, National Ambient Air Quality Standard Designations – San Francisco Bay Area Air Basin**.

Table 5.2-3
National Ambient Air Quality Standard Designations – San Francisco Bay Area Air Basin

Pollutant	Designation/Classification
Ozone (O_3)	Nonattainment
Carbon Monoxide (CO)	Attainment/Maintenance
Nitrogen Dioxide (NO_2)	Attainment/Unclassifiable
Sulfur Dioxide (SO_2)	Attainment
Respirable Particulate Matter (PM10)	Unclassifiable
Fine Particulate Matter (PM2.5)	Nonattainment
Lead (Pb)	Attainment

Source: US Environmental Protection Agency, "Region 9: Air Programs, Air Quality Maps," http://www.epa.gov/region9/air/maps/index.html. 2013.

[1] *The US EPA has promulgated a new 1-hour NAAQS for NO_2. The new 1-hour standard is 0.100 parts per million (188 micrograms per cubic meter) and became effective on April 12, 2010. The US EPA will make nonattainment area designations for the 1-hour standard by 2012.*

Hazardous Air Pollutants

Regulation of hazardous air pollutants (HAPs) under federal regulations is achieved through federal and state controls on individual sources. Federal law defines HAPs as non-criteria air pollutants with short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects. The 1990 federal CAA Amendments offer a comprehensive plan for achieving significant reductions in both mobile and stationary source emissions of HAPs. Under the 1990 CAA Amendments, a total of 189 chemicals or chemical families were designated HAPs because of their adverse human health effects. Title III of the 1990 federal CAA Amendments amended Section 112 of the CAA to replace the former program with an entirely new technology-based program. Under Title III, the US EPA must establish maximum achievable control technology emission standards for all new and existing "major" stationary sources through promulgation of National Emission Standards for Hazardous Air Pollutants (NESHAP). Major stationary sources of HAPs are required to obtain an operating permit from the BAAQMD pursuant to Title V of the 1990 CAA Amendments. A major source is defined as one that emits at least 10 tons per year of any HAP or at least 25 tons per year of all HAPs. The proposed project would not be considered a major source.

California Air Resources Board

The California Air Resources Board (CARB), a branch of the California Environmental Protection Agency (CalEPA), oversees air quality planning and control throughout California. It is primarily responsible for ensuring implementation of the 1988 California Clean Air Act (CCAA), for responding to the federal CAA requirements and for regulating emissions from motor vehicles and consumer products within the state. The CCAA and other California air quality statutes designate local air districts, such as the BAAQMD, with the responsibility for regulating most stationary sources, and to a certain extent, area sources.

Like the US EPA, CARB has established ambient air quality standards for the state (i.e., CAAQS). These standards apply to the same seven criteria pollutants as the federal CAA and also address sulfates (SO_4), visibility-reducing particles, hydrogen sulfide (H_2S) and vinyl chloride (C_2H_3Cl). The CCAA standards are more stringent than the federal standards and, in the case of PM10 and SO_2, far more stringent. Based on monitored pollutant levels, the CCAA divides O_3 nonattainment areas into four categories – moderate, serious, severe, and extreme – to which progressively more stringent planning and emission control requirements apply.

The SFBAAB is a nonattainment area for the California 1-hour and 8-hour ozone standard. The SFBAAB is designated as nonattainment for the California 24-hour and annual PM10 standards, as well as the California annual PM2.5 standard. The SFBAAB is designated as attainment or unclassifiable for all other CAAQS. The ozone precursors, reactive organic gases (ROG) and oxides of nitrogen (NO_X), in addition to PM10, are the pollutants of concern for projects located in the SFBAAB. The status of the SFBAAB with respect to attainment with the CAAQS is summarized in **Table 5.2-4, California Ambient Air Quality Standard Designations – San Francisco Bay Area Air Basin**.

Table 5.2-4
California Ambient Air Quality Standard Designations – San Francisco Bay Area Air Basin

Pollutant	Designation/Classification
Ozone (O_3)	Nonattainment
Carbon Monoxide (CO)	Attainment
Nitrogen Dioxide (NO_2)	Attainment
Sulfur Dioxide (SO_2)	Attainment
Respirable Particulate Matter (PM10)	Nonattainment
Fine Particulate Matter (PM2.5)	Nonattainment
Lead (Pb)	Attainment
Sulfates (SO_4)	Attainment
Hydrogen Sulfide (H_2S)	Unclassified
Vinyl Chloride	Unclassified
Visibility Reducing Particles	Unclassified

Source: California Air Resources Board, "Area Designations Maps/State and National," http://www.arb.ca.gov/desig/adm/adm.htm. 2013.

Toxic Air Contaminants

California law defines toxic air contaminants (TACs) as air pollutants having carcinogenic or other health effects. A total of 245 substances have been designated TACs under California law; they include the federal HAPs adopted as TACs in accordance with Assembly Bill 2728. The Air Toxics Hot Spots Information and Assessment Act of 1987, Assembly Bill 2588 (AB 2588), seeks to identify and evaluate risk from air toxics sources; AB 2588 does not regulate air toxics emissions directly. Under AB 2588, sources emitting more than 10 tons per year of any criteria air pollutant must estimate and report their toxic air emissions to the local air districts. Local air districts then prioritize facilities on the basis of emissions, and high priority facilities are required to submit a health risk assessment and communicate the results to the affected public. Depending on risk levels, emitting facilities are required to implement varying levels of risk reduction measures. The BAAQMD is responsible for implementing AB 2588 in the SFBAAB.

The BAAQMD is currently working to control TAC impacts from local hot spots and from ambient background concentrations. The control strategy involves reviewing new sources to ensure compliance with required emission controls and limits, maintaining an inventory of existing sources to identify major TAC emissions and developing measures to reduce TAC emissions. The BAAQMD publishes the results of the various control programs in an annual report, which provides information on the current TAC inventory, AB 2588 risk assessments, TAC monitoring programs, and TAC control measures and plans.

