3.13 Air Quality

This section of the Environmental Impact Report (EIR) describes the existing air quality within the project area for Phase 2 of the South Bay Salt Pond (SBSP) Restoration Project at Eden Landing. It then analyzes whether the project implementation would cause a substantial adverse effect on air quality. The information presented in this section is based on a review of the existing air quality conditions and other pertinent federal, state and local regulations. The analysis of the project's air-quality-related environmental impacts is presented for each alternative. The program-level mitigation measures described in Chapter 2, Alternatives, would be implemented with the project. Therefore, this section only includes additional, project-level mitigation measures as needed.

3.13.1 Physical Setting

Methodology

The methods of analysis and thresholds of significance are based on the Bay Area Air Quality Management District (BAAQMD) 2011 Air Quality Guidelines (BAAQMD 2010, 2011).

Regional Setting

The proposed project is located in Alameda County, within the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB also comprises all of Contra Costa, Marin, Napa, and San Francisco Counties, the southeast portion of Sonoma County, and the southwest portion of Solano County. The SFBAAB is generally bounded on the west by the Pacific Ocean, on the north by the Coast Ranges, and on the east and south by the Diablo Range.

The ambient concentrations of air pollutants in the SFBAAB are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources.

Topography, Meteorology, and Climate

The climate of the SFBAAB is characterized by mild summers and winters, moderate rainfall, daytime onshore breezes, and moderate humidity. Regional flow patterns affect air quality patterns by directing pollutants downwind of sources. Localized meteorological conditions such as moderate winds disperse pollutants and reduce pollutant concentrations. When a warm layer of air traps cooler air close to the ground, an inversion layer is produced, hampering dispersion and trapping air pollutants near the ground. During summer mornings and afternoons, these inversions are present in the South Bay. The extended daylight hours during the summer also provide plentiful sunshine, which provides the energy needed to fuel photochemical reactions between nitrogen oxides (NO_x) and reactive organic gases (ROGs), which result in ozone formation.

Criteria Air Pollutants

Concentrations of ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$, which are particulate matter with diameters of 10

micrometers and 2.5 micrometers, respectively), and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health, they are commonly referred to as "criteria air pollutants."

O_3 is formed from the interaction of ROGs, NO_x, and sunlight. Ground-level O_3 is the primary component of smog. Motor vehicles, industrial activities, and such consumer products as paints, inks, and adhesives emit ROGs. The combustion of gasoline, coal, and oil emits NO_x. O_3 exposure causes eye irritation and damage to lung tissue in humans. O_3 also harms vegetation, reduces crop yields, and accelerates deterioration of paints, finishes, rubber products, plastics, and fabrics.

CO is an odorless, colorless gas formed by the incomplete combustion of fuels. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. Exposure to high CO concentrations may result in headaches, dizziness, fatigue, unconsciousness, and even death.

NO_2 is a reddish-brown gas formed during combustion of fuels. Exposure to high concentrations may increase the risk of acute and chronic respiratory disease. NO_2 can also contribute to the formation of ground-level O_3.

SO_2 is a colorless gas emitted from fossil-fuel combustion sources and other industrial processes. SO_2 is linked to a number of adverse respiratory effects.

PM_{10} is particulate matter that is 10 micrometers or less in diameter. PM_{10} may come from a variety of sources and consists of a wide range of solid and liquid particles, including smoke, dust, aerosols, and metallic oxides. It evades the respiratory system's natural defenses and can lodge deep in the lungs when inhaled, aggravating chronic respiratory diseases. Long-term exposure to PM_{10} at levels exceeding State of California standards can lead to an increase in respiratory and cardiac illness, exacerbation of asthma, and increased death rates.

$PM_{2.5}$, also known as fine particulate matter, is particulate matter that is 2.5 micrometers or less in diameter. $PM_{2.5}$ exposure has been linked to health problems, including asthma, bronchitis, acute and chronic respiratory symptoms (e.g., shortness of breath and painful breathing), and premature death. People with existing heart or lung disease (e.g., asthma, chronic obstructive pulmonary disease, congestive heart disease), children, and the elderly appear to be at greatest risk for these severe health effects. In addition, $PM_{2.5}$ particles are a major source of visibility impairment.

Lead is a toxic metal that can adversely affect the nervous system, immune system, and reproductive and developmental systems. The major sources of lead emissions have historically been from fuels in motor vehicles and industrial sources.

In addition to the criteria pollutants described above, vinyl chloride, hydrogen sulfide (H_2S), sulfates, and visibility reducing particles are considered air pollutants that can adversely affect human health. Vinyl chloride is used to make vinyl products, and high exposure can lead to central nervous system effects and increased cancer risk. H_2S is formed during bacterial decomposition of sulfur-containing organic substances, has a very disagreeable odor, and is highly toxic. Sulfates are the fully oxidized ionic form of sulfur, and can cause adverse respiratory effects, degrade visibility, and harm or damage ecosystems and property. Visibility reducing particles consist of suspended particulate matter (PM), which is a complex mixture of dry, solid fragments; solid cores with liquid coatings; and small droplets of liquid. These particles can severely impair visibility and contribute to regional haze.

Further information about criteria pollutants and the common sources and health effects of criteria pollutants can be found in the BAAQMD 2012 CEQA Air Quality Guidelines (BAAQMD 2012a). Both the federal government and the state government have established air quality standards and goals to protect human health. Areas that meet these standards are designated as "attainment" areas, and areas that do not meet these standards are designated as "nonattainment" areas. Goals are established to improve air quality in nonattainment-designated areas. Additional information regarding attainment and the regulatory environment is provided in Section 3.13.2, Regulatory Setting.

Toxic Air Contaminants

Concentrations of toxic air contaminants (TACs) are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health impact may pose a threat to public health even at low concentrations. TACs can cause long-term health effects (such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage) or short-term acute affects (such as eye watering, respiratory irritation, runny nose, throat pain, or headaches). The following 10 compounds pose the greatest known ambient risk based on air quality data or, in the case of diesel exhaust, concentration estimates: acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel PM. Naturally occurring asbestos (NOA) in rock and soil may also be of concern during earthmoving activities, as these activities can break NOA down to microscopic fibers that are easily suspended in air. When inhaled, these thin fibers irritate tissues and resist the body's natural defenses.

For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to a particular TAC. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. Cancer risk is typically expressed as excess cancer cases per 1 million exposed individuals, typically over a lifetime exposure or other prolonged duration. For non-carcinogenic substances, there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels may vary depending on the specific pollutant. Acute and chronic exposure to non-carcinogens is expressed as a hazard index, which is the ratio of expected exposure levels to an acceptable reference exposure levels.

Odors

Typically, odors are regarded as a nuisance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, headache). Sources of existing odor in the South Bay include the salt ponds. When algae and other biomass (which grow in the ponds) naturally decompose, H_2S gas can be produced, which generates odors. Also, odors are generated when the ponds dry and the mud bottoms are exposed to air (exposure of algae or brine shrimp).

Project Setting

This section focuses on the air quality conditions in the Eden Landing Phase 2 project area.

The Eden Landing pond complex is in the southwestern Alameda County subregion of the SFBAAB, which encompasses the southeast side of San Francisco Bay from Dublin Canyon to the Alameda County/Santa Clara County border (BAAQMD 1999). The subregion is bordered on the east by the steep

flank of the East Bay hills and on the west by San Francisco Bay. During the summer months, average maximum temperatures in the subregion are in the mid-70s. Average maximum winter temperatures are in the high-50s to low-60s.

The pollution potential is considered relatively high in this subregion during the summer and fall (BAAQMD 1999). The nearest air quality monitoring station that provides the most representative ambient air quality at the Eden Landing pond complex is the Hayward-La Mesa Station. Based on the monitoring data shown in Table 3.13-1, pollutant concentrations (shown in bold text) exceeded ambient air quality standards for the past three years for state ozone and federal PM2.5.

There are no sensitive receptors within the Eden Landing pond complex and limited sensitive receptors adjacent to the pond complex. Sensitive residences are located near the pond complex at Pond E4C (off Carmel Way in Union City), approximately 1,000 feet east of the pond boundary. Several schools are located east of the pond complex, including Alvarado Elementary School (approximately 4,000 feet east of Pond E6, in Union City), Alvarado Middle School (approximately 4,000 feet east of Pond E6, in Union City), Refugio M. Cabello Elementary School (4,000 feet east of Pond E6C, in Union City), Delaine Eastin Elementary School (more than 4,000 feet southeast of Pond E4C, in Union City), and Pioneer Elementary School (more than 4,000 feet southeast of Pond E4C, in Union City). Schools are also located in Hayward, more than 5,000 feet east of the site, on the east side of the railroad tracks.

