3.4 Air Quality

3.4.1 Introduction

This section describes the regulatory setting and affected environment for air quality. Further, the section addresses air quality within the air quality RSA and describes the potential impacts on air quality during construction and operation of the proposed Project. The potential for cumulative impacts of the proposed Project on air quality is also assessed.

3.4.2 Regulatory Setting

This section identifies the federal, state, regional, and local laws, regulations, and orders that are relevant to the analysis of air quality and addresses the proposed Project's consistency with the regulations described herein.

3.4.2.1 Federal

Clean Air Act and National Ambient Air Quality Standards

The Clean Air Act (CAA) was first enacted in 1963 and has been amended numerous times in subsequent years (1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as NAAQS, for six criteria pollutants and specifies future dates for achieving compliance. The CAA also mandates that the states submit and implement a State Implementation Plan (SIP) for local areas that do not meet those standards. The plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. Table 3.4-1 shows the NAAQS currently in effect for each criteria pollutant, as well as the CAAQS (discussed further below).

Table 3.4-1: Federal And State Ambient Air Quality Standards

Criteria Pollutant	Average Time	California Standards	National Standards[a] Primary	National Standards[a] Secondary
Ozone	1-hour	0.09 ppm	None	None[b]
	8-hour	0.070 ppm	0.070 ppm	0.070 ppm
Particulate Matter (PM_{10})	24-hour	50 mg/m^3	150 mg/m^3	150 mg/m^3
	Annual Mean	20 mg/m^3	None	None

Criteria Pollutant	Average Time	California Standards	National Standards[a] Primary	National Standards[a] Secondary
Fine Particulate Matter ($PM_{2.5}$)	24-hour	None	35 mg/m^3	35 mg/m^3
	Annual Mean	12 mg/m^3	12.0 mg/m^3	15 mg/m^3
Carbon Monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen Dioxide	Annual Mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur Dioxide (SO_2)[c]	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.014 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day average	1.5 mg/m^3	None	None
	Calendar quarter	None	1.5 mg/m^3	1.5 mg/m^3
	3-month average	None	0.15 mg/m^3	0.15 mg/m^3
Sulfates	24-hour	25 mg/m^3	None	None
Visibility-reducing Particles	8-hour	[d]	None	None
Hydrogen Sulfide	1-hour	0.03 ppm	None	None
Vinyl Chloride	24-hour	0.01 ppm	None	None

Source: California Air Resources Board (CARB) 2016.

Notes: ppm= parts per million; mg/m^3 = micrograms per cubic meter; NAAQS = National Ambient Air Quality Standard; CAAQS = California Ambient Air Quality Standard

a. National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

b. The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for State Implementation Plans.

c. The annual and 24-hour NAAQS for SO_2 only apply for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.

d. CAAQS for visibility-reducing particles is defined by an extinction coefficient of 0.23 per kilometer –visibility of 10 miles or more due to particles when relative humidity is less than 70 percent.

limitations to quantifying any resulting changes in emissions. In North America, most locomotives have eight engine notch settings, which correspond to power output. In lower notch settings, which are used for acceleration, the engines run less efficiently and produce more emissions per output unit. Since the Coast subdivision would only have one station stop instead of two under the existing route, the proposed Project would result in less locomotive acceleration time, and thus less emissions would be produced.

Additionally, the Coast Subdivision is a comparatively straighter route with fewer turns than the Niles Subdivision and would result in higher speeds and higher fuel consumption, which could partially offset the benefit from the reduced acceleration. However, trains on the Coast Subdivision would also travel a shorter distance than on the Niles Subdivision, which would lower fuel consumption. Overall, it is anticipated that emissions levels from use of the Coast Subdivision would be similar or slightly less compared to use of the Niles Subdivision; however, the effect is not quantified at this time given the uncertainties described above. Exhaust emissions from the locomotives are complexly affected by a series of variables, including the engine notch settings and acceleration time, range of travel speeds, and distance. Thus, although the proposed Project may result in an emissions benefit from passenger trains for regional air quality, it is conservatively assumed that there would be no appreciable change in Capitol Corridor locomotive emissions, and the potential benefit is not quantitatively included in this analysis.

Freight Locomotives

The CCJPA does not have any jurisdictional control over the operation of freight trains, because a private company, UPRR, owns the railroad tracks and controls freight movement in the area. Consequently, emissions from freight trains have not been quantified, because those emissions are not within CCJPA's control. Thus, it is assumed that there would be no appreciable change in freight locomotive emissions as a result of the proposed Project, and emissions are not quantitatively included in this analysis. Nevertheless, freight locomotives would continue to use the subdivisions within the proposed Project area, and it is expected that such train traffic would grow each year. The 2018 California State Rail Plan anticipates rail intermodal traffic in California will increase at a compound annual growth rate of 2.9 percent through 2040, and rail carload traffic will increase at a compound annual growth rate of 1.7 percent through 2040 (California Department of Transportation 2018).

Carbon Monoxide Hot-Spots

BAAQMD's screening methodology for carbon monoxide impacts was used to determine whether traffic-related impacts due to implementation of the proposed Project are significant (see the Supplemental Thresholds discussion under Section 3.4.3.3).

Toxic Air Contaminants

An operational HRA was conducted at the Ardenwood Station area to evaluate impacts of TAC emissions generated by operations of the proposed Project for the nearby sensitive receptors that are located downwind from the proposed Project. The methodology, modeling inputs, and results for the operational HRA are described in greater detail in Appendix B.

3.4.3.3 CEQA Thresholds

To satisfy CEQA requirements, air quality impacts were analyzed in accordance with Appendix G of the CEQA Guidelines. According to the CEQA Guidelines, CCR, Title 14, Section 15002(g), "a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." As stated in CEQA Guidelines Section 15064(b)(1), the significance of an activity may vary with the setting. The impact analysis identifies and analyzes construction (short-term) and operation (long-term) impacts, as well as direct and indirect impacts (see PRC Section 21065). The proposed Project would have significant air quality impacts under CEQA if it would:

a. Conflict with or obstruct implementation of the applicable air quality plan;

b. Result in a cumulatively considerable net increase of any criteria pollutant for which the proposed Project region is non- attainment under an applicable federal or state ambient air quality standard;

c. Expose sensitive receptors to substantial pollutant concentrations; or

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people; for this analysis, construction of an odor-producing facility, would result in an "objectionable odor" capable of affecting a substantial number of people.

Baseline Conditions for Air Quality Impacts

The CEQA Guidelines Section 15125 indicates that existing conditions at the time a notice of preparation is released or when environmental review begins "normally" constitutes the baseline for environmental analysis. In 2010, the California Supreme Court issued an opinion that while lead agencies have some flexibility in determining what constitutes the baseline, relying on "hypothetical allowable conditions" when those conditions are not a realistic description of the conditions without the Proposed Project, would be an illusory basis for a finding of no significant impact from the proposed Project and, therefore, a violation of CEQA (Communities for a Better Environment v. South Coast Air Quality Management District (2010) 48 Cal. 4th 310).

On August 5, 2013, the California Supreme Court decided Neighbors for Smart Rail v. Exposition Metro Line Construction Authority (57 Cal. 4th 439). This latest decision has clarified that, under certain circumstances, a baseline may reflect future, rather than existing, conditions. The rule specifies that factual circumstances can justify an agency using a future baseline in the following circumstances when such reasons are supported by substantial evidence:

- When necessary to prevent misinforming or misleading the public and decision makers.
- When the use of future conditions in place of existing conditions is justified by unusual aspects of the project or surrounding conditions.

With respect to the proposed Project, using existing conditions to evaluate criteria pollutant impacts would misrepresent and mislead the public and decision makers with respect to potential air quality impacts, for the following reasons: (1) expected changes in on-road emission factors, and (2) net proposed Project VMT reductions.

1. On-road vehicle emissions rates are anticipated to lessen in the future due to continuing engine advancements and more stringent air quality regulations. Evaluating the VMT displacement for existing conditions (2019) and quantifying emissions utilizing 2019 vehicle emissions rates

would not only represent a fictitious scenario but would also overestimate emissions reductions and potential air quality benefits achieved by the proposed Project.

2. Using the relatively higher "existing conditions" emissions factors to quantify emissions reduction benefits associated with proposed Project-related VMT reductions in 2025 and 2040 would overstate the proposed Project's emissions reduction benefits.

These circumstances present substantial evidence in support of using a future conditions analysis, rather than existing conditions, to evaluate air quality impacts. Accordingly, for this analysis, the CEQA assessment evaluates the proposed Project emissions in the opening year (2025) and horizon year (2040) conditions, compared to the No Project Alternative in these same years. This approach reflects appropriate vehicle fleet characteristics and emission factors. Using anticipated future year conditions as the basis for the CEQA analysis provides the most accurate reasonably foreseeable assessment and avoids misinforming and misleading the public and decision makers with respect to air quality impacts, consistent with current CEQA case law.

