4.6 AIR QUALITY

This section includes a discussion of existing air quality conditions, a summary of applicable air quality regulations, and an analysis of potential short-term and long-term air quality impacts that could result from implementation of the 1215 O Street Office Building Project. The methods of analysis for short-term construction, long-term regional (operational), local mobile-source, and toxic air emissions are consistent with the recommendations of the Sacramento Metropolitan Air Quality Management District (SMAQMD), the California Air Resources Board (ARB), and the U.S. Environmental Protection Agency (EPA).

4.6.1 Regulatory Background

Air quality surrounding the project site is regulated through the efforts of various federal, State, regional, and local government agencies. These agencies work to improve air quality through legislation, planning, policy-making, education, and a variety of other programs. The agencies responsible for improving the air quality within the air basins are discussed below.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

U.S. Environmental Protection Agency

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

Criteria Air Pollutants

The CAA required EPA to establish national ambient air quality standards (NAAQS). As shown in Table 4.6-1, EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare a State implementation plan (SIP) for attaining and maintaining the NAAQS. The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. Individual SIPs are modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basin.

Table 4.6-1 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California (CAAQS)[a,b]	National (NAAQS)[c]	
			Primary[b,d]	Secondary[b,e]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	–[e]	Same as primary standard
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (147 µg/m^3)	
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	Same as primary standard
	8-hour	9 ppm[f] (10 mg/m^3)	9 ppm (10 mg/m^3)	
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	53 ppb (100 µg/m^3)	Same as primary standard
	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	–
Sulfur dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	–	–
	3-hour	–	–	0.5 ppm (1300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	–
Respirable particulate matter (PM_{10})	Annual arithmetic mean	20 µg/m^3	–	Same as primary standard
	24-hour	50 µg/m^3	150 µg/m^3	
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	12.0 µg/m^3	15.0 µg/m^3
	24-hour	–	35 µg/m^3	Same as primary standard
Lead[f]	Calendar quarter	–	1.5 µg/m^3	Same as primary standard
	30-Day average	1.5 µg/m^3	–	–
	Rolling 3-Month Average	–	0.15 µg/m^3	Same as primary standard
Hydrogen sulfide	1-hour	0.03 ppm (42 µg/m^3)	No national standards	
Sulfates	24-hour	25 µg/m^3		
Vinyl chloride[f]	24-hour	0.01 ppm (26 µg/m^3)		
Visibility-reducing particulate matter	8-hour	Extinction of 0.23 per km		

Notes: µg/m^3 = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million (by volume).

[a] California standards for ozone, carbon monoxide, SO_2 (1- and 24-hour), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[c] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. The $PM_{2.5}$ 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

[d] National primary standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[e] National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. This allows for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source: ARB 2016a

Toxic Air Contaminants/Hazardous Air Pollutants

Toxic air contaminants (TACs), or in federal parlance, hazardous air pollutants (HAPs) are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a

hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

A wide range of sources, from industrial plants to motor vehicles, emit TACs. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis or genetic damage; or short-term acute affects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches.

For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants, for which acceptable levels of exposure can be determined and for which ambient standards have been established (Table 4.6-1). Cancer risk from TACs is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure.

EPA and, in California, ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum available control technology or best available control technology for toxics to limit emissions

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

ARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish California ambient air quality standards (CAAQS) (Table 4.6-1).

Criteria Air Pollutants

ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to attain and maintain the CAAQS by the earliest date practical. The CCAA specifies that local air districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides air districts with the authority to regulate indirect emission sources.

Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807, Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Hot Spots Act) (AB 2588, Chapter 1252, Statutes of 1987). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. Research, public participation, and scientific peer review are required before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, particulate matter (PM) exhaust from diesel engines (diesel PM) was added to ARB's list of TACs.

After a TAC is identified, ARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If a safe threshold exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate best available control technology for toxics to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare an inventory of toxic emissions, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be 85 percent less in 2020 in comparison to year 2000 (ARB 2000). Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

The 1215 O Street Office Building Project is located on State-owned property, has been authorized and funded by the State of California through the State Projects Infrastructure Fund (SPIF), and would be implemented by the Department of General Services (DGS). As explained in Section 4.2, "Land Use," of this DEIR, under Section 4.2.1, "Local Plans, Policies, Regulations, and Laws," State agencies are not subject to local plans, policies, and zoning regulations. Nevertheless, in the exercise of its discretion, DGS does reference, describe, and address local plans, policies, and regulations that are applicable to the project. This evaluation is also intended to be used by local agencies for determining, as part of their permit processes, the project's consistency with local plans, policies, and regulations.

Sacramento Metropolitan Air Quality Management District

Criteria Air Pollutants

SMAQMD is the primary agency responsible for planning to meet NAAQS and CAAQS in Sacramento County. SMAQMD works with other local air districts in the Sacramento region to maintain the region's portion of the SIP for ozone. The SIP is a compilation of plans and regulations that govern how the region and State will comply with the federal Clean Air Act requirements to attain and maintain the NAAQS for ozone. The Sacramento Region has been designated as a "severe" 8-hour ozone nonattainment area with an extended attainment deadline of June 15, 2019.

SMAQMD has developed a set of guidelines for use by lead agencies when preparing environmental documents. The guidelines contain thresholds of significance for criteria pollutants and TACs, and also make recommendations for conducting air quality analyses. After SMAQMD guidelines have been consulted and the air quality impacts of a project have been assessed, the lead agency's analysis undergoes a review by SMAQMD. SMAQMD submits comments and suggestions to the lead agency for incorporation into the environmental document.

All projects are subject to adopted SMAQMD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include but are not limited to the following:

- **Rule 201**: General Permit Requirements. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may be required to obtain permit(s) from SMAQMD before equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact SMAQMD early to determine whether a permit is required, and to begin the permit application process. Portable construction equipment (e.g., generators,

compressors, pile drivers, lighting equipment) with an internal combustion engine greater than 50 horsepower must have a SMAQMD permit or ARB portable equipment registration.