One of the TACs being controlled by the BAAQMD is particulate matter from diesel-fueled engines, also known as diesel particulate matter (DPM). Compared to other TACs, DPM emissions are estimated to be responsible for about 70 percent of the total ambient air toxics risk in the SFBAAB. On a statewide basis, the average potential cancer risk associated with these emissions is over 500 potential cancer cases per million exposed people. In addition to these general risks, diesel exhaust particulate can also present elevated localized or near-source exposures. Depending on the activity and nearness to receptors, these potential risks can range from a low number to 1,500 cancer cases per million exposed people (CARB 2010).

Bay Area Air Quality Management District

Management of air quality in the SFBAAB is the responsibility of the BAAQMD. The BAAQMD is responsible for bringing and/or maintaining air quality in the SFBAAB within federal and state air quality standards. Specifically, the BAAQMD has responsibility for monitoring ambient air pollutant levels throughout the SFBAAB and developing and implementing attainment strategies to ensure that future emissions would be within federal and state standards. The following plans have been developed by the BAAQMD to achieve attainment of the federal and state ozone standards. The Clean Air Plan (CAP) and Ozone Strategy fulfill the planning requirements of the CCAA, while the Ozone Attainment Plan fulfills the federal CAA requirements.

Clean Air Plans

The CCAA requires air districts within nonattainment areas to prepare triennial assessments and revisions to their Clean Air Plans (CAPs). The BAAQMD has prepared a series of CAPs, the most recent and rigorous of which was adopted in September 2010 (BAAQMD 2010). The 2010 CAP continues the air pollution reduction strategy established by the 1991 CAP and represents the fourth triennial update to the 1991 CAP, following previous updates of 1994, 1997, and 2000. The 2010 CAP is designed to address attainment of the state standard for ozone, particulate matter, air toxics, and greenhouse gases. CAPs are intended to focus on the near-term actions through amendments of existing regulations and promulgation of new District regulations.

The Bay Area 2010 CAP provides a comprehensive plan to improve Bay Area air quality and protect public health. The 2010 CAP defines a control strategy that the BAAQMD and its partners would implement to: (1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that poses the greatest health risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce greenhouse gas emissions to protect the climate. The 2010 CAP is designed to update the most recent

ozone plan, the BAAQMD 2005 Ozone Strategy, and to comply with state air quality planning requirements as codified in the California Health and Safety Code. State law required the CAP to include all feasible measures to reduce emissions of ozone precursors and to reduce transport of ozone precursors to neighboring air basins.

The SFBAAB was designated as non-attainment for the national 24-hour PM2.5 standard, and was required to prepare a PM2.5 State Implementation Plan (SIP) pursuant to federal air quality guidelines by December 2012. However, in January 2013, the US EPA issued a final ruling that the Bay Area has attained the PM2.5 standard, and is therefore not required to submit a SIP as long as monitoring data shows that the Bay Area attains the standard. The SFBAAB will continue to be designated "nonattainment" until the BAAQMD submits a redesignation request and that request is approved by the US EPA. The 2010 CAP is not a SIP document and does not respond to federal requirements for PM2.5 or ozone planning. However, in anticipation of future PM2.5 planning requirements, the CAP control strategy also aims to reduce PM emissions and concentrations. In addition, US EPA is currently reevaluating national ozone standards, and is likely to tighten those standards in the near future. The 2010 CAP updates the BAAQMD's most recent state ozone plan, the 2005 Ozone Strategy, by addressing new emerging challenges and opportunities. The 2010 CAP control strategy includes revised, updated, and new measures in the three traditional control measure categories: Stationary Source Measures, Mobile Source Measures, and Transportation Control Measures. In addition, the CAP identifies two new categories of control measures: Land Use and Local Impact Measures, and Energy and Climate Measures (BAAQMD 2010a). The control measures in the CAP will also help in the SFBAAB's continuing effort to attain national ozone standards.

BAAQMD Rules and Regulations

Specific rules and regulations have been adopted by the BAAQMD that limit emissions that can be generated by various uses and/or activities. These rules regulate not only the emissions of the state and federal criteria pollutants, but also the emissions of TACs. The rules are also subject to ongoing refinement by the BAAQMD. A few of the primary BAAQMD rules applicable to the project include the following:

- **Regulation 2, Rule 1 (General Requirements):** This rule requires new and modified sources of air pollution to acquire permits (e.g., Authority to Construct, Permit to Operate) in order to monitor stationary source emissions within the BAAQMD's jurisdiction. The rule also includes a list of equipment and processes that would be exempt from permitting requirements. Among others, these include cooling towers and boilers with a heat input rating less than 10 million British thermal units (BTU) per hour fired exclusively with natural gas, liquefied petroleum gas, or a combination, and laboratories located in a building where the total number of fume hoods within the building is fewer

than 50 or the total laboratory space is less than 25,000 square feet, provided that responsible laboratory management practices are used.

- **Regulation 8, Rule 3 (Architectural Coatings):** This rule sets limits on the ROG content in architectural coatings sold, supplied, offered for sale, or manufactured within the BAAQMD's jurisdiction. The rule also includes time schedules that specify when more stringent ROG standards are to be enforced. The rule applies during the construction phase of a project. In addition, any periodic architectural coating maintenance operations are required to comply with this rule.

- **Regulation 8, Rule 15 (Emulsified and Liquid Asphalts):** This rule sets limits on the ROG content in emulsified and liquid asphalt used for maintenance and paving operations. The rule includes specific ROG content requirements for various types of asphalt (e.g., emulsified asphalt, rapid-cure liquid asphalt, slow-cure liquid asphalt). This rule applies during the construction phase of a project. In addition, any future asphalt maintenance of a project's roads would be required to comply with the ROG standards set in Rule 15.