Supplemental Thresholds

The following section summarizes relevant thresholds and presents substantial evidence regarding the basis upon which they were developed. This section also describes how the thresholds are used to determine whether construction and operation of the proposed Project would result in a significant impact within the context of (1) interfering with or impeding attainment of CAAQS or NAAQS, or (2) causing or contributing to increased risk to human health.

Regional Thresholds for Air Basin Attainment of State and Federal Ambient Air Quality Standards

BAAQMD established different thresholds for criteria pollutants. The criteria pollutant thresholds identified in Table 3.4-2 were adopted by BAAQMD to assist lead agencies in determining the significance of environmental effects with regard to local attainment of state and federal ambient air quality standards.

BAAQMD's ROG, NOX, and PM thresholds are based on emissions levels identified under the New Source Review (NSR) program. The NSR program is a permitting program that was established by Congress as part of the CAA Amendments to ensure that air quality is not significantly degraded by new sources of emissions. The NSR program requires stationary sources to receive permits before starting construction or use of the equipment. By permitting large stationary sources, the NSR program ensures that new emissions would not slow regional progress toward attaining NAAQS. BAAQMD has concluded that pollutants generated by land use and other projects not subject to the NSR (like this Project) are equally significant to the stationary pollutants described under the NSR program. BAAQMD's thresholds identified in Table 3.4-2 were set as the total emission thresholds associated within the NSR program to help attain NAAQS (BAAQMD 2017a).

Accordingly, emissions in excess of BAAQMD thresholds (Table 3.4-2) would be expected to have a significant impact on air quality because an exceedance of the thresholds is anticipated to contribute to CAAQS and NAAQS violations. Further, by its very nature, regional air pollution has a cumulative impact. Emissions from past, present, and future projects contribute to unfavorable air quality on a cumulative basis. No single project by itself would be sufficient in size to result in regional nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative negative air quality impacts. BAAQMD identified project-level

mass emission thresholds to evaluate impacts on air quality. The thresholds have been adopted to prevent further deterioration of ambient air quality, which is influenced by emissions generated by projects within a specific air basin. The project-level thresholds, therefore, consider relevant past, present, and reasonably foreseeable future projects within SFBAAB. The mass emissions thresholds in Table 3.4-2, therefore, represent the maximum emissions a project may generate before contributing to a cumulative impact on regional air quality.

Table 3.4-2: Bay Area Air Quality Management District Mass Emission Thresholds

Analysis	BAAQMD
Construction	ROG: 54 lbs/day NO_x: 54 lbs/day PM_{10}: 82 lbs/day $PM_{2.5}$: 54 lbs/day
Operations	ROG: 54 lbs/day or 10 tons/year NO_x: 54 lbs/day or 10 tons/year PM_{10}: 82 lbs/day or 15 tons/year $PM_{2.5}$: 54 lbs/day or 10 tons/year

Source: BAAQMD 2023

ROG	=	reactive organic gases
Lbs	=	pounds
NO_X	=	nitrogen oxide
PM_{10}	=	Particulate matter that is 10 microns in diameter and smaller.
$PM_{2.5}$	=	Particulate matter that is 2.5 microns in diameter and smaller.

Health-Based Thresholds for Project-Generated Pollutants of Human Health Concern

In December 2018, the California Supreme Court issued its decision in Sierra Club v. County of Fresno (226 Cal.App.4th 704) (hereafter referred to as the "Friant Ranch" decision). The case reviewed the long-term, regional air quality analysis contained in the EIR for the proposed Friant Ranch development. The Friant Ranch project is a 942-acre master-plan development in unincorporated Fresno County within the San Joaquin Valley Air Basin, an air basin currently in nonattainment for the ozone and $PM_{2.5}$ NAAQS and CAAQS. The Court found that the air quality analysis was inadequate because it failed to provide enough detail "for the public to translate the bare [criteria pollutant emissions] numbers provided into adverse health impacts or to understand why such a translation is not possible at this time." The Court's decision clarifies that environmental documents must connect a project's air quality impacts to specific health effects or explain why it is not technically feasible to perform such an analysis.

As discussed in Section 3.4.4, Affected Environment, all criteria pollutants that would be generated by the proposed Project are associated with some form of health risk (e.g., asthma). Criteria pollutants can be classified as either regional or localized pollutants. Regional pollutants can be transported over long distances and affect ambient air quality far from the emissions source. Localized pollutants affect ambient air quality near the emissions source. Ozone is considered a

regional criteria pollutant, whereas CO, NO_2, SO_2, and Pb are localized pollutants. PM can be both a local and a regional pollutant, depending on its composition. As discussed above, the primary criteria pollutants of concern generated by the proposed Project are ozone precursors (ROG and NO_X), CO, and PM (including DPM).

Because localized pollutants generated by a project can directly affect adjacent sensitive receptors, the analysis of project-related impacts on human health focuses on those localized pollutants with the greatest potential to result in a significant, material impact on human health. Potential health effects associated with project-generated ozone precursors are only discussed within the regional and cumulative context. This approach is consistent with the current state of practice and published guidance by BAAQMD, California Air Pollution Control Officers Association, OEHHA, and CARB (BAAQMD 2023; California Air Pollution Control Officers Association 2009; OEHHA 2015; CARB 2000). The local pollutants of concern are (1) localized CO, (2) DPM, (3) localized PM, and (4) asbestos. Adopted thresholds of significance for each local pollutant are identified in the following subsections.

Localized Carbon Monoxide Concentrations

BAAQMD consider localized CO emissions to result in significant impacts if concentrations exceed the CAAQS, as shown above in Table 3.4-1.

Diesel Particulate Matter and Localized Particulate Matter

BAAQMD adopted separate thresholds to evaluate receptor exposure to DPM emissions. The substantial DPM threshold defined by BAAQMD is the probability of contracting cancer for the maximum exposed individual (MEI) exceeding 10 in 1 million, or the ground-level concentrations of non-carcinogenic TACs resulting in an HI greater than 1 for the MEI.

BAAQMD has adopted an incremental concentration-based significance threshold to evaluate receptor exposure to localized $PM_{2.5}$, where a substantial contribution is defined as $PM_{2.5}$ exhaust (diesel and gasoline) and dust concentrations exceeding 0.3 μg/m^3. BAAQMDs cumulative cancer risk threshold is 100 cases per million and its non-cancer thresholds are an HI greater than 10.0 and a $PM_{2.5}$ concentration greater than 0.8 μ g/m^3. Table 3.4-3 summarizes the cancer and non-cancer health risk thresholds used in the analysis.

Table 3.4-3: BAAQMD Cancer and Non-Cancer Health Risk Thresholds

Cancer Risk	Hazard Index	$PM_{2.5}$ Concentration (μg/m^3)
10 in a million (project level)	1.0 (Project level)	0.3 (project-level)
100 in a million (cumulative)	10 (cumulative)	0.8 (cumulative)

Source: BAAQMD 2023
Notes: DPM = diesel particulate matter; PM2.5 – particulate matter that is 2.5 microns in diameter and smaller; μg/m3 = micrograms per cubic meter.

Asbestos

There are no quantitative thresholds related to receptor exposure to asbestos. However, BAAQMD requires projects that have the potential to disturb asbestos (from soil or building material) must comply with all the requirements of CARB's ATCM for Construction, Grading, Quarrying, and Surface Mining Operations.

3.4.4 Affected Environment

3.4.4.1 Regional Setting

Climate and Meteorology in the San Francisco Bay Area Air Basin

The locations of air pollutant sources and the amount of pollutants emitted from those sources are the primary factors that determine air quality; however, meteorological conditions and topography are also important factors. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. Unique geographic features throughout the state define fifteen air basins with distinctive regional climates. The primary subregion that the proposed Project is located in is Southwestern Alameda County in the SFBAAB. The northern section of the proposed Project area, from the City of San Leandro and northward, is located in the Northern Alameda and Western Contra Costa Counties subregion. As the vast majority of the proposed Project area is located in the Southwestern Alameda County subregion, this discussion focuses on that subregion.

The Southwestern Alameda County 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 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 miles per hour, while further inland they average 6 miles per hour.

Air temperatures are moderated by the subregion'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-70s. Average maximum winter temperatures are in the high 50s to low 60s. Average minimum temperatures are in the low 40s in winter and mid-50s in the summer.

The average annual maximum and minimum temperatures at the Western Regional Climate Center station in Newark are 68.2 degrees and 49.5, respectively (Western Regional Climate Center 2019).

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 may increase Southwest Alameda County pollution as well as that of its neighboring subregions (BAAQMD 2017a).

Pollutants of Concern

Criteria Pollutants

Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and particulate matter (PM_{10} and $PM_{2.5}$) are commonly used as indicators of ambient air quality conditions. These pollutants are known as "criteria pollutants" and are regulated by the EPA and CARB through the NAAQS and CAAQS, respectively, which are discussed above in Section 3.4.2, Regulatory Setting.