- **Rule 202**: New Source Review. The purpose of this rule is to provide for the issuance of authorities to construct and permits to operate at new and modified stationary air pollution sources and to provide mechanisms, including emission offsets, by which authorities to construct such sources may be granted without interfering with the attainment or maintenance of ambient air quality standards.

- **Rule 402**: Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause or have natural tendency to cause injury or damage to business or property.

- **Rule 403**: Fugitive Dust. The developer or contractor is required to control dust emissions from earthmoving activities or any other construction activity to prevent airborne dust from leaving the project site.

- **Rule 902**: Asbestos. The developer or contractor is required to notify SMAQMD of any regulated renovation or demolition activity. Rule 902 contains specific requirements for surveying, notification, removal, and disposal of material containing asbestos.

In addition, if modeled construction-generated emissions for a project are not reduced to less than SMAQMD's mass emission threshold (85 pounds per day [lb/day]) after the standard construction mitigation is applied, then SMAQMD recommends using an offsite construction mitigation fee. The fee must be paid before SMAQMD can issue a grading permit. This fee is used by SMAQMD to purchase offsite emissions reductions. Such purchases are made through SMAQMD's Heavy Duty Incentive Program, through which select owners of heavy-duty equipment in Sacramento County can repower or retrofit their old engines with cleaner engines or technologies.

Toxic Air Contaminants

At the local level, air districts may adopt and enforce ARB control measures for TACs. Under SMAQMD Rule 201 ("General Permit Requirements"), Rule 202 ("New Source Review"), and Rule 207 ("Federal Operating Permit"), all sources that possess the potential to emit TACs are required to obtain permits from SMAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including New Source Review standards and air toxics control measures. SMAQMD limits emissions and public exposure to TACs through a number of programs. SMAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. Sensitive receptors are people, or facilities that generally house people (e.g., schools, hospitals, residences), that may experience adverse effects from unhealthful concentrations of air pollutants.

Odors

Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable stress among the public and often generating citizen complaints to local governments and SMAQMD. SMAQMD's Rule 402 (Nuisance) regulates odorous emissions.

City of Sacramento 2035 General Plan

The following policies in the Environmental Resources Element of the City of Sacramento 2035 General Plan are relevant to the analysis air quality effects.

- **Policy ER 6.1.1 Maintain Ambient Air Quality Standards.** The City shall work with the California Air Resources Board and the Sacramento Metropolitan Air Quality Management District (SMAQMD) to meet State and Federal ambient air quality standards in order to protect residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution.

- **Policy ER 6.1.2 New Development.** The City shall review proposed development projects to ensure projects incorporate feasible measures that reduce construction and operational emissions for reactive organic gases, nitrogen oxides, and particulate matter (PM_{10} and $PM_{2.5}$) through project design.

- **Policy ER 6.1.3 Emissions Reduction.** The City shall require development projects that exceed [SMAQMD-adopted] ROG and NO_X operational thresholds to incorporate design or operational features that reduce emissions equal to 15 percent from the level that would be produced by an unmitigated project.

- **Policy ER 6.1.4 Sensitive Uses**. The City shall coordinate with SMAQMD in evaluating exposure of sensitive receptors to toxic air contaminants, and will impose appropriate conditions on projects to protect public health and safety.

4.6.2 Existing Conditions

The 1215 O Street Office Building Project site is located in the Sacramento Valley Air Basin (SVAB). The SVAB includes all of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba Counties; the western portion of Placer County; and the eastern portion of Solano County. The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by the sources of air pollutants and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

CLIMATE, METEOROLOGY, AND TOPOGRAPHY

The SVAB is a relatively flat area bordered by the north Coast Ranges to the west and the northern Sierra Nevada to the east. Air flows into the SVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento River–San Joaquin River Delta (Delta) from the San Francisco Bay area.

The Mediterranean climate type of the SVAB is characterized by hot, dry summers and cool, rainy winters. During the summer, daily temperatures range from 50 degrees Fahrenheit (°F) to more than 100°F. The inland location and surrounding mountains shelter the area from much of the ocean breezes that keep the coastal regions moderate in temperature. Most precipitation in the area results from air masses that move in from the Pacific Ocean, usually from the west or northwest, during the winter months. More than half the total annual precipitation falls during the winter rainy season (November through February); the average winter temperature is a moderate 49°F. Also characteristic of SVAB winters are periods of dense and persistent low-level fog, which are most prevalent between storms. The prevailing winds are moderate in speed and vary from moisture-laden breezes from the south to dry land flows from the north.

The mountains surrounding the SVAB create a barrier to airflow, which leads to the entrapment of air pollutants when meteorological conditions are unfavorable for transport and dilution. The highest frequency of poor air movement occurs in the fall and winter when high-pressure cells are often present over the SVAB. The lack of surface wind during these periods, combined with the reduced vertical flow caused by a decline in surface heating, reduces the influx of air and leads to the concentration of air pollutants under stable metrological conditions. Surface concentrations of air pollutant emissions are highest when these conditions occur in combination with agricultural burning activities or with temperature inversions, which hamper dispersion by creating a ceiling over the area and trapping air pollutants near the ground.

May through October is ozone season in the SVAB. This period is characterized by poor air movement in the mornings with the arrival of the Delta sea breeze from the southwest in the afternoons. In addition, longer daylight hours provide a plentiful amount of sunlight to fuel photochemical reactions between ROG and NO_X, which result in ozone formation. Typically, the Delta breeze transports air pollutants northward out of the

SVAB; however, a phenomenon known as the Schultz Eddy prevents this from occurring during approximately half of the time from July to September. The Schultz Eddy phenomenon causes the wind to shift southward and blow air pollutants back into the SVAB. This phenomenon exacerbates the concentration of air pollutant emissions in the area and contributes to the area violating the ambient-air quality standards.