- **Regulation 9, Rule 6 (Nitrogen Oxide Emission from Natural Gas-Fired Water Heaters):** This rule sets a limit on the NO_x emissions from natural gas-fired water heaters. The rule applies to natural gas-fired water heaters manufactured after July 1, 1992 with a heat input rating of less than 75,000 BTU/hr. Water heaters subject to the rule must not emit more than 40 nanograms of NO_x per joule of heat output.

BAAQMD CEQA Guidelines

In April 1996, the BAAQMD prepared its first *BAAQMD California Environmental Quality Act (CEQA) Guidelines* as a guidance document to provide lead government agencies, consultants, and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA. On June 2, 2010, the BAAQMD adopted updated *CEQA Air Quality Guidelines*, which were again updated in May 2011. These guidelines describe the criteria that the BAAQMD uses when reviewing and commenting on the adequacy of environmental documents, such as this EIR. The updated *BAAQMD CEQA Air Quality Guidelines* recommend thresholds for use in determining whether projects would have significant adverse impacts on air quality, identify methodologies for predicting project emissions and impacts, and identify measures that can be used to avoid or reduce air quality impacts.

The significance thresholds under BAAQMD's 2010 *CEQA Air Quality Guidelines* were challenged in a lawsuit, and on March 5, 2012, the Alameda County Superior Court ordered that the BAAQMD must set aside the 2010 *CEQA Air Quality Guidelines*, and not approve any new Guidelines until the District complies with CEQA regarding implementation of the revised thresholds. The BAAQMD accordingly issued a statement recommending that the 2010 significance thresholds not be used to determine the significance of air quality impacts, including impacts from greenhouse gas (GHG) emissions. Instead, the BAAQMD recommended that the lead agency should "determine appropriate air quality thresholds of

significance based on substantial evidence in the record" (BAAQMD 2012). On July 13, 2013, the Court of Appeal ruled that adoption of the thresholds by the BAAQMD was not subject to CEQA. While the 2010 *CEQA Air Quality Guidelines* have yet to be officially reinstated and although this decision may still be appealed, the City has determined that in this circumstance it will use the methodological approach and emissions thresholds in the 2010 *CEQA Air Quality Guidelines* to evaluate the impacts of the proposed project. The thresholds for the evaluation of air quality impacts from the 2010 *CEQA Air Quality Guidelines* are presented under **Thresholds of Significance** below.

Local Plans and Policies

City of Pittsburg General Plan

Local governments have the authority (Cal Const. Art. 11 Sec. 7) to reduce air pollution through their police power and land use decision-making authority. Specifically, local governments are responsible for the mitigation of emissions resulting from land use decisions and for the implementation of measures as outlined in the Air Quality Management Plan (AQMP). The AQMP assigns local governments certain responsibilities to assist the Basin in meeting air quality goals and policies. In general, a first step toward implementation of a local government's responsibility is accomplished by identifying air quality goals, policies, and implementation measures in its general plan. In accordance with the CEQA requirements and the CEQA review process, local governments assess air quality impacts, require mitigation of potential air quality impacts by conditioning discretionary permits, and monitor and enforce implementation of such mitigation. Development of the proposed project is subject to the City's 2020 General Plan. The City of Pittsburg 2020 General Plan identifies goals and policies to guide development within the City. Specific policies of the General Plan that are particularly relevant to air quality are listed below:

Air Quality

Goal 9-G-9 Work toward improving air quality and meeting all federal and state ambient air quality standards by reducing the generation of air pollutants from stationary and mobile sources.

Goal 9-G-10 Reduce the potential for human discomfort or illness due to local concentrations of toxic contaminants odors and dust.

Goal 9-G-11 Reduce the number of motor vehicle trips and emissions accounted to Pittsburg residents and encourage land use and transportation strategies that promote use of alternatives to the automobile for transportation, including bicycling, bus transit, and carpooling.

Policy 9-P-29	Cooperate with the Bay Area Air Quality Management District to achieve emissions reductions for ozone and its precursor, PM10.
Policy 9-P-30	Cooperate with the Bay Area Air Quality Management District to ensure compliance with dust abatement measures during construction. This measure would reduce particulate emissions from construction and grading activities.
Policy 9-P-33	Encourage new residential development and remodeled existing homes to install clean-burning fireplaces and wood stoves. Residential woodburning is a growing source of localized air pollution. Woodsmoke released from fireplaces and wood stoves contains carbon monoxide, nitrogen dioxide, and PM10. Pollution can be reduced by installing gas fireplaces or EPA certified wood heaters.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Thresholds of Significance

In accordance with Appendix G of the *2013 State CEQA Guidelines*, the impact of the proposed project related to air quality would be considered significant if it would:

- conflict with or obstruct implementation of the applicable air quality plan;
- violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- expose sensitive receptors to substantial pollution concentrations; or
- create objectionable odors affecting a substantial number of people.

As noted above, the City has determined that it will use the methodological approach and emissions thresholds in the BAAQMD guidelines to evaluate the impacts of the proposed project. The BAAQMD's evaluation criteria for determining air quality impacts provide defined thresholds for pollutant emissions. These thresholds for air quality impacts from the BAAQMD 2010 *CEQA Air Quality Guidelines* are presented below.

Construction Emissions

Impacts related to construction emissions associated with the proposed project would be considered significant if the project emissions exceeded the thresholds listed in **Table 5.2-5, Average Daily Construction Emission Thresholds**.

Table 5.2-5
Average Daily Construction Emission Thresholds

Criteria Air Pollutants	Average Daily Emissions (Pounds per Day)
ROG	54
NO_x	54
PM10 (Exhaust)	82
PM2.5 (Exhaust)	54

Source: Bay Area Air Quality Management District, 2010b.

Operational Emissions

Impacts from direct and/or indirect operational emissions associated with the proposed project would be considered significant if they exceeded the thresholds in **Table 5.2-6, Operational Emission Thresholds**.