Table 3.13-1 Summary of Ambient Air Quality in the Vicinity of the Eden Landing Pond Complex

POLLUTANT	STANDARD/EXCEEDANCE	Hayward- La Mesa Station		
		2013	2014	2015
Ozone (O_3)	Max. 1-hour concentration (parts per million [ppm])	**0.075**	**0.076**	**0.085**
	Max. 8-hour concentration (ppm)	**0.085**	**0.096**	**0.103**
	# Days > federal 8-hour standard (std.) of > 0.075 ppm	0	0	2
	# Days > California 1-hour std. of > 0.09 ppm	0	1	2
	# Days > California 8-hour std. of > 0.07 ppm	1	4	2
Fine particulate matter ($PM_{2.5}$)**	Max. 24-hour concentration (micrograms per cubic meter [$\mu g/m^3$])	**37.9**	**37.6**	**44.7**
	#Days > fed. 24-hour std. of > 35 $\mu g/m^3$	2	1	1
	Annual average ($\mu g/m^3$)	13	11	11
Respirable particulate matter (PM_{10})	Max. 24-hour concentration ($\mu g/m^3$)	*	*	*
	#Days > fed. 24-hour std. of > 150 $\mu g/m^3$	*	*	*
	#Days > California 24-hour std. of > 50 $\mu g/m^3$	*	*	*
	Annual average (µg/m3)	*	*	*
Nitrogen dioxide (NO_2)**	Max. 1-hour concentration (parts per billion [ppb])	60	82	48
	# Days > California 1-hour std. of > 18 ppb	0	0	0
	Annual average (ppb)	13	11	11

Notes:
Data from Hayward-La Mesa Monitoring Station.
* Indicates there was insufficient data to determine the value.
**Data from next closest monitoring station: Oakland-9925 International Blvd.
Exceedances of federal or state standards are shown in **bold** text.
Source of air quality monitoring data: California Air Resources Board (CARB) 2016a.

3.13.2 Regulatory Setting

Air quality in the San Francisco Bay Area is regulated by the United States Environmental Protection Agency (USEPA), California Air Resources Board (CARB), and the BAAQMD. Each of these agencies develops rules, regulations, policies, and/or goals to attain the directives imposed through legislation. Although USEPA regulations may not be superseded, both state and local regulations may be more stringent.

Federal Laws and Regulations

USEPA has been charged with implementing national air quality programs. USEPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major CAA amendments were made by Congress in 1990.

Federal Clean Air Act

The CAA required USEPA to establish national ambient air quality standards (NAAQS). USEPA has established primary and secondary NAAQS for the following criteria air pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The primary standards protect public health and the secondary standards protect public welfare. The primary standards are shown in Table 3.13-2, along with current attainment designations for the SFBAAB. The CAA also requires each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies.

USEPA has responsibility to review all state SIPs to determine conformity to the mandates of the CAA and the amendments thereof and determine if implementation will achieve air quality goals. If USEPA determines an SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated time frame may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

Table 3.13-2 Ambient Air Quality Standards and Designations

Pollutant	Averaging Time	California Standards		Federal Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone (O_3)	8 Hours	0.070 ppm (137 µg/m^3)	N	0.070 ppm (137 µg/m^3)	N
	1 Hour	0.090 ppm (180 µg/m^3)	N	—	—
Carbon monoxide (CO)	8 Hours	9 ppm (10 milligrams per cubic meter [mg/m^3])	A	9 ppm (10 mg/m^3)	A
	1 Hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	A

Table 3.13-2 Ambient Air Quality Standards and Designations

Pollutant	Averaging Time	California Standards		Federal Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Nitrogen dioxide (NO_2)	1 Hour	0.180 ppm (339 µg/m^3)	A	0.100 ppm (188 µg/m^3)	U
	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	—	0.053 ppm (100 µg/m^3)	A
Sulfur dioxide (SO_2)	24 Hours	0.040 ppm (105 µg/m^3)	A	0.140 ppm (365 µg/m^3)	A
	1 Hour	0.250 ppm (655 µg/m^3)	A	0.075 ppm (196 µg/m^3)	A
	Annual arithmetic mean	—	—	0.030 ppm (80 µg/m^3)	A
Particulate matter (PM_{10})	Annual arithmetic mean	20 µg/m^3	N	—	—
	24 Hours	50 µg/m^3	N	150 µg/m^3	U
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	N	12 µg/m^3	A
	24 Hours	—	—	35 µg/m^3	N
Sulfates	24 Hours	25 µg/m^3	A	—	—
Lead (Pb)	30-Day average	1.500 µg/m^3	A	—	A
	Calendar quarter	—	—	1.500 µg/m^3	A
	Rolling 3-month average	—	—	0.150 µg/m^3	U
Hydrogen sulfide (H_2S)	1 Hour	0.030 ppm (42 µg/m^3)	U	—	—
Vinyl chloride (C_2H_3Cl)	24 Hours	0.010 ppm (26 µg/m^3)	U	—	—
Visibility reducing particles (VRP)	8 Hours	Extinction of 0.230 per kilometer	U	—	—

Notes:

A = Attainment; N = Nonattainment; U = Unclassified

Source of attainment status: BAAQMD 2014

Source of federal and state standards: CARB 2016b.

General Conformity

General conformity analysis is performed to determine if federal actions conform to the current SIP. If an area is designated as a federal nonattainment or maintenance area, general conformity applies for the criteria pollutants that are in nonattainment or maintenance. Within these areas, general conformity applies to any federal action not specifically exempted by the CAA or USEPA regulations. Emissions from construction activities are also included. General conformity does not apply to projects or actions that are covered by the transportation conformity rule. If a federal action falls under the general

conformity rule, the federal agency responsible for the action is responsible for making the conformity determination. Applicability analyses to determine conformity are required to quantify short- and long-term emissions of air pollutants from implementation of a proposed project and to determine whether the project would cause or contribute to any new violation of any standard, interfere with maintenance of any standard, increase the frequency or severity of any existing violation of any standard, or delay timely attainment of any standard. The applicability of Eden Landing Phase 2 actions to conformity is addressed in Section 3.13.3, Environmental Impacts and Mitigation Measures.

Federal Hazardous Air Pollutant Programs

USEPA has programs for identifying and regulating Hazardous Air Pollutants (HAPs). Title III of the CAAA directs USEPA to promulgate National Emissions Standards for HAPs (NESHAP). The NESHAP may have different standards for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year of any HAP or more than 25 tons per year of any combination of HAPs; all other sources are considered area sources. The standards require the application of technology-based emissions standards referred to as Maximum Achievable Control Technology. USEPA completed the emission standards required by Section 112 of the CAA in 2011 (USEPA 2011). The enforcement of these standards is currently supported by USEPA's Air Toxics National Enforcement Initiative.

The CAAA also required USEPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. Also, Section 219 of the CAAA required the use of reformulated gasoline in selected areas with the most severe O_3 nonattainment conditions to further reduce mobile-source emissions.

State Laws and Regulations

California Clean Air Act

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA was adopted in 1988; it requires CARB to establish California Ambient Air Quality Standards (CAAQS) (Table 3.13-2). CARB has established CAAQS for sulfates, H_2S, vinyl chloride, visibility reducing particulate matter, and the above-mentioned federal criteria air pollutants. In most cases, the CAAQS are more stringent than the NAAQS.

Other CARB responsibilities include, but are not limited to, overseeing local air district compliance with California and federal laws; approving local air quality plans; submitting SIPs to USEPA; monitoring air quality; determining and updating area designations and maps; and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

In-Use Off-Road Diesel Vehicle Regulation

In 2007, CARB adopted a regulation to reduce diesel particulate matter and NO_x emissions from in-use off-road heavy-duty diesel vehicles in California. The regulation imposes limits on vehicle idling and requires fleets to reduce emissions by retiring, replacing, repowering, or installing exhaust retrofits to older engines. In December 2010, major amendments were made to the regulation, including a delay of the first performance standards compliance date to no earlier than January 1, 2014 (CARB 2010).

State Toxic Air Contaminant Programs

TACs in California are primarily regulated through the Tanner Air Toxics Act (California Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588) (Hot Spots Act). To date, CARB has identified over 21 TACs, and adopted USEPA's list of HAPs as TACs.

CARB has adopted Airborne Toxics Control Measures for sources that emit a particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology to minimize emissions.

CARB adopted a Diesel Risk Reduction Plan, which recommends control measures to achieve a diesel PM reduction of 85 percent by 2020 from year 2000 levels. Recent regulations and programs include the low-sulfur diesel fuel requirement and more stringent emission standards for heavy-duty diesel trucks and off-road in-use diesel equipment. As emissions are reduced, it is expected that the risks associated with exposure to the emissions will also be reduced.

Local Laws and Regulations

Bay Area Air Quality Management District

BAAQMD is the primary agency responsible for ensuring that air quality standards (NAAQS and CAAQS) are attained and maintained in the SFBAAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB. BAAQMD prepares ozone attainment plans for the national ozone standard, clean air plans (CAPs) for the California standard, and particulate matter plans to fulfill federal air quality planning requirements. BAAQMD also inspects stationary sources of air pollution, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA, CAAA, and the CCAA.