Ozone and NO_2 are considered regional pollutants because they (or their precursors) affect air quality on a regional scale. Pollutants such as CO, SO_2, and Pb are considered local pollutants that tend to accumulate in the air locally. Particulate matter is both a regional and local pollutant. The primary criteria pollutants that will be generated by the Project are ozone precursors (nitrogen oxides [NO_X] and reactive organic gases [ROG]), CO, PM_{10}, and $PM_{2.5}$.

All criteria pollutants can have human health effects at certain concentrations. The ambient air quality standards for these pollutants are set to public health and the environment with an adequate margin of safety (CAA Section 109). Epidemiological, controlled human exposure, and toxicology studies evaluate potential health and environmental effects of criteria pollutants, and form the scientific basis for new and revised ambient air quality standards.

Principal characteristics and possible health and environmental effects from exposure to the primary criteria pollutants that will be generated by the Project are discussed below.

Ozone

Ozone, or smog, is a photochemical oxidant that is formed when ROG and NO_X (both byproducts of the internal combustion engine) react with sunlight. ROG are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROG are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown irritating gas formed by the combination

of NO and oxygen. In addition to serving as an integral participant in ozone formation, NO_X also directly acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Ozone poses a higher risk to those who already suffer from respiratory diseases (e.g., asthma), children, older adults, and people who are active outdoors. Exposure to ozone at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggregate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary diesel. Studies show associations between short-term ozone exposure and non-accidental mortality, including deaths from respiratory issues. Studies also suggest long-term exposure to ozone may increase the risk of respiratory-related deaths (EPA 2022a). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone and a 50% decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggest that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (EPA 2021a). For reference, the average background level of ozone in the Bay Area is approximately 45 parts per billion (BAAQMD 2017b).

In addition to human health effects, ozone has been tied to crop damage, typically in the form of stunted growth and premature death. Ozone can also act as a corrosive, resulting in property damage such as the degradation of rubber products.

Carbon Monoxide

Carbon Monoxide, CO, is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation. Exposure to CO at high concentrations can also cause fatigue, headaches, confusion, dizziness, and chest pain. There are no ecological or environmental effects to ambient CO (CARB No date).

Particulate Matter

Particulate Matter consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized—inhalable coarse particles, or PM_{10}, and inhalable fine particles, or $PM_{2.5}$. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind on arid landscapes also contributes substantially to local particulate loading.

Particulate pollution can be transported over long distances and may adversely affect human health, especially for people who are naturally sensitive or susceptible to breathing problems. Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms. Studies show that every 1 microgram per cubic meter reduction in $PM_{2.5}$ results in a one percent reduction in mortality rate for individuals over 30 years old (BAAQMD 2017b). Depending on its composition, both PM_{10} and $PM_{2.5}$ can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (EPA 2021b).

Toxic Air Contaminants

Although NAAQS and CAAQS have been established for criteria pollutants, no ambient standards exist for TACs. A TAC is defined by California law as an air pollutant that "may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." The primary TACs of concern associated with the proposed Project are asbestos and diesel particulate matter (DPM).

Asbestos

Asbestos is the name given to several naturally occurring fibrous silicate minerals. Before the adverse health effects of asbestos were identified, asbestos was widely used as insulation and fireproofing in buildings, and it can still be found in some older buildings. It is also found in its natural state in rock or soil. The inhalation of asbestos fibers into the lungs can result in a variety of adverse health effects, including inflammation of the lungs, respiratory ailments (e.g., asbestosis, which is scarring of lung tissue that results in constricted breathing), and cancer (e.g., lung cancer and mesothelioma, which is cancer of the linings of the lungs and abdomen).

Diesel Particulate Matter

DPM is generated by diesel-fueled equipment and vehicles. CARB estimates that DPM emissions are responsible for about 70 percent of the total ambient air toxics risk in California (CARB No date). Within the Bay Area, the BAAQMD has found that of all controlled TACs, emissions of DPM are responsible for about 82 percent of the total ambient cancer risk (BAAQMD 2017b). Short-term exposure to DPM can cause acute irritation (e.g., eye, throat, and bronchial), neurophysiological symptoms (e.g., lightheadedness and nausea), and respiratory symptoms (e.g., cough and phlegm). The EPA has determined that diesel exhaust is "likely to be carcinogenic to humans by inhalation" (EPA 2002).

Odors

Offensive odors can be unpleasant and lead to citizen complaints to local governments and air districts. According to CARB's Air Quality and Land Use Handbook (CARB 2005), land uses associated with odor complaints typically include sewage treatment plants, landfills, recycling facilities, manufacturing, and agricultural activities. CARB provides recommended screening distances for siting new receptors near existing odor sources.

Existing Air Quality Conditions

Regional Attainment Status

Local monitoring data are used to designate areas as nonattainment, maintenance, attainment, or unclassified for the ambient air quality standards. The four designations are further defined as shown below.

- Nonattainment – assigned to areas where monitored pollutant concentrations consistently violate the standard in question.
- Maintenance – assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.

- Attainment – assigned to areas where pollutant concentrations meet the standard in question over a designated period of time.
- Unclassified – assigned to areas where data are insufficient to determine whether a pollutant is violating the standard in question.

Table 3.4-4 summarizes the attainment statuses of the proposed Project area in Alameda County.

Table 3.4-4: Federal and State Air Quality Attainment status for Alameda County

Criteria Pollutant	Federal Designation	State Designation
O_3 (8-hour)	Marginal Nonattainment	Nonattainment
CO	Attainment	Attainment
PM_{10}	Attainment	Nonattainment
$PM_{2.5}$	Moderate Nonattainment	Nonattainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No Federal Standard)	Attainment
Hydrogen Sulfide	(No Federal Standard)	Unclassified
Visibility Reducing Particles	(No Federal Standard)	Unclassified

Sources: EPA 2022b, CARB 2022.

Notes: O_3 = ozone, CO = carbon monoxide, PM_{10} = particulate matter less than or equal to 10 microns, $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns, NO_2 = nitrogen dioxide, SO_2 = sulfur dioxide

3.4.4.2 Local Setting

Ambient Criteria Pollutant Concentrations

A number of ambient air quality monitoring stations are located in SFBAAB to monitor progress toward air quality standards attainment of NAAQS and CAAQS. The nearest monitoring station to the proposed Project includes the Oakland monitoring station[1], which is located approximately 0.7 miles

[1] The address of the Oakland station is 9925 International Boulevard, Oakland, CA 94603.

east from the junction where the existing Capitol Corridor service line and the proposed Capitol Corridor service line split in the northern portion of the RSA. In the central portion of the RSA, the Hayward air quality monitoring station[2] is located 4.6 miles east of the proposed Capitol Corridor service line and 2.2 miles east of the existing Capitol Corridor service line. The Oakland monitoring station records ozone, CO, NO_2, and $PM_{2.5}$ data, while the Hayward monitoring station only records ozone data. PM_{10} is not monitored in Alameda County.

Table 3.4-5 summarizes data for criteria air pollutant levels from the Oakland and Hayward monitoring stations for the last 3 years (2020–2022). Table 3.4-5 shows that the monitoring stations experienced violations of the federal and state ozone and $PM_{2.5}$ standards in the 2020 to 2022 timeframe. Federal and state standards for the other pollutants (with the exception of PM_{10}, which is not monitored) were not exceeded. As discussed above, the CAAQS and NAAQS define clean air and represent the maximum amount of pollution that can be present in outdoor air without any harmful effects on people and the environment. Existing violations of the ozone and $PM_{2.5}$ ambient air quality standards indicate that certain individuals exposed to this pollutant may experience certain health effects, including increased incidence of cardiovascular and respiratory ailments.

Table 3.4-5: Ambient Air Quality Data at the Oakland and Hayward Monitoring Stations (2020-2022)

Pollutant Standards	Oakland			Hayward		
	2020	2021	2022	2020	2021	2022
Ozone (O_3)						
Maximum 1-hour concentration (ppm)	0.090	0.083	0.069	0.116	0.097	0.098
Maximum 8-hour concentration (ppm)	0.066	0.061	0.055	0.092	0.082	0.073
Number of days standard exceeded[a]						
CAAQS 1-hour (>0.09 ppm)	0	0	0	3	1	2
CAAQS 8-hour (>0.070 ppm)	0	0	0	5	3	2
NAAQS 8-hour (>0.070 ppm)	0	0	0	4	3	2
Carbon Monoxide (CO)						
Maximum 8-hour concentration (ppm)	2.4	1.1	1.3	*	*	*
Maximum 1-hour concentration (ppm)	3.3	1.6	1.6	*	*	*
Number of days exceeded[a]						
NAAQS 8-hour (>9 ppm)	0	0	0	*	*	*
CAAQS 8-hour (>9.0 ppm)	0	0	0	*	*	*

[2] The address of the Hayward station is 3466 La Mesa Drive, Hayward, CA 94542.