Table 5.2-6
Operational Emission Thresholds

Criteria Air Pollutants	Average Daily Emissions (Pounds per Day)
ROG	54
NO_x	54
PM10	82
PM2.5	54

Source: Bay Area Air Quality Management District, 2010b.

Direct emissions are those that are emitted on a site, and include stationary sources and on-site mobile equipment, if applicable. Examples of land uses and activities that generate direct emissions are industrial operations and sources subject to an operating permit by the BAAQMD. Indirect emissions come from mobile sources that access the project site, but generally are emitted off-site. For many types of

land development projects, the principal source of air pollutant emissions is the motor vehicle trips generated by the project.

Local Community Risk and Toxic Air Contaminant Emissions

Local community risk and hazard impacts are associated with TACs and PM2.5 because emissions of these pollutants can have significant health impacts at the local level. The proposed project would result in a significant impact if its emissions of TACs or PM2.5 resulted in any of the following:

- Non-compliance with a qualified risk reduction plan; or,
- An incremental increase in cancer risk of more than 10 in 1 million, or an increase in non-cancer risk (i.e., chronic or acute) as measured by a hazard index greater than 1.0; or
- An incremental increase in ambient PM2.5 of more than 0.3 micrograms per cubic meter ($\mu g/m^3$) annual average.

Odors

For impacts associated with odors, the BAAQMD considers project operations that result in five confirmed complaints per year averaged over three years to have a significant impact.

Local Carbon Monoxide Concentrations

The impact from indirect CO emissions is considered significant if the emissions would contribute to a violation of the state standards for CO (9.0 ppm averaged over 8 hours and 20 ppm over 1 hour). The BAAQMD recommends CO modeling for a plan or a project in which: (1) project vehicle emissions of CO would exceed 550 pounds per day; (2) project traffic would affect intersections or roadway segments operating at level of service (LOS) E or F, or would cause a decline to LOS E or F;[2] or (3) project traffic would increase traffic volumes on nearby roadways by 10 percent or more (unless the increase in traffic volume is less than 100 vehicles per hour). Intersections are determined to operate at an LOS between A and F (LOS A being the best and LOS F being the worst) according to congestion or delay time, volume/capacity ratio, and relative flow of traffic at the intersection. Intersections that are determined to operate at LOS F or E have the potential to cause a CO hotspot (i.e., exceedance of the CAAQS). If necessary, a simplified CO modeling analysis, described in the BAAQMD *CEQA Air Quality Guidelines,* may be used to determine localized CO concentrations. If modeling demonstrates that the traffic added by the project to a congested intersection or roadway would not cause a violation of the state standard at

2 Levels of Service (LOS) range from A (least congested) with a condition of free flow with low volumes and high speeds to F (most congested) with stop and go, low-speed conditions with little or poor maneuverability.

existing or reasonably foreseeable receptors, the motor vehicle trips generated by the project would not have a significant impact on local air quality. The traffic study prepared for the proposed project indicates that three study intersections would operate at an LOS of E or F with or without the project. As the proposed project would add traffic to intersections that would operate at an LOS of E or F a CO analysis is required.

CEQA Checklist Items Adequately Addressed in the Initial Study

All air quality thresholds listed above are addressed below.

Methodology

Air quality impacts resulting from the implementation of proposed development project fall into two categories: short-term impacts due to construction activities and long-term impacts from the day-to-day operations of the proposed project. Construction activities would affect air quality on a local and regional level due to fugitive dust, PM10, and other criteria pollutant emissions associated with heavy-duty construction equipment exhaust. Operational criteria pollutant emissions would be generated primarily by project-related motor vehicle trips. Emissions would also be generated by area sources such as heaters, stoves, and landscaping equipment. The California Emissions Estimator Model (CalEEMod)[3] is a program that calculates air pollutant emissions from construction and operation of land development projects. It incorporates the California Air Resources Board EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions. The model also incorporates factors specific to the project region, such as vehicle fleet mixes. During project construction, the model can analyze emissions that occur during different phases, such as grading and building construction, concurrently or separately. This proposed project would be constructed in four separate phases beginning in April 2015 and continuing through March 2018. The phases would be generally similar in terms of total area disturbed, area disturbed per day, the volume of cut and fill, and building construction, and would overlap, with up to three phases underway at any one time. For the purposes of efficiency, a single phase was modeled. The results of this single phase were then appropriately added to represent overlapping phases as they are actually scheduled to occur. For example, if construction and paving of Phases 1 and 2 were occurring while grading of Phase 3 was taking place, the estimated daily emissions associated with all of these activities would be added for a daily emissions total. The worst-case situation was then chosen to compare to significance thresholds. The emission calculations and estimated daily emissions are described in further detail below.

3 South Coast Air Quality Management District, "CalEEMod, Version 2011.1.1," http://www.caleemod.com/.

Impact Analysis

Impact AQ-1 **The proposed project would not conflict with or obstruct implementation of the applicable air quality plan.** ***(Less than significant)***

According to the BAAQMD 2010 *CEQA Air Quality Guidelines*, a project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. A project is conforming if it complies with all applicable BAAQMD rules and regulations, complies with all proposed control measures from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s). Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. The proposed project is covered under the BAAQMD 2010 *Bay Area 2010 Clean Air Plan* (CAP). The CAP based its assumptions on forecasts contained in the Metropolitan Transportation Commission *Regional Transportation Plan 2030* (RTP 2030) for traffic growth[4], as well as population and growth forecasts produced by the Association of Bay Area Governments (ABAG). Both the RTP 2030 and ABAG used existing General Plans and zoning information as data in their projections. The proposed project is included in the Pittsburg General Plan and the main project site is zoned for single-family homes. Therefore, the proposed project would not conflict with or obstruct implementation of BAAQMD air quality plans. The proposed project would have a less than significant impact with respect to this criterion.

Mitigation Measures

No mitigation measures are required.

