RECON

Air Quality Analysis for the Sharp Ocean View Tower Chula Vista, California

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RECON Number 8063
March 23, 2016

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ATTACHMENTS

Acronyms

$\mu g/m^3$	micrograms per cubic meter
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
DPM	diesel particulate matter
H_2S	hydrogen sulfides
HRA	health risk assessment
LOS	level of service
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
ºC	degrees Celsius
ºF	degrees Fahrenheit
Pb	lead
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 microns or less
ppb	parts per billion
ppm	parts per million
RAQS	Regional Air Quality Strategy
ROG	reactive organic gas
SANDAG	San Diego Association of Governments
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	oxides of sulfur
TACs	toxic air contaminants
T-BACT	Toxics Best Available Control Technology
TCM	Transportation Control Measures
U.S. EPA	United States Environmental Protection Act
USC	United States Code
VMT	vehicle miles travelled

Executive Summary

This report evaluates potential local and regional air quality impacts associated with the proposed Sharp Ocean View Tower project (proposed project) located at 751 Medical Center Court, in Chula Vista, California. The 2.47-acre site is currently developed with the existing Sharp Chula Vista Hospital.

The proposed project would include construction of a new hospital tower within the existing Sharp Chula Vista hospital campus. The new critical care tower (Ocean View Tower) would be seven stories in height and would include 138 beds, 6 operating rooms with pre- and post-op support, sterile processing, dietary services, material management, dock, and other related support services. The 197,696-square-foot Ocean View Tower would be seven floors, six above grade and one mostly sub-grade (subterranean on three sides; above ground on one side). The total height would be 110 feet 9 inches for the seven-story tower and 120 feet to the top of the elevator structure. A new boiler room would be located in the top floor of the seven-story tower. Air handlers would be located on the second-floor roof of the lower portion of the new tower located between the patient tower and the existing hospital. Additional units would be located on the roof of the seven-story tower. A new 1,500-kilowatt emergency generator would be located west of the existing parking structure and immediately east of the existing generator building.

Regional air quality plans include the State Implementation Plan (SIP) and the San Diego Air Pollution Control District's (SDAPCD's) Regional Air Quality Strategy (RAQS). The SIP plans for San Diego County specifically include the Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County (2012), which is pending U.S. Environmental Protection Agency approval, and the 2004 Revision to the California State Implementation Plan for Carbon Monoxide – Updated Maintenance Plan for Ten Federal Planning Areas. The primary goal of the RAQS is to reduce ozone precursor emissions. The project site is designated as PQ (Public and Quasi-Public) land use in the General Plan and is zoned COP. Because the project would be consistent with the General Plan land use designation, the project would be consistent with the growth anticipated by the General Plan and San Diego Association of Governments. The proposed project would therefore not result in an increase in population or emissions that are not already accounted for in the RAQS and applicable portions of the SIP. Thus, the project would not interfere with implementation of the RAQS or SIP.

Additionally, as calculated in this analysis, project construction emissions would not exceed the applicable regional emissions thresholds. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality. Therefore, as project emissions are well below these limits, project construction would not result in regional emissions that would exceed the National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS) or contribute to existing violations. Additionally, construction emissions would be temporary, intermittent, and would cease at the end of project construction.

Long-term emissions of regional air pollutants occur from operational sources. Based on emissions estimates, project operational emissions would not exceed the applicable regional emissions thresholds. Therefore, as project emissions are well below these limits, project operations would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations.

Maximum carbon monoxide (CO) concentrations occur at the intersection of East Palomar Street and Heritage Road and would be less than the CAAQS and NAAQS. All other intersections would carry less peak hour traffic and experience shorter delays than the intersection of E Palomar Street and Heritage Road. Thus, it can be concluded that CO concentrations at these intersections would be less than the CO concentrations at East Palomar Street and Heritage Road. There would be no harmful concentrations of CO and localized air quality emissions would not exceed applicable standards with implementation of the project; therefore, sensitive receptors would not be exposed to substantial pollutant concentrations.

The project does not include industrial or agricultural uses that are typically associated with objectionable odors. The project would involve the use of diesel-powered equipment during construction. Diesel exhaust may occasionally be noticeable at adjacent properties; however, construction activities would be temporary and the odors would dissipate quickly in an outdoor environment. The stationary equipment proposed for the project would be subject to permitting by the SDAPCD and, as such, would be required to comply with the applicable SDAPCD rules and regulations. Under SDACPD Rule 1200 the project would be required to prepare a health risk assessment (HRA) to demonstrate that impacts are less than 1 in a million excess cancer risk without use of Toxics Best Available Control Technology (T-BACT), or less than 10 in a million excess cancer risk with T-BACT. Toxic air contaminants emission sources are also required to obtain a permit to construct and operate from the SDAPCD. The HRA demonstrating the risk associated with the new sources would be required prior to issuance of these permits. Therefore, this impact would be less than significant.

1.0 Introduction and Project Description

The purpose of this report is to assess potential short-term local and regional air quality impacts resulting from development of the proposed Ocean View Tower project (project).

Air pollution affects all southern Californians. Effects can include the following:

- Increased respiratory infections;
- Increased discomfort;
- Missed days from work and school;
- Increased mortality; and
- Polluted air also damages agriculture and our natural environment.