Pollutant Standards	Oakland			Hayward		
	2020	2021	2022	2020	2021	2022
NAAQS 1-hour (>35 ppm)	0	0	0	*	*	*
CAAQS 1-hour (>20 ppm)	0	0	0	*	*	*
Nitrogen Dioxide (NO_2)						
State maximum 1-hour concentration (ppb)	59	48	50	*	*	*
State second-highest 1-hour concentration (ppb)	53	42	44	*	*	*
Annual average concentration (ppb)	9	8	9	*	*	*
Number of days standard exceeded[a]						
CAAQS 1-hour (180 ppb)	0	0	0	*	*	*
Particulate Matter (PM_{10})						
No PM_{10} data available in Alameda County						
Particulate Matter ($PM_{2.5}$)						
National[f] maximum 24-hour concentration ($\mu g/m^3$)	167.7	33.0	25.7	*	*	*
National[f] second-highest 24-hour concentration ($\mu g/m^3$)	117.3	23.4	25.3	*	*	*
State[g] maximum 24-hour concentration ($\mu g/m^3$)	167.7	33.0	25.7	*	*	*
State[g] second-highest 24-hour concentration ($\mu g/m^3$)	117.3	23.4	25.3	*	*	*
National annual average concentration ($\mu g/m^3$)	11.4	7.9	8.2	*	*	*
State annual average concentration $\mu g/m^3$)	11.4	8.0	8.3	*	*	*
Measured number of days standard exceeded[a]						
NAAQS 24-hour (>35 $\mu g/m^3$)	11	0	0	*	*	*

Sources: EPA 2023, CARB 2023b.

Notes: ppm = parts per million; NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards; $\mu g/m^3$= micrograms per cubic meter; * = insufficient data available to determine the value

a. An exceedance is not necessarily related to a violation of the standard

b. National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods

c. State statistics are based on approved local samplers and local conditions data.

d. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

e. Measurements usually are collected every 6 days.
f. National statistics are based on samplers using federal reference or equivalent methods.
g. State statistics are based on local approved samplers.

Sensitive Receptors

Sensitive land uses are defined as locations where human populations, especially children, seniors, and sick persons, are located and where there is reasonable expectation of continuous human exposure according to the averaging period for the air quality standards (i.e., 24-hour, 8-hour). Sensitive receptor locations are typically defined as schools, hospitals, resident care facilities, places of employment, daycare centers, or other facilities that may house individuals with health conditions, including private residences.

BAAQMD recommends that any proposed Project that includes the siting of a new source or receptors assess associated impacts within 1,000 feet. Throughout the entire Project corridor, there are sensitive receptors located within 1,000 feet of the existing and proposed service areas, and the new station and existing stations. The greatest number of sensitive receptors in the RSA are residential receptors, which are represented by single and multi-family housing units. Other land uses where sensitive receptors are located include parks and recreational areas, such as community and neighborhood parks, playgrounds, and nature preserves. Other facilities where sensitive individuals are located in the RSA include places of employment (e.g. retail and office space), schools, childcare facilities, eldercare facilities, and hospitals. There are many of these types of land uses in the RSA. Sensitive receptors, not including residential homes, within 1,000 feet of existing or proposed service areas are shown in Appendix B.

3.4.5 Best Management Practices

As noted in Chapter 2, Project Alternatives, CCJPA would incorporate a range of BMPs to avoid and minimize adverse effects on the environment that could result from implementation of the proposed Project. BMPs are included in the proposed Project description, and the impact analyses were conducted assuming application of these practices. The BMPs relevant to air quality are summarized below. Full descriptions of the BMPs are provided in Chapter 2, Project Alternatives.

BMP AQ-1. Implement BAAQMD Basic Construction Mitigation Measures.

3.4.6 Environmental Impacts

This section describes the potential environmental impacts on air quality as a result of implementation of the proposed Project.

3.4.6.1 Conflict with or obstruct implementation of the applicable air quality plan?

No Project Alternative

No Impact. Under the No Project Alternative, the Capitol Corridor passenger rail service between Oakland and San Jose would not be relocated from the Niles Subdivision to the Coast Subdivision. Capitol Corridor passenger trains and UPRR freight trains would continue to operate based on current routes with no changes to connectivity or rail efficiency. The 2018 California State Rail Plan projects that rail intermodal traffic in California will increase at a

compound annual growth rate of 2.9 percent through 2040 while rail carload traffic will increase at a compound annual growth rate of 1.7 percent through 2040. The projected annual growth rate for rail traffic would result in the generation of additional criteria pollutant emissions, causing the level of emissions associated with the existing conditions to increase annually. However, the forecasted projected growth along the rail corridor would still occur with or without project implementation. Therefore, the No Project Alternative would not result in additional criteria pollutant emissions beyond the existing conditions and would thus not conflict with the applicable air quality plan. Additionally, as noted above, the In-Use Locomotive Regulation will result in lower-emitting locomotives in future years. There would be no impact.

Proposed Project

Construction and Operations

Less Than Significant Impact. BAAQMD adopted their 2017 Clean Air Plan on April 19, 2017. The 2017 Clean Air Plan updates the prior 2010 Bay Area ozone plan and outlines feasible measures to reduce ozone; provides a control strategy to reduce particulate matter, air toxics, and GHGs in a single, integrated plan; and establishes emission control measures to be adopted or implemented. The 2017 Clean Air Plan is the most current applicable air quality plan for the air basin. Consistency with this plan is the basis for determining whether the proposed Project would conflict with or obstruct implementation of an air quality plan.

BAAQMD recommends that the agency approving a project where an air quality plan consistency determination is required analyze the project with respect to the following questions. If all the questions are concluded in the affirmative, and those conclusions are supported by substantial evidence, BAAQMD considers the project consistent with air quality plans prepared for the Bay Area.

1. **Does the project support the primary goals of the AQP?** The primary goals of the 2017 Clean Air Plan are 1) Protect Air Quality and Health at the Regional and Local Scale: Attain all state and national air quality standards and eliminate disparities among Bay Area communities in cancer health risk from TACs; and 2) Protect the Climate: Reduce Bay Area GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

   The proposed Project proposes to reroute Capitol Corridor passenger rail service to the UPRR Coast Subdivision from the UPRR Niles Subdivision between Oakland Coliseum and Newark Junction and to construct a new train station, Ardenwood Station, along the Coast Subdivision at the existing Ardenwood Park-n-Ride facility. The purpose and need of the proposed Project support the primary goals of the 2017 Clean Air Plan by reducing passenger rail travel time between Oakland and San Jose and throughout the larger area to increase ridership on transit, ease congestion on the Bay Area's roadways, and reduce automobile commutes. Increasing transit ridership, easing congestion, and reducing commute time will improve air quality and reduce greenhouse gases in the BAAQMD region, thus helping BAAQMD meet state and national air quality standards. The proposed Project will also improve service between Northern California markets by enhancing connections between high demand destinations, overcoming existing geographic service gaps between job centers and affordable housing on the San Francisco Peninsula and the Capitol Corridor route. Access to affordable housing is one of the multi-layered issues that affect air quality,

and the proposed Project will help bridge the gap, improve air quality, and help BAAQMD reach their GHG emissions reduction goals.

2. **Does the project include applicable control measures from the AQP?** To meet the primary goals, the 2017 Clean Air Plan recommends specific control measures and actions. These control measures are grouped into various categories and include stationary source measures, mobile-source measures, and transportation control measures.

   The proposed Project will create a more direct passenger rail route and reduce rail travel time between Oakland and San Jose, facilitating more auto-competitive travel times for intercity passenger rail trips. The proposed Project will also create new connections to Transbay transit services and destinations on the San Francisco Peninsula and facilitate the separation of passenger rail service and freight rail operations in southern Alameda County, improving operations for both and supporting the economic vitality of the region. As such, the proposed Project directly supports and advances measure TR4: Local and Regional Rail Service, which carries forward a measure from the 2010 Clean Air Plan (TCM-A2: Improve Local and Regional Rail Service). The other control measures from the 2017 Clean Air Plan apply to other, unrelated types of projects, such as those involving stationary sources or land use projects and are thus not applicable to the proposed Project.
3. **Does the project disrupt or hinder implementation of any AQP control measures?** The proposed Project does not hinder the implementation of any control measures in the 2017 Clean Air Plan. As stated above, the Project supports measure TR4: Local and Regional Rail Service, and this is the only control measure applicable to the proposed Project. The other measures pertain to other types of projects such as those involving stationary sources or land use development projects.

Based on the discussion above, the proposed Project will support the primary goals of the 2017 Clean Air Plan, supports all applicable control measures, and does not disrupt or hinder the implementation of any control measures. Thus, the proposed Project will not conflict with or obstruct implementation of the 2017 Clean Air Plan, and this impact is less than significant.

