4.5 AIR QUALITY AND WIND

A. SUMMARY

Projects implemented as part of the Main Campus Master Plan would result in the generation of air pollutants during construction and operation. Fugitive dust generated by on-site grading activities would be significant without mitigation, but could be adequately addressed with the implementation of feasible dust control measures recommended by the Bay Area Air Quality Management District (BAAQMD).

Operational emissions from vehicle trips generated by near-term projects would not exceed the thresholds of significance recommended by the BAAQMD and, therefore, would not be considered individually significant. Operational emissions generated by buildout of the Master Plan as a whole would exceed the thresholds of significance recommended by the BAAQMD and, therefore, would be considered significant. Given that the proposed project would have a significant air quality impact, cumulative impacts related to operational emissions would also be significant. The impacts would remain significant after mitigation because implementation of all TDM measures cannot be assumed and the actual effectiveness is not known at this time.

Near-term, Master Plan buildout, and cumulative impacts related to localized carbon monoxide (CO) emissions near all study locations would not exceed the State or Federal CO standards and therefore would not be significant.

B. INTRODUCTION

This section describes the expected emission of air pollutants generated during the construction and operational phases of the project. Air pollutants are primarily generated by two categories of sources: stationary and mobile. Stationary sources include ”point sources” that have one or more emission sources at a single facility, or ”area sources” that are widely distributed and produce many small emissions. Point sources are usually associated with manufacturing and industrial uses; area sources include residential water heaters, lawn mowers, landfills, and consumer products, such as barbecue lighter fluid. Mobile sources are non-stationary sources such as motor vehicles. Emissions from motor vehicles are calculated using air emission modeling, which is based partially on information from the traffic study prepared for the proposed project. This section was prepared in accordance with the June 1996 (as revised December 1999) BAAQMD CEQA Guidelines.

C. EXISTING CONDITIONS

C1. Smog and its Causes

Smog is a term based on the words 'smoke' and 'fog' that is used to describe dense, visible air pollution. Although some air pollutants are colorless, smog is commonly used to describe the general concentrations of pollutants in the air. Smog is formed when combustion emissions and gaseous
emissions, such as reactive organic gases (ROG) and oxides of nitrogen (NOx), undergo photochemical reactions in sunlight to form ozone. Ozone is a highly reactive gas that exists as a natural component of the atmosphere. Ozone found at relatively high concentrations in the upper atmosphere, known as stratospheric ozone, helps to shield the Earth from harmful ultraviolet radiation. In the lower atmosphere where people live, elevated levels of ozone pose human health risks and can result in damage to crops, rubber, and other materials. Particulates, such as soil and dust materials and vehicle exhaust particulates, often mix with ozone, carbon monoxide (CO), and other compounds and create a brownish haze in the air known as smog.

C2. Regional Climate and Topography

The topography and climate of the San Francisco Bay Area Air Basin (Basin) combine to make it an area of smog potential. The climate of the Bay Area is Mediterranean in character, with mild, rainy winter weather from November through March, and warm, dry weather from June through September. In summer, the Pacific high-pressure system typically remains near the coast of California; subsidence of warm air, associated with the Pacific high, creates frequent summer atmospheric temperature inversions. Subsidence inversions may be several hundred to several thousand feet deep, effectively trapping pollutants in a small volume of air near the ground. In winter, the Pacific high-pressure system moves southward, allowing ocean-formed storms to move through the region. The frequent storms and infrequent periods of sustained sunny weather are not conducive to smog formation. Radiational cooling during the evening, however, sometimes creates thin inversions and concentrates air pollutant emissions near the ground.

CCSF is located in the peninsula region, which extends from northwest of San Jose to the Golden Gate Bridge. San Francisco lies at the northern end of the peninsula. Because most of San Francisco’s topography is below 200 feet, marine air is able to flow easily across most of the city, making its climate cool and windy. The blocking effect of the Santa Cruz Mountains, which run up the center of the peninsula, tend to keep mean maximum summer temperatures in San Francisco in the mid-60s. Mean minimum temperatures during the winter months are in the high-30s to low-40s. Annual average wind speeds range from 5 to 10 mph throughout the peninsula. The prevailing winds along the peninsula’s coast are from the west, although individual sites can show significant differences. (Additional information on wind conditions is presented later in this section.)

In San Francisco, pollutant emissions are high, especially from motor vehicle congestion. Localized pollutants, such as CO, can build up in “urban canyons.” However, winds are generally fast enough to carry the pollutants away before they can accumulate.
C3. Air Quality Regulation

Air quality within the Basin is addressed through the efforts of various Federal, State, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies primarily responsible for improving the air quality within the Basin are discussed below along with their individual responsibilities.

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (U.S. EPA) is responsible for enforcing the 1990 amendments to the Federal Clean Air Act (CAA) and the national ambient air quality standards (Federal standards) that it establishes. These standards identify levels of air quality for six “criteria” pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The six criteria pollutants include ozone, CO, nitrogen dioxide (NO2 - a form of NOX), sulfur dioxide (SO2), fine particulate matter (PM10 and PM2.5), and lead.1 The U.S. EPA also has regulatory and enforcement jurisdiction over emission sources beyond State waters (i.e., on or above the outer continental shelf), and those that are under the exclusive authority of the Federal government, such as aircraft, locomotives, and interstate trucking.

The Basin is currently classified by the U.S. EPA as a nonattainment area for ozone.2 In response to its enforcement responsibilities, the U.S. EPA requires each state to prepare and submit a State Implementation Plan (SIP) that describes how the state will achieve the Federal standards by specified dates, depending on the severity of the air quality within the state or air basin.

California Air Resources Board

The California Air Resources Board (ARB), a department of the California Environmental Protection Agency (Cal/EPA), oversees air quality planning and control throughout California. It is primarily responsible for ensuring implementation of the 1989 amendments to the California Clean Air Act (CCAA), for responding to the Federal CAA requirements, and for regulating emissions from motor vehicles and consumer products within the State. The ARB has established emission standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions.

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1 Although Federal standards for PM2.5 exist, not enough air quality data related to these emissions exist to determine area designations. Final designations will be issued by the USEPA on December 15, 2004.
Like the U.S. EPA, the ARB has established ambient air quality standards for the State (State standards). These standards apply to the same six criteria pollutants as the Federal CAA, and also address sulfate (SO$_2$), visibility, hydrogen sulfide (H$_2$S), and vinyl chloride (C$_2$H$_3$Cl). The CCAA standards are more stringent than the Federal standards and, in the case of PM$_{10}$ and SO$_2$, far more stringent. The amendments to the CCAA require air pollution control districts to achieve the State standards by the earliest practicable date.

Based on monitored pollutant levels, the CCAA divides ozone nonattainment areas into four categories—moderate, serious, severe, and extreme—to which progressively more stringent requirements apply. As of January 2003, the Basin was classified as a nonattainment area for PM$_{10}$ and as an area in serious nonattainment for ozone.

**Bay Area Air Quality Management District**

The management of air quality in the Basin is the responsibility of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD is responsible for bringing and/or maintaining air quality in the Basin within Federal and State air quality standards. Specifically, the BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the Basin and to develop and implement attainment strategies to ensure that future emissions will be within Federal and State standards.

**Clean Air Plan**

As discussed previously, the Federal and State Clean Air Acts require the preparation of plans to reduce air pollution to healthful levels. The BAAQMD has responded to this requirement by preparing a series of Clean Air Plans (CAPs), the most recent and rigorous of which was approved in December 2000. The 2000 CAP continues the air pollution reduction strategy established by the 1991 CAP and represents the third triennial update to the 1991 CAP, following previous updates in 1994 and 1997. The 2000 CAP is designed to address attainment of the State standards for ozone.