The local meteorology of the project site and surrounding area is represented by measurements recorded at the Western Regional Climate Center (WRCC) Sacramento Executive Airport Station. The normal annual precipitation is approximately 17 inches. January temperatures range from a normal minimum of 37.5°F to a normal maximum of 53.5°F. July temperatures range from a normal minimum of 58.2°F to a normal maximum of 92.7°F (WRCC 2016). The prevailing wind direction is from the south (WRCC 2002).

CRITERIA AIR POLLUTANTS

Concentrations of criteria air pollutants are used to indicate the quality of the ambient air. A brief description of key criteria air pollutants in the SVAB is provided below. Emission source types and health effects are summarized in Table 4.6-2. Sacramento County's attainment status for the CAAQS and the NAAQS are shown in Table 4.6-3. Monitoring data applicable to the project site is provided in Table 4.6-4.

Ozone

Ozone is a photochemical oxidant (a substance whose oxygen combines chemically with another substance in the presence of sunlight) and the primary component of smog. Ozone is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of ROG and NO_X in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels.

Emissions of the ozone precursors ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. Emissions of ROG and NO_X decreased from 2000 to 2010 and are projected to continue decreasing from 2010 to 2035 (ARB 2013).

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X and are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local sources of NO_X emissions (EPA 2012).

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors (ARB 2013). Fine particulate matter ($PM_{2.5}$) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less. PM_{10} emissions in the SVAB are dominated by emissions from area sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, farming operations, construction and demolition, and particles from residential fuel combustion. Direct emissions of PM_{10} are projected to remain relatively constant through 2035. Direct emissions of $PM_{2.5}$ have steadily declined in the SVAB between 2000 and 2010 and then are projected to increase very slightly through 2035. Emissions of $PM_{2.5}$ in the SVAB are dominated by the same sources as emissions of PM_{10} (ARB 2013).

Table 4.6-2 Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute[1] Health Effects	Chronic[2] Health Effects
Ozone	Secondary pollutant resulting from reaction of ROG and NO_X in presence of sunlight. ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO_X results from the combustion of fuels	increased respiration and pulmonary resistance; cough, pain, shortness of breath, lung inflammation	permeability of respiratory epithelia, possibility of permanent lung impairment
Carbon monoxide (CO)	Incomplete combustion of fuels; motor vehicle exhaust	headache, dizziness, fatigue, nausea, vomiting, death	permanent heart and brain damage
Nitrogen dioxide (NO_2)	combustion devices; e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines	coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis or pulmonary edema; breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, death	chronic bronchitis, decreased lung function
Sulfur dioxide (SO_2)	coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract, increased asthma symptoms	Insufficient evidence linking SO_2 exposure to chronic health impacts
Respirable particulate matter (PM_{10}), Fine particulate matter ($PM_{2.5}$)	fugitive dust, soot, smoke, mobile and stationary sources, construction, fires and natural windblown dust, and formation in the atmosphere by condensation and/or transformation of SO_2 and ROG	breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, premature death	alterations to the immune system, carcinogenesis
Lead	metal processing	reproductive/ developmental effects (fetuses and children)	numerous effects including neurological, endocrine, and cardiovascular effects

Notes: NO_X = oxides of nitrogen; ROG = reactive organic gases.

[1] "Acute" refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.

[2] "Chronic" refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.

Sources: EPA 2016

Table 4.6-3 Attainment Status Designations for Sacramento County

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Ozone	Attainment (1-hour)[1]	Nonattainment (1-hour) Classification-Serious[2]
	Nonattainment (8-hour)[3] Classification=Severe	Nonattainment (8-hour)
	Nonattainment (8-hour)[4] Classification=Severe	
Respirable particulate matter (PM_{10})	Attainment (24-hour)	Nonattainment (24-hour)
		Nonattainment (Annual)
Fine particulate matter ($PM_{2.5}$)	Nonattainment (24-hour)	(No State Standard for 24-Hour)
	Attainment (Annual)	Attainment (Annual)
Carbon monoxide (CO)	Attainment (1-hour)	Attainment (1-hour)
	Attainment (8-hour)	Attainment (8-hour)
Nitrogen dioxide (NO_2)	Unclassified/Attainment (1-hour)	Attainment (1-hour)
	Unclassified/Attainment (Annual)	Attainment (Annual)
Sulfur dioxide (SO_2)[5]	(Attainment Pending) (1-Hour)	Attainment (1-hour)
		Attainment (24-hour)

Table 4.6-3 Attainment Status Designations for Sacramento County

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Lead (Particulate)	Attainment (3-month rolling avg.)	Attainment (30 day average)
Hydrogen Sulfide	No Federal Standard	Unclassified (1-hour)
Sulfates		Attainment (24-hour)
Visibly Reducing Particles		Unclassified (8-hour)
Vinyl Chloride		Unclassified (24-hour)

Notes:
[1] Air Quality meets federal 1-hour Ozone standard (77 FR 64036). EPA revoked this standard, but some associated requirements still apply. SMAQMD attained the standard in 2009. SMAQMD has requested EPA recognize attainment to fulfill the requirements.
[2] Per Health and Safety Code (HSC) § 40921.5(c), the classification is based on 1989 – 1991 data, and therefore does not change.
[3] 1997 Standard.
[4] 2008 Standard.
[5] 2010 Standard.
Source: SMAQMD 2016a

Table 4.6-4 Summary of Annual Data on Ambient Air Quality (2013-2015)[1]

	2013	2014	2015
Ozone			
Maximum concentration (1-hr/8-hr avg, ppm)	0.091/0.081	0.085/0.080	0.092/0.079
Number of days state standard exceeded (1-hr/8-hr)	0/0	0/4	0/4
Number of days national standard exceeded (8-hr)	0	3	4
Fine Particulate Matter ($PM_{2.5}$)			
Maximum concentration (24-hour µg/m^3)	40.2	33.2	42.1
Number of days national standard exceeded (24-hour measured[2])	6.1	0	3.0
Respirable Particulate Matter (PM_{10})			
Maximum concentration (µg/m^3)	77.8[2]	70.6[2]	71.6[2]
Number of days state standard exceeded	23.0[2]	0[2]	6.1[2]
Number of days national standard exceeded	0[2]	0[2]	0[2]