Air quality impacts can result from the construction and operation of the project. Construction impacts are short-term and result from fugitive dust, equipment exhaust, and indirect effects associated with construction workers and deliveries. Operational impacts can occur due to emissions from any equipment or process used in the project (e.g., residential water heaters, engines, boilers, operations using paints or solvents), and motor vehicle emissions associated with the project.

The analysis of impacts is based on state and federal Ambient Air Quality Standards (AAQS) and is assessed in accordance with the guidelines, policies, and standards established by the City and the San Diego Air Pollution Control District (SDAPCD). Project compatibility with the adopted air quality plan for the area is also assessed.

The proposed project would include construction of a new hospital tower within the existing Sharp Chula Vista hospital campus. The new critical care tower ("Ocean View Tower") would be seven stories in height and would include 138 beds, 6 operating rooms with pre- and post-op support, sterile processing, dietary services, material management, dock, and other related support services. The 197,696-square-foot Ocean View Tower would be seven floors, six above grade and one mostly sub-grade (subterranean on three sides; above ground on one side). A new boiler room would be located in the top floor of the new tower with an exhaust stack located on the roof of the seven-story tower. Nine air handlers would be located on the second-floor roof of the lower portion of the new tower located between the patient tower and the existing hospital. Two additional units would be located on the roof of the seven-story tower. A new 1,500-kilowatt emergency generator housed in a sound enclosure would be located west of the existing parking structure and immediately east of the existing generator building. The total height would be 110 feet 9 inches for the seven-story tower and 120 feet to the top of the elevator structure.

The Sharp Chula Vista hospital campus is located at 751 Medical Center Court, east of Interstate 5, south of Telegraph Canyon Road, and between Medical Center Drive and Paseo Ladera. The campus is comprised of a central 17.2-acre acute care parcel, a 10-acre outpatient parcel, and a 5-acre medical office building parcel. The proposed tower would be constructed immediately adjacent to the existing east tower at the northeastern corner of the acute care portion of the campus. Figure 1 shows the regional location of the project; Figure 2 shows an aerial photograph of the project vicinity; and Figure 3 shows the proposed site plan for the project.

Project Location

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FIGURE 1

Regional Location

Image Source: USDA FSA (flown May 2014)