3.4.6.2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

No Project Alternative

No Impact. Under the No Project Alternative, the Capitol Corridor passenger rail service between Oakland and San Jose would not be relocated from the Niles Subdivision to the Coast Subdivision. Capitol Corridor passenger trains and UPRR freight trains would continue to operate based on current routes with no changes to connectivity or rail efficiency. As discussed above, annual growth for rail traffic would occur in future years. No construction-related criteria pollutants would be generated under the No Project Alternative because no passenger rail service would be relocated. In the existing conditions, criteria pollutants resulting from diesel locomotive operation are currently present in the project area from freight and passenger rail operation. The criteria pollutant emissions would continue in the future; however, as noted above, the In-Use Locomotive Regulation will result in lower-emitting locomotives in future years. Therefore, there would be no impact.

Proposed Project

Construction

Less than Significant Impact with Mitigation Incorporated. As noted in Section 3.4.4, Affected Environment, Alameda County is currently designated as a nonattainment area for federal ozone and $PM_{2.5}$ standards, and nonattainment for state ozone, PM_{10}, and $PM_{2.5}$ standards. Construction of the Proposed Project has the potential to create air quality impacts through the use of heavy-duty construction equipment, worker vehicle trips, truck hauling trips, and locomotive trips. Additionally, fugitive emissions would result from site grading and asphalt paving. Criteria pollutant emissions generated by these sources were quantified using emission factors from CalEEMod, EMFAC2021, AP-42, and other sources, as described in Section 3.5.4, Methods for Evaluating Impacts.

The total amount, duration, and intensity of construction activity could have a substantial effect on the amount of construction emissions, their concentrations, and the resulting impacts occurring at any one time. Consequently, the emission forecasts in this analysis are a conservative estimate, because it is based on a relatively large amount of construction occurring in a relatively intensive and overlapped schedule. If construction is delayed or occurs over a longer period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix, and/or (2) a less intensive and overlapping buildout schedule (i.e., fewer daily emissions occurring over a longer period).

Table 3.4-6 summarizes estimated unmitigated construction-related emissions in the BAAQMD in pounds per day. As discussed above in *Supplemental Thresholds under Section 3.4.3.4*, BAAQMD has identified project-level mass emission thresholds to evaluate impacts on air quality that are inclusive of past, present, and future projects. The mass emissions thresholds, therefore, represent the maximum emissions the proposed Project may generate before contributing to a cumulative impact on regional air quality. The emissions shown in Table 3.4-6 assume implementation of BMP AQ-1, which is application of BAAQMD's Basic Construction Mitigation Measures to reduce fugitive dust.

As shown in Table 3.4-6, unmitigated construction emissions would exceed BAAQMD's daily NO_X threshold during all three years of construction. No other pollutant would exceed the BAAQMD thresholds. Due to the exceedances of NO_X shown in Table 3.4-6, emissions from proposed Project construction may contribute to a cumulatively considerable net increase of a criteria pollutant within the SFBAAB for which the region is designated a nonattainment area. This is a potentially significant impact.

Mitigation is required to reduce NO_X emissions. Mitigation Measure AQ-1 reduces emissions from off-road equipment and requires engines greater than 25 horsepower to meet Tier 4 emission standards. With construction equipment meeting Tier 4 standards, the rate of exhaust emissions will be substantially reduced relative to the average equipment fleet. Similarly, Mitigation Measure AQ-2 would reduce emissions from locomotives that would be used during construction to deliver materials, because it requires advanced emissions controls for locomotives used to deliver materials to the proposed Project site. In accordance with Mitigation Measure AQ-2, locomotives will be equipped with engines that meet or exceed Tier 4 emissions standards. Additionally, compliance with BAAQMD's best management practices for dust control (BMP AQ-1) would also be required to mitigate fugitive dust emissions. Refer to Section 3.4.5, Best Management Practices, for more information on BMP AQ-1.

Table 3.4-6 also shows the mitigated emissions in the BAAQMD with the implementation of Mitigation Measures AQ-1 Implement advanced emissions controls for off-road equipment, AQ-2 Implement advanced emissions controls for locomotives used for construction, and BMP AQ-1 Implement BAAQMD Basic Construction Mitigation Measures. With these mitigation measures and best management practices, the emissions to construct the proposed Project would be less than the pollutant thresholds for all years of construction. As shown in Table 3.4-6, the NOx emissions for the proposed Project would be reduced to below the threshold.

As discussed below with respect to the proposed Project's operational phase, there would be a net reduction in most pollutants once operations begin, because the increased passenger ridership will result in reduced VMT. The net reduction in NOx emissions would be between 1 to 2 lbs per day for the entire operational phase, relative to the No Project Alternative. Thus, with Mitigation Measures AQ-1 and AQ-2, the proposed Project would not result in any exceedances of the pollutant thresholds during the construction period, and there would be a net reduction in daily NOx emissions during the operational period, which would occur for a much longer duration than construction.

The use of tier 4 engines in the construction equipment and locomotives would reduce the amount of NO_X that is emitted from the equipment exhaust, and the BAAQMD best management practices to control dust would minimize fugitive dust emissions during construction. Additionally, during proposed Project operations, there would be a net reduction in NOx emissions. Because NOx emissions during construction would be below the threshold for all alternatives, this impact is less than significant with mitigation.

Table 3.4-6: Estimated Unmitigated and Mitigated Construction Criteria Pollutant Emissions from Proposed Project Construction

Pollutant Standards	Unmitigated Daily Emissions (Pounds per Day)[a]								Mitigated Daily Emissions (Pounds per Day)[a]							
	ROG	NOx	CO	PM_{10}	PM_{10}	$PM_{2.5}$	$PM_{2.5}$	SO2	ROG	NOx	CO	PM_{10}	PM_{10}	$PM_{2.5}$	$PM_{2.5}$	SO_2
Year 1	14.8	**204.7**	110.1	5.0	20.9	4.5	6.4	0.4	4.7	51.0	131.7	0.9	20.9	0.7	6.4	0.4
Year 2	13.9	**192.6**	99.8	4.5	17.7	4.2	5.1	0.3	4.5	47.5	113.9	0.8	17.7	0.7	5.1	0.3
Year 3	12.6	**185.1**	87.4	4.2	7.8	3.9	2.3	0.3	3.8	42.7	95.8	0.7	7.8	0.6	2.3	0.3
Threshold[b,c]	**54**	**54**	**N/A**	**82**	**BMP**	**82**	**BMP**	**N/A**	**54**	**54**	**N/A**	**82**	**BMP**	**82**	**BMP**	**N/A**

Notes:
a Unmitigated emissions include implementation of BMP AQ-1. Mitigated emissions include implementation of BMP AQ-1 and Mitigation Measures AQ-1 and AQ-2.
b Exceedances of air district thresholds are shown in bold underline.
c BMP = best management practice

Operations

Less Than Significant Impact. Operation of proposed Project has the potential to create air quality impacts through operation of the new Ardenwood Station. However, proposed Project operations would also improve existing passenger rail, which would reduce single-occupancy VMT in the region. Criteria pollutant emissions and reductions generated by these sources were quantified for 2025 and 2040 conditions to evaluate the changes in regional emission as a result of the proposed Project. As noted above in Section 3.4.3 *Methods for Evaluating Impacts*, emissions from the station operations include combustion emissions from landscaping equipment and an emergency generator and off-gassing emissions from the use of consumer products and architectural coatings. Additionally, the analysis is conservative, because it does not account for any emissions reductions that may occur from the removal of Capitol Corridor service at the two existing stations.

Table 3.4-7 summarizes the difference in operational emissions for two years between the No Project alternative and the Proposed Project Alternative. As shown, the proposed Project would result in a net reduction in vehicle-related emissions and a minor increase in emissions from station operations. It should also be noted that emissions have been quantified for two years, but emissions would occur in each year between 2025 and 2040.

Relocating operation of CCJPA passenger locomotives from the Niles to the Coast Subdivision under the proposed Project is expected to reduce net operational emissions from current rates. As addressed in Data Sources: Capitol Corridor Locomotives, the proposed relocation of passenger rail to the Coast Subdivision has fewer turns and station stops, which would reduce the need for locomotives to travel at less efficient engine notches. The combination of this more efficient engine use and the shorter trip duration under the proposed Project would reduce fuel consumption and lessen emissions from existing conditions. Due to variables previously mentioned these improvements have not been quantified.

The overall net effect in 2025 would be an emissions decrease, or benefit, for all pollutants. In 2040, however, the effect from reducing VMT becomes less beneficial per mile reduced, because vehicles will become lower emitting in future years from improved technology, more stringent standards and regulations, and turnover of the existing vehicle fleet. As such, there is a lesser beneficial effect in 2040 for most pollutants, except for PM_{10} and $PM_{2.5}$.[3] Overall, the net effect in 2040 would be a reduction in all pollutants except for ROG, which would be a minor increase. In both years and for all pollutants, the net operational emissions do not exceed the BAAQMD thresholds, because emissions would be net negative except for one pollutant (ROG) in 2040.

[3] Dust-related emissions are not affected by improvements in vehicle exhaust. Dust-related emissions are correlated with VMT; thus, 2040 has higher VMT than 2025, and the proposed Project results in a greater reduction in dust-related emissions in 2040 compared to 2025.