Notes: µg/m^3 = micrograms per cubic meter; ppm = parts per million
[1] Measurements from the Sacramento-T Street station for ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).
[2] Data was unavailable for Sacramento-T Street station, thus next closest station data was used (West Sacramento-15th Street station).
Source: ARB 2016b

MONITORING STATION DATA AND ATTAINMENT DESIGNATIONS

Criteria air pollutant concentrations are measured at several monitoring stations in the SVAB. The Sacramento-T Street station is the closest and most representative station to the project area with recent data for ozone and $PM_{2.5}$. Table 4.6-4 summarizes the air quality data from the last three years (2013-2015). Because no PM_{10} concentrations are collected at the Sacramento-T Street station, measured concentrations from the next closest station, West Sacramento-15th Street, is presented in Table 4.6-4.

Both ARB and EPA use this type of monitoring data to designate areas according to their attainment status for criteria air pollutants (attainment designations are summarized above in Table 4.6-2).

TOXIC AIR CONTAMINANTS

According to the *California Almanac of Emissions and Air Quality* (ARB 2013), the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being diesel PM. Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emissions control system is being used. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Diesel PM poses the greatest health risk among these 10 TACs mentioned. Based on receptor modeling techniques, ARB estimated the average cancer risk associated with diesel PM concentrations in the SVAB to be 360 excess cancer cases per million people in the year 2000. Overall, levels of most TACs, except para-dichlorobenzene and formaldehyde, have decreased since 1990 (ARB 2013).

ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals can smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. Odor sources of concern include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, rendering plants, and food packaging plants (SMAQMD 2016b). None of these odorous land uses are within proximity to the project site.

SENSITIVE RECEPTORS

Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, hospitals, playgrounds, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and/or the potential for increased and prolonged exposure of individuals to pollutants.

The closest residences to the office building portion of the project site are approximately 50 and 100 feet northeast of, and 125 feet to the southeast of the building. Additionally, Westminster Presbyterian Church is located approximately 250 feet northeast of the office building site, and Forever Young Child Care Center is located approximately 350 feet south of, and has a direct line of sight to the office building site. See Exhibit 4.8-1 for locations of all nearby sensitive land uses.

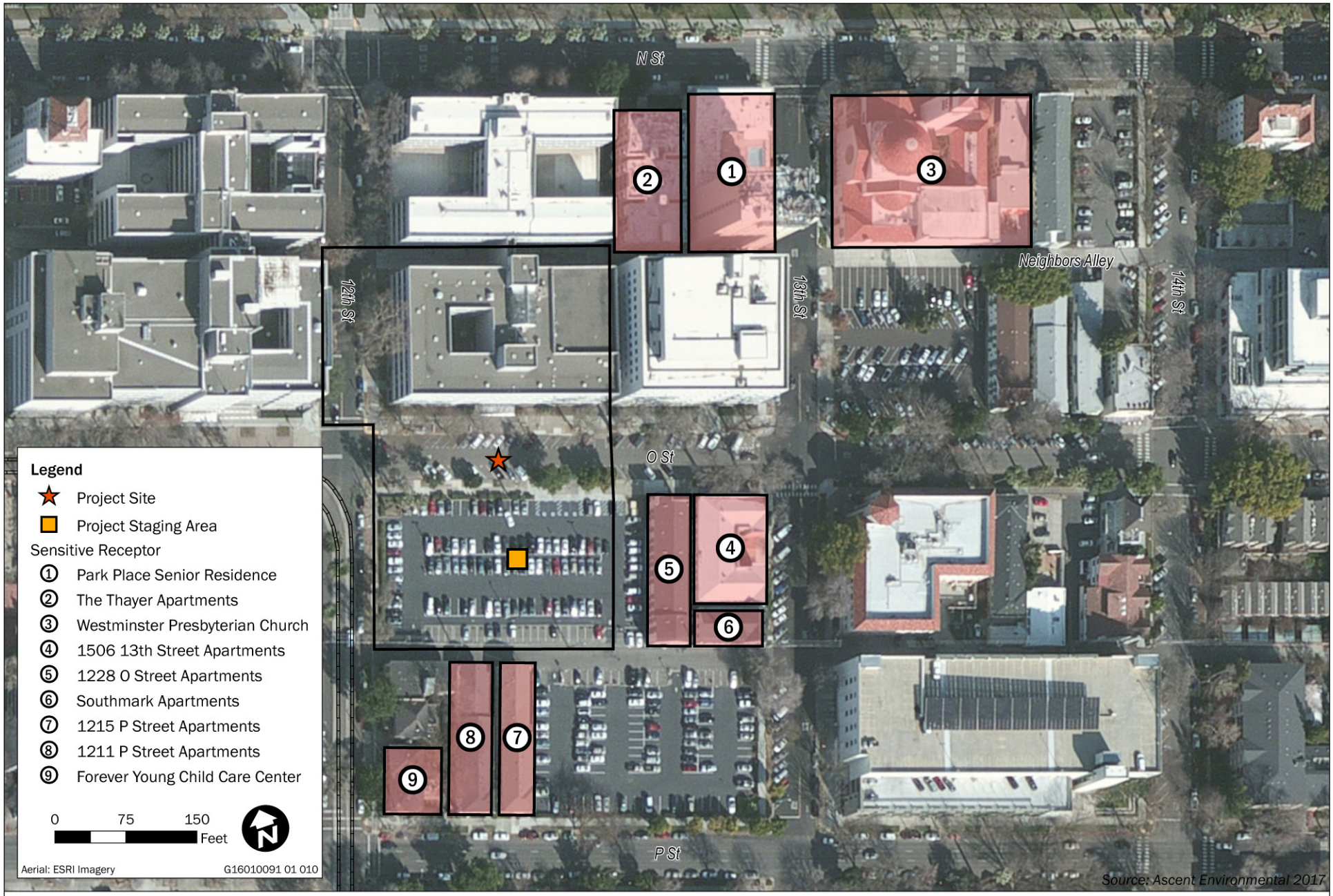

Exhibit 4.6-1

Sensitive Receptors

ASCENT ENVIRONMENTAL

4.6.3 Environmental Impacts and Mitigation Measures

ANALYSIS METHODOLOGY

Regional and local criteria air pollutant emissions and associated impacts, as well as impacts from TACs, CO concentrations, and odors were assessed in accordance with SMAQMD-recommended methodologies. The project's emissions are compared to SMAQMD-adopted thresholds.