Project Parcel

Site Plan

FIGURE 2

Project Location on Aerial Photograph

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Map Source: Smith Group JJR

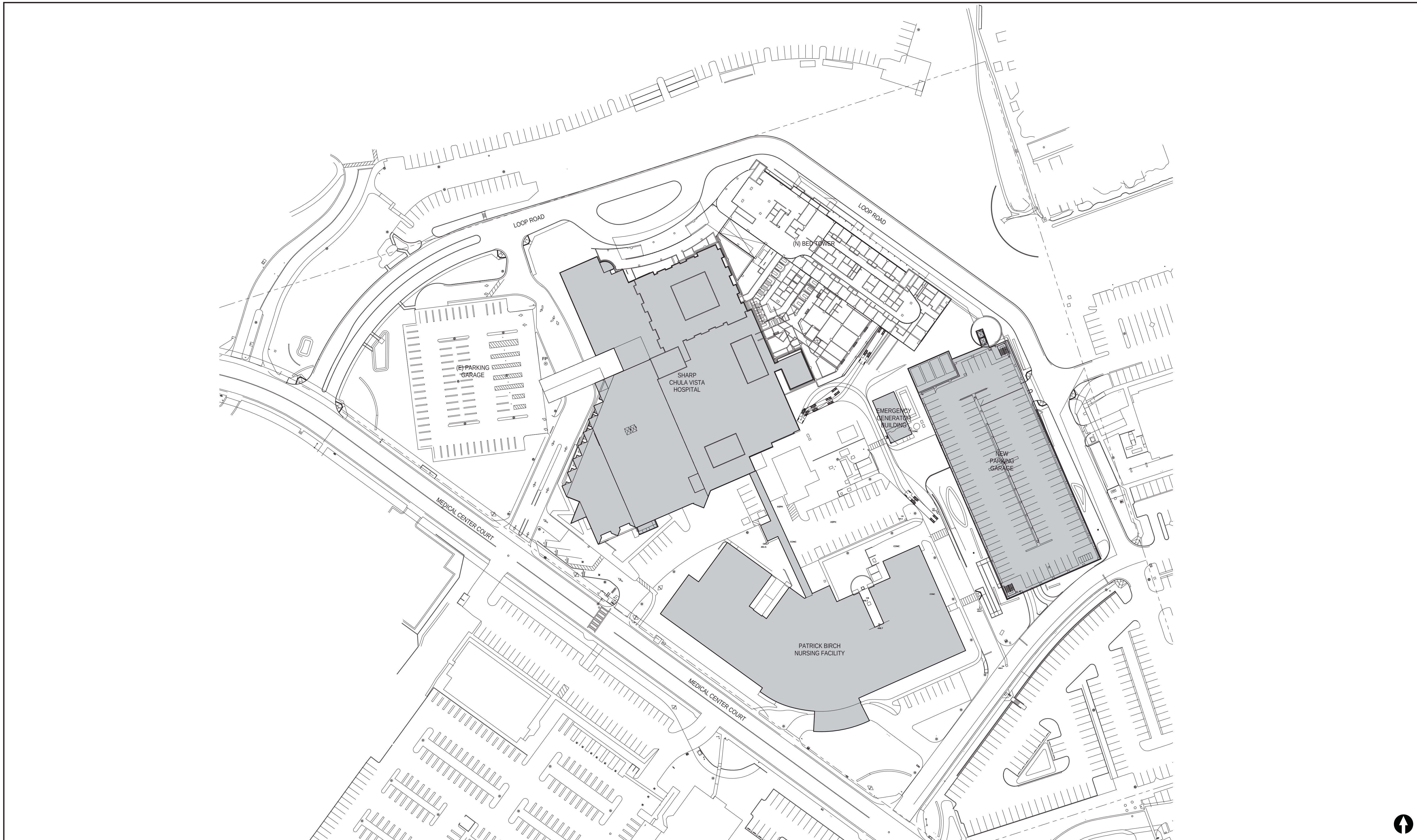

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FIGURE 3
Site Plan

2.0 Regulatory Framework

Motor vehicles are San Diego County's leading source of air pollution (County of San Diego 2013). In addition to these sources, other mobile sources include construction equipment, trains, and airplanes. Emission standards for mobile sources are established by state and federal agencies, such as the California Air Resources Board (CARB) and the United States Environmental Protection Agency (U.S. EPA). Reducing mobile source emissions requires the technological improvement of existing mobile sources and the examination of future mobile sources, such as those associated with new or modification projects (e.g., retrofitting older vehicles with cleaner emission technologies). The state of California has developed statewide programs to encourage cleaner cars and cleaner fuels. The regulatory framework described below details the federal and state agencies that are in charge of monitoring and controlling mobile source air pollutants and the measures currently being taken to achieve and maintain healthful air quality in the San Diego Air Basin (SDAB).

In addition to mobile sources, stationary sources also contribute to air pollution in the SDAB. Stationary sources include gasoline stations, power plants, dry cleaners, and other commercial and industrial uses. Stationary sources of air pollution are regulated by the local air pollution control or management district, in this case the SDAPCD.

The state of California is divided geographically into 15 air basins for managing the air resources of the state on a regional basis. Areas within each air basin are considered to share the same air masses and, therefore, are expected to have similar ambient air quality. If an air basin is not in either federal or state attainment for a particular pollutant, the basin is classified as a moderate, serious, severe, or extreme non-attainment area for that pollutant (there is also a marginal classification for federal non-attainment areas).

Once a non-attainment area has achieved the air quality standards for a particular pollutant, it may be redesignated as an attainment area for that pollutant. To be redesignated, the area must meet air quality standards and have a 10-year plan for continuing to meet and maintain air quality standards, as well as satisfy other requirements of the Clean Air Act (CAA). Areas that are redesignated to attainment are called maintenance areas.

2.1 Federal Regulations

Ambient Air Quality Standards represent the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. The federal CAA was enacted in 1970 and amended in 1977 and 1990 [42 United States Code (USC) 7401] for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. In 1971, in order to achieve the purposes of Section 109 of the CAA [42 USC 7409], the EPA developed primary and secondary National Ambient Air Quality Standards (NAAQS).

Six criteria pollutants of primary concern have been designated: ozone, carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and respirable particulate matter (which include particles 10 micrometers in diameter and smaller [PM_{10}] and particles 2.5 micrometers in diameter and smaller [$PM_{2.5}$]). The primary NAAQS ". . . in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health . . . " and the secondary standards ". . . protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air" [42 USC 7409(b)(2)]. The primary NAAQS were established, with a margin of safety, considering long-term exposure for the most sensitive groups in the general population (i.e., children, senior citizens, and people with breathing difficulties). The NAAQS are presented in Table 1 (CARB 2015a).

2.2 State Regulations

2.2.1 Criteria Pollutants

The EPA allows states the option to develop different (stricter) standards. The state of California has developed the California Ambient Air Quality Standards (CAAQS) and generally has set more stringent limits on the criteria pollutants (see Table 1). In addition to the federal criteria pollutants, the CAAQS also specify standards for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride (see Table 1). Similar to the federal CAA, the state classifies specific geographic areas as either "attainment" or "nonattainment" areas for each pollutant based on the comparison of measured data with the CAAQS. The SDAB is a non-attainment area for the state ozone standards, the state PM_{10} standard, and the state $PM_{2.5}$ standard.

2.2.2 Toxic Air Contaminants

The public's exposure to toxic air contaminants (TACs) is a significant public health issue in California. Diesel-exhaust particulate matter emissions have been established as TACs. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health (Assembly Bill [AB] 1807: Health and Safety Code Sections 39650–39674). The Legislature established a two-step process to address the potential health effects from TACs. The first step is the risk assessment (or identification) phase. The second step is the risk management (or control) phase of the process.

The California Air Toxics Program establishes the process for the identification and control of TACs and includes provisions to make the public aware of significant toxic exposures and for reducing risk. Additionally, the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly Bill) was enacted in 1987 and requires stationary sources to report the types and quantities of certain substances routinely released into the air. The goals of the Air Toxics "Hot Spots" Act are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce those significant risks to acceptable levels.

