

Introduction

This section describes the setting and impacts of the proposed project with regard to air quality. Specifically, this section focuses on the relationship between topography and climate, discusses federal and state ambient air quality standards and existing air quality conditions in the project area, describes the overall regulatory framework for air quality management in California and the region, and identifies sensitive receptors in the project area. This section then identifies the potential air quality impacts of the proposed project and proposes mitigation measures to reduce any significant impacts to less-than-significant levels.

Setting

Regional Topography and Climate

The concentration of a given pollutant in the atmosphere is determined by the amount of the pollutant released by various sources and the atmosphere's ability to transport and dilute the pollutant. The major determinants of air pollution transport and dilution are wind, atmospheric stability, terrain, and insolation (i.e., exposure to sunlight).

The project site is located in Alameda County, which lies within the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB includes the City of San Francisco; portions of Sonoma and Solano Counties; and all of San Mateo, Santa Clara, Alameda, Contra Costa, Marin, and Napa Counties.

Temperatures in Oakland average 58°F annually, ranging on the average from the mid-40s on winter mornings to the mid-70s in late summer afternoons. Daily and seasonal oscillations of temperature are small because of the moderating effects of the nearby Pacific Ocean. In contrast to the steady temperature regime, rainfall is highly variable and confined almost exclusively to the "rainy" period from early November to mid-April. Oakland averages 18 inches of precipitation annually, but because much of the area's rainfall derives from the fringes of midlatitude storms, a shift in the annual storm track of a few hundred miles can

mean the difference between a very wet year and near-drought conditions. Winds in the Oakland area are typically out of the west, west-northwest, and northwest (about 50% of the time). All other wind directions occur no more than 7% of the time, individually, and calm conditions occur during 8% of annual observations. Annual average wind speeds are approximately 9 miles per hour (California Air Resources Board 1984).

More information on the air quality of the project area is provided under “Existing Air Quality Conditions,” below. This information is best understood within the context of the state and federal regulatory framework for air quality.

Regulatory Framework

Federal and State Ambient Air Quality Standards

California and the federal government have each established ambient air quality standards for several pollutants (Table 3E-1). For some pollutants, separate standards have been set for different periods. Most standards have been set to protect public health; however, for some pollutants, standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions.

The air pollutants of greatest concern in the project area include ozone and inhalable particulate matter less than 10 microns in diameter (PM10). The primary effects of ozone (a component of photochemical smog) include reductions in plant growth and crop yield, chemical deterioration of various materials, irritation of the respiratory system, and eye irritation. PM10 can cause a wide range of pollution effects, including reduced visibility, respiratory irritation, corrosion of structures and materials, and soiling of materials and related economic concerns.

Air Quality Management Programs

Air pollution control programs were established in California before the enactment of federal requirements. The federal Clean Air Act legislation in the 1970s resulted in a gradual merging of state and federal air quality programs, particularly those relating to industrial sources. Air quality management programs developed since the late 1980s generally have been developed in response to requirements established by the federal Clean Air Act. Enactment of the California Clean Air Act in 1988 and the federal Clean Air Act Amendments of 1990 has produced additional changes in the structure and administration of air quality management programs.

The California Clean Air Act requires preparation of an air quality attainment plan for any area that violates state air quality standards for carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), or ozone. Locally prepared attainment plans are not required for areas that violate the state standards for

PM10. PM10 attainment issues are being addressed by the California Air Resources Board (CARB).

Attainment refers to the success of a region in meeting state and federal air quality standards. An area in nonattainment has violated the standards for the given period by exceeding the regulatory thresholds of allowable pollutant concentrations.

Air pollution problems in the SFBAAB are primarily the result of locally generated emissions. The SFBAAB, however, has been identified as a source of ozone precursor emissions, which occasionally contribute to air quality problems in the Monterey Bay area, the northern San Joaquin Valley, and the southern Sacramento Valley. Consequently, in addition to correcting local air pollution problems, air quality planning efforts for the SFBAAB must also reduce the area's impact on downwind air basins.

The Bay Area Air Quality Management District (BAAQMD) has prepared two recent air quality plans designed to bring the SFBAAB into attainment with ozone standards. The 1999 Ozone Attainment Plan is designed to bring the SFBAAB into attainment with the federal ambient air quality ozone standards. The plan was approved by the CARB and is now waiting to be approved by the U.S. Environmental Protection Agency (EPA) (BAAQMD, Metropolitan Transportation Commission, and Association of Bay Area Governments 1999a). This plan contains 11 control strategy measures that would include development and implementation of additional air quality rules and regulations for emission sources within the SFBAAB.