Table 3.4-7: Estimated Criteria Pollutant Emissions from Proposed Project Operations

Operational Year, Scenario, and Emissions Source	Daily Emissions (Pounds per Day)									
	ROG	NO_x	CO	PM_{10}			$PM_{2.5}$			SO_2
				Exhaust	Dust	Total	Exhaust	Dust	Total	
2025										
No Project Alternative Total	**4,396**	**21,947**	**323,688**	**626**	**147,456**	**148,082**	**576**	**36,562**	**37,138**	**1,308**
On-Road Vehicle Emissions	4,396	21,947	323,688	626	147,456	148,082	576	36,562	37,138	1,308
Proposed Project Total	**4,396**	**21,945**	**323,656**	**626**	**147,441**	**148,067**	**576**	**36,558**	**37,134**	**1,308**
On-Road Vehicle Emissions	4,396	21,944	323,654	626	147,441	148,067	576	36,558	37,134	1,308
Station Emissions	<1	<1	2	<1	-	<1	<1	-	<1	<1
Net Change – 2025[a]	**-0.4**	**-2**	**-33**	**-0.03**	**-16**	**-16**	**-0.02**	**-4**	**-4**	**-0.1**
2040										
No Project Alternative Total	**1,866**	**10,895**	**242,722**	**299**	**166,658**	**166,957**	**275**	**41,345**	**41,620**	**1,169**
On-Road Vehicle Emissions	1,866	10,895	242,722	299	166,658	166,957	275	41,345	41,620	1,169
Proposed Project Total	**1,866**	**10,895**	**242,692**	**299**	**166,637**	**166,935**	**275**	**41,340**	**41,615**	**1,169**
On-Road Vehicle Emissions	1,865	10,894	242,691	299	166,637	166,935	275	41,340	41,615	1,169
Station Operations	< 1	< 1	2	< 1	-	< 1	< 1	-	< 1	< 1
Net Change – 2040 [a]	**0.2**	**-1**	**-30**	**< 0.1**	**-21**	**-21**	**< 0.1**	**-5**	**-5**	**-0.1**
Threshold	**54**	**54**	**N/A**	**N/A**	**N/A**	**82**	**N/A**	**N/A**	**82**	**N/A**

Notes:
a Negative values represent a net reduction in emissions.

3.4.6.3 Expose sensitive receptors to substantial pollutant concentrations?

No Project Alternative

No Impact. Under the No Project Alternative, the Capitol Corridor passenger rail service between Oakland and San Jose would not be relocated from the Niles Subdivision to the Coast Subdivision. Capitol Corridor passenger trains and UP freight trains would continue to operate based on current routes with no changes to connectivity or rail efficiency. As discussed above, annual growth for rail traffic would occur in future years. No construction-related pollutant concentrations would be generated under the No Project Alternative, because no passenger rail service would be relocated. In the existing conditions, pollutant concentrations resulting from diesel locomotive operation are currently present in the project area as trains pass by. These pollutant concentrations would continue in the future; however, as noted above, the In-Use Locomotive Regulation will result in lower-emitting locomotives in future years. Therefore, there would be no impact.

Proposed Project

Toxic Air Contaminants and Particulate Matter

As discussed above, the Project proposes to reroute the Capitol Corridor passenger rail service to the UPRR Coast Subdivision from the UPRR Niles Subdivision between Oakland Coliseum and Newark Junction and to construct a new train station, Ardenwood Station, along the Coast Subdivision. The construction of the new Ardenwood Station as well as the improvements to the Coast Subdivision would exceed the adopted BAAQMD regional thresholds, even with implementation of the mitigation measures and best management practices noted above. In addition, the proposed Project would have a regional benefit during operations by reducing criteria pollutant emissions. However, the rerouting of the Capitol Corridor passenger rail service, as well as the construction of the new Ardenwood Station, may potentially result in a localized TAC impact from DPM emissions during construction and operations. Thus, the Ardenwood Station on the Coast Subdivision was selected for the construction HRA and operational HRA to analyze the worst-case localized TAC impacts at sensitive receptors. The Ardenwood Station area was chosen because construction and operational activities would occur directly upwind from nearby sensitive receptor groups and an increase in Capitol Corridor passenger rail would affect receptors near the Coast Subdivision.

The Ardenwood Station would be a new commuter train station and platform with an emergency generator, on-road vehicle trips to and from the station, and Capitol Corridor passenger train trips and idling activity. The construction of the Ardenwood Station would be the primary driver of TAC emissions at the Coast Subdivision

The results from the construction and operational HRA that was conducted are discussed below. Modeling inputs, figures, and results can be found in Appendix B.

Construction

Less than Significant with Mitigation Incorporated. Construction of the proposed Project would have the potential to create inhalation health risks, which may exceed local significance thresholds for increased cancer and non-cancer health risk at receptor locations adjacent to the tracks. As

noted in *Section 3.4.4 Affected Environment*, the cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other air toxic from construction of the proposed Project. Accordingly, the analysis of health risks from construction focuses on DPM emissions and $PM_{2.5}$ emissions, as recommended by BAAQMD, OEHHA, and CARB.

The local topography and meteorology can have a substantial effect on DPM and $PM_{2.5}$ air concentrations and the resulting exposure. Consequently, DPM and $PM_{2.5}$ concentrations were estimated using conservative air quality modeling options and representative local meteorological conditions.[4] Modeling results are reported based on the annual average concentration collected from 5 years of modeling. Because of these conservative assumptions, actual health risks could be less than the projected exposures.

Table 3.4-8 summarizes estimated mitigated maximum individual cancer risk and chronic health hazard from construction of the proposed Project. Refer to Appendix B for modeling inputs, calculations, and results.

Table 3.4-8: Estimated Maximum Inhalation Cancer Risk, Chronic Hazard Index, and $PM_{2.5}$ Concentration from Mitigated Project Construction

Modeled Area	Receptor Group	Exposure Duration (years)	Cancer Risk (per million)	Chronic Hazard Index	$PM_{2.5}$ Concentration ($\mu g/m^3$)
Ardenwood Station/Coast Subdivision Area	Resident	1.42	3.10	0.005	0.08
	School	1.42	0.6	0.005	0.06
	Worker	1.42	0.6	0.007	0.08
	Recreational	1.42	<0.01	<0.001	<0.01
BAAQMD Threshold			10.0	1.0	0.3
Exceeds Threshold			No	No	No

Notes: Refer to Appendix B for more details.
Modeling assumes implementation of BMP AQ-1 and MM AQ-1 and AQ-2.
µg/m3 = micrograms per cubic meter.
< = less than.

As shown in Table 3.4-8, the construction of the proposed Project would not exceed the 10 per million cancer risk threshold, the chronic HI hazard threshold or the $PM_{2.5}$ concentration thresholds for all sensitive receptors types with implementation of BMP AQ-1 and MM AQ-1 through AQ-2, at the Ardenwood Station or Coast Subdivision. Thus, construction of the proposed Project would not result in health risks or $PM_{2.5}$ concentrations that exceed the applicable thresholds. Thus, impacts would be less than significant with incorporation of BMP AQ-1 and MM AQ-1 through AQ-2.

[4] The HRA modeling area selected is located upwind from nearby and adjacent sensitive receptors.

Operations

Less than significant. During operations, the proposed Project would generate DPM and $PM_{2.5}$ emissions from the introduction of Capitol Corridor passenger trains on the Coast Subdivision and an emergency generator at Ardenwood station. $PM_{2.5}$ exhaust and fugitive dust emissions would be generated from on-road travel of passenger commuters to the Ardenwood station as well as the emergency generator. These activities could expose off-site receptors to incremental increases in health risks. Table 3.4-9 highlights the annual emission from the operational sources that would be located at Ardenwood Station and the Coast Subdivision.

Table 3.4-9: Operational HRA Sources Emission Inventories

Project Segment	Scenario	AERMOD Source Name	DPM (PM_{10}) emissions (lbs./year)[1]	$PM_{2.5}$ emissions (lbs./year)[2]
Ardenwood Station/Coast Subdivision Area				
Coast Subdivision	Project	C_PASS_D	7.33	7.11
Ardenwood Station	Project	Idle_East	6.95	6.95
	Project	Idle_West	6.95	6.95
	Project	EMGEN	1.04	1.04
	Project	ONROAD	0.06	79.11

Notes:
1. Only diesel PM_{10} exhaust emissions were modeled as DPM, consistent with BAAQMD Guidance.
2. $PM_{2.5}$ emissions include all exhaust emissions from all fuel types and dust emissions from vehicle travel.