Construction and operational emissions of criteria air pollutants and precursors were calculated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.1 computer program, as recommended by SMAQMD. Modeling was based on project-specific information (e.g., size, area to be graded, area to be paved) where available; reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location and land use type. Construction would begin as early as 2018.The project would accommodate approximately 1,000 relocated employees from the Bateson Building, along with space for up to 200 new employees at 1215 O Street.

For the purposes of this analysis, the mobile sector emissions accounts for only the 150 to 200 new employees that would occupy the 1215 O Street Office Building, as these new employees would be the source of any net new mobile source emissions in the downtown area. The cumulative assessment of mobile source emissions (see Chapter 5, "Cumulative Impacts") includes both the new employees at the 1215 O Street Office Building, and the backfilling of the renovated Bateson Building (approximately 1,000 employees). The transfer of existing employees from the Bateson Building to the 1215 O Street Office Building would not change the total number of employees in the downtown area. The 1215 O Street Office Building is anticipated to accommodate 150-200 additional employees. The vehicle trips and associated emissions from this increase in employees in the downtown area is attributed to the 1215 O Street Office Building Project. Then, the eventual re-occupation of the Bateson Building would bring approximately 1,000 net new employees to the downtown area compared to existing conditions. In the cumulative assessment of mobile source emissions provided in Chapter 5, the vehicle trips and associated emissions from these employees is added to the mobile source GHG emissions attributable to the 1215 O Street Office Building Project. However, the estimate of operational emissions does not include emissions from the renovated Bateson Building itself. The currently occupied Bateson Building is generating criteria pollutant emissions as part of building operation. The renovation of the Bateson Building would allow it to operate in a more energy- and emissions-efficient manner. A renovated Bateson Building would result in lower building operation emissions of criteria pollutants than under existing conditions. Rather than "take credit" for future reduced criteria pollutant emissions at the Bateson Building, the analysis takes a conservative approach and assumes there would be no change in criteria pollutant emissions from existing conditions; and therefore, no net gain or decline in criteria pollutant emissions to incorporate into the emission calculations.

Specific model assumptions and inputs for these calculations can be found in Appendix C.

CO impacts were assessed qualitatively, using the screening criteria set forth by SMAQMD and results from the project-specific traffic study. The level of health risk from exposure to construction- and operation-related TAC emissions was assessed qualitatively. This assessment was based on the proximity of TAC-generating construction activity to off-site sensitive receptors, the number and types of diesel-powered construction equipment being used, and the duration of potential TAC exposure.

Impacts related to odors were also assessed qualitatively, based on proposed construction activities, equipment types and duration of use, overall construction schedule, and distance to nearby sensitive receptors. To evaluate an odor impact, SMAQMD recommends the lead agency provide the buffer distance and a description of the land features and topography in the buffer zone that separates nearby sensitive receptors and the odor source. The focus of the analysis is construction related odors as the 1215 O Street Office Building Project does not include any uses that would generate odors different from typical existing urban development in the area.

THRESHOLDS OF SIGNIFICANCE

Per Appendix G of the CEQA Guidelines and SMAQMD recommendations, a project's impact to air quality is considered significant if it would do any of the following:

- cause construction-generated criteria air pollutant or precursor emissions to exceed the SMAQMD-recommended thresholds of 85 lb/day for NO_X, 80 lb/day or14.6 tons/year for PM_{10}, and 82 lb/day or 15 tons/year for $PM_{2.5}$;
- result in a net increase in long-term operational criteria air pollutant or precursor emissions that exceed the SMAQMD-recommended thresholds of 65 lb/day for ROG and NO_X, 80 lb/day and 14.6 tons/year for PM_{10}, and 82 lb/day or 15 tons/year for $PM_{2.5}$;
- result in long-term operational local mobile-source CO emissions that would violate or contribute substantially to concentrations that exceed the 1-hour CAAQS of 20 parts per million (ppm) or the 8-hour CAAQS of 9 ppm;
- expose sensitive receptors to a substantial incremental increase in TAC emissions that exceed 10 in one million for carcinogenic risk (i.e., the risk of contracting cancer) and/or a noncarcinogenic hazard index of 1.0 or greater; or
- create objectionable odors affecting a substantial number of people.

ENVIRONMENTAL IMPACTS

Impact 4.6-1: Construction emissions of criteria air pollutants and precursors (ROG, NO_X, PM_{10}, and $PM_{2.5}$)

Construction of the 1215 O Street Office Building Project would result in project-generated emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ from demolition, site preparation (e.g., excavation, clearing), off-road equipment, material and equipment delivery trips, worker commute trips, and other miscellaneous activities (e.g., asphalt paving, application of architectural coatings). Construction activities would not result in daily emissions of ROG, PM_{10}, or $PM_{2.5}$ and annual emissions of PM_{10} and $PM_{2.5}$ that would exceed the respective SMAQMD thresholds. However, daily emissions of NO_X would exceed SMAQMD's threshold of 85 lb/day. Therefore, construction-generated emissions of NO_X would contribute to existing nonattainment status of the SVAB for ozone. This impact would be **significant**.