California Environmental Quality Act Guidelines

BAAQMD developed quantitative thresholds of significance for its California Environmental Quality Act (CEQA) guidelines in 2010, which were also included in its updated 2011 guidelines (BAAQMD 2010, 2011). BAAQMD's adoption of the 2010 thresholds of significance (2010 Thresholds) was later challenged, resulting in a court-ordered ruling issued March 5, 2012, in *California Building Industry Association v. BAAQMD* (Alameda County Superior Court Case No. RGI0548693). The order requires the BAAQMD thresholds to be subject to further environmental review under CEQA. As a result, BAAQMD released updated guidelines in 2012 with references to the CEQA thresholds removed (BAAQMD 2012a). BAAQMD later appealed the ruling, and the judgment was reversed on August 13, 2013, by the Court of Appeals of the State of California, First Appellate District. The Court of Appeals' decision was appealed to the California Supreme Court, which granted limited review and held that the Guidelines were valid in part, and remanded the case to the Court of Appeals. In August 2016, the Court of Appeals issued an opinion limited to the challenged receptor-based thresholds, and found that the thresholds may not be used for the primary purpose envisioned by BAAQMD These thresholds were not found to be entirely invalid. The case was then remanded to the Alameda County Superior Court, where the matter is currently pending.

The claims made in the case concerned the CEQA impacts of adopting the thresholds, and petitioners argued that the thresholds for Health Risk Assessments encompassed issues not addressed by CEQA. The court did not specifically address whether the thresholds were supported by "substantial evidence." At this time, BAAQMD is no longer recommending use of the 2010 Thresholds, and instead recommends that lead agencies determine appropriate air quality thresholds of significance based on substantial evidence in the record.

For this air quality analysis, the 2010 Thresholds were used because they were established based on substantial evidence. The BAAQMD released the "Proposed Thresholds of Significance" in 2009, which listed the proposed thresholds for criteria pollutants, greenhouse gases (GHGs), community risk and hazards, and odors. BAAQMD researched existing and projected sources of air quality contaminants and designed the 2010 Thresholds to comply with state and federal standards. The report "provides the *substantial evidence* in support of the thresholds of significance…" (emphasis added) (BAAQMD 2009). The thresholds for criteria pollutants were developed through a quantitative examination of the efficacy of fugitive dust mitigation measures and a quantitative examination of statewide nonattainment emissions.

The issues identified in the BAAQMD CEQA Air Quality Guidelines' court case are not considered relevant to the scientific soundness of the BAAQMD's analysis of the level at which a pollutant would potentially significantly affect air quality. Therefore, the usage of these 2010 Thresholds is consistent with the BAAQMD's direction that thresholds should be based on substantial evidence.

BAAQMD 2017 Clean Air Plan

BAAQMD adopted the Bay Area Clean Air Plan: *Spare the Air, Cool the Climate* (Bay Area CAP) on April 19, 2017 to provide a plan to improve Bay Area air quality and meet public health goals. More specifically, the control strategy described in the Bay Area CAP includes a wide range of control measures and is designed to reduce emissions and decrease ambient concentrations of harmful pollutants, safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, and reduce GHG emissions to protect the climate.

The Bay Area CAP addresses four categories of pollutants: (1) ground-level O_3 and its key precursors, ROG and NO_x; (2) PM, primarily $PM_{2.5}$, and precursors to secondary $PM_{2.5}$; (3) air toxics; and (4) GHGs. The control measures are categorized based upon the economic sector framework including stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management and water measures (BAAQMD 2017).

Particulate Matter Plan

To fulfill federal air quality planning requirements, the BAAQMD adopted a $PM_{2.5}$ emissions inventory for year 2010 at a public hearing on November 7, 2012. The Bay Area 2010 CAP also included several measures for reducing PM emissions. On January 9, 2013, USEPA issued a final rule determining that the San Francisco Bay Area has attained the 24-hour $PM_{2.5}$ NAAQS, suspending federal SIP planning requirements for the Bay Area (BAAQMD 2013). The San Francisco Bay Area is currently designated as an attainment maintenance area.

BAAQMD 2001 Ozone Attainment Plan

BAAQMD adopted the Bay Area Ozone Attainment Plan in 2001 in response to USEPA's finding of failure of the Bay Area to attain the national ambient air quality standard for O_3. The plan includes a

control strategy for O_3 and its precursors to ensure reduction in emissions from stationary sources, mobile sources, and the transportation sector (BAAQMD 2001).

Plan Bay Area

On July 18, 2013, the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) approved the Plan Bay Area. The plan includes the San Francisco Bay Area Sustainable Communities Strategy, in accordance with California Senate Bill (SB) 375, and the 2040 Regional Transportation Plan. The Bay Area Plan includes integrated land use and transportation strategies for the region and was developed through OneBayArea, a joint initiative between ABAG, BAAQMD, MTC, and the San Francisco Bay Conservation and Development Commission. The plan's transportation policies focus on maintaining the extensive existing transportation network and utilizing these systems more efficiently to handle density in Bay Area transportation cores (ABAG and MTC 2013).

Local Toxic Air Contaminant Programs

Under BAAQMD regulations, all stationary sources that possess the potential to emit TACs are required to obtain permits from BAAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. BAAQMD limits emissions and public exposure to TACs through a number of programs. BAAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Odors

Because offensive odors rarely cause any physical harm, neither the state nor the federal government has adopted any rules or regulations regarding odors. However, BAAQMD has adopted Regulation 7 (Odorous Substances), which specifically addresses citizen complaints. If 10 or more complaints are received within a 90-day period alleging that a person has caused odors perceived at or beyond the property line of such person and that these odors are deemed to be objectionable by the complainants in the normal course of their work, travel or residence, this regulation becomes applicable. When 10 or more citizen complaints are received, the limits of this regulation become effective and shall remain effective until such time as no citizen complaints have been received by the Air Pollution Control Officer for 1 year. The limits of this regulation shall become applicable again when the Air Pollution Control Officer receives odor complaints from five or more complainants within a 90-day period.

General Plans

Many of the cities and counties near the project area have adopted general plans containing strategies and policies regarding air quality and emissions. Applicable items from these plans include the following:

- Hayward General Plan 2040 (City of Hayward 2014)
    - NR-2.1 Ambient Air Quality Standards. The City shall work with CARB and BAAQMD to meet State and Federal ambient air quality standards in order to protect all residents from the health effects of air pollution.
    - NR-2.2 Emissions Reduction. The City shall require development projects that exceed BAAQMD ROG, NO_x operational thresholds to incorporate design or operational thresholds

to incorporate design or operational features that reduce emissions equal to at least 15 percent below the level that would be produced by an unmitigated project.

- NR-2.7 Coordination with BAAQMD. The City shall coordinate with the BAAQMD to ensure projects incorporate feasible mitigation measures to reduce greenhouse gas emissions and air pollution if not already provided for through project design.
- NR-2.12 Preference for Reduced-Emission Equipment. The City shall give preference to contractors using reduced-emission equipment for City construction projects and contracts for services (e.g., garbage collection), as well as businesses that practice sustainable operations.
- NR-2.14 Air Quality Education. The City shall educate the public about air quality standards, health effects, and efforts they can make to improve air quality and reduce greenhouse gas emissions.
- NR-2.15 Community Risk Reduction Strategy. The City shall maintain and implement the General Plan as Hayward's community risk reduction strategy to reduce health risks associated with TACs and $PM_{2.5}$ in both existing and new development.
- NR-2.16 Sensitive Uses. The City shall minimize exposure of sensitive receptors to TACs, $PM_{2.5}$, and odors to the extent possible, and consider distance, orientation, and wind direction when siting sensitive land uses in proximity to TAC- and PM2.5-emitting sources and odor sources in order to minimize health risk.
- NR-2.17 Source Reduction Measures. The City shall coordinate with and support the efforts of the Bay Area Air Quality Management District, the California Air Resources Board, the U.S. Environmental Protection Agency, and other agencies as appropriate to implement source reduction measures and best management practices that address both existing and new sources of TACs, $PM_{2.5}$, and odors.
- NR-2.19 Exposure Reduction Measures for both Existing and New Receptors. The City shall work with area businesses, residents and partnering organizations to provide information about best management practices that can be implemented on a voluntary basis to reduce exposure of sensitive receptors to TACs and $PM_{2.5}$.

- Union City's 2002 General Plan Policy Document (City of Union City 2002)
  - HS-D.1.1 The City shall cooperate with the BAAQMD to implement the air quality plan.
  - HS-D.1.2 The City shall implement measures to protect air quality that may be required to mitigate the effects of population growth in the planning area.
  - HS-D.1.3 The City shall encourage development designs for city circulation systems that conserve air quality and minimize direct and indirect emissions of air pollutants.
  - HS-D.1.4 The City shall encourage a reduction in vehicle-trips through Transportation Systems Management, BAAQMD Transportation Congestion Management and the use of non-polluting forms of transportation, including electric hybrid buses, vans, city vehicles, bicycles and walking.