Impact AQ-2 **Construction and operation of the proposed project would violate an air quality standard or contribute substantially to an existing or projected air quality violation.** ***(Potentially significant)***

Construction Emissions

Assuming an aggressive construction schedule, construction associated with the proposed project would occur between April 2015 and March 2018. As previously mentioned, construction would occur in four separate but similar and overlapping phases. Therefore, one fourth of the total construction was modeled, including grading, construction, paving, and architectural coating. The results provided would be representative of construction of any of the four phases, and the daily emissions estimates were added as appropriate to represent the overlapping nature of the construction phases to obtain daily emissions

4 Metropolitan Transportation Commission, *Regional Transportation Plan 2030*, (2005).

totals. These daily totals were then averaged on an annual basis to compare with the BAAQMD average daily emissions thresholds. Site-specific or project-specific data was used in the CalEEMod model where available. The default construction equipment and vehicle mixes generated by CalEEMod were assumed for grading and building construction purposes. The number of vendor trips (e.g., transport of building materials) and worker trips were also based on default values in the CalEEMod model. However, CalEEMod does not currently allow for on-site balancing of grading and excavation materials, and assumes that all material to be excavated or used as fill is either exported or imported respectively. The proposed project would balance all cut and fill on-site, and no material would be imported or exported. In order to approximate this, haul truck trips were assumed to be 0.25 mile long and occur on unpaved roads.

Table 5.2-7, Estimated Construction Emissions, identifies the average daily emissions for each pollutant during each year of project construction. Construction emissions include all emissions associated with the construction equipment, grading and trenching activities, worker trips, on-road diesel trucks, paving, and architectural coatings and finishing.

Table 5.2-7
Estimated Construction Emissions

	Average Emissions in Pounds per Day							
Construction Year	**ROG**	**NOx**	**CO**	**SOx**	**PM10 (exhaust)**	**PM10 (total)**	**PM2.5 (exhaust)**	**PM2.5 (total)**
2015	9.69	83.56	86.33	0.07	3.83	231.80	3.54	27.11
2016	52.35	161.37	150.35	0.14	8.49	313.03	7.89	39.48
2017	57.99	86.25	70.10	0.08	5.24	81.92	4.91	12.96
2018	15.32	8.43	6.08	0.01	0.59	0.69	0.55	0.58
Thresholds	54	54	—	—	82	—	54	—
Exceeds Threshold?	YES	YES	—	—	NO	—	NO	—

*Source: Impact Sciences, Inc. Detailed CalEEMod emissions calculations are provided in **Appendix 5.2**.*
Totals in table may not appear to add exactly due to rounding in the computer model calculations.
Thresholds for PM10 and PM2.5 apply only to vehicle exhaust.

As shown in the above table, due to overlapping construction schedules of Phases 1, 2, and 3, construction emissions would exceed BAAQMD thresholds of significance for ROG during 2017 and for NOx during 2015, 2016, and 2017. Therefore, construction of the proposed project would have a significant impact on air quality. **Mitigation Measures MM AQ-2a** and **MM AQ-2b** are proposed to reduce impacts.

Fugitive Dust

The BAAQMD thresholds for particulate matter (PM) only apply to vehicle exhaust emissions and not to fugitive dust emissions (in the form of PM10 and PM2.5) generated by grading and earthmoving activities. The BAAQMD has determined that emissions of fugitive dust during construction are adequately addressed by the use of best practices. However, a number of scoping comments received on the Notice of Preparation (NOP) for this EIR expressed concern over the large amount of grading and earthmoving activities and resulting potential for large amounts of fugitive dust. Although most air districts in California approach fugitive dust in a manner similar to that used by the BAAQMD, the South Coast Air Quality Management District (SCAQMD) has put forth significance thresholds for PM that include all sources of PM10 and PM2.5. For PM10, the SCAQMD construction threshold is 150 pounds per day (lbs/day), while the PM2.5 threshold is 55 lbs/day. The average daily emissions of PM10 and PM2.5 for the proposed project would be greatest in 2016, with total PM10 estimated at 139 lbs/day and total PM2.5 at 24 lbs/day. These totals include fugitive dust as well as vehicle exhaust, and do not include any mitigation or control measures. The daily average emissions generated by the proposed project for total PM10 and PM2.5 would be below the SCAQMD thresholds for significance.

Regardless, project construction activities would be required to implement control measures for fugitive dust emissions. Practices identified by the BAAQMD for use in the Bay Area are included in Tables 8-1, Basic Construction Mitigation Measures, and 8-2, Additional Construction Mitigation Measures, in the BAAQMD 2010 *CEQA Air Quality Guidelines*. Table 8-1 comprises measures that the BAAQMD recommends be used on all construction projects, and Table 8-2 includes measures that should be used on projects that exceed significance thresholds for construction. As the proposed project would exceed thresholds, the measures from both tables have been included as mitigation measures (**Mitigation Measures MM AQ-2a** and **MM AQ-2b**). According to the BAAQMD, the use of best practices has been shown to reduce fugitive dust emissions by up to 90 percent. Therefore, implementation of these measures would greatly reduce fugitive dust emissions from construction, and result in a less than significant impact on nearby residents.

Operational Emissions

Operational emissions would be generated by both stationary and mobile sources as a result of normal day-to-day activities on the main project site after occupation. Stationary emissions would be generated by the use of natural gas in space and water heating devices (including residential use water heater and boilers). Mobile emissions would be generated by the motor vehicles traveling to and from the main project site.

The project would construct approximately 356 single-family homes, resulting in new vehicle trips to and from the site. The operational emissions associated with the proposed project were estimated using the CalEEMod model. CalEEMod can estimate mobile and area source emissions associated with land uses specific to a given operational year and location. Assuming an aggressive construction schedule, the proposed project would be fully constructed by 2018; therefore, 2018 was used to estimate operational emissions. Trip generation rates provided by Abrams Associates Traffic Engineering[5] were used to estimate motor vehicle emissions. **Table 5.2-8, Estimated Operational Emissions**, shows the pollutant emissions associated with the proposed residential land use on the main project site. As discussed previously, only a single phase of the proposed project was modeled out of four potential total phases of construction; the results of the model run were then multiplied by four to obtain the total operational emissions estimates.