On December 20, 2000, the BAAQMD adopted the 2000 Clean Air Plan (CAP) (BAAQMD 2000). The CAP represents the third triennial update of the 1991 CAP. The update contains additional rules and regulations designed to bring the SFBAAB into attainment with California ambient air quality ozone standards.

Existing Air Quality Conditions

Monitoring Data

Data are collected for various pollutants at air quality monitoring stations throughout the region. The closest monitoring station to the project site is located on Alice Street in Oakland.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections—it is a severe eye, nose, and throat irritant. Ozone can cause substantial damage to vegetation and other materials; plants exposed to ozone can experience leaf discoloration and cell damage. Ozone also attacks synthetic rubber, textiles, plants, and other materials.

State and federal standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any 3-year period.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and oxides of nitrogen (NO_x), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone precursors ROG and NO_x are emitted by mobile sources and by stationary combustion equipment.

This monitoring station on Alice Street recorded no violations of the state ozone standard during the 3 most recent years for which data are available (1998–2000) (Table 3E-2).

Carbon Monoxide

CO is essentially inert to plants and materials but can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Effects on humans range from slight headaches to nausea to death.

State and federal CO standards have been set for both 1-hour and 8-hour averaging times. The state 1-hour standard is 20 ppm by volume, and the federal 1-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the 8-hour averaging period.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

This monitoring station at Alice Street recorded no violations of the state CO standard during the 3 most recent years for which data are available (1998–2000) (Table 3E-2).

PM10

Health concerns associated with suspended particulate matter focus on particles small enough to reach the lungs when inhaled, referred to as PM10. Particulates can damage human health and retard plant growth. Particulates also reduce visibility, soil buildings and other materials, and corrode materials.

The state PM10 standards are 50 micrograms per cubic meter as a 24-hour average and 30 micrograms per cubic meter as an annual geometric mean. The federal PM10 standards are 150 micrograms per cubic meter as a 24-hour average and 50 micrograms per cubic meter as an annual arithmetic mean.

PM10 emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

There are no PM10 monitoring stations near the project site.

Attainment Status

The SFBAAB is currently classified as a nonattainment area for the state PM10 standards and for the state and federal ozone standards. The SFBAAB is an attainment area for the federal PM10 standards and for the state and federal NO₂ and SO₂ standards. The SFBAAB is also an attainment area for the state CO standards and a maintenance area for the federal CO standards.

Sensitive Receptors

Sensitive receptors located around the project site are:

- Best Western Inn at the corner of 2nd Street and Washington Street;
- Jack London Inn on Embarcadero between Franklin Street and Broadway;
- Waterfront Plaza Hotel on the water at the base of Broadway; and
- Ten residential loft units at 373 4th Street “Pocket Building Lofts” between Franklin Street and Webster Street.

Apart from the sensitive receptors described above, the proposed project also represents a sensitive receptor because residential uses are proposed as a component of the mixed land use.

Impacts and Mitigation Measures

Methodology

The proposed project would generate construction-related emissions and operational emissions. The methodology used to evaluate construction and operational impacts is described below.

Construction Impact Assessment Methodology

BAAQMD does not require construction emissions estimates. Instead, it requires implementation of feasible control measures (BAAQMD 1999b). PM10 emitted during construction activities varies greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, and

weather conditions. Despite this variability in emissions, experience has shown that there are a number of feasible control measures that can be reasonably implemented to reduce PM10 emissions during construction. These measures have been incorporated into the mitigation identified under Impact 3E-1 (construction-related impact).

Operational Impact Assessment Methodology

The primary operational emissions associated with the project include CO, PM10, and ozone precursors (ROG, NO_x) emitted as vehicle exhaust. Ozone precursors and PM10 operational emissions were estimated using the URBEMIS7G model. CO impacts at intersections near the vicinity of the project site were estimated using CALINE4. Detailed methodology of the CO analysis is provided in Appendix D.