The AERMOD source annual emissions shown in Table 3.4-9 were imported into the CARB HARP2 ADMRT tool, along with the AERMOD plot files, to calculate Ground Level Concentrations (GLC) at the nearby sensitive receptors. With the GLC calculated, OEHHA factors were selected to model the following HRA scenarios for operations: 1) 30-year residential exposure, 2) 12-year school exposure, 3) 25-year worker exposure, and 4) 30-year recreational exposure; refer to Appendix B for more details. Table 3.4-10 presents the operational health risk impacts for the Ardenwood Station/Coast Subdivision area.

Table 3.4-10: Estimated Maximum Inhalation Cancer Risk, Chronic Hazard Index, and $PM_{2.5}$ Concentration from Project Operations

Modeled Area	Receptor Group	Exposure Duration (years)	Cancer Risk (per million)	Chronic Hazard Index	$PM_{2.5}$ Concentration ($\mu g/m^3$)
Ardenwood Station/Coast Subdivision Area	Resident	30	1.3	<0.001	0.016
	School	12	1.5	0.002	0.024
	Worker	25	0.9	0.001	0.023
	Recreational	30	0.03	<0.001	0.002
BAAQMD Threshold			10.0	1.0	0.3
Exceeds Threshold			No	No	No

Notes: Refer to Appendix B for more details.
$\mu g/m^3$ = micrograms per cubic meter.
< = less than.

As shown in Table 3.4-10, the operations of the Ardenwood Station and Coast Subdivision would not exceed the adopted BAAQMD thresholds for cancer risk, chronic HI, and $PM_{2.5}$ concentrations. Thus, the proposed Project would result in a less than significant operational TAC risk at the Ardenwood station.

Construction and Operations

Less than Significant with Mitigation Incorporated. Table 3.4-11 highlights the construction and operation health risks for the Ardenwood Station and Coast Subdivision as part of the proposed Project. As shown in Table 3.4-11, the combination of the Project's construction cancer risk and operational cancer risk at the proposed Coast Subdivision and Ardenwood Station would not exceed the adopted BAAQMD thresholds for cancer risk, chronic hazard index or $PM_{2.5}$ concentration. Thus, the combination of the Proposed Project's construction and operations would not result in a significant and unavoidable TAC impact.

Table 3.4-11: Estimated Maximum Inhalation Cancer Risk, Chronic Hazard Index, and $PM_{2.5}$ Concentration from Mitigated Project Construction and Operations

Modeled Area	Receptor Group	Exposure Duration (years)	Cancer Risk (per million)	Chronic Hazard Index	$PM_{2.5}$ Concentration ($\mu g/m^3$)
Ardenwood Station/Coast Subdivision Area	Resident	see note 1	3.6	0.005	0.08
	School	see note 1	1.7	0.005	0.06
	Worker	see note 1	0.8	0.007	0.08
	Recreational	see note 1	0.03	<0.001	<0.01
BAAQMD Threshold			10.0	1.0	0.3
Exceeds Threshold			No	No	No

Notes: Refer to Appendix B for more details.
Modeling assumes implementation of BMP AQ-1 and MM AQ-1 and AQ-2.
$\mu g/m^3$ = micrograms per cubic meter.
< = less than.
[1]*The Proposed Project included 1.42 years of construction and the remainder as operations. For operations, this would be 28.58 years for residential and recreational receptors, 23.58 years of exposure for worker receptors, and 10.58 years for school receptors.*

Localized Carbon Monoxide Impacts

Operations (not applicable to Construction)

Less Than Significant Impact. During operations, continuous engine exhaust may elevate localized CO concentrations, resulting in "hot spots." Receptors exposed to these CO hot spots may have a greater likelihood of developing adverse health effects. CO hot spots are typically observed at heavily congested intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations throughout the day. The BAAQMD's screening criteria for CO hot spots is 44,000 vehicles per hour at affected intersections and 24,000 vehicles per hour at affected intersections where vertical or horizontal mixing is limited (i.e., a tunnel).

In order to use the BAAQMD's quantitative screening criteria to evaluate CO hot spots, a project must be consistent with an applicable Congestion Management Program (CMP). In the proposed Project area, none of the affected intersections have been identified as CMP intersections. Consequently, the proposed Project would not conflict with an applicable CMP, and BAAQMD quantitative screening values are used to evaluate the potential to create CO hot spots.

Peak hour traffic volume data at the intersections in the proposed Project area, provided by the traffic engineers, indicate that volumes at all intersections would be below both the 44,000 and 24,000 vehicle per hour levels. The maximum intersection volume with the proposed Project would occur in the PM peak hour in 2040 at the intersection of Ardenwood Boulevard and Paseo Padre Parkway and would be 7,119 vehicles per hour, which is substantially below the screening levels

(Fehr and Peers 2021). As a result, the additional vehicle trips associated with the proposed Project would not result in a localized violation of the CAAQS for CO.

Asbestos-Containing Materials

Construction (not applicable to Operations)

Less Than Significant Impact. Demolition of existing structures results in fugitive dust and other particulates that may disperse to adjacent sensitive receptor locations. Asbestos-containing materials (ACM) were commonly used as fireproofing and insulating agents prior to the 1970s. The U.S. Consumer Product Safety Commission banned use of most ACM in 1977 due to their link to mesothelioma. However, buildings constructed prior to 1977 that would be demolished by the Proposed Project may have used ACM and could expose receptors to asbestos, which may become airborne with other particulates during demolition.

Construction contractors would also be required to comply with the BAAQMD's Asbestos Airborne Toxic Control Measure for Construction and Grading Operations, which requires implementation of dust control measures to limit the potential for airborne asbestos. The demolition of asbestos-containing materials is subject to the limitations of the National Emissions Standards for Hazardous Air Pollutants (40 C.F.R. Parts 61 and 63) regulations and would require an asbestos inspection. Compliance with the asbestos National Emissions Standards for Hazardous Air Pollutants regulations would be mandatory in the event ACM is found in any of the existing structures. Additionally, the BAAQMD would be consulted before demolition begins. Therefore, the impact of exposure of sensitive receptors to increased asbestos during construction would be less than significant.

3.4.6.4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

No Project Alternative

No Impact. Under the No Project Alternative, the Capitol Corridor passenger rail service between Oakland and San Jose would not be relocated from the Niles Subdivision to the Coast Subdivision. Capitol Corridor passenger trains and UPRR freight trains would continue to operate based on current routes with no changes to connectivity or rail efficiency. As discussed above, annual growth for rail traffic would occur in future years. No construction odors would occur under the No Project Alternative, because no passenger rail service would be relocated. In the existing conditions, odors resulting from diesel fuel combustion currently occur in the project area as trains pass by. These odors would continue in the future but would remain short-term. Therefore, there would be no impact.

Proposed Project

Construction and Operations

Less Than Significant Impact. Land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding facilities (CARB 2005).

Sources of odor during construction include diesel exhaust from construction equipment and asphalt paving. Odors from equipment exhaust would be localized and generally confined to the immediate area surrounding the proposed Project site. The proposed Project would utilize typical construction techniques, and the equipment odors would be typical of most construction sites and temporary in nature.

The Project operations do not include any uses identified by the CARB as being associated with odors and therefore would not produce objectionable odors. Any odors resulting from diesel fuel combustion along either route would be short-term, occurring as trains pass by, and are not considered significant during operations. In addition, implementation of the proposed Project would not introduce a new type of odor source in the proposed Project area and would not site sensitive receptors near sources of odor. Short-term odors from locomotives are already an existing part of the ambient environment. Accordingly, proposed Project operation is not expected to result in odor impacts that would adversely affect a substantial number of people. This impact would be less than significant.

3.4.7 Mitigation Measures

The following mitigation measures associated with air quality will be implemented.

MM AQ-1: Implement Advanced Emissions Controls for Off-Road Equipment.

CCJPA will require all off-road equipment greater than 25 horsepower have engines that meet or exceed either EPA or CARB Tier 4 final off-road emission standards.

MM AQ-2: Implement Advanced Emissions Controls for Locomotives Used for Construction.

CCJPA will require all diesel-powered locomotives used for construction to have engines that meet or exceed either EPA or CARB Tier 4 locomotive emission standards.

3.4.8 Cumulative Impact Analysis

The cumulative RSA for air quality is comprised of the same components as described above – the local RSA (proposed Project footprint plus areas within 1,000 feet) and the regional RSA (the SFBAAB air basin). The cumulative RSA includes current and reasonably foreseeable transportation improvements and infill development projects. The cumulative RSA would capture construction and operational impacts on criteria pollutants emissions generated from the combined effects of planned projects and the proposed Project.

Construction and operation of other planned projects would result in criteria pollutant emissions. In general, projects involving public transit would provide alternatives to vehicular travel and usually result in a net reduction in emissions relative to vehicular travel. Other regional transportation projects would increase vehicular emissions if such projects result in induced traffic. If cumulative transportation projects result in a net decrease in VMT, they would reduce criteria pollutant emissions. Operation of land development projects would increase criteria pollutant emissions from increased vehicular travel and other sources. Additionally, projects that emit TACs could result in significant health impacts on people living and working in close proximity to those projects.

Cumulative impact related to conflicting with or obstructing implementation of the applicable air quality plan.