Construction-related activities would result in project-generated emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ (a subset of PM_{10}) from demolition, site preparation (e.g., excavation, clearing), off-road equipment, material delivery, worker commute trips, and other miscellaneous activities (e.g., asphalt paving, application of architectural coatings). Fugitive dust emissions of PM_{10} and $PM_{2.5}$ are associated primarily with demolition and site preparation and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbance, and vehicle miles traveled on and off the site. Emissions of ozone precursors, ROG and NO_X, are primarily associated with construction equipment and on-road mobile exhaust. Paving and the application of architectural coatings result in off-gas emissions of ROG. PM_{10} and $PM_{2.5}$ are also contained in vehicle exhaust.

Typical construction activities would require forklifts, cranes, compressors, loaders, backhoes, excavators, dozers, scrapers, pavement compactors, welders, concrete pumps, concrete trucks, and off-road haul trucks, as well as other diesel-fueled equipment as necessary. Construction activities could begin as early as October 2018 and is assumed to be complete by early 2021. Conservative assumptions were used to model construction emissions and individual phases were overlapped (e.g., site preparation, grading, building construction) to account for construction activities occurring simultaneously (although such overlapping is unlikely given the relatively small size of the project site and the difficulty in operating multiple pieces of

machinery in the available space). As such, reported emissions represent a conservative estimate of maximum daily emissions (i.e., likely higher than actual emissions). For specific assumptions and modeling inputs, refer to Appendix C.

Table 4.6-5 summarizes the modeled maximum daily emissions from construction activities, by year, over the estimated 4-year buildout period (ending in 2021). Maximum daily emissions of NO_X could potentially exceed applicable thresholds through during part of the construction period. Daily emissions of ROG, PM_{10}, and $PM_{2.5}$ and annual emissions of PM_{10} and $PM_{2.5}$ would not exceed the respective thresholds. Because the SMAQMD suggested threshold for daily emission of NO_x could be exceeded, construction emissions could contribute to the existing nonattainment condition of the SVAB with respect to CAAQS and NAAQS for ozone. This would be a **significant** impact.

Table 4.6-5 Summary of Maximum Daily Emissions of Criteria Air Pollutants and Precursors Associated with Project Construction

Construction Year	ROG lb/day	NO_X lb/day	PM_{10} lb/day (fugitive/exhaust/total)	PM_{10} tons/year (fugitive/exhaust/total)	$PM_{2.5}$ lb/day (fugitive/exhaust/total)	$PM_{2.5}$ tons/year (fugitive/exhaust/total)
2018	7	74	14/3/17	<1/<1/<1	6/3/9	<1/<1/<1
2019	11	**105**	10/4/14	<1/<1/<1	4/4/8	<1/<1/<1
2020	6	52	2/2/4	<1/<1/<1	0.6/2/3	<1/<1/<1
2021	192	59	8/3/11	<1/<1/<1	2/2/4	<1/<1/<1
SMAQMD Threshold of Significance	NONE	85	-/-/80	14.6	-/-/82	15
Exceed Significance Threshold?	N/A	Yes	No	No	No	No

Notes: CO = carbon monoxide; lb/day = pounds per day; N/A= not applicable; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases.

Bold values indicate emissions that would exceed local significance criteria. Total values may not add correctly due to rounding. See Appendix C for detailed input parameters and modeling results.

Source: Modeling performed by Ascent Environmental 2017

Mitigation Measure 4.6-1: Construction-related exhaust emission controls

To reduce construction-related exhaust emissions, and thus emissions of NO_X, DGS shall ensure that the following measures are adhered to by the Design-Build Team during all construction activities.

<u>Exhaust Emissions Reduction Measures</u>

- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. Before delivery to the project site, the equipment must be checked by a certified mechanic and determined to be running in proper condition.

- The Design-Build Team shall submit to DGS and SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The inventory shall also identify the anticipated construction timeline including start date, and name and phone number of the

project manager and on-site foreman. The information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.

- The Design-Build Team shall provide a plan for approval by DGS and SMAQMD demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NO_X reduction compared to the most recent ARB fleet average. This plan shall be submitted in conjunction with the equipment inventory. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

Significance after Mitigation

Implementation of Mitigation Measure 4.6-1 would reduce exhaust emissions generated by construction of the project. Implementation of exhaust control measures would reduce NO_X emissions from off-road equipment by a minimum of 20 percent. This would lower the maximum daily NO_X emissions below the 85 lb/day threshold for all years of construction, regardless of simultaneous construction phases occurring. Thus, construction-generated NO_X levels would be reduced to a **less-than-significant** level

Impact 4.6-2: Long-term operational emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$

Implementation of the 1215 O Street Office Building Project would not result in long-term operational emissions of ROG, NO_X, PM_{10}, or $PM_{2.5}$ that exceed SMAQMD's thresholds of significance (65 lb/day for ROG, 65 lb/day for NO_X, 80 lb/day for PM_{10}, and 82 lb/day for $PM_{2.5}$). Therefore, operational-related emissions would not conflict with the air quality planning efforts or conflict substantially with the nonattainment status of Sacramento County with respect to ozone and PM_{10}. This impact would be **less than significant**.

Project operations would result in the generation of long-term operational emissions of ROG, NO_X, and particulate matter (PM_{10} and $PM_{2.5}$) as a result of mobile, stationary, and area-wide sources. Mobile-source emissions of criteria air pollutants and precursors would result from vehicle trips generated by new employees occupying the 1215 O Street Office Building. Stationary and area-wide sources would include the combustion of natural gas for space and water heating (i.e., energy use), the regular testing of the emergency backup generator and occasional operation during power outages, the use of landscaping equipment and other small equipment, the periodic application of architectural coatings, and generation of ROG from the use of consumer products.