As shown in **Table 5.2-8**, operational emissions associated with implementation of the proposed project would not exceed the thresholds for significance for any pollutant. Projects that generate emissions below the thresholds of significance would not be considered to contribute a substantial amount of air pollutants to regional air quality. Therefore, operational emissions associated with the proposed project would result in a less than significant impact on air quality.

Table 5.2-8
Estimated Operational Emissions

Emissions Source	Emissions in Pounds per Day					
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Mobile Sources	9.64	21.00	110.08	0.24	15.40	4.56
Area Sources	17.44	3.52	30.92	0.02	0.40	0.40
Emissions Total	**27.08**	**24.52**	**141.00**	**0.26**	**15.80**	**4.96**
Threshold	**54**	**54**	**—**	**—**	**82**	**54**
Exceeds Threshold?	NO	NO	--	--	NO	NO

*Source: Impact Sciences, Inc. Emission calculations are provided in **Appendix 5.2**.*
Totals in table may not appear to add exactly due to rounding in the computer model calculations.

Mitigation Measures

As shown in **Table 5.2-7**, construction emissions would exceed BAAQMD thresholds of significance for ROG and NOx; therefore, construction of the proposed project would have a significant impact on air quality. Additionally, the BAAQMD 2010 *CEQA Air Quality Guidelines* recommend that all projects

5 Abrams Associates Traffic Engineering, Inc., *Transportation Impact Analysis Montreux Residential Project Subdivision 8279*, (2013).

comply with basic construction mitigation measures. As such, the project is required to comply with the following measures.

MM AQ-2a The project shall comply with the following basic construction mitigation measures from Table 8-1 in the BAAQMD 2010 *CEQA Air Quality Guidelines*:

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

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

C. 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.

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

E. Building pads shall be laid immediately after grading unless seeding or soil binders are used.

F. 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 informing workers of this provision shall be provided for construction workers at all access points.

G. 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.

H. 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.

MM AQ-2b The project shall comply with the following additional construction mitigation measures taken from Table 8-2 in the BAAQMD 2010 *CEQA Air Quality Guidelines* for projects that exceed construction significance thresholds:

A. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.

B. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

C. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.

D. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.

E. All trucks and equipment, including their ties, shall be washed off prior to leaving the site.

F. Site accesses to a distance of 100 feet from the paved road shall be treated with a six to 12 inch compacted layer of wood chips, mulch or gravel.

G. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.

H. The idling time of diesel powered construction equipment shall be minimized to no more than 2 minutes.

I. The project shall develop a plan to be submitted to the City's Engineering Department, demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NO_x reduction and 45 percent PM reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.

J. Low volatile organic compound (VOC) (i.e., ROG) paint coatings that exceed local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings) shall be used.

K. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NO_x and PM.

L. All contractors shall use equipment that meets CARB's most recent certification standard for off-road heavy-duty diesel engines.

Though it is difficult to quantify exact reductions, implementation of the mitigation measures described above would reduce emissions of ROG, NO_x, and PM. It is likely that ROG emissions would be reduced to levels below significance thresholds, as they are only minimally above the threshold without mitigation. However, NO_x emissions exceed the significance threshold substantially, and it is unlikely that the measures listed above would be sufficient to reduce NO_x emissions to a less than significant level. Therefore, it is conservatively assumed that project emissions of NO_x during construction would exceed significance thresholds, even after mitigation.

Residual Impacts after Mitigation

Even with the implementation of mitigation, this impact would be significant and unavoidable.

Impact AQ-3 **Development of the proposed project would expose nearby sensitive receptors to substantial concentrations of toxic air contaminants.** ***(Potentially significant)***

Toxic Air Contaminants

Sensitive receptors are defined as persons who are at particular risk of health impacts due to air pollution, such as children, the elderly, and the infirm. For the purposes of determining health risk, the BAAQMD recommends that sensitive receptors be assumed to exist at the following locations: residential dwellings (including apartments, houses, and condominiums); schools, colleges, and universities; daycares; hospitals; and senior-care facilities.

The proposed project is located on Kirker Pass Road approximately 2 miles south of SR 4 between Buchanan Road and Nortonville Road. The surrounding land is mostly undeveloped, with residential land uses to the north. Regional access to the proposed project is provided by SR 4, which is a major east-west route in Contra Costa County traveled by heavy-duty diesel-fueled vehicles, as well as other motor vehicles. CARB has determined that health effects are generally elevated near heavily traveled roadways. The primary pollutant of concern near freeways and heavily traveled roadways is diesel particulate matter (DPM), since it is identified by the State of California as a toxic air contaminant (TAC) based on its potential to cause cancer, premature death, and other health problems.

The BAAQMD 2010 *CEQA Air Quality Guidelines* provides screening criteria for the siting of sensitive receptors in relation to sources of TACs, such as highways or industrial facilities. The criterion recommends identifying all major roadways and sources of TACs in the area surrounding the proposed project. If there are no such sources within 1,000 feet of the proposed project, no further analysis of impacts associated with DPM or TACs for potential receptors at the main project site would be needed. The BAAQMD has also provided mapping tools for identifying and locating permitted sources of TACs within the jurisdiction of the BAAQMD.[6] According to the BAAQMD stationary source tool, the nearest source of TACs is well over 2,000 feet from the main project site. The nearest major roadway (defined by the BAAQMD as carrying more than 10,000 vehicles per day) is SR 4, which is over 2 miles away. Therefore, the proposed project would not expose new residential receptors on the main project site to substantial TAC emissions, and the impact would be less than significant.