Table 1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone[8]	1 Hour	0.09 ppm ($180\ \mu g/m^3$)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm ($137\ \mu g/m^3$)		0.070 ppm ($137\ \mu g/m^3$)		
Respirable Particulate Matter (PM_{10})[9]	24 Hour	$50\ \mu g/m^3$	Gravimetric or Beta Attenuation	$150\ \mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	$20\ \mu g/m^3$		–		
Fine Particulate Matter ($PM_{2.5}$)[9]	24 Hour	No Separate State Standard		$35\ \mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	$12\ \mu g/m^3$	Gravimetric or Beta Attenuation	$12\ \mu g/m^3$	$15\ \mu g/m^3$	
Carbon Monoxide (CO)	1 Hour	20 ppm ($23\ mg/m^3$)	Non-dispersive Infrared Photometry	35 ppm ($40\ mg/m^3$)	–	Non-dispersive Infrared Photometry
	8 Hour	9.0 ppm ($10\ mg/m^3$)		9 ppm ($10\ mg/m^3$)	–	
	8 Hour (Lake Tahoe)	6 ppm ($7\ mg/m^3$)		–	–	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm ($339\ \mu g/m^3$)	Gas Phase Chemi-luminescence	100 ppb ($188\ \mu g/m^3$)	–	Gas Phase Chemi-luminescence
	Annual Arithmetic Mean	0.030 ppm ($57\ \mu g/m^3$)		0.053 ppm ($100\ \mu g/m^3$)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm ($655\ \mu g/m^3$)	Ultraviolet Fluorescence	75 ppb ($196\ \mu g/m^3$)	–	Ultraviolet Fluorescence; Spectro-photometry (Pararosaniline Method)
	3 Hour	–		–	0.5 ppm ($1,300\ \mu g/m^3$)	
	24 Hour	0.04 ppm ($105\ \mu g/m^3$)		0.14 ppm (for certain areas)[10]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[10]	–	
Lead[12,13]	30 Day Average	$1.5\ \mu g/m^3$	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		$1.5\ \mu g/m^3$ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	–		$0.15\ \mu g/m^3$		
Visibility Reducing Particles[14]	8 Hour	See footnote 13	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	$25\ \mu g/m^3$	Ion Chroma-tography			
Hydrogen Sulfide	1 Hour	0.03 ppm ($42\ \mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm ($26\ \mu g/m^3$)	Gas Chroma-tography			

See footnotes on next page.

ppm = parts per million; ppb = parts per billion; µg/m[3] = micrograms per cubic meter; – = not applicable.

[1] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, particulate matter (PM_{10}, $PM_{2.5}$, 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.

[2] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°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.

[4] Any equivalent measurement method which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

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

[7] Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.

[8] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[9] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standards of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[10] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[11] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[12] The ARB has identified lead and vinyl chloride as ‘toxic air contaminants’ with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[13] The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[14] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

SOURCE: CARB 2015a.

The Children's Environmental Health Protection Act, California Senate Bill 25 (Chapter 731, Escutia, Statutes of 1999), focuses on children's exposure to air pollutants. The act requires CARB to review its air quality standards from a children's health perspective, evaluate the statewide air monitoring network, and develop any additional air toxic control measures needed to protect children's health. Locally, toxic air pollutants are regulated through the SDAPCD's Regulation XII. Of particular concern statewide are diesel-exhaust particulate matter emissions. Diesel-exhaust particulate matter was established as a TAC in 1998, and is estimated to represent a majority of the cancer risk from TACs statewide (based on the statewide average). Diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB and are listed as carcinogens either under the state's Proposition 65 or under the federal Hazardous Air Pollutants program.

Following the identification of diesel particulate matter (DPM) as a TAC in 1998, CARB has worked on developing strategies and regulations aimed at reducing the risk from DPM. The overall strategy for achieving these reductions is found in the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB 2000). A stated goal of the plan is to reduce the statewide cancer risk arising from exposure to DPM by 85 percent by 2020.

In April 2005, CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB 2005). The handbook makes recommendations directed at protecting sensitive land uses from air pollutant emissions while balancing a myriad of other land use issues (e.g., housing, transportation needs, economics, etc.). It notes that the handbook is not regulatory or binding on local agencies and recognizes that application takes a qualitative approach. As reflected in the CARB Handbook, there is currently no adopted standard for the significance of health effects from mobile sources. Therefore, the CARB has provided guidelines for the siting of land uses near heavily traveled roadways. Of pertinence to this study, the CARB guidelines indicate that siting new sensitive land uses within 500 feet of a freeway or urban roads with 100,000 or more vehicles/day should be avoided when possible.

As an ongoing process, CARB will continue to establish new programs and regulations for the control of diesel particulate and other air-toxics emissions as appropriate. The continued development and implementation of these programs and policies will ensure that the public's exposure to DPM will continue to decline.

2.2.3 State Implementation Plan

The State Implementation Plan (SIP) is a collection of documents that set forth the state's strategies for achieving the NAAQS. In California, the SIP is a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls. The CARB is the lead agency for all purposes related to the SIP under state law. Local air districts and other agencies, such as the Department of Pesticide Regulation and the Bureau of Automotive Repair, prepare SIP elements and submit them to CARB for review and approval. The CARB then forwards SIP revisions to the EPA for approval and publication in the Federal Register. All of the items included in the California SIP are listed in the Code of Federal Regulations (CFR) at 40 CFR 52.220.