- HS-D.1.5 The City shall encourage developers of large projects to install fueling stations for alternative energy vehicles.
- HS-D.1.6 The City shall require all businesses, in particularly fast food and manufacturing, to minimize odors generated by the business so that the odors are not detectable off-site.

3.13.3 Environmental Impacts and Mitigation Measures

Overview

The proposed Eden Landing Phase 2 activities were evaluated to determine whether each alternative conforms to the SIP (as described in Section 3.13.2, Regulatory Setting) and whether each alternative would exceed the thresholds contained in the BAAQMD 2011 Guidelines, as described above (BAAQMD 2012a). Alameda County is currently designated as a marginal nonattainment area with respect to the national 8-hour ozone standard and as a moderate nonattainment area for the 24-hour $PM_{2.5}$ standard. Alameda County is also a maintenance area for CO. General conformity requirements would not apply to actions where the total project-generated direct or indirect emissions would not be equal to or exceed the applicable emissions levels, known as the *de minimis* thresholds, and would be less than 10 percent of the area's annual emissions budget, known as regionally significant thresholds. The *de minimis* thresholds applicable to the SFBAAB are 50 tons per year for ROGs and 100 tons per year for $PM_{2.5}$, NO_x, and CO.

Significance Criteria

For the purpose of this analysis, the project would result in a significant air quality impact 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;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

As stated in Appendix G of the CEQA Guidelines (AEP 2016), the significance standards established by the applicable air quality management or air pollution control district may be used to evaluate impacts. Impacts related to the first three significance criteria are discussed in the short term under Phase 2 Impact 3.13-1 and in the long term under Phase 2 Impact 3.13-2. Impacts to sensitive receptors from exposure to substantial pollutant concentrations, including TACs, are discussed in Phase 2 Impact 3.13-3. Impacts from objectionable odors are discussed in Phase 2 Impact 3.13-4. Also note that the impacts and the thresholds of significance in this EIR are similar to those evaluated in the 2007 SBSP Restoration Project Final Environmental Impact Statement/Report (2007 Final EIS/R) with the updated significance criteria from Appendix G of the CEQA Guidelines (AEP 2016).

As discussed in the Section 3.13.2, Regulatory Setting, this analysis follows the thresholds and methodology contained in the BAAQMD 2011 Guidelines. According to these Guidelines, if average

daily emissions of construction-related criteria air pollutants or precursors would exceed any applicable threshold of significance listed in Table 3.13-3, the project would result in a significant impact.

Table 3.13-3 Thresholds of Significance for Construction-Related Activities

Pollutant	Average Daily Emissions (lbs/day)
ROG	54
NO_x	54
PM_{10} (exhaust only)	82
$PM_{2.5}$ (exhaust only)	54
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices

Source: BAAQMD 2011.

If average daily emissions of operational-related criteria air pollutants or precursors would exceed any applicable threshold of significance listed in Table 3.13-4, the project would result in a significant impact. According to the BAAQMD 2011 Guidelines, projects that would not result in significant impacts may be considered consistent with the applicable air quality plan. By its very nature, air pollution is largely a cumulative impact. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. The thresholds of significance set forth by BAAQMD are considered the emission levels for which a project's individual emissions would be cumulatively considerable.

Table 3.13-4 Thresholds of Significance for Operations-Related Activities

Pollutant	Average Daily Emissions (lbs/day)
ROG	54
NO_x	54
PM_{10}	82
$PM_{2.5}$	54

Source: BAAQMD 2011.

The BAAQMD defines sensitive receptors as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these types of land uses include schools, hospitals, and residential areas. The BAAQMD 2011 Guidelines recommend a phased approach to estimating community risks and hazards. A site screening should be conducted to determine if the project would result in receptors being within 1,000 feet of a PM or TAC source. A project would be considered to have a significant impact on sensitive receptors if it would result in release of toxic air contaminants (diesel particulate matter and volatile organic compounds) that would increase cancer risk by 10 in 1,000,000, non-cancer chronic risk by 1.0 Hazard Index, or increase $PM_{2.5}$ concentrations above 0.3 micrograms per cubic meter ($\mu g/m^3$) on an annual average basis within a zone of influence that includes a 1,000-foot radius around the project property lines.

Odors would be considered significant if the project would result in a frequent exposure of members of the public to objectionable odors or five or more confirmed complaints per year averaged over 3 years. According to the BAAQMD, typical uses that may result in significant odor impacts include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt

batch plants, chemical manufacturing, fiberglass manufacturing, painting/coating operations, rendering plants, and coffee roasters.

As explained in Section 3.1.2, Environmental Setting and Impact Analysis, although both the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (CEQ 2015) and the CEQA Guidelines were considered during the impact analysis, the impacts identified in this EIR are generally characterized using CEQA terminology; exceptions are noted where they occur. Please refer to Section 3.1.2 for a description of the terminology used.

Program-Level Evaluation Summary

On a programmatic level, the determination was made in the 2007 Final EIS/R that under the implementation of Programmatic Alternative C, the alternative selected for implementation, there would be less-than-significant impacts as a result of long-term emissions and odors. Short-term emissions and TAC impacts for this alternative were less than significant with mitigation. Program-level mitigation measures were developed to minimize construction-generated fugitive dust emissions and to minimize the potential effects of TAC emissions to sensitive receptors. These mitigation measures, updated to match BAAQMD's 2012 CEQA Guidelines (BAAQMD 2012a), have been incorporated into the project design of all Action Alternatives. Because Eden Landing Phase 2 of the SBSP Restoration Project is a relatively early phase of the overall SBSP Restoration Project, its implemented actions meet the objectives of Programmatic Alternative B as well as Programmatic Alternative C. The impacts and mitigation measures for Programmatic Alternative B were the same as those for Alternative C, summarized above.

Project-Level Evaluation

The following paragraphs summarize common definitions and methodological approaches that were used in conducting all of the project-level impacts for the construction phase and the operations phase of the Eden Landing Phase 2 Project.

As described in Chapter 2, Alternatives, each Action Alternative includes dredged material placement and import from a project-constructed offloading facility. The offloading facility and booster pumps may be powered by diesel fuel or electricity. If diesel were to power the construction equipment during dredge material pumping and placement, a large diesel generator barge would be moored near the offloading facility in the deep-water channel. Booster pumps and onshore equipment would have individual diesel generators that would be maintained by land- and water-based crews. If electricity were to power construction equipment during dredge material pumping and placement, the electrical infrastructure necessary to bring power to the offloading facility and booster pumps would include a substation, overhead transmission line, and submarine power cables. Because air quality emissions would differ if the dredged material placement equipment was primarily powered by diesel fuel or electricity, the Action Alternatives were further subdivided and labeled Alternative Eden B1, C1, and D1 for diesel and Eden B2, D2, and D2 for electric.

Construction

Construction activities associated with the Action Alternatives may generate direct emissions from the temporary use of off-road equipment, earthmoving activities (for fugitive dust), and exhaust emissions from construction worker commutes would result in temporary emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$. Emissions of ROG and NO_X are associated primarily with exhaust from construction equipment and vehicle activity. Construction emissions were modeled using the California Emissions Estimator Model

Version 2013.2.2. Project-specific equipment types, equipment activities, and construction phasing and durations were used in the analysis. For parameters where this project-specific information was not available, California Emissions Estimator Model default values were used. It should be noted that California Emissions Estimator Model default assumptions are typically conservative to avoid underestimating emissions when project-specific information is unknown. As discussed in Chapter 2, Alternatives, the fill material used for construction would be surplus fill material originating from local off-site resources. Emissions associated with the transport of material from off-site locations to landfills are reflected in the total emissions presented under each Alternative. As described in Section 3.11, Traffic, the Eden Landing Phase 2 construction would result in these haul truck trips being diverted from their original landfill destinations to the applicable Eden Landing Phase 2 project areas. Portions of the truck trip lengths to the Eden Landing Phase 2 project area were considered to be generated by Eden Landing Phase 2 project activities to provide a conservative estimate of construction emissions. The material-hauling truck trip lengths were estimated using the distance from freeway exits to the project sites; transport from the source project(s) onto I-880 and to the relevant exit for the Eden Landing Phase 2 Project are assumed to be covered by the NEPA/CEQA document for those source project(s), as that material would need to be transported to a disposal site regardless of the Eden Landing Phase 2 Project.