---

6 The mapping tools are available from the BAAQMD website: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

A new development project also has the potential to expose existing receptors, such as the residential neighborhood to the north, to TACs. However, the proposed project is a residential development with no stationary sources that would produce substantial emissions of TACs. With regard to mobile sources, the primary source of TACs would be diesel-fueled vehicles such as heavy-duty trucks, buses, trains, and other commercial vehicles. The proposed project would not generate a substantial amount of new trips of these types of vehicles, and would therefore not be a source of TACs from mobile sources.

Construction activities also have the potential to emit TACs. The primary TAC of concern associated with construction is Diesel Particulate Matter (DPM), which is emitted in equipment and vehicle exhaust in the form of PM2.5 emissions. The BAAQMD *CEQA Air Quality Guidelines* provide guidance and thresholds for the evaluation of an increase in cancer risk, or the potential for acute and chronic health effects from exposure to construction TACs. The BAAQMD *CEQA Air Quality Guidelines* also include a concentration-based threshold for total PM2.5 emitted during construction, including PM2.5 from equipment and vehicle exhaust and PM2.5 from dust, tire wear, and other sources. Due to the short duration of construction activities, limited emissions of DPM, prevailing wind direction to the east, and the fact that the majority of the project's construction activity would take place at a considerable distance from the sensitive receptors to the north, exposure of nearby sensitive receptors to TACs would be limited. Therefore, the project's construction activities are not expected to result in significant effects related to increased cancer risk, or non-cancer (acute and chronic) health hazards.

As noted above, the BAAQMD *CEQA Air Quality Guidelines* also include a concentration-based threshold for PM2.5. The project-level PM2.5 threshold is an increase of 0.3 microgram of PM2.5 per cubic meter ($\mu g/m^3$) on an annual average. For assessment of this impact, all PM2.5 emissions are included, rather than only vehicle exhaust emissions. These additional sources include material loading and unloading, excavation, grading, vehicle travel on unpaved roads, tire and brake wear, exhaust from vehicles and other combustion sources, and more. The amount of PM2.5 generated is proportional to the scale of construction and earthmoving activities, so projects that involve large amounts of earthmoving generally have difficulty meeting this threshold. This is true even if the project's PM2.5 emissions do not exceed the criteria pollutant PM2.5 threshold of 54 pounds per day, which applies only to vehicle emissions. The scale of earthmoving activities associated with the proposed project combined with the relative close proximity of some receptors to some of the areas where these activities would occur (as close as 300 feet at some locations along the northern edge of the project) make it highly probable that PM2.5 concentrations would exceed the 0.3 $\mu g/m^3$ threshold at some locations. Appropriate mitigation for this impact has already been included with **Mitigation Measures MM AQ-2a** and **MM AQ-2b**; however, the mitigation is not expected to reduce the impact to a less than significant level. Consequently, it is conservatively assumed that the impact from construction on existing receptors under this criterion

would be significant and unavoidable, even with the implementation of **Mitigation Measures MM AQ-2a** and **MM AQ-2b**. There are no substantial sources of PM2.5 associated with operation of the project, and impacts would be less than significant for operation under this criterion.

Carbon Monoxide Concentrations

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed state standards are termed CO "hotspots." The BAAQMD recommends the use of CALINE4, a dispersion model developed by Caltrans for predicting CO concentrations near roadways, as the preferred method of estimating pollutant concentrations at various locations. CALINE4 adds roadway-specific CO emissions calculated from peak traffic volumes to ambient CO air concentrations. For this analysis, CO concentrations were calculated based on a simplified CALINE4 screening procedure developed by the BAAQMD. This methodology assumes worst-case conditions (i.e., wind direction is parallel to the primary roadway, 90 degrees to the secondary road; wind speed of less than 1 meter per second; and extreme atmospheric stability) and provides a screening of maximum, worst-case, CO concentrations.

CO concentrations are modeled if an intersection is operating with a LOS of E or F. None of the local intersections would operate at LOS E or F under existing plus project conditions, baseline plus project conditions, or cumulative plus project conditions with the James Donlon Boulevard Extension. However, three local intersections would operate at LOS E or F under cumulative plus project conditions without the James Donlon Boulevard Extension. As result, maximum CO concentrations were calculated for peak hour traffic volumes at these three intersections. The traffic volumes used to calculate maximum CO concentrations were obtained from the traffic impact analysis. The results of these calculations are presented in **Table 5.2-9, Cumulative Future Plus Project Without James Donlon Boulevard Extension Carbon Monoxide Concentrations**, for representative locations 0 and 25 feet from each roadway.

As shown, the simplified CALINE4 screening procedure shows that, under worst-case conditions, CO concentrations at the impacted intersections would not exceed the federal or state 1-hour or 8-hour CO standards under future cumulative conditions plus the proposed project. Based on this analysis, the proposed project would not cause or contribute to the formation of CO hotspots at impacted intersections and impacts would be less than significant.

Table 5.2-9
Cumulative Future Plus Project Without James Donlon Boulevard Extension
Carbon Monoxide Concentrations

	0 Feet		25 Feet	
Intersection	**1-Hour**	**8-Hour**	**1-Hour**	**8-Hour**
Railroad Ave and Buchanan Road	2.0	1.3	1.7	1.1
Buchanan Road and Harbor St	1.7	1.1	1.5	1.0
Buchanan Road and Loveridge Road	1.8	1.2	1.5	1.0
Exceeds state 1-hour standard of 20 ppm?	NO	—	NO	—
Exceeds federal 1-hour standard of 35 ppm?	NO	—	NO	—
Exceeds state 8-hour standard of 9.0 ppm?	—	NO	—	NO
Exceeds federal 8-hour standard of 9 ppm?	—	NO	—	NO

Source: Impact Sciences, Inc. Emissions calculations are provided in ***Appendix 5.2****.*

Mitigation Measures

Implement **Mitigation Measures MM AQ-2a** and **MM AQ-2b**.