The SDAPCD is responsible for preparing and implementing the portion of the SIP applicable to the SDAB. The SIP plans for San Diego County to specifically include the Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County (2012), which is pending U.S. EPA approval, and the 2004 Revision to the California State Implementation Plan for Carbon Monoxide – Updated Maintenance Plan for Ten Federal Planning Areas. The SDAPCD adopts rules, regulations, and programs to attain state and federal air quality standards, and appropriates money (including permit fees) to achieve these objectives.

2.2.4 The California Environmental Quality Act

Section 15125(d) of the California Environmental Quality Act (CEQA) Guidelines requires discussion of any inconsistencies between the project and applicable general plans and regional plans, including the applicable air quality attainment or maintenance plan (or SIP).

2.3 San Diego Air Pollution Control District

The SDAPCD is the agency that regulates air quality in the SDAB. The SDAPCD prepared the Regional Air Quality Strategy (RAQS) in response to the requirements set forth in the California CAA AB 2595 (County of San Diego 1992). Attached, as part of the RAQS, are the Transportation Control Measures (TCMs) for the air quality plan prepared by the San Diego Association of Governments (SANDAG) in accordance with AB 2595 and adopted by SANDAG on March 27, 1992, as Resolution Number 92-49 and Addendum. The RAQS and TCM set forth the steps needed to accomplish attainment of state AAQS. The required triennial updates of the RAQS and corresponding TCM were adopted in 1995, 1998, 2001, 2004, and 2009.

The SDAPCD has also established a set of rules and regulations initially adopted on January 1, 1969 and periodically reviewed and updated. These rules and regulations are available for review on the agency's website.

The project would require an authority to construct and a permit to operate per the requirements of SDAPCD Rule 10 for each new source. This would include compliance with other pertinent SDAPCD rules that may include, but are not limited to the following.

Rule 20.1 – New Source Review – General Provisions
Rule 20.2 – New Source Review – Non-Major Stationary Sources
Rule 69.2 – Industrial and Commercial Boilers, Process Heaters and Steam Generators

Rule 69.3	–	Stationary Gas Turbine Engines – Reasonably Available Control Technology
Rule 69.3.1	–	Stationary Gas Turbine Engines – Best Available Retrofit Control Technology
Rule 69.4.1	–	Stationary Reciprocating Internal Combustion Engines – Best Available Retrofit Control Technology
Rule 1200	–	Toxic Air Contaminants – New Source Review
Rule 1202	–	Hexavalent Chromium – Cooling Towers

The new equipment would not be allowed to operate without the necessary SDAPCD permits. Permits would be subject to annual reviews and would require the preparation of health risk assessments (HRAs) demonstrating that impacts are less than 1 in a million excess cancer risk without use of Toxics Best Available Control Technology (T-BACT), or less than 10 in a million excess cancer risk with T-BACT.

3.0 Environmental Setting

3.1 Geographic Setting

The project is located in the city of Chula Vista, about 2.5 miles east of the Pacific Ocean. The eastern portion of the SDAB is surrounded by mountains to the north, east, and south. These mountains tend to restrict airflow and concentrate pollutants in the valleys and low-lying areas below.

3.2 Climate

The project area, like the rest of San Diego County's inland valley areas, has a Mediterranean climate characterized by warm, dry summers and mild, wet winters. The mean annual temperature for the project area is 61 degrees Fahrenheit (°F). The average annual precipitation is 10 inches, falling primarily from November to April. Winter low temperatures in the project area average about 45°F, and summer high temperatures average about 72°F. The average relative humidity is 69 percent and is based on the yearly average humidity at Lindbergh Field (Western Regional Climate Center 2015).

The dominant meteorological feature affecting the region is the Pacific High Pressure Zone, which produces the prevailing westerly to northwesterly winds. These winds tend to blow pollutants away from the coast toward the inland areas. Consequently, air quality near the coast is generally better than that which occurs at the base of the coastal mountain range.

Fluctuations in the strength and pattern of winds from the Pacific High Pressure Zone interacting with the daily local cycle produce periodic temperature inversions that influence the dispersal or containment of air pollutants in the SDAB. Beneath the inversion layer pollutants become "trapped" as their ability to disperse diminishes. The mixing depth is the area under the inversion layer. Generally, the morning inversion layer is lower than the afternoon inversion layer. The greater the change between the morning and afternoon mixing depths the greater the ability of the atmosphere to disperse pollutants.

Throughout the year, the height of the temperature inversion in the afternoon varies between approximately 1,500 and 2,500 feet above mean sea level. In winter, the morning inversion layer is about 800 feet above mean sea level. In summer, the morning inversion layer is about 1,100 feet above mean sea level. Therefore, air quality generally tends to be better in the winter than in the summer.

The prevailing westerly wind pattern is sometimes interrupted by regional "Santa Ana" conditions. A Santa Ana occurs when a strong high pressure develops over the Nevada-Utah area and overcomes the prevailing westerly coastal winds, sending strong, steady, hot, dry northeasterly winds over the mountains and out to sea.