Table 4.6-6 summarizes the maximum daily operational-related emissions of criteria air pollutants during the summer season (higher emissions scenario), as well as annual emissions of PM_{10} and $PM_{2.5}$, at full buildout. Emissions were calculated based on proposed land uses and adjusted trip lengths to match project-specific vehicle miles traveled (VMT), as reported in the traffic study (Section 4.4, "Transportation and Circulation"). As shown in Table 4.6-6, operational-related activities would not result in project-generated daily emissions of ROG, NO_X, PM_{10}, or $PM_{2.5}$that exceed the SMAQMD-recommended thresholds of significance. Thus, ROG, NO_X, PM_{10}, and $PM_{2.5}$emissions generated under full buildout of the project would not conflict with long-term ozone and PM_{10} planning efforts or contribute substantially to a net increase in concentrations of ozone and PM_{10} for which Sacramento County is in nonattainment. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Table 4.6-6 Summary of Maximum (Unmitigated) Operational Emissions of Criteria Air Pollutants and Precursors at Full Buildout (2021)

Source Type	Maximum Daily Emissions (lb/day)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Area	10	<1	<1	<1
Energy	<1	1	<1	<1
Mobile	7	15	2	<1
Total Emissions	17	17	2	<1
Annual Emissions (tons/year)			<1	<1
SMAQMD Threshold of Significance	65 lb/day	65 lb/day	80 lb/day and 14.6 tons/year	82 lb/day and 15 tons/year
Exceed Significance Threshold?	No	No	No	No

Notes: CO = carbon monoxide; lb/day = pounds per day; N/A= not applicable; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases.

Total values may not add correctly due to rounding. See Appendix C for detailed input parameters and modeling results.

Source: Modeling performed by Ascent Environmental 2017

Impact 4.6-3: Mobile-source CO concentrations

Long-term operation-related local mobile-source emissions of CO generated by the implementation of the 1215 O Street Office Building Project would not result in long-term operational local mobile-source CO emissions that would violate or contribute substantially to concentrations that exceed the 1-hour CAAQS of 20 ppm or the 8-hour CAAQS of 9 ppm. Therefore, project operation would not violate a standard or contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial CO. As a result, this impact would be **less than significant**.

Local mobile-source CO emissions near roadway intersections are a direct function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. However, under certain meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels at nearby sensitive land uses, such as residential units, hospitals, schools, and childcare facilities. As a result, it is recommended that CO not be analyzed at the regional level, but at the local level.

Construction would occur over 4 years and therefore traffic related to construction activities would also be spread over the duration of construction activities. As such, construction-generated traffic is not anticipated to result in large peaks at any one time over the course of construction. This analysis focuses on operational-related traffic.

Project-generated traffic would be associated primarily with the operational phase. At complete buildout, the project would generate up to 249 daily trips, including up to 40 trips during the a.m. peak hour and up to 35 during the p.m. peak hour. This is a result of the 142 new employees that would occupy the 1215 O Street building, upon building completion.

SMAQMD provides a screening methodology to determine whether CO emissions generated by traffic at congested intersections have the potential to exceed, or contribute to an exceedance of, the 8-hour CAAQS of 9.0 ppm or the 1-hour CAAQS of 20.0 ppm. The screening methodology has two tiers of screening criteria. If the first set is not met, then the second tier may be applied. It states that the following criteria must be met:

First-Tier
A project will result in a less-than-significant impact to air quality for local CO if:

- Traffic generated by the project will not result in deterioration of intersection level of service (LOS) to LOS E or F; and
- The project will not contribute additional traffic to an intersection that already operates at LOS E or F.

Second-Tier
If all the following criteria are met, a project will result in a less-than-significant impact to air quality for local CO.

- The project will result in an affected intersection experiencing more than 31,600 vehicles per hour;
- The project will not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, or below-grade roadway; or other locations where horizontal or vertical mixing of air will be substantially limited; and
- The mix of vehicle types at the intersection is not anticipated to be substantially different from the County average (as identified by CalEEMod model).

Based on the traffic study conducted for the project (see Section 4.4, Transportation and Circulation), if traffic generated by the proposed project is added to existing traffic conditions (existing plus project conditions) the project would not result in the downgrading of a project-affected intersection to the level E or F. All intersections would continue to operate at LOS C or better overall, except for the intersection of W Street/16th Street/U.S. 50 westbound off-ramp, which would operate at LOS D. Refer to Section 4.4, "Transportation and Circulation" for traffic intersection details. Because the traffic generated by the project will not result in deterioration of LOS to E or F, based on the SMAQMD CO screening methodology, operation-related local mobile-source emissions of CO generated by the proposed project would not result in long-term operational local mobile-source CO emissions that would violate or contribute substantially to concentrations that exceed the 1-hour CAAQS of 20 ppm or the 8-hour CAAQS of 9 ppm. Therefore, project operation would not violate a standard or contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial CO concentrations. This impact is **less than significant.**

Mitigation Measures

No mitigation is required.

Impact 4.6-4: Exposure of sensitive receptors to TACs

Construction- and operation-related emissions of TACs associated with the implementation of 1215 O Street Building Project would not result an incremental increase in cancer risk greater than 10 in one million or a hazard index greater than 1.0 at existing or future sensitive receptors. Therefore, this impact would be **less than significant**.

Particulate exhaust emissions from diesel fueled engines (i.e., diesel PM) was identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed above in Section 4.6.2, "Existing Conditions," outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs (ARB 2003). With regards to exposure of diesel PM, the dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher level of health risk for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, when a Health Risk Assessment is prepared to project the results of exposure of

sensitive receptors to selected compounds, exposure of sensitive receptors to TAC emissions should be based on a 70- or 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the proposed project if emissions occur for shorter periods (OEHHA 2012:11-3).

The exposure of sensitive receptors to TAC emissions from project-generated construction and operational sources are discussed separately below. The TAC that is the focus of this analysis is diesel PM because it is known that diesel PM would be emitted during project construction and operation. Although other TACs exist (e.g., benzene, 1,3-butadiene, hexavalent chromium, formaldehyde, methylene chloride), they are primarily associated with industrial operations and the project site would not include any industrial sources of other TACs.