Less than Significant Impact. The analysis of consistency with the 2017 Clean Air Plan is inherently cumulative. As discussed above in Section 3.4.6.1, the proposed Project would not conflict with the 2017 Clean Air Plan. Thus, because the proposed Project would not conflict with the 2017 Clean Air Plan, cumulative impacts would be less than significant.

Cumulatively considerable net increase in any criteria pollutants.

Less than Significant Impact with Mitigation Incorporated. During construction, all planned projects in the proposed Project area and within the SFBAAB would emit criteria pollutants from either construction and/or during operational activities. Although there may be planned projects occurring near the proposed Project, the air quality analysis above is inherently cumulative. In the discussion of Supplemental Thresholds under Section 3.4.3.4 above, it is noted that the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable while developing the thresholds of significance for air pollutants. As such, discussing individual planned projects in the RSA is not necessary for the analysis of regional air quality impacts. As discussed above in 3.4.6.2, after implementation of MM AQ-1: Implement advanced emissions controls for off-road equipment, and MM AQ-2: Implement advanced emissions controls for locomotives used for construction, the proposed Project would not exceed the established BAAQMD regional construction threshold for any pollutant. The proposed Project would also not exceed the operational thresholds and would result in a net reduction of most pollutants during the operational period. The BAAQMD thresholds are inherently cumulative; thus, the proposed Project would not slow the regional process toward attaining the NAAQS and would result in a less than significant impact. Cumulative criteria pollutant emissions would be less than significant with mitigation during construction and less than significant during operations.

Cumulatively considerable contribution to an impact related to Toxic Air Contaminant emissions.

Less than Significant Impact with Mitigation Incorporated. According to BAAQMD's CEQA Guidelines, combined risk levels should be determined for all TAC sources within 1,000 feet of a Project site and compared to BAAQMD's cumulative health risk thresholds (BAAQMD 2023).

Nearby TAC sources as well as the proposed Project's construction and operational emissions could contribute to a cumulative health risk for sensitive receptors near the proposed Project site. BAAQMD's inventory of stationary health risks were used to estimate the combined levels of health risk from existing stationary sources in combination with the proposed Project. Geographic information system (GIS) raster files provided by BAAQMD were used to estimate roadway and railway emissions (BAAQMD 2022b). The methods used to estimate proposed Project-related TAC emissions are described above and in Appendix B. The results of the cumulative impact assessment for the proposed Project are summarized in Tables 3.4-11 through 3.4-15 for residential, school, worker, and recreational receptors, respectively. The tables show the health risk values for the maximally affected receptors and the health risk contributions from existing sources. The sum of the highest proposed Project's risk and existing background health risk values are compared to BAAQMD cumulative thresholds. Additional data on individual background contributions from existing sources are included in Appendix B.

As show in Table 3.4-12 through Table 3.4-15, the proposed Project would not exceed the BAAQMD cumulative cancer risk, chronic HI risk or $PM_{2.5}$ concentration thresholds. Thus, cumulative impacts for all sensitive receptor types would not be cumulatively significant.

Table 3.4-12: Maximum Mitigated Cumulative Health Risks - Residential

Source	Maximum Affected Residential Receptor		
	Cancer Risk (per million)	Non-Cancer Chronic Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Contribution from Existing Sources			
Stationary[1]	-	-	-
Roadway	9.2	0.029	0.191
Rail	5.3	0.001	0.007
Existing Total	14.5	0.03	0.20
Contribution from Project			
Project Construction	3.1	0.005	0.08
Project Construction + Operations	3.6	0.005	0.08
Existing + Construction + Operations (cancer only)	18.1	-	-
Existing + Project Chronic HI/annual $PM_{2.5}$	-	0.035	0.28
BAAQMD Cumulative Thresholds	100	10	0.8
Exceeds Thresholds?	No	No	No

Notes:
$\mu g/m^3$ = micrograms per meter cube;
$PM_{2.5}$ = fine particulate matter.

1. There are no stationary sources within 1,000 feet of the most impacted residential receptor

Table 3.4-13: Maximum Mitigated Cumulative Health Risks - School

Source	Maximum Affected Residential Receptor		
	Cancer Risk (per million)	Non-Cancer Chronic Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Contribution from Existing Sources			
Stationary	27.4	0.12	0.04
Roadway	12.1	0.034	0.21
Rail	7.2	0.002	0.01
Existing Total	46.7	0.15	0.26
Contribution from Project			
Project Construction	0.6	0.005	0.08
Project Construction + Operations	1.7	0.005	0.06
Existing + Construction + Operations (cancer only)	48.4	-	-
Existing + Project Chronic HI/annual $PM_{2.5}$	-	0.155	0.32
BAAQMD Cumulative Thresholds	100	10	0.8
Exceeds Thresholds?	No	No	No

Notes:
$\mu g/m^3$ = micrograms per meter cube;
$PM_{2.5}$ = fine particulate matter.

Table 3.4-14: Maximum Mitigated Cumulative Health Risks - Worker

Source	Maximum Affected Residential Receptor		
	Cancer Risk (per million)	Non-Cancer Chronic Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Contribution from Existing Sources			
Stationary	27.4	0.12	0.041
Roadway	13.7	0.03	0.23
Rail	7.4	0.00.2	0.01
Existing Total	48.6	0.15	0.277
Contribution from Project			
Project Construction	0.6	0.007	0.08
Project Construction + Operations	0.8	0.007	0.08
Existing + Construction + Operations (cancer only)	49.4	-	-
Existing + Project Chronic HI/annual $PM_{2.5}$	-	0.157	0.36
BAAQMD Cumulative Thresholds	100	10	0.8
Exceeds Thresholds?	No	No	No

Notes:
$\mu g/m^3$ = micrograms per meter cube;
$PM_{2.5}$ = fine particulate matter.

Table 3.4-15: Maximum Mitigated Cumulative Health Risks - Recreational

Source	Maximum Affected Residential Receptor		
	Cancer Risk (per million)	Non-Cancer Chronic Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Contribution from Existing Sources			
Stationary[1]	-	-	-
Roadway	8.1	0.25	0.177
Rail	1.4	<0.01	0.002
Existing Total	9.5	0.03	0.18
Contribution from Project			
Project Construction	<0.01	<0.001	<0.01
Project Construction + Operations	0.03	<0.001	<0.01
Existing + Construction + Operations (cancer only)	9.5	-	-
Existing + Project Chronic HI/annual $PM_{2.5}$	-	0.03	0.18
BAAQMD Cumulative Thresholds	100	10	0.8
Exceeds Thresholds?	No	No	No

Notes:
$\mu g/m^3$ = micrograms per meter cube;
$PM_{2.5}$ = fine particulate matter.

1. There are no stationary sources within 1,000 feet of the most impacted recreational receptor.

Emission of odors adversely affecting a substantial number of people.

Less than Significant. Construction of cumulative projects, including the proposed Project, could result in emissions of odors in the form of diesel exhaust from construction equipment and vehicles. However, odors during construction would be short term, limited in extent at any given time, and distributed throuhout the area; therefore, they would not affect a substantial number of individuals.

The proposed Project operations do not include any uses identified by the CARB as being associated with odors and therefore would not produce objectionable odors. Any odors resulting from diesel fuel combustion along the route would be short-term, occurring as trains pass by, and are not considered significant during operations. As noted above, implementation of the proposed Project would not introduce a new type of odor source in the proposed Project area and would not site

sensitive receptors near sources of odor. Short-term odors from locomotives are already an existing part of the ambient environment. Accordingly, proposed Project operation is not expected to result in odor impacts that would adversely affect a substantial number of people. This impact would not be cumulatively considerable.

3.4.9 CEQA Significance Findings Summary Table

Table 3.4-16 provides a summary of the CEQA significance findings for air quality for the proposed Project.

Table 3.4-16: CEQA Significance Findings

Question	Level of Significance Before Mitigation	Incremental Project Contribution to Cumulative Impacts	Mitigation	Level of Significance with Mitigation Incorporated	Incremental Project Cumulative Impact after Mitigation
Would the project conflict with or obstruct implementation of the applicable air quality plan?	LTS	NCC	N/A	LTS	NCC
Would the project 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?	S/M	CC	MM AQ-1 MM AQ-2	LTS	CC
Would the project expose sensitive receptors to substantial pollutant concentrations?	S/M	CC	MM AQ-1 MM AQ-2	LTS	CC

Question	Level of Significance Before Mitigation	Incremental Project Contribution to Cumulative Impacts	Mitigation	Level of Significance with Mitigation Incorporated	Incremental Project Cumulative Impact after Mitigation
Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	LTS	NCC	N/A	LTS	NCC

Notes: LTS = Less than Significant Impact, NI = No Impact, N/A = Not Applicable, SI = Significant Impact, S/M = Significant Impact but Mitigable to a Less than Significant Level, CC = Cumulatively Considerable, NCC = Not Cumulatively Considerable.

3.4.10 References

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