The analysis also includes the emissions associated with dredged material placement and import from an offloading facility. This phase of the construction would not be concurrent with the construction of the restoration, flood risk management, and recreational components of the project. Emission estimates for the dredging component were estimated using emission factors from the CARB OFFROAD and Emission Factors (EMFAC) 2011 inventory models (CARB 2011). Construction emissions from the operation of diesel-fueled off-road equipment were estimated by multiplying daily usage (i.e., hours per day) and total days of construction by OFFROAD equipment-specific factors. Emissions from on-road motor vehicles were estimated using vehicle trips, vehicle miles traveled, and EMFAC 2011 mobile source factors. The emission factors represent the fleet-wide average emission factors within Alameda County. Criteria pollutant emissions associated with tugboat and barge operations were estimated using emission factors from CARB's Harbor Craft Emissions Inventory Database. The offloading facility and booster pumps required for the dredged material movement and placement may be powered by diesel fuel or electricity; thus, both scenarios were identified and analyzed for each of the Action Alternatives (labeled Alternative B1, C1, and D1 for diesel and B2, C2, and D2 for electric). During material placement, pump operations could occur up to 24 hours per day.

Detailed modeling input assumptions and output results are provided in Appendix I.

Construction emissions for the Eden Landing Phase 2 pond complex and alternatives are presented in Phase 2 Impact 3.13-1.

Operations

Operations at Eden Landing under all No Action[1] and Action Alternatives may generate direct emissions from equipment usage and on-road vehicle trips during the operations and maintenance (O&M) activities described in Chapter 2, Alternatives. These activities include levee inspections and maintenance, maintenance and use of recreational trails, and biological surveys. The No Action and Action Alternatives are not expected to substantially increase the level of operational activities at southern Eden Landing.

[1] "No Action Alternative" is the NEPA term. It corresponds to the CEQA term "No Project Alternative." This EIR uses No Action throughout.

Therefore, operational activities and emissions at the pond complex would be similar to existing conditions under the No Action and Action Alternatives. Operational emissions for the pond complex and alternatives are presentation in Phase 2 Impact 3.13-2.

Phase 2 Impact 3.13-1: Short-term construction-generated air pollutant emissions.

Alternative Eden A (No Action). Under Alternative Eden A (No Action Alternative), no construction activities would occur within southern Eden Landing. Although O&M activities would be ongoing, they are considered part of project operation, not project construction. As such, no construction-generated emissions would occur.

Alternative Eden A Level of Significance: No Impact

Alternative Eden B1. Alternative Eden B1 has the capacity to support beneficial reuse of up to 6 MCY of dredged material. As described in the Preliminary Design Memorandum of Dredged Material Placement at Southern Eden Landing (Appendix E), the average annual rate of dredged sediment delivery to the Bay and Inland Ponds is expected to range from 0.9 to 1.8 MCY per year. The analysis for Alternative Eden B1 assumes that hydraulic offloader and two booster pumps would be diesel powered. Implementation of Alternative Eden B1 would also involve excavation of pilot channels, creation of habitat islands and habitat transition zones, trail construction, and levee modifications including raising, breaching, and lowering which would typically occur after dredge material placement is complete. Earthmoving activity would occur under this alternative. Material from cut activities would be reused on-site, and some off-site hauling trips for imported material would be required. Construction activities would result in emissions from earthmoving activities, exhaust from off-road equipment and worker commute activity, and other miscellaneous construction-related activities. Table 3.13-5 shows the projected construction-generated average daily criteria pollutant emissions.

Table 3.13-5 Alternative Eden B1 Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	48.08	218.93	629.91	15.55	15.35	15.55	15.35
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	Yes	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

Earthmoving activities would result in temporary construction fugitive dust emissions that have the potential to represent a significant impact with respect to air quality. Furthermore, the project would implement several BMPs, developed by the State Coastal Conservancy, as project design features to be implemented as feasible, that would reduce fugitive dust emissions during construction. See Chapter 2, Alternatives, for the Basic Construction Mitigation Measures and for SBSP Mitigation Measures 3.14-1, 3.14-3a, and 3.14-3b, which are incorporated into the Eden Landing Phase 2 project. The project design features include a number of fugitive dust control measures that would meet the BAAQMD's Basic Construction Mitigation Measures Recommended for All Proposed Projects from the 2011 Guidelines (BAAQMD 2011).

As shown in Table 3.13-5, construction-generated average daily NO_x emissions would exceed the applicable regional significance thresholds during dredge material placement. Therefore, construction emissions could violate an ambient air quality standard or contribute substantially to an existing violation. Implementation of Mitigation Measures AQ-A and AQ-B would be required during dredge material placement to reduce criteria air pollutant emissions.

- Mitigation Measure AQ-A. Construction Equipment. The construction contractor shall use off-road construction diesel engines with horsepower (hp) ratings between 50 hp and 750 hp that meet, at a minimum, the Tier 4 California Emissions Standards, unless such an engine is not available for a particular item of equipment. Tier 3 engines will be allowed on a case by case basis when the contractor has documented that no Tier 4 equipment, or emissions equivalent retrofit equipment is available for a particular equipment type that must be used to complete construction. Documentation shall consist of signed written statements from at least two construction equipment rental firms.

- Mitigation Measure AQ-B. Marine Vessels. Construction contractors and dredge material placement contractors are encouraged to use marine vessels that meet the latest EPA exhaust emissions standards for marine compression-ignition engines (i.e., Tier 4 for Category 1 and 2 vessels, and Tier 3 for Category 3 vessels). Use of lower tier engines will be allowed on a case by case basis if Tier 4 engines for Category 1 and 2 vessels and Tier 3 engines for Category 3 vessels are unavailable. Harbor craft with a Category 1 or 2 marine engine, such as tugboats, shall meet, at a minimum, USEPA Tier 2 marine engine emission standards.

The OFFROAD model used in the analysis contains ranges of tier engines and uses average fleet data to develop emission factors for a given calendar year. Emission standards for diesel off-road equipment are based on the engine model year. Implementation of these standards, referred to as Tier 1 emission standards, became effective in 1996. The more stringent Tier 2 and Tier 3 emission standards became effective between 2001 and 2008, with the effective date dependent on engine horsepower. Tier 4 interim standard became effective between 2008 and 2012, and Tier 4 final standards became effective in 2014 and 2015.

Based on the improvements in emissions standards required by CARB, the analysis assumes that using off-road construction equipment with Tier 4 engines would result in an additional reduction in VOC, NO_X and PM_{10} emissions from the assumptions in the OFFROAD model. Implementation of Mitigation Measures AQ-A and AQ-B during dredge material placement would ensure construction activities associated with the construction of the Alternative Eden B1 would minimize criteria pollutant emissions. Table 3.13-6 shows the mitigated emissions for construction activities.

Table 3.13-6 Alternative Eden B1 Mitigated Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	46.31	213.91	610.56	14.57	14.44	14.57	14.44
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	Yes	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-6, incorporation of Mitigation Measures AQ-A through AQ-B would reduce NO_x emissions to the greatest extent feasible, but would still exceed the threshold of significance. Therefore, construction-related emissions for Alternative Eden B1 would result in a significant and unavoidable impact.

The General Conformity applicability and NEPA analyses are based on estimates of the total direct and indirect net emissions from construction of the project. Dredged material could potentially be received year-around, and the Bay and Inland Ponds may receive dredged material between 3 to 7 years, depending on the rate of the dredged material delivery to the southern Eden Landing ponds. As shown in Table 2-2, the expected duration for the dredge material component of Alternative Eden B1 is approximately 53 to 93 months (includes construction and decommissioning of the dredge material infrastructure). Therefore, annual criteria pollutant emissions were assumed to occur over 53 months, which is the more conservative estimate for construction activities. Table 3.13-7 summarizes the projected annual emissions associated with construction of the Alternative Eden B1.

Table 3.13-7 Alternative Eden B1 Construction-Related NEPA/General Conformity Applicability Analysis

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (tons/year)	2.55	11.78	33.62	0.80	0.80	0.80	0.80
Subsequent Construction (total tons)	0.60	5.43	6.14	0.27	0.25	3.06	1.22
Subsequent Construction (tons/year)	0.38	3.43	3.88	0.17	0.16	1.93	0.77
General conformity *de minimis* thresholds (tons/year)	50	100	100	—	—	—	100
Exceeds general conformity *de minimis* threshold?	No	No	No	—	—	—	No

See Appendix I for modeling input assumptions and output results.

The annual emissions estimates shown in Table 3.13-7 include emission reductions associated with the mitigation measures discussed above. The federal agency can take measures to reduce emissions, and the changes must be state or federally enforceable to guarantee that emissions would be below *de minimis* levels. Based on CEQA provisions in 14 California Code of Regulations Section 15091(a)(1), mitigation measures must be incorporated into the project. For the purposes of the NEPA and General Conformity applicability analysis, mitigation measures required by CEQA are considered design features of the project. This is not considered "mitigation" under the General Conformity Rule. The project assumes that mitigation measures would be implemented to meet CEQA requirements. Additional details are included in Appendix I.

As shown in Table 3.13-7, the estimated annual emissions associated with the Alternative Eden B1 would be less than the General Conformity *de minimis* thresholds. Therefore, construction-generated emissions associated with Alternative Eden B1 would conform to the SIP, and a formal conformity analysis would not be required. No substantial adverse direct or indirect effects would occur under NEPA.