The 1997 CAP contained stationary and mobile source control measures, which included: developing rules to reduce vehicle trips to and from major residential developments, shopping centers, and other indirect sources; encouraging cities and counties to plan for high density development; and clustering development with mixed uses in the vicinity of mass transit stations. The 2000 CAP includes changes in the organization and scheduling of some existing control measures, some new stationary source control

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3 New, stricter standards for PM$_{10}$ passed by the California Air Resources Board went into effect on July 5, 2003. In addition, while State standards for PM$_{2.5}$ exist, area designations are not yet finalized. As a result, State plans for addressing PM$_{2.5}$ emissions are not yet in place.

measures, revisions to previous stationary source measures, and deletion of some control measures no longer deemed feasible by BAAQMD staff. The transportation control measures (TCMs) in the 2000 CAP are unchanged from the 1997 CAP. The 2000 CAP continues to discourage “urban sprawl,” while strongly endorsing high-density mixed-use developments near transit centers that reduce the need for commuting by personal vehicles.

**BAAQMD Rules and Regulations**

The BAAQMD is responsible for limiting the amount of emissions that can be generated throughout the Basin by stationary sources. Specific rules and regulations have been adopted which limit the emissions that can be generated by various uses and/or activities, and identify specific pollution reduction measures which must be implemented in association with various uses and activities. These rules regulate not only the emissions of the six criteria pollutants, but also the emissions of toxic and acutely hazardous materials. The rules are also subject to ongoing refinement by the BAAQMD.

Emissions sources subject to these rules are regulated through the BAAQMD’s permitting process. Through this permitting process, the BAAQMD also monitors the amount of stationary emissions being generated and uses this information in developing the CAP. Any emissions sources that would be constructed as part of the proposed project would be subject to the BAAQMD rules and regulations.

**BAAQMD CEQA Guidelines**

In April 1996, the BAAQMD prepared its *BAAQMD CEQA Guidelines* as a guidance document to provide lead government agencies, consultants, and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA. The *CEQA Guidelines* was revised by the BAAQMD in December 1999. This document describes the criteria that the BAAQMD uses when reviewing and commenting on the adequacy of environmental documents, such as this EIR. The *BAAQMD CEQA Guidelines* recommends thresholds for use in determining whether projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts. This EIR section was prepared following these recommendations.

**Association of Bay Area Governments**

The Association of Bay Area Governments (ABAG) is a council of governments for the Counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Sonoma, and Solano. ABAG is a regional planning agency and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. ABAG also serves as the regional clearinghouse for projects requiring environmental documentation under Federal and State law. In this role, ABAG reviews proposed projects to analyze their impacts on ABAG’s regional planning efforts.
Although ABAG is not an air quality management agency, it is responsible for several air quality planning issues. Specifically, as the designated Metropolitan Planning Organization (MPO) for the nine counties, it is responsible, pursuant to Section 176(c) of the 1990 amendments to the Federal CAA, for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. It is required to quantify and document the demographic and employment factors influencing expected transportation demand, including land-use forecasts. Pursuant to California Health and Safety Code Section 40460(b), ABAG is also responsible for preparing and approving the portions of the Basin’s CAP relating to demographic projections and integrated regional land use, housing, employment, as well as transportation programs, measures, and strategies.

**Local Governments**

Local governments, such as the City and County of San Francisco, have the authority and responsibility to reduce air pollution through their police power and land-use decision-making authority. Specifically, local governments are responsible for the mitigation of emissions resulting from land-use decisions and for the implementation of TCMs as outlined in the CAP. The CAP assigns local governments certain responsibilities to assist the Basin in meeting air-quality goals and policies. In general, a first step toward implementation of a local government’s responsibility is accomplished by identifying air quality goals, policies, and implementation measures in its general plan. Through capital improvement programs, local governments can fund infrastructure that contributes to improved air quality, by requiring such improvements as ridesharing, park and ride, bicycle facilities, and traffic signal timing improvements. In accordance with CEQA requirements and the CEQA review process, local governments assess air quality impacts, require mitigation of potential air quality impacts by conditioning discretionary permits, and monitor and enforce implementation of such mitigation.

**C4. Existing Air Quality Environment**

**Regional Air Quality**

To identify ambient concentrations of the six criteria pollutants, the BAAQMD operates 31 air quality monitoring stations throughout the Basin. The nearest monitoring station to the project site is the San Francisco-Arkansas St. station, which monitors levels of four of the six criteria pollutants.

**Table 4.5-1, Ambient Pollutant Concentrations Registered at the San Francisco-Arkansas St. Monitoring Station**, lists the concentrations registered and the violations of State and Federal standards that have occurred at this San Francisco monitoring station from 1998 through 2002. The station
registered 18 days above the State 24-hour standard for PM$_{10}$; the specific dates and times of these violations are unknown. No other violations were registered at this station between 1998 and 2002.  

### Table 4.5-1

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standards\textsuperscript{a}</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OZONE (O$_3$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration monitored (pphm)</td>
<td></td>
<td>5.3</td>
<td>7.9</td>
<td>5.8</td>
<td>8.2</td>
<td>5.4</td>
</tr>
<tr>
<td>Number of days exceeding Federal standard</td>
<td>&gt;12 pphm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of days exceeding State standard</td>
<td>&gt;9 pphm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum 8-hour concentration monitored (pphm)</td>
<td></td>
<td>4.6</td>
<td>5.7</td>
<td>4.3</td>
<td>5.4</td>
<td>4.9</td>
</tr>
<tr>
<td>Number of days exceeding Federal standard</td>
<td>&gt;8 pphm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>SUSPENDED PARTICULATE MATTER (PM$_{10}$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Arithmetic Mean (µg/m$^3$)</td>
<td></td>
<td>22</td>
<td>26</td>
<td>24</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>In excess of Federal standard?</td>
<td>&gt;50 µg/m$^3$</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>In excess of State standard\textsuperscript{b}</td>
<td>&gt;30 µg/m$^3$</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Maximum 24-hour concentration (µg/m$^3$)</td>
<td></td>
<td>52.4</td>
<td>77.9</td>
<td>63.2</td>
<td>67.4</td>
<td>74.1</td>
</tr>
<tr>
<td>Number of days exceeding Federal standard</td>
<td>&gt;150 µg/m$^3$</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of days exceeding State standard</td>
<td>&gt;50 µg/m$^3$</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td><strong>CARBON MONOXIDE (CO)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration (ppm)</td>
<td></td>
<td>7.1</td>
<td>5.4</td>
<td>5.5</td>
<td>3.8</td>
<td>3.5</td>
</tr>
<tr>
<td>Number of days exceeding Federal standard</td>
<td>&gt;35 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of days exceeding State standard</td>
<td>&gt;20 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum 8-hour concentration (ppm)</td>
<td></td>
<td>3.96</td>
<td>3.68</td>
<td>3.19</td>
<td>3.28</td>
<td>2.57</td>
</tr>
<tr>
<td>Number of days exceeding Federal standard</td>
<td>&gt;9 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of days exceeding State standard</td>
<td>&gt;9 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>NITROGEN DIOXIDE (NO$_2$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration (ppm)</td>
<td></td>
<td>8.0</td>
<td>10.3</td>
<td>7.4</td>
<td>7.3</td>
<td>7.5</td>
</tr>
<tr>
<td>Number of days exceeding State standard</td>
<td>&gt;25pphm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: California Air Resources Board (www.arb.ca.gov/).

\textsuperscript{a} Concentrations are given in parts by volume per hundred million of air (pphm), parts by volume per million of air (ppm), or micrograms per cubic meter of air (µg/m$^3$).

\textsuperscript{b} Federal and State standards are for the same time period as the maximum concentration measurement.

\textsuperscript{c} The proposed standard was remanded by the U.S. Supreme Court in April 2001 pending the development of a new ozone implementation policy by the U.S. EPA; therefore, the data are included for informational purposes only.

\textsuperscript{d} Effective 7/5/03, the new State standard is 20 µg/m$^3$.