Strong Santa Ana's tend to blow pollutants out over the ocean, producing clear days. However, at the onset or during breakdown of these conditions, or if the Santa Ana is weak, local air quality may be adversely affected. In these cases, emissions from the South Coast Air Basin (SCAB) to the north are blown out over the ocean, and low pressure over Baja California draws this pollutant-laden air mass southward. As the high pressure weakens, prevailing northwesterly winds reassert themselves and send this cloud of contamination ashore in the SDAB. When this event does occur, the combination of transported and locally produced contaminants produce the worst air quality measurements recorded in the basin.

3.3 Existing Air Quality

Air quality at a particular location is a function of the kinds, amounts, and dispersal rates of pollutants being emitted into the air locally and throughout the basin. The major factors affecting pollutant dispersion are wind speed and direction, the vertical dispersion of pollutants (which is affected by inversions), and the local topography.

Air quality is commonly expressed as the number of days in which air pollution levels exceed state standards set by the CARB or federal standards set by the U.S. EPA. The SDAPCD maintains 10 air-quality monitoring stations located throughout the greater San Diego metropolitan region. Air pollutant concentrations and meteorological information are continuously recorded at these stations. Measurements are then used by scientists to help forecast daily air pollution levels.

The Chula Vista monitoring station located at 80 East J Street, approximately two miles northwest of the project site, is the nearest station to the project area. The Chula Vista monitoring station measures ozone, NO_2, PM_{10}, and $PM_{2.5}$. Table 2 provides a summary of measurements of ozone, NO_2, PM_{10}, and $PM_{2.5}$ collected at the Chula Vista monitoring station for the years 2010 through 2014.

Table 2 Summary of Air Quality Measurements Recorded at the Chula Vista Monitoring Station					
Pollutant/Standard	2010	2011	2012	2013	2014
Ozone					
Days State 1-hour Standard Exceeded (0.09 ppm)	1	0	0	0	0
Days State 8-hour Standard Exceeded (0.07 ppm)	3	0	1	0	1
Days Federal 8-hour Standard Exceeded (0.075 ppm)	2	0	1	0	0
Max. 1-hr (ppm)	0.107	0.083	0.085	0.073	0.093
Max 8-hr (ppm)	0.083	0.057	0.079	0.063	0.072
Nitrogen Dioxide					
Days State 1-hour Standard Exceeded (0.18 ppm)	0	0	0	0	0
Days Federal 1-hour Standard Exceeded (0.100 ppm)	0	0	0	0	0
Max 1-hr (ppm)	0.050	0.057	0.057	0.057	0.055
Annual Average (ppm)	0.012	0.012	0.011	0.011	0.011
PM_{10}*					
Measured Days State 24-hour Standard Exceeded (50 μg/m³)	0	0	0	0	0
Calculated Days State 24-hour Standard Exceeded (50 μg/m³)	0.0	0.0	0.0	0.0	0.0
Measured Days Federal 24-hour Standard Exceeded (150 μg/m³)	0	0	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (150 μg/m³)	0.0	0.0	0.0	0.0	0.0
Max. Daily (μg/m³)	45.0	46.0	38.0	40.0	39.0
State Annual Average (μg/m³)	24.6	21.9	21.5	23.7	23.4
Federal Annual Average (μg/m³)	24.0	21.5	21.0	22.7	22.9
$PM_{2.5}$*					
Measured Days Federal 24-hour Standard Exceeded (35 μg/m³)	0	0	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (35 μg/m³)	Na	Na	0.0	0.0	0.0
Max. Daily (μg/m³)	22.7	27.9	34.3	21.9	26.5
State Annual Average (μg/m³)	Na	Na	Na	9.5	9.3
Federal Annual Average (μg/m³)	Na	Na	10.2	9.4	9.2

SOURCE: CARB 2015b.
ppm = parts per million
μg/m³ = micrograms per cubic meter
Na = Not available.
* Calculated days value. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

3.3.1 Ozone

Nitrogen oxides and hydrocarbons (reactive organic gases [ROG]) are known as the chief “precursors” of ozone. These compounds react in the presence of sunlight to produce ozone, which is the primary air pollution problem in the SDAB. Because sunlight plays such an important role in its formation, ozone pollution—or smog—is mainly a concern during the daytime in summer months. The SDAB is currently designated a federal and state non-attainment area for ozone. During the past 25 years, San Diego had experienced a decline in the number of days with unhealthy levels of ozone despite the region’s growth in population and vehicle miles traveled (County of San Diego 2013).

About half of smog-forming emissions come from automobiles. Population growth in San Diego has resulted in a large increase in the number of automobiles expelling ozone-forming pollutants while operating on area roadways. In addition, the occasional transport of smog-filled air from the SCAB only adds to the SDAB's ozone problem. Stricter automobile emission controls, including more efficient automobile engines, have played a large role in why ozone levels have steadily decreased.

In order to address adverse health effects due to prolonged exposure, the U.S. EPA phased out the national 1-hour ozone standard and replaced it with the more protective 8-hour ozone standard. The SDAB is currently a non-attainment area for the previous (1997) national 8-hour standard, and is recommended as a non-attainment area for the revised (2008) national 8-hour standard of 0.075 ppm.