Thresholds of Significance

Based on the State CEQA Guidelines and professional standards, a project would result in a significant impact on air quality if it would:

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

In addition to the above significant criteria, emission thresholds are contained in the BAAQMD's *CEQA Guidelines for Assessing the Air Quality Impacts of Projects and Plans* (BAAQMD 1999b):

- Cause a net increase in pollutant emissions of 80 pounds per day (ppd) or 15 tons per year (tpy) of ROG, NO_x, or PM10; or
- Cause a net increase in carbon monoxide emissions exceeding 550 pounds per day, reduce roadway LOS of intersections operating at LOS E or F, cause a reduction of intersection LOS to E or F, or increase traffic volumes on nearby roadways by 10% or more, and violate state carbon monoxide concentration standards as determined by the modeling of carbon monoxide emissions. The level of significance of carbon monoxide emissions from mobile sources is determined by modeling the ambient carbon monoxide concentration under project conditions and comparing the resultant one- and

eight-hour concentrations to the respective state carbon monoxide standards of 20.0 and 9.0 parts per million.

Impacts of the Proposed Project

Impact 3E-1: Temporary increase in construction-related emissions during grading and construction activities (Potentially Significant)

During construction of the proposed project, emissions would be produced by a variety of sources. They would include criteria pollutant emissions produced by construction equipment and fugitive dust created by wind and the operation of construction equipment over exposed earth.

The BAAQMD's CEQA Guidelines do not require that emissions be estimated for construction activities. Instead, specific construction-related mitigation measures must be implemented to minimize dust generation. Consequently, construction-related emissions were not estimated for the proposed project.

Because construction activities could result in a significant increase in PM10 and construction vehicle exhaust emissions, this impact is considered potentially significant. Implementation of Mitigation Measure 3E-1 would reduce this impact to a less-than-significant level.

Mitigation Measure 3E-1: Implement dust and vehicle emissions control measures.

The project sponsor will implement the following basic control measures to control dust emissions during construction:

- a. Water all active construction areas at least twice daily, or more as required to control dust.
- b. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.
- c. Pave, apply water daily to, or apply (nontoxic) soil stabilizers on, all unpaved access roads, parking areas, and staging areas at construction sites.
- d. Sweep (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites, as needed.
- e. Sweep streets (with water sweepers) if soil is visible on adjacent public streets, as needed.
- f. Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas that will be inactive for 10 days or more).
- g. Enclose, cover, water twice daily to, or apply (nontoxic) soil binders to exposed stockpiles (dirt and sand).

- h. Install sandbags or other erosion control measures to prevent silt runoff to public roadways, as needed.
- i. Idling of internal combustion engines shall, to the greatest extent feasible, be held to an absolute minimum.
- j. Construction equipment shall be properly maintained and tuned to minimize exhaust emissions.

Impact 3E-2: Increase in ROG, NO_x and PM₁₀ emissions from mobile sources during project operation (Less than Significant)

The proposed project's land uses would generate motor-vehicle trips that would in turn generate operational air emissions. Emission calculations for with-project conditions are based on the daily trip generation data provided by Dowling Associates, Inc. (Dowling Associates, Inc. 2001). The results of these calculations are summarized in Table 3E-3. Project-related mobile source emissions would not exceed the BAAQMD thresholds for project operations in either 2005 or 2020. Therefore, this impact is considered less than significant. No mitigation is required.

Table 3E-3. Mobile Source Emissions (pounds/day)

Year	ROG	NO _x	PM ₁₀
2005	43.5	70.9	31.1
2020	19.1	50.6	30.6
Thresholds	80	80	80

Sources: California Air Resources Board's EMFAC7G and URBEMIS7G models.

Impact 3E-3: Increase in local carbon monoxide concentrations at nearby intersections (Less than Significant)

The proposed project would add to traffic volumes on roads in and around the project area and would worsen levels of service at nearby intersections. Therefore, CO modeling was performed to determine the significance of CO at various intersections for 2005 and 2020 project conditions. The modeled intersections were selected based on the locations of sensitive receptors; they are the intersections of Broadway and 2nd Street, Franklin Street and 2nd Street, and Franklin Street and 3rd Street. The modeled results are presented in Table 3E-4. Modeled results showed no violation of either the 1-hr or the 8-hr CO state standard. Therefore, this impact is considered less than significant. Detailed methodology is provided in Appendix D. No mitigation is required.

Impact 3E-4: Generate objectionable odors and unsafe fumes within parking garage (Less than Significant)

The proposed project would include open walls and/or ventilation systems as required by the Uniform Building Code, to prevent collection or concentration of vehicle emissions in the parking garage. These systems would ensure that fumes from moving and idling vehicles within the garage would be mechanically dispersed. No mitigation is required.

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