It should be noted that effective July 5, 2003, the new State standard for the annual arithmetic mean for PM$_{10}$ is 20 µg/m$^3$. While the station did not register any violations of the annual arithmetic mean for PM$_{10}$ between 1998 and 2002 based on the standard at the time, the measurements for PM$_{10}$ for these years would be in violation of the new standard.
4.5 Air Quality and Wind

Local Air Quality

Existing land uses in the vicinity of the Main Campus include residential, school, and commercial uses, Balboa Park, local roadways and area highways (including I-280 adjacent to the campus), and BART and MUNI facilities. There are no major stationary emissions sources near the Main Campus; the minor sources of stationary emissions include space heating, cooking, and water heating. Motor vehicles are the primary indirect emission sources of pollutants within the area.

Localized Carbon Monoxide Concentrations

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. The BAAQMD monitoring stations have not recorded any exceedances of the State or Federal CO standards since 1991. However, because elevated CO concentrations are generally localized, heavy traffic volumes and congestion at specific intersections or roadway segments can lead to high levels of CO, or “hot spots,” while concentrations at the nearest air quality monitoring station may be below State and Federal standards. Based on BAAQMD recommendations that CO modeling be performed for intersections and roadways that would be “most impacted by the proposed project” (BAAQMD CEQA Guidelines, pg. 40, and see discussion later in this section), the following intersections were analyzed:

- Phelan Avenue and Ocean Avenue;
- Ocean Avenue and Geneva Avenue;
- I-280 northbound off-ramp and Geneva Avenue; and
- I-280 southbound on-ramp and Geneva Avenue.

The BAAQMD recommends the use of CALINE4, a dispersion model developed by Caltrans for predicting CO concentrations near roadways, as the preferred method of estimating pollutant concentrations at various locations. CALINE4 adds roadway-specific CO emissions calculated from peak traffic volumes to ambient CO air concentrations. For this analysis, CO concentrations were calculated based on a simplified CALINE4 screening procedure developed by the BAAQMD. This methodology assumes worst-case conditions (i.e., wind direction is parallel to the primary roadway, 90° to the secondary road; wind speed of less than one meter per second; and extreme atmospheric stability) and provides a screening of maximum, worst-case, CO concentrations.

Maximum CO concentrations were calculated for peak hour traffic volumes at the intersections noted above. The results of these calculations are presented in Table 4.5-2, Existing Carbon Monoxide Concentrations, for representative receptors located 50, 100, and 300 feet from each intersection. Based on this analysis, there are no CO hot spots near any of the roadway intersections examined.
### Table 4.5-2
 existing carbon monoxide concentrations (parts per million)

<table>
<thead>
<tr>
<th>Intersection</th>
<th>50 feet away</th>
<th>100 feet away</th>
<th>300 feet away</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-hour</td>
<td>8-hour</td>
<td>1-hour</td>
</tr>
<tr>
<td>Phelan Avenue and Ocean Avenue</td>
<td>7.02</td>
<td>5.13</td>
<td>6.44</td>
</tr>
<tr>
<td>Ocean Avenue and Geneva Avenue</td>
<td>6.76</td>
<td>4.95</td>
<td>6.26</td>
</tr>
<tr>
<td>I-280 northbound on-and off-ramps/Geneva Avenue</td>
<td>6.66</td>
<td>4.88</td>
<td>6.13</td>
</tr>
<tr>
<td>I-280 southbound on-and off-ramps/Geneva Avenue</td>
<td>6.54</td>
<td>4.79</td>
<td>6.06</td>
</tr>
</tbody>
</table>

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix 4.5.
1 State standard is 20.0 parts per million. Federal standard is 35 parts per million.
2 State and Federal standard is 9.0 parts per million.

### Site-Specific Emissions

The Main Campus includes academic buildings, administrative offices, student services, athletic facilities and fields, associated parking, equipment storage areas, and mechanical shops and maintenance facilities. Emissions are generated by stationary activities, such as space heating, cooking, and water heating, and mobile activities—primarily automobile traffic. The largest stationary sources on the Ocean Avenue Campus, two main boilers, require and have air permits. 6

### Local Wind Conditions

Long-term wind data in San Francisco are available from historical wind records from the U.S. Weather Bureau weather station atop the old Federal Building at 50 United Nations Plaza. The wind data show that average wind speeds are greatest in the summer and least in the fall. Winds also exhibit a diurnal variation with the strongest winds occurring in the afternoon, and lightest winds occurring in the early morning.

Winds in San Francisco are most frequently from the west to northwest directions, reflecting the persistence of sea breezes. Wind direction is most variable in the winter. The approach of winter storms often results in southerly winds. Although not as frequent as westerly winds, these southerly winds are often strong. The strongest winds in San Francisco are typically from the south during the approach of a winter storm.
The Main Campus is located within the Alemany Gap that lies between the San Miguel Hills to the north and San Bruno Mountain to the south. This gap generally has accelerated winds when the wind direction is off the Pacific Ocean, and has a relatively high frequency of low stratus clouds.

The Main Campus has varied terrain. The western end of the campus is very open and exposed to prevailing winds. Science Hall sits atop higher terrain also exposed to prevailing winds. The remainder of the campus lies at lower altitude generally sheltered from westerly winds by higher terrain and dense groupings of mature trees.

**Air Toxics**

Regulation of toxic air contaminants (TACs), termed Hazardous Air Pollutants (HAPs) under Federal regulations, is achieved through Federal and State controls on individual sources. Federal law defines HAPs as non-criteria air pollutants with short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects. The 1990 Federal CAA Amendments offer a comprehensive plan for achieving significant reductions in both mobile and stationary source emissions of HAPs. A total of 189 air pollutants have been designated HAPs because of their adverse human health effects. Title III of the 1990 Federal CAA Amendments amends Section 112 of the CAA Amendments to replace the former program with an entirely new technology-based program. Under Title III, EPA must establish maximum achievable control technology emission standards for all new and existing “major” stationary sources. Stationary sources of HAPs are required to obtain an operating permit from the BAAQMD pursuant to Title V of the 1990 CAA Amendments.

California State law defines TACs as air pollutants having carcinogenic effects. Assembly Bill (AB) 1807 (the Tanner Bill, passed in 1983) established the State Air Toxics Program and the methods for designating certain air toxics as TACs. A total of 191 substances have been designated TACs under California law; they include the 189 (Federal) HAPs adopted as TACs in accordance with AB 2728. The Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; AB 2588 does not regulate air toxic emissions. Under AB 2588, sources emitting more than 10 tons per year of any criteria air pollutant must estimate and report their toxic air emissions to the local Air Districts. The local Air Districts then prioritize facilities on the basis of emissions, and “high priority” facilities are required to submit a health-risk assessment and communicate the results to the affected public. Depending on the risk levels, emitting facilities are required to implement varying levels of risk reduction measures. The BAAQMD is responsible for implementing AB 2588 in the Basin.

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

The major source of TACs contributing to ambient risk in the Bay Area is motor vehicles (45 percent of the risk associated with all sources). The BAAQMD TAC 2000 Annual Report identified 116 stationary sources in San Francisco; most were dry cleaners, which emit perchloroethylene. The closest sources to the Main Campus are three dry cleaners at distances of about 0.5 mile, 0.75 mile, and 1.0 mile, respectively.

One of the TACs being monitored and controlled by the BAAQMD is particulate matter (PM) from diesel-fueled engines, also known as diesel exhaust particulate. In 1998, ARB identified diesel exhaust particulate as a TAC. Compared to other TACs, diesel exhaust particulate emissions are estimated to be responsible for about 70 percent of the total ambient air toxics risk. On a statewide basis, the average potential cancer risk associated with these emissions is over 500 potential cancer cases per million people. In addition to these general risks, diesel exhaust particulate can also present elevated localized or near-source exposures. Depending on the activity and nearness to receptors, these potential risks can range from small to 1,500 cancer cases per million or more people.7

C5. Sensitive Receptors

Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because infants, the elderly, and people with health afflictions, especially respiratory ailments, are more susceptible to respiratory infections and other air-quality-related health problems than the general public. Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. In the vicinity of the Main Campus, sensitive air quality receptors include residential areas to the west of the Balboa Reservoir and across Judson Avenue, Havelock Street, and Ocean Avenue; Balboa Park across I-280; and two private high schools adjacent to the campus.