Not all of the ozone within the SDAB is derived from local sources. Under certain meteorological conditions, such as during Santa Ana wind events, ozone and other pollutants are transported from the Los Angeles Basin and combine with ozone formed from local emission sources to produce elevated ozone levels in the SDAB.

Local agencies can control neither the source nor the transportation of pollutants from outside the air basin. The SDAPCD's policy, therefore, has been to control local sources effectively enough to reduce locally produced contamination to clean air standards. Through the use of air pollution control measures outlined in the RAQS, the SDAPCD has effectively reduced ozone levels in the SDAB.

Actions that have been taken in the SDAB to reduce ozone concentrations include:

- **TCMs if vehicle travel and emissions exceed attainment demonstration levels.** TCMs are strategies that will reduce transportation-related emissions by reducing vehicle use or improving traffic flow.

- **Enhanced motor vehicle inspection and maintenance program.** The smog check program is overseen by the Bureau of Automotive Repair. The program requires most vehicles to pass a smog test once every two years before registering in the state of California. The smog check program monitors the amount of pollutants automobiles produce. One focus of the program is identifying "gross polluters," or vehicles that exceed two times the allowable emissions for a particular model. Regular maintenance and tune-ups, changing the oil, and checking tire inflation can improve gas mileage and lower air pollutant emissions. It can also reduce traffic congestion due to preventable breakdowns, further lowering emissions.

- **Air Quality Improvement Program.** This program, established by AB 118, is a voluntary incentive program administered by the CARB to fund clean vehicle and equipment projects, research on biofuels production and the air quality impacts of alternative fuels, and workforce training.

3.3.2 Carbon Monoxide

The SDAB is classified as a state attainment area and as a federal maintenance area for CO. Until 2003, no violations of the state standard for CO had been recorded in the SDAB since 1991, and no violations of the national standard had been recorded in the SDAB since 1989. The violations that took place in 2003 were likely the result of massive wildfires that occurred throughout the county. No violations of the state or federal CO standards have occurred since 2003.

Small-scale, localized concentrations of CO above the state and national standards have the potential to occur at intersections with stagnation points such as those that occur on major highways and heavily traveled and congested roadways. Localized high concentrations of CO are referred to as "CO hot spots" and are a concern at congested intersections, where automobile engines burn fuel less efficiently and their exhaust contains more CO.

3.3.3 PM_{10}

PM_{10} is particulate matter with an aerodynamic diameter of 10 microns or less. Ten microns is about one-seventh of the diameter of a human hair. Particulate matter is a complex mixture of very tiny solid or liquid particles composed of chemicals, soot, and dust. Sources of PM_{10} emissions in the SDAB consist mainly of urban activities, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

Under typical conditions (i.e., no wildfires) particles classified under the PM_{10} category are mainly emitted directly from activities that disturb the soil including travel on roads and construction, mining, or agricultural operations. Other sources include windblown dust, salts, brake dust, and tire wear. For several reasons hinging on the area's dry climate and coastal location, the SDAB has special difficulty in developing adequate tactics to meet present state particulate standards.

The SDAB is designated as federal unclassified and state nonattainment for PM_{10}. The measured federal PM_{10} standard was exceeded once in 2007, and once in 2008 in the SDAB. The 2007 exceedance occurred on October 21, 2007, at times when major wildfires were raging throughout the county. Consequently, this exceedance was likely caused by the wildfires and would be beyond the control of the SDAPCD. As such, this event is covered under the U.S. EPA's Natural Events Policy that permits, under certain circumstances, the exclusion of air quality data attributable to uncontrollable natural events (e.g., volcanic activity, wild land fires, and high wind events). The 2008 exceedance did not occur during wildfires and are not covered under this policy. No exceedances of the federal standard have occurred since 2008.

3.3.4 $PM_{2.5}$

Airborne, inhalable particles with aerodynamic diameters of 2.5 microns or less ($PM_{2.5}$) have been recognized as an air quality concern requiring regular monitoring. Federal $PM_{2.5}$ standards include an annual arithmetic mean of 15 $\mu g/m^3$ and a 24-hour concentration of

35 μg/m^3. State $PM_{2.5}$ standards established in 2002 are an annual arithmetic mean of 12 μg/m^3.

The SDAB was classified as an attainment area for the previous federal 24-hour $PM_{2.5}$ standard of 65 μg/m^3 and has also been classified as an attainment area for the revised federal 24-hour $PM_{2.5}$ standard of 35 μg/m^3 (U.S. EPA 2004 and 2009). The SDAB is a non-attainment area for the state $PM_{2.5}$ standard.

3.3.5 Other Criteria Pollutants

The national and state standards for NO_2, oxides of sulfur (SO_x), and the previous standard for lead are being met in the SDAB, and the latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future. As discussed above, new standards for these pollutants have been adopted, and new designations for the SDAB will be determined in the future. The SDAB is also in attainment of the state standards for vinyl chloride, hydrogen sulfides (H_2S), sulfates, and visibility-reducing particulates.

4.0 Thresholds of Significance

Thresholds used to evaluate potential impacts to air quality are based on applicable criteria in the CEQA Guidelines Appendix G and South Coast Air Quality Management District's (SCAQMD) regulations. The project would have a potentially significant air quality impact if it would:

1. Obstruct or conflict with the implementation of the San Diego RAQS or applicable portions of the SIP.
2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).
4. Expose sensitive receptors to substantial pollutant concentration including air toxics such as diesel particulates.
5. Create objectionable odors affecting a substantial number of people.