Alternative Eden B1 Level of Significance: Significant and Unavoidable (CEQA); Less than Significant with Mitigation (NEPA)

Alternative Eden B2. Implementation of Alternative Eden B2 would be similar to Alternative Eden B1. However, the analysis for Alternative Eden B2 assumes that hydraulic offloader and two booster pumps would be powered by electricity. Alternative Eden B2 would also include construction activities associated with the installation of electrical infrastructure (i.e., a substation, overhead transmission line, and submarine power cables). Table 3.13-8 shows the projected construction-generated average daily criteria pollutant emissions for Alternative Eden B2.

Table 3.13-8 Alternative Eden B2 Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	8.60	57.54	68.66	2.68	2.48	2.68	2.48
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	Yes	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-8, construction-generated average daily NO_x emissions for Alternative Eden B2 would exceed the applicable regional significance thresholds during dredge material placement. Therefore, construction emissions could violate an ambient air quality standard or contribute substantially to an existing violation. Implementation of Mitigation Measures AQ-A and AQ-B would be required during dredge material placement to reduce criteria air pollutant emissions. Table 3.13-9 shows the mitigated emissions for construction activities for Alternative Eden B2.

Table 3.13-9 Alternative Eden B2 Mitigated Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	6.76	52.74	48.41	1.66	1.53	1.66	1.53
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	No	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-9, construction activities would result in emissions that would not exceed a significance threshold after mitigation. Incorporation of Mitigation Measures AQ-A and AQ-B would reduce NOx emissions to a less than significant level. Therefore, construction-generated air pollutant emissions associated with Alternative Eden B2 would be less than significant with mitigation.

The General Conformity applicability and NEPA analyses are based on estimates of the total direct and indirect net emissions from construction of the project. As discussed with Alternative Eden B1, the expected duration for the dredge material component of Alternative Eden B2 is approximately 53 to 93 months. Therefore, the criteria pollutant emissions were assumed to occur over 53 months, which is the more conservative estimate for construction activities. Table 3.13-10 summarizes the projected annual emissions associated with construction of the Alternative Eden B2. The annual emissions estimates

shown in Table 3.13-10 include emission reductions associated with the mitigation measures discussed above. The project assumes that mitigation measures would be implemented to meet CEQA requirements. Additional details are included in Appendix I.

Table 3.13-10 Alternative Eden B2 Construction-Related NEPA/General Conformity Applicability Analysis

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (tons/year)	0.37	2.67	2.90	0.09	0.08	0.09	0.08
Subsequent Construction (total tons)	0.60	5.43	6.14	0.27	0.25	3.06	1.22
Subsequent Construction (tons/year)	0.38	3.43	3.88	0.17	0.16	1.93	0.77
General conformity *de minimis* thresholds (tons/year)	50	100	100	—	—	—	100
Exceeds general conformity *de minimis* threshold?	No	No	No	—	—	—	No

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-10, the estimated emissions associated with the Alternative Eden B2 would be less than the General Conformity *de minimis* thresholds. Therefore, construction-related emissions associated with the Alternative Eden B2 would conform to the SIP, and a formal conformity analysis would not be required. No substantial adverse direct or indirect effects would occur under NEPA.

Alternative Eden B2 Level of Significance: Less than Significant with Mitigation

Alternative Eden C1. Alternative Eden C1 has the capacity to support beneficial reuse of up to 5 MCY of dredged material. The analysis for Alternative Eden C1 assumes that hydraulic offloader and two booster pumps would be diesel powered. Implementation of Alternative Eden C1 would also involve excavation of pilot channels, creation of habitat islands and habitat transition zones, trail construction, and levee modifications including raising, breaching, and lowering. Earthmoving activity would occur under this alternative. Dredged material movement and placement would occur under this alternative using diesel-powered offloading facility and pumps. Material from cut activities would be reused on-site, and some off-site hauling trips for imported material would be required. Construction activities would result in emissions from earthmoving activities, exhaust from off-road equipment and worker commute activity, and other miscellaneous construction-related activities. Table 3.13-11 shows the projected construction-generated daily criteria pollutant emissions.

Table 3.13-11 Alternative Eden C1 Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	46.33	210.92	602.38	14.91	14.71	14.91	14.71
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	Yes	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-11, the projected construction-generated average daily NO_x, emissions would exceed the applicable regional significance thresholds during dredge material placement. Therefore, construction emissions for Alternative Eden C1 could violate an ambient air quality standard or contribute substantially to an existing violation. Implementation of Mitigation Measures AQ-A and AQ-B during dredge material placement would be required to reduce criteria air pollutant emissions. Table 3.13-12 shows the mitigated emissions for construction activities.

Table 3.13-12 Alternative Eden C1 Mitigated Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	44.75	206.97	585.12	14.03	13.89	14.03	13.89
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	Yes	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-12, incorporation of Mitigation Measures AQ-A through AQ-B would reduce NO_x emissions to the greatest extent feasible, but would still exceed the threshold of significance. Therefore, construction emissions associated with Alternative Eden C1 would result in a significant and unavoidable impact.

The General Conformity applicability and NEPA analyses are based on estimates of the total direct and indirect net emissions from construction of the project. Dredged material could potentially be received year-around, and the Bay and Inland Ponds may receive dredged material between 3 to 7 years, depending on the rate of the dredged material delivery to the southern Eden Landing ponds. The expected duration for the dredge material component of Alternative Eden C1 is approximately 42 to 74 months (includes construction and decommissioning of the dredge material infrastructure). Therefore, the criteria pollutant emissions were assumed to occur over 42 months. Table 3.13-13 summarizes the projected annual emissions associated with construction of the Alternative Eden C1. Additional details are included in Appendix I.

Table 3.13-13 Alternative Eden C1 Construction-Related NEPA/General Conformity Applicability Analysis

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (tons/year)	2.58	11.91	33.68	0.81	0.80	0.81	0.80
Subsequent Construction (total tons)	0.60	5.43	6.14	0.27	0.25	3.06	1.22
Subsequent Construction (tons/year)	0.38	3.43	3.88	0.17	0.16	1.93	0.77
General conformity *de minimis* thresholds (tons/year)	50	100	100	—	—	—	100
Exceeds general conformity *de minimis* threshold?	No	No	No	—	—	—	No

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-13, the estimated emissions associated with the Alternative Eden C1 would be less than the General Conformity *de minimis* thresholds. Therefore, construction-generated emissions associated with Alternative Eden C1 would conform to the SIP, and a formal conformity analysis would not be required. No substantial adverse direct or indirect effects would occur under NEPA.

Alternative Eden C1 Level of Significance: Significant and Unavoidable (CEQA); Less than Significant with Mitigation (NEPA)

Alternative Eden C2. Implementation of Alternative Eden C2 would be similar to Alternative Eden C1. However, the analysis for Alternative Eden C2 assumes that hydraulic offloader and two booster pumps would be powered by electricity. Alternative Eden C2 would also include construction activities associated with the installation of electrical infrastructure (i.e., a substation, overhead transmission line, and submarine power cables). Table 3.13-14 shows the projected construction-generated daily criteria pollutant emissions for Alternative Eden C2.

Table 3.13-14 Alternative Eden C2 Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	8.94	58.12	70.51	2.72	2.51	2.72	2.51
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	Yes	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-14, construction-generated daily NO_x emissions for Alternative Eden C2 would exceed the applicable regional significance thresholds during dredge material placement. Therefore, construction emissions could violate an ambient air quality standard or contribute substantially to an existing violation. Implementation of Mitigation Measures AQ-A and AQ-B during dredge material placement would be required to reduce criteria air pollutant emissions. Table 3.13-15 shows the mitigated emissions for construction activities for Alternative Eden C2.

Table 3.13-15 Alternative Eden C2 Mitigated Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	7.27	54.43	52.15	1.80	1.66	1.80	1.66
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	No	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-15, construction activities would result in emissions that would not exceed a significance threshold after mitigation. Incorporation of Mitigation Measures AQ-A and AQ-B would

reduce NOx emissions to a less than significant level. Therefore, construction-generated air pollutant emissions associated with Alternative Eden C2 would be less than significant with mitigation.

The General Conformity applicability and NEPA analyses are based on estimates of the total direct and indirect net emissions from construction of the project. As discussed with Alternative Eden C1, the expected duration for the dredge material component of Alternative Eden C2 is approximately 42 to 74 months. Therefore, the criteria pollutant emissions were assumed to occur over 42 months. Table 3.13-16 summarizes the projected annual emissions associated with construction of the Alternative Eden C2. The annual emissions estimates shown in Table 3.13-16 include emission reductions associated with the mitigation measures discussed above. The project assumes that mitigation measures would be implemented to meet CEQA requirements. Additional details are included in Appendix I.