D. SIGNIFICANCE THRESHOLDS

For purposes of this EIR, thresholds were used from both the City and County of San Francisco Initial Study Checklist and Appendix G of the CEQA Guidelines (Environmental Checklist Form).

The environmental checklist used by the City and County of San Francisco includes the following criteria for determining whether a project could have a significant air quality or climate impact:

Could the project:

a) Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation;

b) Expose sensitive receptors to substantial pollutant concentrations;

c) Permeate its vicinity with objectionable odors; or

d) Alter wind, moisture or temperature (including sun shading effects) so as to substantially affect public areas, or change the climate either in the community or region.

Appendix G of the CEQA Guidelines (Environmental Checklist Form) lists the following items to be considered when determining whether a project could have a significant effect on the environment:

Would the project:

• 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 air pollutant for which the project region is in non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

• Expose sensitive receptors to substantial pollutant concentrations; or

• Create objectionable odors affecting a substantial number of people.

If implementation of the project exceeds any of the standards outlined above, the project would result in a significant impact. (Potential shadow effects are analyzed in Section 4.2, Visual Quality and Shadow.)

In order to facilitate the intent and significance determinations of the CEQA Guidelines, the BAAQMD has issued criteria for determining the level of significance for project-specific impacts within its jurisdiction. CCSF defers to these criteria when assessing project specific and cumulative air quality impacts for projects proposed within its jurisdiction. These thresholds are identified below.
D1. Construction Emissions

According to the BAAQMD CEQA Guidelines, fine particulate matter (PM$_{10}$) is the pollutant of greatest concern with respect to construction activities. Construction emissions of PM$_{10}$ can vary greatly depending upon the level of activity, construction equipment, local soils, weather conditions, among other factors. As a result, the BAAQMD CEQA Guidelines specifies, “The District’s approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions.” (BAAQMD CEQA Guidelines, p. 13) Therefore, the determination of significance with respect to construction emissions should be based on a consideration of the control measures to be implemented. If all the applicable control measures for PM$_{10}$ indicated in the BAAQMD CEQA Guidelines would be implemented, then air pollutant emissions from construction activities would be considered less than significant. If a project would not implement all applicable control measures, construction emissions would be considered a significant impact.

D2. Operational Emissions

The BAAQMD recommends that individual projects with direct and/or indirect operational emissions that exceed the following thresholds be considered significant:

- 80 pounds per day (ppd) of ROG
- 80 ppd of NO$_x$
- 80 ppd of PM$_{10}$

Direct emissions are those that are emitted on a site; they include stationary sources and on-site mobile equipment. Examples of land uses and activities that generate direct emissions are industrial operations and sources subject to an operating permit by the BAAQMD. Academic facilities and associated uses are not significant sources of direct emissions. Indirect emissions come from mobile sources that access the project site but generally emit off site. The primary sources of long-term, indirect emissions associated with school facility projects are motor vehicles.

Indirect CO emissions are considered significant if they will contribute to a violation of the State standards for CO (9 ppm averaged over 8 hours and 20 ppm for one hour). CO emissions are localized, and typically analyzed in terms of their impacts to specific roadway segments or intersections. The BAAQMD requires CO modeling for projects in which: (1) project vehicle emissions of CO would exceed

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8 Construction equipment exhaust contains CO and ozone precursors. However, these exhaust emissions are included in the emission inventory that is the basis for regional air quality plans, and are not expected to impede attainment and maintenance of ozone and CO standards in the Bay Area. In addition, as mentioned before, although State standards for PM$_{10}$ exist, area designations have not yet been determined. As a result, State plans for addressing PM$_{10}$ emissions are not yet in place and air quality management districts do not include these emissions in their analyses of construction impacts.
550 pounds/day, (2) project traffic would affect intersections or roadway segments operating at level of service (LOS) D, E, or F, or would cause a decline to LOS D, E, or F, or (3) project traffic would increase traffic volumes on nearby roadways by 10 percent or more (unless the increase in traffic volume is less than 100 vehicles per hour). Since the project would meet these conditions, CO modeling is required. For the purposes of this EIR, a simplified CO modeling analysis will be used to determine impacts. If modeling demonstrates that the source would not cause a violation of the State standard at existing or reasonably foreseeable receptors, the project would not have a significant impact on local air quality.

D3. Toxic Air Contaminants

Projects that have the potential to emit toxic air contaminants could also result in significant air quality impacts. As stated in the BAAQMD CEQA Guidelines, a project that emits toxic air contaminants and exceeds the following criteria is considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI)\(^9\) exceeds 10 in one million; or
- Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a hazard index\(^10\) greater than one (1) for the MEI.

D4. Odors

Odors would be considered significant if the project would result in a frequent exposure of members of the public to objectionable odors. According to the BAAQMD, typical uses that may result in significant odor impacts include wastewater treatment plant, sanitary landfill, transfer station, composting facility, petroleum refinery, asphalt batch plant, chemical manufacturing, fiberglass manufacturing, painting/coating operations, rendering plant, and coffee roasters. The proposed project does not include these land uses. Given these reasons, this topic is not discussed further in this EIR.

D5. Cumulative Impacts

According to the BAAQMD CEQA Guidelines, any project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact. For a project that does not individually have a significant air quality impact, the BAAQMD requires that a determination of cumulative impacts be based on an evaluation of the consistency of the proposed project with the local general plan and of the general plan with the regional air quality plan. The appropriate

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\(^9\) A hypothetical off-site person, usually at or near the site boundary, who would receive the maximum exposure from a facility’s operations.

\(^10\) A hazard index measures the potential for noncancer health effects. It is the ratio of the estimated exposure level to the Reference Exposure Level, which is the level at or below which no adverse health effects are anticipated.
4.5 Air Quality and Wind

Regional air quality plan for this analysis is the 2000 CAP. If a project is proposed in a city or county with a general plan that is consistent with the CAP, and the project is consistent with that general plan, the project would not have a significant cumulative impact. If the city or county general plan is not consistent with the CAP, or the project is not consistent with the general plan, quantitative analysis is required to determine whether the impact is significant.

D6. Wind

CEQA does not list any specific criterion for the evaluation of wind effects of a project. The City of San Francisco has, however, established both standards and criteria for the evaluation of wind impacts. For the purposes of CEQA, San Francisco has established a pedestrian wind hazard criterion of 1 occurrence per year of winds greater than 36 mph as representing a significant adverse impact within the Downtown C-3 district and other specific districts within the city. These criteria do not apply to the project site, however.

For this analysis, the project is considered to have a potentially significant climate impact if the exposure, orientation and massing of the structure can be expected to substantially increase ground-level winds in pedestrian corridors or public spaces within or near the campus.

E. IMPACTS AND MITIGATION MEASURES

Air Quality-1 Construction Emissions

Impact

Master Plan Buildout

During the construction phase of development of individual Main Campus Master Plan projects, emissions would be generated by on-site stationary sources, heavy-duty construction vehicles, construction worker vehicles, and energy use. In addition to construction vehicle emissions, fugitive dust would also be generated during grading and construction activities. Dust is generated when grading equipment breaks down surface materials. The resulting dust, which includes PM10, is subsequently entrained into the air by wind and vehicle tires. Although much of this airborne dust would settle out on, or near, the individual project sites, smaller particles would remain in the atmosphere, increasing existing particulate levels within the surrounding area. Sensitive receptors in proximity to the Main Campus that could be affected by construction include the single-family residences and schools. Students and employees on the Main Campus could also be affected by construction of individual projects within other parts of the campus.
Although the project’s construction-related emissions would be temporary in duration, in the absence of control measures, they could be substantial. In addition, several Main Campus projects could be under construction simultaneously, thus contributing to increased or combined construction emissions. Without the implementation of dust control measures, impacts related to construction emissions would be significant.