Residual Impacts

This impact would be significant and unavoidable.

Impact AQ-4 **Development of the proposed project would not create objectionable odors affecting a substantial number of people.** ***(Less than significant)***

Land uses primarily associated with odorous emissions include waste transfer and recycling stations, wastewater treatment plants, landfills, composting operations, petroleum operations, food and byproduct processes, factories, and agricultural activities, such as livestock operations. The proposed project does not include any of these types of land uses and it is not located downwind or in close proximity to these types of odor sources. The strictly residential nature of the proposed project is not expected to be a source of persistent odors and construction would be temporary and is also not expected to cause an odor nuisance. In addition, refuse associated with operation of the proposed project would be disposed of in accordance with applicable regulations. Therefore, it is not anticipated that project residents would be adversely affected by off-site odorous emissions, nor would the project create objectionable odors having the potential to affect people located off-site and in close proximity to the project. Consequently, no significant impacts from odors are anticipated from the proposed project.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

CEQA defines cumulative impacts as two or more individual effects which, when considered together, are either significant or "cumulatively considerable," meaning they add considerably to a significant environmental impact. Cumulative impacts can result from individually minor but collectively significant projects (*State CEQA Guidelines* Section 15355). An adequate cumulative impact analysis considers a project over time and in conjunction with other past, present, and reasonably foreseeable future projects whose impacts might compound those of the project being assessed.

Impact AQ-5: **Construction activities associated with the proposed project would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under the federal and state ambient air quality standard. (*Potentially significant*)**

The SFBAAB is currently designated as a nonattainment area for state and national ozone standards and particulate matter standards. Past, present and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, the BAAQMD 2010 *CEQA Air Quality Guidelines* states that a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. According to the BAAQMD, if a project's emissions exceed the identified significance thresholds for the nonattainment pollutants, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. This is because the mass-based significance thresholds published by the BAAQMD include impacts from projected growth in the SFBAAB, so that cumulative impacts are included in the significance threshold (BAAQMD 2010). For this reason, the BAAQMD does not require air pollutant emissions from other reasonably foreseeable planned projects in the area (such as Tuscany Meadows, Sky Ranch II and the James Donlon Boulevard Extension Project in the City of Pittsburg and Black Diamond Ranch in the City of Antioch), to be quantified.

As shown in **Table 5.2-8**, the proposed project's operational emissions would not exceed long-term operational emission thresholds. Therefore, the project would not add criteria pollutant emissions to the air basin that would be cumulatively considerable.

However, as shown in the analysis above, even with mitigation the proposed project's construction emissions would exceed thresholds of significance for one pollutant (NO_x) for which the SFBAAB is currently in nonattainment. Therefore, for the duration of project construction, the proposed project would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under the federal and state ambient air quality standards.

Mitigation Measures

Implement **Mitigation Measures MM AQ-2a** through **MM AQ-2b**.

Residual Impacts after Mitigation

Even with the implementation of mitigation, this impact would be significant and unavoidable.

Impact AQ-6: **Construction emissions generated by the proposed project in combination with construction emissions from the James Donlon Boulevard Extension Project would be unlikely to result in significant localized cumulative impacts. (*Less than significant*)**

With respect to the potential for localized construction-phase cumulative impacts, including human health effects, only one currently known construction project, the James Donlon Boulevard Expansion project, would be located within 1,000 feet of the proposed project and would therefore have the potential to result in localized construction-phase cumulative impacts. That project's western terminus is at Kirker Pass Road, directly across from the proposed project. The construction schedule of that project is currently unknown. However, should construction at the Kirker Pass Road end of that project commence in the next five years, its construction emissions would have the potential to affect the project area the at same time as the proposed project. All existing sensitive receptors in the area are located to the north of both projects and no sensitive receptors are located within 1,000 feet from the site where the James Donlon Boulevard Expansion would meet the Montreux main project site. Additionally, prevailing wind patterns would tend to carry construction emissions, including PM2.5 emissions, east along the valley instead of north towards the existing residential areas. Consequently, the cumulative construction emissions, including emissions of PM2.5, would be unlikely to result in significant localized cumulative impacts.

Mitigation Measures

No mitigation measures are required.

REFERENCES

Abrams and Associates. June 2013. *Transportation Impact Analysis Montreux Residential Project Subdivision 8279 City of Pittsburg.*

Bay Area Air Quality Management District. 1997. *1997 Clean Air Plan and Triennial Assessment*. December.

Bay Area Air Quality Management District. 2000. *2000 Clean Air Plan and Triennial Assessment*. December.

Bay Area Air Quality Management District. 2001. *Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard*. October.

Bay Area Air Quality Management District. 2006. *Bay Area 2005 Ozone Strategy*. January.

Bay Area Air Quality Management District. 2010. *Bay Area 2010 Clean Air Plan*. September.

Bay Area Air Quality Management District. May 2011. "CEQA Air Quality Guidelines."

Bay Area Air Quality Management District. May 2012. "CEQA Air Quality Guidelines."

California Air Resources Board and Office of Environmental Health Hazard Assessment. 2010. "Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values." http://www.arb.ca.gov/toxics/healthval/healthval.htm.

California Constitution, Article 11 Section 7.

Office of Environmental Health Hazard Assessment. Air Toxics Hot Spots Program. 2003. *Guidance Manual for Preparation of Health Risk Assessments*. August.

United States Environmental Protection Agency. 1995. "Compilation of Air Pollutant Emission Factors (AP 42), Fifth Edition." http://www.epa.gov/ttnchie1/ap42/

United States Environmental Protection Agency. 2010a. "Class I Ozone Depleting Substances." http://www.epa.gov/ozone/science/ods/classone.html

United States Environmental Protection Agency. 2010b. The Accelerated Phase-Out of Class 1 Ozone-Depleting Substances. http://www.epa.gov/ozone/title6/phaseout/accfact.html.