Table 3.13-16 Alternative Eden C2 Construction-Related NEPA/General Conformity Applicability Analysis

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (tons/year)	0.42	3.13	3.00	0.10	0.10	0.10	0.10
Subsequent Construction (total tons)	0.60	5.43	6.14	0.27	0.25	3.06	1.22
Subsequent Construction (tons/year)	0.38	3.43	3.88	0.17	0.16	1.93	0.77
General conformity *de minimis* thresholds (tons/year)	50	100	100	—	—	—	100
Exceeds general conformity *de minimis* threshold?	No	No	No	—	—	—	No

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-16, the estimated emissions associated with the Alternative Eden C2 would be less than the General Conformity *de minimis* thresholds. The annual emissions would not exceed any *de minimis* levels. Therefore, temporary emissions associated with the Alternative Eden C2 would conform to the SIP, and a formal conformity analysis would not be required. No substantial adverse direct or indirect effects would occur under NEPA.

Alternative Eden C2 Level of Significance: Less than Significant with Mitigation

Alternative Eden D1. Alternative Eden D1 has the capacity to support beneficial reuse of up to 6 MCY of dredged material. The analysis for Alternative Eden D1 assumes that hydraulic offloader and two booster pumps would be diesel powered. Implementation of Alternative Eden D1 would also involve excavation of pilot channels, creation of habitat islands and habitat transition zones, trail construction, and levee modifications including raising, breaching, and lowering. Earthmoving activity would occur under this alternative. Dredged material movement and placement would occur under this alternative using diesel-powered offloading facility and pumps. Material from cut activities would be reused on-site, and some off-site hauling trips for imported material would be required. Construction activities would result in emissions from earthmoving activities, exhaust from off-road equipment and worker commute activity, and other miscellaneous construction-related activities. Table 3.13-17 shows the projected construction-generated daily criteria pollutant emissions.

Table 3.13-17 Alternative Eden D1 Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	48.13	214.15	631.35	15.61	15.41	15.61	15.41
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	Yes	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-17, the projected construction-generated average daily NO_x, emissions would exceed the applicable regional significance thresholds during dredge material placement. Therefore, construction emissions for Alternative Eden D1 could violate an ambient air quality standard or contribute substantially to an existing violation. Implementation of Mitigation Measures AQ-A and AQ-B during dredge material placement would be required to reduce criteria air pollutant emissions. Table 3.13-18 shows the mitigated emissions for construction activities.

Table 3.13-18 Alternative Eden D1 Mitigated Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	46.27	208.96	610.83	14.58	14.46	14.58	14.46
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	Yes	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-18, incorporation of Mitigation Measures AQ-A through AQ-B would reduce NO_x emissions to the greatest extent feasible, but would still exceed the threshold of significance. Therefore, construction emissions associated with Alternative Eden D1 would result in a significant and unavoidable impact.

The General Conformity applicability and NEPA analyses are based on estimates of the total direct and indirect net emissions from construction of the project. Dredged material could potentially be received year-around, and the Bay and Inland Ponds may receive dredged material between 3 to 7 years, depending on the rate of the dredged material delivery to the southern Eden Landing ponds. The expected duration for the dredge material component of Alternative Eden D1 is approximately 53 to 93 months (includes construction and decommissioning of the dredge material infrastructure). Therefore, the criteria pollutant emissions were conservatively assumed to occur over 53 months. Table 3.13-19 summarizes the projected annual emissions associated with construction of the Alternative Eden D1. Additional details are included in Appendix I.

Table 3.13-19 Alternative Eden D1 Construction-Related NEPA/General Conformity Applicability Analysis

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (tons/year)	2.55	11.52	33.66	0.80	0.80	0.80	0.80
Subsequent Construction (total tons)	0.60	5.43	6.14	0.27	0.25	3.06	1.22
Subsequent Construction (tons/year)	0.38	3.43	3.88	0.17	0.16	1.93	0.77
General conformity *de minimis* thresholds (tons/year)	50	100	100	—	—	—	100
Exceeds general conformity *de minimis* threshold?	No	No	No	—	—	—	No

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-19, the estimated annual emissions associated with the Alternative Eden D1 would be less than the General Conformity *de minimis* thresholds. Therefore, construction-generated emissions associated with the project would conform to the SIP, and a formal conformity analysis would not be required. No substantial adverse direct or indirect effects would occur under NEPA.

Alternative Eden D1 Level of Significance: Significant and Unavoidable (CEQA); Less than Significant with Mitigation (NEPA)

Alternative Eden D2. Implementation of Alternative Eden D2 would be similar to Alternative Eden D1. However, the analysis for Alternative Eden D2 assumes that hydraulic offloader and two booster pumps would be powered by electricity. Alternative Eden D2 would also include construction activities associated with the installation of electrical infrastructure (i.e., a substation, overhead transmission line, and submarine power cables). Table 3.13-20 shows the projected construction-generated daily criteria pollutant emissions for Alternative Eden D2.

Table 3.13-20 Alternative Eden D2 Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	8.59	52.50	69.26	2.72	2.51	2.72	2.51
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	Yes	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-20, construction-generated average daily NO_x emissions for Alternative Eden D2 would exceed the applicable regional significance thresholds during dredge material placement. Therefore, construction emissions could violate an ambient air quality standard or contribute substantially to an existing violation. Implementation of Mitigation Measures AQ-A and AQ-B during dredge material placement would be required to reduce criteria air pollutant emissions. Table 3.13-21 shows the mitigated emissions for construction activities for Alternative Eden D2.

Table 3.13-21 Alternative Eden D2 Mitigated Construction Emissions Summary

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (lbs/day)	6.65	47.52	47.84	1.66	1.53	1.66	1.53
Subsequent Construction (lbs/day)	2.89	25.98	29.36	1.29	1.19	14.62	5.84
BAAQMD thresholds (lbs/day)	54	—	54	82	54	BMPs	BMPs
Exceeds BAAQMD threshold?	No	—	No	No	No	—	—

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-21, construction activities would result in emissions that would not exceed a significance threshold after mitigation. Incorporation of Mitigation Measures AQ-A and AQ-B would reduce NOx emissions to a less than significant level. Therefore, construction-generated air pollutant emissions associated with Alternative Eden D2 would be less than significant with mitigation.

The General Conformity applicability and NEPA analyses are based on estimates of the total direct and indirect net emissions from construction of the project. As discussed with Alternative Eden D1, the expected duration for the dredge material component of Alternative Eden D2 is approximately 53 to 93 months. Therefore, the criteria pollutant emissions were conservatively assumed to occur over 53 months. Table 3.13-22 summarizes the projected annual emissions associated with construction of the Alternative Eden D2. The annual emissions estimates shown in Table 3.13-22 include emission reductions associated with the mitigation measures discussed above. The project assumes that mitigation measures would be implemented to meet CEQA requirements. Additional details are included in Appendix I.

Table 3.13-22 Alternative Eden D2 Construction-Related NEPA/General Conformity Applicability Analysis

Emissions	ROG	CO	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (total)	$PM_{2.5}$ (total)
Dredge Material Placement (tons/year)	0.37	2.62	2.64	0.09	0.08	0.09	0.08
Subsequent Construction (total tons)	0.60	5.43	6.14	0.27	0.25	3.06	1.22
Subsequent Construction (tons/year)	0.38	3.43	3.88	0.17	0.16	1.93	0.77
General conformity *de minimis* thresholds (tons/year)	50	100	100	—	—	—	100
Exceeds general conformity *de minimis* threshold?	No	No	No	—	—	—	No

BMPs = Best Management Practices

See Appendix I for modeling input assumptions and output results.

As shown in Table 3.13-22, the estimated emissions associated with the Alternative Eden D2 would be less than the General Conformity *de minimis* thresholds. Therefore, temporary emissions associated with the Alternative Eden D2 would conform to the SIP, and a formal conformity analysis would not be required. No substantial adverse direct or indirect effects would occur under NEPA.

Alternative Eden D2 Level of Significance: Less than Significant with Mitigation

Phase 2 Impact 3.13-2: Potential long-term operational air pollutant emissions.

Alternative Eden A (No Action). Alternative Eden A (No Action Alternative) would involve no new activities. Southern Eden Landing would continue to be monitored and managed through the activities described in the AMP and in accordance with current California Department of Fish and Wildlife (CDFW) practices, as well as those of Alameda County Flood Control and Water Conservation District (ACFCWCD) on its parcels. The level of activity would be extremely similar to the activities occurring under existing conditions and would not result in a change in emissions. Therefore, the impact from long-term operational emissions would be less than significant.

According to the BAAQMD 2011 Guidelines, projects that would not result in significant impacts may be considered consistent with the applicable air quality plan. Because operational emissions would be less than significant, Alternative Eden A would not conflict with the applicable air quality plan.