The Master Plan would involve the demolition of several of the existing buildings on the Main Campus. In addition, a number of buildings on the site are proposed for renovation. Some of these buildings could contain asbestos. However, the College would be required to implement standard State and Federal procedures for asbestos containment and worker safety. Specifically, the demolition, renovation or removal of asbestos-containing building materials is subject to the limitations of District Regulation 11, Rule 2: Hazardous Materials; Asbestos Demolition, Renovation and Manufacturing. CCSF would be required to consult with the District’s Enforcement Division prior to commencing demolition of a building containing asbestos building materials. If CCSF adheres to this requirement, asbestos-related impacts would be considered less than significant.

As noted earlier, construction exhaust emissions are accounted for in the emission inventories that are the basis for the regional air quality plan. Therefore, no further analysis of these emissions is required.\footnote{Bourguignon, Suzanne, Bay Area Air Quality Management District, personal communication, November 12, 2003.}

\section*{Near-Term Development}

In the near term, emissions on the Ocean Avenue Campus would be associated with construction of the Community Health & Wellness Center, the Student Health Center & Classroom Building (Health Center) and the Child Development Center. Construction of both the Community Health & Wellness and Health Centers would require demolition of a number of bungalows as well as the loss of two existing parking lots. Near-term developments also call for relocation of the existing practice field, which would require the demolition of both the existing Child Care Center and a number of bungalows. In addition, reconfiguration of the Balboa Reservoir would occur in this time period and would require removal of the center berm between the North and South Balboa Reservoirs and removal of some of the interior slopes of the existing berms. The construction dust impacts from near-term construction activities would be similar to those described for Master Plan buildout, above. Trucks carrying dirt from the reservoir to construction sites and the stockpiling of dirt for future use would contribute to those impacts.

\section*{Reservoir Configuration}

If the MOU between CCSF and SFPUC were not approved and the Balboa Reservoir was not reconfigured, Master Plan development would occur within the South Balboa Reservoir only. If this were the case, reconfiguration of the Balboa Reservoir would not be required. Therefore, there would be no

\footnote{Bourguignon, Suzanne, Bay Area Air Quality Management District, personal communication, November 12, 2003.}
need to remove the central berm between the North and South Balboa Reservoirs (assuming that the existing parking on the North Reservoir would be adequate). (Removal of some of the interior slopes of the existing berms may still be required.) Given that less construction activity would occur, it would be expected that overall construction emissions associated with construction within the South Balboa Reservoir only would be less than that expected for the proposed Master Plan buildout. Impacts on a particular day of construction might be the same, however, depending on the construction activity taking place.

Mitigation

Based on guidance from the BAAQMD, this EIR does not include a quantification of construction emissions associated with the Master Plan. Therefore, the level of mitigation that constitutes a “substantial lessening” of the potential construction emissions impacts cannot be determined. In this case, the adequacy of mitigation is based on the BAAQMD guidance that if all of the applicable control measures for PM$_{10}$ (indicated in the BAAQMD CEQA Guidelines) were implemented, the impact would be considered less than significant.

Air Quality-1: The College District shall require all construction contractors working on new construction projects for the Master Plan to implement a dust control plan. The dust control plan shall include the following measures from Table 2 of the BAAQMD CEQA Guidelines as applicable and feasible, and would reduce the impact to a less-than-significant level. The program shall be applied to all construction activities involving grading, excavation, use of unpaved areas for staging, extensive hauling of materials, or building demolition.

Basic Control Measures (for all construction sites)

• If necessary, water all active construction areas at least twice daily (with recycled water, if possible).

• Cover all trucks hauling soil, sand, and other loose materials.

• Apply water two times daily to all unpaved access roads, parking areas, and staging areas at construction sites.

• Sweep daily all paved access roads, parking areas, and staging areas at construction sites.

• Sweep streets daily if visible soil material is carried onto adjacent public streets.
Enhanced Control Measures (for individual or combined construction sites of larger than four acres)

- Hydroseed or apply non-toxic soil stabilizers to inactive construction areas.

- Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.).

- Limit vehicle speeds on unpaved roads and over disturbed soils to 15 miles per hour during construction.

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

- Replant vegetation in disturbed areas as quickly as possible.

Optional Measures (to be implemented at the discretion of the District)

- Wash off the tires or tracks of all trucks and equipment leaving the site.

- Install wind breaks, where necessary, at the windward side(s) of construction areas.

- Suspend excavation and grading activity when sustained winds exceed 25 miles per hour.

Significance After Mitigation

If implemented, Measure **Air Quality-1** would adequately mitigate the potential construction emissions impact.

**Air Quality-2 Daily Operational Emissions**

Impact

Operational emissions associated with the ultimate development and operation of the Master Plan projects would result primarily from increased vehicular trips to and from the Main Campus. Other sources of emissions would include area source emissions, such as the use of natural gas for water heaters and cooking appliances. According to the BAAQMD CEQA Guidelines, area sources are sources that individually emit fairly small quantities of air pollutants, but which cumulatively may represent significant quantities of emissions. The predicted mobile source and area source emissions associated with project operation have been calculated utilizing the URBEMIS2002 computer model distributed for use by the ARB and recommended for use by the BAAQMD.
The average daily indirect and direct emissions associated with the proposed project are presented in **Table 4.5-3, Estimated Operational Emissions**. The emissions estimates are based on the assumptions that the near-term projects would be operational in 2006, and that buildout of the Master Plan would occur by 2015. Results are presented for the near-term projects, as well as for the near-term projects and the remainder of the Master Plan buildout combined.

### Table 4.5-3
**Estimated Operational Emissions**

<table>
<thead>
<tr>
<th>Emissions Source</th>
<th>Applicable Emissions in Pounds per Day</th>
<th>(\text{PM}_{10})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Near-Term Projects: 2006</td>
<td>75.18</td>
<td>52.06</td>
</tr>
<tr>
<td>Recommended Thresholds:</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Exceeds Threshold?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Master Plan Buildout: 2015</td>
<td>124.28</td>
<td>68.02</td>
</tr>
<tr>
<td>Recommended Thresholds:</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Exceeds Threshold?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: Impact Sciences, Inc. Based on emissions factors in EMFAC 2001. Emissions calculations are provided in Appendix 4.5. Units are pounds per day.

The average emissions presented in **Table 4.5-3** are based on certain assumptions about conditions in the area. The average temperature assumed can have a substantial effect on the results, in particular for emissions of ROG. The estimates in the table are based on an assumed average (summer) temperature of 75 degrees Fahrenheit. Use of a lower assumed temperature, more in line with actual temperatures in the project area, would produce substantially lower ROG emissions. The assumption used for this EIR is considered to be a reasonable “worst-case” approach.

The average emissions presented in **Table 4.5-3** are compared with the BAAQMD project-specific recommended thresholds of significance for the sources of pollutants. As shown, the calculations indicate that the proposed near-term projects would not generate average daily direct and indirect emissions that would exceed the BAAQMD-recommended thresholds for individual projects. Therefore, the near-term operational emissions are considered less than significant. With the buildout of the remainder of the Master Plan, the project operational emissions would increase and would exceed the BAAQMD-recommended thresholds for ROG and \(\text{PM}_{10}\) (as shown in the above table). Therefore, operational emissions associated with Master Plan buildout are considered significant.

As noted earlier, the primary sources of long-term, indirect emissions associated with school facility projects are motor vehicles. Implementation of the Main Campus Master Plan would be guided by a
number of transportation and parking principles aimed at further reducing the number of vehicle trips to and from the campus. Apart from calling for locating and orienting campus buildings and activity centers to take advantage of nearby transit nodes and improving pedestrian access to and from these nodes, these principles include a commitment to implementation of a transportation demand management (TDM) program. The Master Plan recommends that future increases in trips to and from the campus due to increased enrollment be accommodated primarily by the implementation of programs that discourage driving to campus, provide incentives to increase transit ridership, and encourage carpooling and bicycling. These measures would be phased in gradually by CCSF as the campus develops and as needed to accommodate enrollment increases. If implemented, the measures would help to reduce air quality impacts. Although approval of the Master Plan represents a commitment to pursue implementation of the measures, implementation of all measures is not guaranteed. Therefore, the calculations of air pollutant emissions in this section do not reflect any features included in the project to reduce air quality impacts.