Construction

Construction-related activities would result in temporary, intermittent emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment used during site preparation (e.g., demolition, clearing, grading); paving; on-road truck travel; and other miscellaneous activities. On-road diesel-powered haul trucks traveling to and from the construction area to deliver materials and equipment are less of a concern because they do not operate at any one location for extended periods of time such that they would expose a single receptor to excessive diesel PM emissions. This analysis focuses primarily on heavy-duty construction equipment used onsite that may affect nearby offsite existing land uses.

As shown in Exhibit 4.6-1, there are several sensitive receptors near the project site. These include residences, a childcare center, and a church. Residences are as close as 50 feet from the project site. The staging area for the project would be the parking lot directly south of the project. The construction activities would begin in 2018, starting with hazardous materials abatement and demolition of the existing office building. The construction of the project would include activities such as site preparation, excavation, grading, building construction, and paving. Construction would be complete by early 2021, resulting in construction occurring over four separate calendar years. Relative to the 30-year and 70-year exposure periods suggested for conducting a Health Risk Assessment, construction-generated emissions of diesel PM would be short-term and intermittent and would not occur for an extended period of time.

As noted above, the diesel PM is considered to be the pollutant of concern for this analysis. Based on the emission modeling conducted and presented in Table 4.6-5, above, maximum daily emissions of diesel exhaust PM_{10}, considered a surrogate for diesel PM, would not exceed 4 lb/day during the most intense season of construction activity. This is below the SMAQMD-recommended threshold of 80 lb/day. In addition, Mitigation Measure 4.6-1 is in place which would further reduce exhaust emissions from onsite construction equipment. Further, the majority of the construction would occur during daytime hours, which is when many residents who are employed or are students typically are not home, thus limiting exposure from construction-related emissions to these receptors.

Therefore, considering the relatively low mass of diesel PM emissions that would be generated by construction, the relatively short duration of diesel PM-emitting construction activity at the project site, mitigation measures in place to further reduce exhaust emission, and the highly dispersive properties of diesel PM, construction-related TAC emissions would not expose sensitive receptors to an incremental increase in cancer risk greater than 10 in 1 million or a hazard index greater than 1.0.

Long-Term Operation

The project would not locate new residences or other sensitive land uses in proximity to existing TAC sources associated with surrounding land uses and roadways.

Operation of the 1215 O Street Office Building may result in stationary sources of TACs, including back-up diesel generators and commercial loading docks where delivery trucks may idle. The back-up diesel generator would only operate during power failures and periodic testing. Idling time of delivery trucks would be limited to 5 minutes by the California airborne toxics control measure incorporated in Title 13, Section 2485 of CCR. These types of uses are common in urban settings and considered compatible with various

urban land uses, including residential. Stationary TAC sources associated with the project would not result in a substantial increase in TAC emissions compared to existing conditions.

In addition to stationary sources, the project would result in increases in mobile-source emissions on local roadways associated with project-generated traffic. These include Interstate 5 (I-5) and US Route 50 (US-50). Traffic volumes on I-5 are approximately 181,700 per day, while traffic volumes on US-50 are approximately 258,000 per day (Caltrans 2015). Guidance from SMAQMD's Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways and ARB's Air Quality and Land Use Handbook recommends that new sensitive receptors should not be placed within 500 feet of freeways or urban streets with volumes that exceed 100,000 per day (ARB 2005). Some of the project-generated traffic would occur on nearby freeways experiencing volumes greater than 100,000 vehicles per day, contributing to an already adverse condition with regards to mobile TACs in the area.

Based on the traffic study conducted, the project would result in a maximum of 249 daily trips (i.e., new TAC sources), traveling through 22 different intersections (see Table 4.4-9 in Section 4.4, "Transportation and Circulation") and many roads. Total project-trips dispersed over many intersections and roadways throughout the project area would result in fewer vehicles than 249 on any given road, and therefore; would not be considered a substantial increase in mobile-source TACs. In addition, vehicle types associated with office buildings include primarily non-diesel passenger vehicles. Although these vehicle types still generate TAC emissions, they do not generate diesel PM, the TAC of primary concern with respect to mobile-sources. Given that project-generated vehicle trips would not result in a substantial increase in mobile-source TACs and diesel PM would not be a predominate pollutant, project-related increases in TACs would not result in a substantial increase to existing TAC levels on existing roadways.

In summary, construction- and operation-related emissions of TACs associated with the implementation of 1215 O Street Building Project would be minimal and would not result an incremental increase in cancer risk greater than 10 in one million or a hazard index greater than 1.0 at existing or future sensitive receptors. Therefore, this impact would be **less than significant.**

Mitigation Measures

No mitigation is required.

Impact 4.6-5: Exposure of sensitive receptors to odors

The project would introduce new odor sources into the area (e.g., temporary diesel exhaust emissions during construction and delivery truck associated with commercial land uses). Construction and long-term operation of the project would not result in the exposure of sensitive receptors to excessive odors. Therefore, this impact would be **less than significant**.

The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the affected receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generate citizen complaints to local governments and regulatory agencies. Projects with the potential to frequently expose a substantial number of people to objectionable odors would be deemed to have a significant impact.

Minor odors from the use of heavy-duty diesel equipment, and the laying of asphalt during project related construction activities would be intermittent and temporary, and would dissipate rapidly from the source with an increase in distance. Exhibit 4.6-1 details the sensitive receptors in proximity to the project site. This includes residences, a child care center, and a church. Construction activities would primarily occur during daytime hours, when many residents who are employed or are students typically are not home and thus, would not be subject to potential objectionable odors.

Operation of the office building would not generate substantial objectionable odors. The proposed office building would contain uses that are common in the surrounding urbanized area (e.g., office, food service). No major odor sources (i.e., dairy, wastewater treatment plant, landfill, etc.) exist in the immediate vicinity of the project site. Further, the proposed land use is not considered a sensitive receptor. Therefore, the implementation of the 1215 O Street Office Building would not result in exposure of a substantial number of people to objectionable odors. This impact is **less than significant**.

Mitigation Measures

No mitigation is required.