Alternative Eden A Level of Significance: Less than Significant

Alternatives Eden B1/B2, Eden C1/C2, and Eden D1/D2. The following discussion addresses the three Action Alternatives (Alternatives ***Eden B1/B2, Eden C1/C2, and Eden D1/D2***). In terms of air quality emissions, the operations under the Action Alternatives would be quite similar to the current operations and those that would take place over time under Alternative Eden A. The opening and closing of water control structures is done by hand, and those structures would continue to be reached by regular passenger vehicles (primarily a pick-up truck). All three Action Alternatives include removing the existing pump between Old Alameda Creek and Pond E1, which could reduce emissions somewhat. All three also feature addition of recreational trails. Although these new recreational trails may generate emissions as a result of vehicle trips, this activity is not anticipated to result in a substantial increase in emissions compared to the environmental baseline. While there would be some ongoing maintenance of levees and the additional need to maintain trails in all Action Alternatives, there would also be breaching and removal of large areas of levee that would no longer need to be maintained.

Similarly, the habitat transition zones, islands, and other habitat features would need to be maintained and there would be ongoing mosquito abatement, biological monitoring and research, but this would largely be limited to occasional visits in passenger vehicles to remove weeds, perform abatement, or conduct surveys. These activities would have a negligible increase in local air quality emissions.

Overall, therefore, the level of operational activity would not be anticipated to be substantially different compared to existing conditions, and would not result in a substantial increase in emissions compared to existing operational activities. Based on the above discussion, the level of operational activity would be similar to existing conditions and would not result in a change in emissions. Therefore, the impact from long-term operational emissions would be less than significant.

According to the BAAQMD 2011 Guidelines, projects that would not result in significant impacts may be considered consistent with the applicable air quality plan. Because operational emissions would be less than significant, none of the Action Alternatives would conflict with the applicable air quality plan.

Alternatives Eden B1/B2, Eden C1/C2, and Eden D1/D2Level of Significance: Less than Significant

Phase 2 Impact 3.13-3: Potential exposure of sensitive receptors to TAC emissions.

Alternative Eden A (No Action). Alternative Eden A (No Action Alternative) would not require construction activities within southern Eden Landing. O&M activities could require the use of diesel-powered equipment and vehicles that have the potential to generate TAC emissions. However, the use of this equipment would be limited in extent and occur intermittently over the lifetime of the project. As such, the potential for exposure of sensitive receptors to TAC emissions from use of diesel-powered equipment and vehicles would be less than significant.

Alternative Eden A Level of Significance: Less than Significant

Alternatives Eden B1/B2, Eden C1/C2, and Eden D1/D2. Under Alternatives Eden B, Eden C, and Eden D (the Action Alternatives), construction would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. There are no sensitive receptors within the Eden Landing pond complex or southern Eden Landing in particular. However, there are sensitive receptors in the areas around the pond complex, as mentioned in Section 3.13.1, Physical Setting. Because of the distance of the sensitive receptors and the temporary use of off-road construction equipment, short-term construction activities would not expose sensitive receptors to substantial TAC emissions. Soil disturbance during construction activities (including mass grading and excavation) may result in airborne entrainment of toxic contaminants in fugitive dust, and as such may expose workers and nearby sensitive receptors to potentially toxic air emissions, although the concentrations of these contaminants in fugitive dust emissions are not anticipated to reach levels that may present significant risks. Project design features would include requirements for the preparation of a Health and Safety Plan to reduce the potential for workers and nearby residents to be exposed to airborne TACs.

O&M activities could require the use of diesel-powered equipment and vehicles that have the potential to generate TAC emissions. However, the use of this equipment would be limited in extent and occur intermittently over the lifetime of the project. Further, sensitive receptors are located at least 1,000 feet from the site and would not be in the immediate vicinity of the project. As such, potential exposure of sensitive receptors to TAC emissions during operations would be limited. Because of the distance to sensitive receptors, the limited duration of construction activities, the preparation of a Health and Safety Plan, and the intermittent nature of operational activities, impacts to sensitive receptors under any of the Action Alternatives would be less than significant.

Alternatives Eden B1/B2, Eden C1/C2, and Eden D1/D2 Level of Significance: Less than Significant

Phase 2 Impact 3.13-4: Potential odor emissions.

Odors can occur in the existing ponds in two ways. First, algae and other biomass that naturally grow in seasonal or managed ponds can accumulate in certain areas of the ponds. As the algae naturally decompose, H_2S gas can be produced, generating odors. Warm weather and lack of wind can accelerate the decomposition in the ponds and aggravate the odorous condition. Second, odors can develop as the ponds dry and the mud bottoms are exposed to air, especially in hot weather. These odors are caused by the exposure of algae or brine shrimp that are found in some of the salt ponds.

The occurrence of an odor depends to a large part on the number of degree-cooling days that occur in summer months. The potential for odor-related impacts is also dependent on prevailing winds and the proximity and location of downwind receptors. Although offensive odors rarely cause any physical harm,

they still can be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies.

Alternative Eden A (No Action). Under Alternative Eden A (No Action Alternative), no construction activities would occur and O&M activities would be limited. This alternative would be a continuation of existing conditions—that is, no new activities would occur at southern Eden Landing. The ponds would remain in the mix of managed ponds that they currently are. This is not anticipated to substantially change pond conditions that affect the potential for odors. As such, the potential for odors under this alternative would not change from that under existing conditions and would result in a less-than-significant impact.

Alternative Eden A Level of Significance: Less than Significant

Alternatives Eden B1/B2. Construction under Alternative Eden B would result in diesel emissions from the exhaust of on-site equipment, which may be odorous. Those emissions would be intermittent and would dissipate rapidly from the source. Also, mobile diesel-powered equipment would only be present on-site temporarily during construction activities. The great distance to occupied areas would prevent this from being a significant impact. As such, construction would not create objectionable odors affecting a substantial number or people. This impact would be less than significant.

Under Alternative Eden B, all of southern Eden Landing would be opened to tidal flows and expected to transition toward tidal marsh. This is anticipated to increase circulation and thus reduce the pond conditions (i.e. stagnant water in managed ponds or dry conditions in seasonal ponds) that affect the potential for odors. The potential for odors is not expected to create new odors affecting a substantial number of people and would thus result in a less than significant impact.

Alternatives Eden B1/B2 Level of Significance: Less than Significant

Alternatives Eden C1/C2. With regard to construction-related odors, Alternative Eden C is similar to Alternative Eden B, and the diesel-fueled construction equipment would not be expected to cause a significant odor-related impact.

Under Alternative Eden C, the Bay Ponds would be breached and expected to transition to tidal marsh as in Alternative Eden B, which again would not be anticipated to cause odors. However, the Inland Ponds and the Southern Ponds would be retained as managed ponds and enhanced with eleven new water control structures that would improve the ability of CDFW to increase circulation and pond depths as needed to address water quality conditions before they generate odors. Therefore, Alternative Eden C would substantially improve the ability to avoid pond conditions that could generate odors. Thus, Alternative Eden C would result in a less-than-significant impact.

Alternatives Eden C1/C2 Level of Significance: Less than Significant

Alternatives Eden D1/D2. Alternative Eden D is similar to Alternative Eden C in the initial pond restoration activities. That is, the Bay Ponds would be opened to full tidal flows and transition to tidal marsh, and the Inland Ponds and Southern Ponds would be enhanced managed ponds. In the long-run (a decade or more), however, those enhanced managed ponds would either be kept in that condition or opened to fully tidal flows. In either of those cases, the result would be a restoration project that either directly reduced odors by increasing flows or substantially improved the ability to manage pond conditions so as to avoid the potential for odors. Thus Alternative Eden D would result in a less-than-significant impact.

Alternatives Eden D1/D2 Level of Significance: Less than Significant

Impact Summary

Phase 2 impacts and levels of significance are summarized in Table 3.13-23. The levels of significance are those remaining after implementation of program-level mitigation measures, project-level design features, the AMP, and other CDFW management practices and documents. The air quality analysis required no project-level mitigation measures to reduce the impacts to a level that was less than significant.

Table 3.13-23 Phase 2 Summary of Impacts – Air Quality

IMPACT	Alt. Eden A	Alt. Eden B1	Alt. Eden B2	Alt. Eden C1	Alt. Eden C2	Alt. Eden D1	Alt. Eden D2
Phase 2 Impact 3.13-1: Short-term construction-generated air pollutant emissions.	NI	SU/LTSM	LTSM	SU/LTSM	LTSM	SU/LTSM	LTSM
Phase 2 Impact 3.13-2: Potential long-term operational air pollutant emissions.	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Phase 2 Impact 3.13-3: Potential exposure of sensitive receptors to TAC emissions.	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Phase 2 Impact 3.13-4: Potential odor emissions.	LTS	LTS	LTS	LTS	LTS	LTS	LTS

Notes:

Alternative Eden A is the No Action Alternative (No Project Alternative under CEQA).

LTS = Less than Significant

LTSM = Less Than Significant with Mitigation

SU – Significant and Unavoidable

NI = No Impact