Implementation of these measures would reduce not only the number of future trips attributable to increased enrollment, but also the number of existing trips attributable to the current student enrollment. In other words, the TDM program would be expected to steer some portion of the total enrollment that might otherwise be projected to drive to campus away either from driving or from driving single-occupancy vehicles. The reduction in total traffic would help to offset the air quality impacts from increased enrollment.

Mitigation

Air Quality-2a: CCSF shall commit to implementation of the TDM program outlined in the Master Plan (to the extent feasible and in compliance with State law) in order to reduce operational emissions related to vehicles traveling to and from the Ocean Avenue Campus. The components of the TDM program are outlined below.

- Encourage the City and County of San Francisco to impose and enforce parking restrictions and permits in the adjacent neighborhood;
- Designate a Campus Transportation Coordinator to develop and implement the TDM program;
- Investigate subsidized or reduced cost transit passes (e.g., MUNI/BART Class Pass);
- Establish carpool match database for CCSF faculty, staff and students, and designate preferential parking spaces (closest to campus buildings) for carpool parking spaces;
• Consider vanpool or shuttle bus service from off-campus sites, including the Balboa Park BART Station and other CCSF campuses;

• Implement “guaranteed ride home” program for faculty or staff to utilize a taxi service, free of charge, in the event of emergencies, to encourage transit usage;

• Establish a car-sharing program and offer preferential parking for car share cars;

• Consider options for providing faculty housing on campus or in adjacent future developments;

• Provide additional services on campus (restaurants, banks, etc.);

• Provide a bicycle station or improved provisions for bicyclists on campus;

• Conduct annual monitoring of automobile trips to and from the campus to evaluate the effectiveness of the TDM programs;

• Increase parking fees to recover a portion of the cost of construction and maintenance of structured parking;

• Use parking revenue to fund implementation of TDM programs.

**Air Quality-2b:** CCSF shall monitor the effectiveness of the TDM Program. The monitoring activities shall establish a baseline (pre-program level) for trips to and from the campus, and shall provide a quantitative measurement of future trips on at least a yearly basis. The monitoring activities may include, but would not be limited to, regular surveys and the use of trip counters at CCSF entrances. If the measures are found not to be effective (that is, if they do not meet at least the minimum level of trip reduction estimated), CCSF shall consider and implement corrective actions (to the extent feasible and consistent with State law).

**Air Quality-2c:** In addition to the measures identified above, CCSF shall not expand its parking supply beyond existing levels without the implementation of all feasible TDM measures (see above) and an assessment of parking demand in order to minimize emissions related to parking lots and garages.
Air Quality-2d: CCSF shall coordinate with the City and County of San Francisco to encourage use of public transit, improve pedestrian and bicycle access and reduce vehicle trips in the Ocean Avenue Campus area. In particular, CCSF shall adopt a resolution to work with the City toward reducing vehicle trips, employing relevant policies and objectives from the Balboa Park Station Area Plan (if approved). In addition, CCSF shall consider and incorporate relevant policies from the Plan to the extent feasible when designing and siting individual Master Plan projects. A list of relevant objectives and policies from the draft Plan is provided in Table 4.5-4, Relevant Policies, Draft Balboa Park Station Area Plan.

Significance After Mitigation

Successful TDM programs that are comprehensive and strongly supported have been found to be effective in reducing motor vehicle trips by 15 to 25 percent. If the CCSF TDM program were to be as successful, it would be expected that emissions of ROG and PM\textsubscript{10} at project buildout in 2015 would decline by 15 to 25 percent, to between 93.2 and 105.6 ppd for ROG and 66.2 and 75.1 ppd for PM\textsubscript{10}. A decrease in future vehicle trips of about 10 percent or more would prevent exceedance of BAAQMD’s recommended thresholds for individual projects for PM\textsubscript{10}. In addition, implementation of the TDM program would reduce existing vehicle trips, offsetting some of the trips from the additional students and reducing pollutant emissions still further. However, implementation of all of the TDM measures is not guaranteed, and the exact effectiveness is not known at this time. In the absence of this information, the impact is considered significant after mitigation.

ROG emissions from the increase in trips would still be expected to be in excess of the BAAQMD threshold, even assuming maximum effectiveness of the TDM program. Given the uncertainties noted, the impact is considered significant after mitigation.
Table 4.5-4
Relevant Policies, Draft Balboa Park Station Area Plan

1. Design Streets for People
   - Objective 1: Emphasize the importance of the main streets in the plan area - Ocean, Geneva and San Jose Avenues - as civic spaces as well as movement corridors, by providing for a balanced mix of travel modes, including pedestrians, bicyclists, transit and automobiles. The multi-purpose character of these streets should allow them to gracefully accommodate all ways of moving about, but with special attention on pedestrians, transit and street life.
     - Policy 1.2: Use widened sidewalks and boldly marked crosswalks at intersections on major streets to make the pedestrian crossings shorter and thereby safer.
     - Policy 1.3: Implement a streetscape improvement program on the plan area’s key streets.
     - Policy 1.5: Reallocate street space to support pedestrian use and activity and more effective transit service.
     - Policy 1.6: Improve bicycle connections and safety throughout the plan area.
   - Objective 2: Reconstruct and reconfigure major streets as a key step toward transforming the plan area.
     - Policy 2.3: Redesign Ocean Avenue as a transit and pedestrian boulevard.
     - Policy 2.4: Redesign Phelan Avenue in a manner benefiting a campus-oriented street.
   - Objective 5: Assess the performance of the street system by measuring the overall movement of people and goods, rather than merely the movement of vehicles.
     - Policy 5.1: Adopt a set of person-movement-based performance measures for use in Environmental Impact Reports.

2. Create Quality Parks, Plazas and Open Space
   - Objective 1: Create a system of public parks, plazas and open spaces.
     - Policy 1.1: Create a variety of new open spaces.
     - Policy 1.2: Design safe and active spaces.
     - Policy 1.3: Ensure that open spaces are linked to and serve as an extension of the street system.
     - Policy 1.4: Pay attention to transit waiting areas.
     - Policy 1.5: Use “found space” as public open space.
   - Objective 2: Take advantage of opportunities to create open space within new developments in a manner that contributes to the neighborhood’s open space system.
     - Policy 2.1: Require good quality public open space as part of major new developments.
### Table 4.5-4
Relevant Policies, Draft Balboa Park Station Area Plan

#### 4. Build with a Sense of Place
- **Objective 1:** Create strong physical and visual links between the transit station neighborhood, City College and the Ocean Avenue Neighborhood Commercial District.

#### 5. Make Public Transit Work
- **Objective 1:** Maximize the potential of Balboa Park Station as a regional transit hub that efficiently accommodates BART, light rail, buses, bicycles, pedestrians, taxis and automobile drop-off and pick-up.
  - Policy 1.1: Re-design the Balboa Park Station so that it functions as a true intermodal transit hub.
- **Objective 2:** Improve the travel time, reliability, comfort and safety of transit in the plan area so that it becomes competitive with the private automobile.
  - Policy 2.1: Consider introducing signal preemption or prioritization for transit vehicles and removing stop signs on major transit streets.
  - Policy 2.2: Consider introducing a dedicated right-of-way for the K-Ingleside MUNI Metro Line.
  - Policy 2.3: Consider re-structuring the routing of MUNI bus service in this part of the City to more effectively serve the Balboa Park Station.
- **Objective 3:** Improve the quality of the transit experience through well-designed stops and stations that make a positive contribution to the streetscape.
  - Policy 3.1: Institute a program of upgrades to transit stops.

#### 6. Get Parking Right
- **Objective 1:** Establish parking standards and controls that promote quality of place, affordable housing and transit-oriented development.
  - Policy 1.2: Replace commercial and institutional minimum parking requirements with maximums for parcels near transit.
- **Objective 2:** Ensure that new development does not adversely affect parking availability for existing residents.
  - Policy 2.1: Institute residential permit parking.
  - Policy 2.2: Consider revisions to the residential permit parking system so that it more effectively prioritizes parking for residents.
  - Policy 2.3: Manage the existing supply of on-street parking in the plan area to prioritize spaces for residents, shoppers and non-commute transit trips.
- **Objective 3:** Ensure that new off-street parking does not adversely affect neighborhood character nor the pedestrian friendliness of streets.
  - Policy 3.1: Prohibit garage doors and curb cuts on neighborhood commercial and transit preferential streets.
Table 4.5-4

Relevant Policies, Draft Balboa Park Station Area Plan

- **Objective 4:** Establish parking policies to support revitalization of the Ocean Avenue Neighborhood Commercial District.
  - Policy 4.5: Consider the long-term need for additional public off-street parking only after all existing on- and off-street parking opportunities have been exhausted.

- **Objective 5:** Establish parking policies to support the new Transit Station Neighborhood.
  - Policy 5.1: Do not provide off-street parking to serve BART or MUNI users.
  - Policy 5.2: Prioritize on-street parking in the Transit Station Neighborhood for particular types of users.

- **Objective 6:** Promote car-sharing programs as an important way to reduce parking needs while still providing residents with access to an automobile when needed.
  - Policy 6.1: Encourage and help facilitate the provision of car-share facilities to serve residents in or near the plan area who wish to use this service.
  - Policy 6.2: Study the relationship between car-share programs and the overall demand for parking. Modify parking requirements accordingly.

- **Objective 7:** Establish effective monitoring and enforcement programs.
  - Policy 7.1: Regularly monitor parking availability and utilization.
  - Policy 7.2: Increase the effectiveness and scope of the City’s parking enforcement program.

8. Integrate City College into the Community

- **Objective 2:** Better integrate the existing campus, and the future expansion, with the surrounding neighborhood and the transit station.
  - Policy 2.6: Upgrade and improve various streets and transit facilities related to the College.

9. Realize the Potential of the Balboa Reservoir

- **Objective 1:** Redevelop the reservoir so that it becomes better connected with its surroundings.
  - Policy 1.1: Regardless of the type of new development that occurs on the reservoir, it should be planned so as to respect the grid structure of the surrounding neighborhoods so that the reservoir in the future can become an amenity connected to the neighborhood rather than isolated from it.

- **Objective 3:** Ensure that the east basin of the reservoir is developed in a manner that embraces that surrounding neighborhood.
  - Policy 3.1: Continue Phelan Loop Plaza with a central promenade.
  - Policy 3.2: Create a new east to west pedestrian pathway.
  - Policy 3.3: Create a strong system of streets and pathways and make sure new buildings are designed to address them.
Table 4.5-4
Relevant Policies, Draft Balboa Park Station Area Plan

<table>
<thead>
<tr>
<th>1. Policy 3.4: Ensure parking facilities are well designed and not larger than necessary.</th>
</tr>
</thead>
</table>

11. Protect and Enhance the Surrounding Neighborhoods

- Objective 1: Improve the environment within the surrounding neighborhoods.
  - Policy 1.2: Explore neighborhood-wide traffic calming for the neighborhoods surrounding the plan area.
  - Policy 1.3: Expand and adjust the Residential Permit Parking Program.

Source: Balboa Park Station Area Plan, City and County of San Francisco, draft report.

**Air Quality-3 Local Carbon Monoxide Concentrations**

**Impact**

The simplified CALINE4 procedure was used to assess project buildout (year 2015) CO concentrations 50, 100, and 300 feet from the previously identified roadway intersections. The calculations are based on traffic generated by near-term projects and Master Plan buildout combined. The results of this modeling are shown in Table 4.5-5, Predicted Project Carbon Monoxide Concentrations.

As shown, the simplified CALINE4 procedure predicts that CO concentrations at all of the study roadway intersections would not exceed the State 1-hour or 8-hour CO standards under Master Plan buildout (year 2015) conditions. Based on this analysis, CO hot spots are not predicted to exist near these study intersections. Therefore, project impacts related to CO emissions along all study roadway intersections would not be significant.

**Mitigation**

No mitigation is required.

**Significance After Mitigation**

Less than significant.
### Table 4.5-5
Predicted Project Carbon Monoxide Concentrations (parts per million)

<table>
<thead>
<tr>
<th>Intersection</th>
<th>50 feet away</th>
<th>100 feet away</th>
<th>300 feet away</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-hour</td>
<td>8-hour</td>
<td>1-hour</td>
</tr>
<tr>
<td>Phelan Avenue and Ocean Avenue</td>
<td>6.65</td>
<td>4.84</td>
<td>5.99</td>
</tr>
<tr>
<td>Ocean Avenue and Geneva Avenue</td>
<td>6.38</td>
<td>4.65</td>
<td>5.79</td>
</tr>
<tr>
<td>I-280 northbound on-and off-ramps/Geneva Avenue</td>
<td>6.05</td>
<td>4.42</td>
<td>5.50</td>
</tr>
<tr>
<td>I-280 southbound on-and off-ramps/Geneva Avenue</td>
<td>5.98</td>
<td>4.37</td>
<td>5.46</td>
</tr>
</tbody>
</table>

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix 4.5.

*State standard is 20.0 parts per million. Federal standard is 35 parts per million.*

*State and Federal standard is 9.0 parts per million.*

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**Air Quality and Toxic Air Pollutants**

**Impact**

As discussed above, the BAAQMD recommends that local plan impacts with respect to toxics be evaluated based on the presence of buffer zones around existing or proposed land uses that would emit those air pollutants. As noted previously, the closest source of TACs (due to its emissions of perchloroethylene) is a dry cleaner approximately 0.5 mile away from the Main Campus. Although other dry cleaning businesses exist within the project vicinity and all dry cleaning businesses are considered priority TAC sites, these businesses are not required to prepare health risk assessments because statewide measures are currently being developed for all California dry cleaners. The proposed development under the Main Campus Master Plan would occur within the existing College site boundaries and on the reconfigured Balboa Reservoir. The College site would be buffered from the TAC sites by existing roadways, landscaped areas and developed uses. The TAC sites listed would also be required to comply with all permitting and reporting requirements per the State and Federal TAC legislation. Given these reasons, no impacts to new students, faculty or staff related to off-site toxics would result.

Toxic air pollutants are not expected to occur in any large amounts in conjunction with the operation of the Master Plan projects. Therefore, no significant impacts associated with toxic air pollutants are anticipated.

**Mitigation**

No mitigation is required.
Significance After Mitigation

Less than significant.

**Air Quality-5 Stationary Pollutant Emissions**

**Impact**

The uses proposed as part of the Main Campus Master Plan, including athletic uses, child development and health care centers, academic facilities, performing arts facilities, and support and administrative functions, would not generate substantial stationary source emissions. These stationary sources, including HVAC systems, have been taken into account in the calculations of the operational emissions of the project. In addition, if the project were to include specific point sources, such as emergency generators, these sources would be subject to permitting by BAAQMD. Emergency generators would be operated on an emergency basis only, with testing only as allowed by the permit. Therefore, the project would not have a significant impact with regard to stationary source emissions.

**Mitigation**

No mitigation is required.

**Significance After Mitigation**

Less than significant.

**Air Quality-6 Odors**

**Impact**

The uses proposed as part of the Main Campus Master Plan, including athletic uses, child development and health care centers, academic facilities, performing arts facilities, and support and administrative functions, would not be substantial sources of odors. Therefore, the project would not have a significant impact on odors.

**Mitigation**

No mitigation is required.

**Significance After Mitigation**

Less than significant.
Air Quality-7    Wind
Impact

Building Aerodynamics

Ground-level wind accelerations near buildings are controlled by exposure, massing and orientation. Exposure is a measure of the extent that the building extends above surrounding structures into the wind stream. A building that is surrounded by taller structures is not likely to cause adverse wind accelerations at ground level, while even a small building can cause wind problems if it is freestanding and exposed.

Massing is important in determining wind impact because it controls how much wind is intercepted by the structure and whether building-generated wind accelerations occur above-ground or at ground level. In general, slab-shaped buildings have the greatest potential for wind problems. Buildings that have an unusual shape, rounded faces or utilize set-backs have a lesser effect. A general rule is that the more complex the building is geometrically, the lesser the probable wind impact at ground level.

Orientation determines how much wind is intercepted by the structure, a factor that directly determines wind acceleration. In general, buildings that are oriented with their wide axis across the prevailing wind direction will have a greater impact on ground-level winds than a building oriented with its long axis along the prevailing wind direction.

Evaluation of Project Wind Effects

West of Phelan Avenue. The reconfigured eastern portion of the north and south reservoir would be the site of several buildings including a technology center, an academic facility, administration building and Arts Center. Each of these structures would be 2 to 4 stories in height. A pedestrian plaza would be located both at the north and south ends of this area, and a new pedestrian pathway would be provided along the Phelan Avenue frontage.

This area would be exposed to prevailing winds. However, the limited height of these structures would result in only moderate increases of wind near the up-wind corners of the structures. These accelerations would largely affect the reservoir to the west, and all new pedestrian plazas or pathways would be sheltered from westerly winds by structures.

Northwest Campus. Two structures are proposed for the northwest corner of campus near the intersection of Judson Avenue and Phelan Avenue. Removal of several small structures is proposed with replacement by a two-story Health Center building and one-story Child Development Center. This part of the campus is only partially exposed to prevailing westerly winds due to the sheltering effect of Bishop Riordan High School on the opposite side of Phelan Avenue. Given the small size of these structures, little or no change in wind is expected.
**South Campus.** The southern portions of the campus between Phelan Avenue and the I-280 off ramp would see the addition of a Community Health & Wellness Center and improvements and additions to the Student Services buildings. The Community Health & Wellness Center site is sheltered from prevailing winds by terrain and substantial vegetation. The Student Services additions and improvements would be of very limited height. Little or no change in wind would be expected in this area.

**East Campus.** This area of the campus would see removal of the north and south gym buildings and removal of numerous small bungalow structures. The bungalows would be replaced by a practice field, and the gymnasium structures would be replaced by a parking structure. Neither of these changes would be expected to substantially change wind. The area is sheltered by terrain and vegetation, and a parking garage is a porous structure that would not generate large wind effects even if exposed.

**Central Campus.** Within the central campus area no new structures are proposed, but the existing Cloud Circle roadway is proposed to become a pedestrian way. The eastern portions of the Cloud Circle have substantial shelter from existing buildings and would be unaffected by any of the buildings proposed as part of the project. The western portions are likely to have improved reduced wind and comfort conditions due to the presence of new two- to four-story structures west of Phelan Avenue.

**Summary.** Based on consideration of the exposure, massing and orientation of the proposed additions to the campus, the project does not have the potential to cause significant changes to the wind environment in pedestrian corridors or public spaces adjacent to or near the site.

**Mitigation**

No mitigation is required to reduce project impacts on wind and climate to a less-than-significant level. The following are recommended design strategies that may be used in the design development for future buildings to minimize wind discomfort and enhance the pedestrian experience at the campus:

- Align long axis of the buildings along a west-east alignment to reduce exposure of the wide faces of the building to westerly winds;
- West building faces should be articulated and modulated through the use of architectural devices such as surface articulation, variation, variation of planes, wall surfaces and heights, as well as the placement of stepbacks and other features;
- Wherever possible, maintain existing trees and vegetation; and
- Avoid narrow gaps between buildings where westerly winds could be accelerated.

**Significance After Mitigation**

Less than significant.
Air Quality-8  Impacts of Citywide Master Plan Development

Impact

Master Plan development at most of the other CCSF campuses involves minor improvements. More substantial improvements are planned for the Chinatown/North Beach and Mission Campuses. The air quality impacts for these projects have been analyzed in certified EIRs (see Section 3.0, Project Description, for full citations of these documents). That analysis has been incorporated into this EIR by reference.

For both projects, air quality issues were scoped out in the Initial Studies for each project (included in the Appendix of each of the 1998 EIRs). Specifically, the Initial Studies noted that, with mitigation, the projects would not cause significant construction-related air quality effects. In addition, given the small size of the projects, operational emissions associated with the projects would be unlikely to generate emissions above the significance threshold. Therefore, the projects would have less-than-significant air quality impacts. Although the improvements at the other campuses will not accommodate enough growth to cause campus-specific air quality impacts, the improvements would combine with the proposed Main Campus Master Plan to accommodate increases in enrollment (and the resulting vehicle trips) system wide. The cumulative impact would be significant.

Mitigation

Air Quality-8: CCSF shall apply its TDM program for the Main Campus to all campuses within the CCSF system, to the extent feasible and in accordance with State law.

Significance After Mitigation

Significant (for the reasons noted under Impact Air Quality-2, above).

Air Quality-9  Cumulative Impacts

Impact

As noted earlier, according to the BAAQMD CEQA Guidelines, any project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact. Since the proposed project would exceed the BAAQMD-recommended operational emissions thresholds for individual projects, the cumulative air quality impacts are also considered significant.

Mitigation

The mitigation measures identified to reduce operational emissions of the proposed project would help to reduce the project contribution to cumulative air quality impacts.
Significance After Mitigation

Significant (for the reasons noted under Impact Air Quality-2, above).

Air Quality-10  Cumulative Impacts: Carbon Monoxide Concentrations

Impact

In order to determine whether the project would contribute toward a significant impact related to localized CO concentrations, the simplified CALINE4 procedure was used to assess project buildout (year 2015) and cumulative traffic, as shown in Table 4.5-6 Predicted Cumulative Plus Project Carbon Monoxide Concentrations. CO concentrations were determined for 50, 100, and 300 feet from the previously identified roadway intersections.

As shown, the simplified CALINE4 procedure predicts that, under cumulative plus project conditions, CO concentrations at all of the study roadway intersections would not exceed the State 1-hour or 8-hour CO standards. Based on this analysis, CO hot spots are not predicted to exist near these study intersections. Therefore, project impacts related to CO emissions along all study roadway intersections would not be significant.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>50 feet away</th>
<th>100 feet away</th>
<th>300 feet away</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-hour</td>
<td>8-hour</td>
<td>1-hour</td>
</tr>
<tr>
<td>Phelan Avenue and Ocean Avenue</td>
<td>6.89</td>
<td>5.01</td>
<td>6.16</td>
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<tr>
<td>Ocean Avenue and Geneva Avenue</td>
<td>6.59</td>
<td>4.80</td>
<td>5.94</td>
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<tr>
<td>I-280 northbound on-and off-ramps/Geneva Avenue</td>
<td>6.24</td>
<td>4.56</td>
<td>5.64</td>
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<tr>
<td>I-280 southbound on-and off-ramps/Geneva Avenue</td>
<td>6.16</td>
<td>4.50</td>
<td>5.58</td>
</tr>
</tbody>
</table>

Source: Impact Sciences, Inc. Emissions calculations are provided in Appendix 4.5.

¹State standard is 20.0 parts per million. Federal standard is 35 parts per million.
²State and Federal standard is 9.0 parts per million.

Mitigation

No mitigation is required.
Significance After Mitigation

Less than significant.

G. CONCLUSION

Construction dust impacts would be reduced to less-than significant levels with implementation of the dust controls listed in the BAAQMD CEQA Guidelines. Project-specific and cumulative operational impacts (emissions from vehicles) could be reduced substantially by implementation of a TDM program, but the extent of the reduction is not known at this time. In the absence of this information, the impacts would be considered significant after mitigation.
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