Emissions resulting from implementation of the project would be due primarily to construction-generated emissions and traffic associated with daily operation. The City of Chula Vista evaluates project emissions based on the quantitative emission thresholds established by the SCAQMD. The SCAQMD sets forth quantitative emission significance thresholds below which a project would not have a significant impact on ambient air quality. It should be noted that the use of these significance thresholds is conservative, as the SCAQMD's significance thresholds were originally based on the SCAB extreme ozone nonattainment status for the 1-hour NAAQS, whereas the SDAB was designated as an attainment area for the 1-hour NAAQS. Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 3, City of Chula Vista Air Quality Significance Thresholds, are exceeded.

Table 3
Chula Vista Air Quality Significance Thresholds

Pollutant	Construction (pounds per day)	Operation (pounds per day)
NO_x	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150
CO	550	550
Lead	3	3

SOURCE: SCAQMD 1993, 2006.

In addition to a comparison with the quantitative thresholds for regional emissions in Table 3, the project was evaluated for local air quality impacts, such as whether concentrations of carbon monoxide would exceed the NAAQS or CAAQS, consistency with assumptions of the SDAPCD RAQS, and potential odors impacts.

5.0 Air Quality Assessment

Air quality impacts can result from the construction and operation of a project. Construction impacts are short-term and result from fugitive dust, equipment exhaust, and indirect effects associated with construction workers and deliveries. Operational impacts can occur on two levels: regional impacts resulting from growth-inducing development, or local hot-spot effects stemming from sensitive receivers being placed close to highly congested roadways. In the case of this project, operational impacts are primarily due to emissions to the basin from mobile sources associated with the vehicular travel along the roadways within the project area.

Air emissions were calculated using California Emissions Estimator Model (CalEEMod) 2013.2.2 (California Air Pollution Control Officers Association [CAPCOA] 2013). The CalEEMod program is a tool used to estimate air emissions resulting from land development projects based on California-specific emission factors. The model estimates mass emissions from two basics sources: construction sources and operational sources (i.e., area and mobile sources).

Inputs to CalEEMod include such items as the air basin containing the project, land uses, trip generation rates, trip lengths, vehicle fleet mix (percentage of autos, medium truck, etc.), trip destination (i.e., percent of trips from home to work, etc.), duration of construction phases, construction equipment usage, grading areas, season, and ambient temperature, as well as other parameters. The CalEEMod output files contained in Attachment 1 indicate the specific outputs for each model run. Emissions of NO_x, CO, SO_x, PM_{10}, $PM_{2.5}$, and ROG are calculated. Emission factors are not available for lead, and consequently, lead emissions are not calculated. The SDAB is currently in attainment of the state and federal lead standards. Furthermore, fuel used in construction equipment and most other vehicles is not leaded.

5.1 Construction-related Emissions

Construction-related activities are temporary, short-term sources of air emissions. Sources of construction-related air emissions include:

- Fugitive dust from grading activities;
- Construction equipment exhaust;
- Construction-related trips by workers, delivery trucks, and material-hauling trucks; and
- Construction-related power consumption.

Construction-related pollutants result from dust raised during demolition and grading, emissions from construction vehicles, and chemicals used during construction. Fugitive dust emissions vary greatly during construction and are dependent on the amount and type of activity, silt content of the soil, and the weather. Vehicles moving over paved and unpaved surfaces, demolition, excavation, earth movement, grading, and wind erosion from exposed surfaces are all sources of fugitive dust. Construction operations are subject to the requirements established in Regulation 4, Rules 52, 54, and 55, of the SDAPCD's rules and regulations.

Heavy-duty construction equipment is usually diesel powered. In general, emissions from diesel-powered equipment contain more NO_x, SO_x, and particulate matter than gasoline-powered engines. However, diesel-powered engines generally produce less CO and less ROG than do gasoline-powered engines. Standard construction equipment includes tractors/loaders/backhoes, rubber-tired dozers, excavators, graders, cranes, forklifts, rollers, paving equipment, generator sets, welders, cement and mortar mixers, and air compressors.

Emissions associated with construction of the project were calculated using the CalEEMod program assuming that construction would begin in April 2016 and last for approximately 48 months. Primary inputs are the numbers of each piece of equipment and the length of each construction stage. Specific construction phasing and equipment parameters are not available at this time. However, CalEEMod can estimate the required construction equipment when project-specific information is unavailable. The estimates are based on surveys, performed by the SCAQMD and the Sacramento Metropolitan Air Quality Management District, of typical construction projects which provide a basis for scaling equipment needs and schedule with a project's size. Air emission estimates in CalEEMod are based on the duration of construction phases; construction equipment type, quantity, and usage; grading area; season; and ambient temperature, among other parameters.

Project construction would occur in six stages: site preparation, grading/excavation, building construction, paving, and architectural coatings. An exterior volatile organic compounds (VOC) content of 150 grams per liter and an interior VOC content of 100 grams per liter were assumed in accordance with SDAPCD Rule 67.0. Note that SDAPCD Rule 67.0.1, which requires even lower contents of VOC, became effective on January 1, 2016. However, as a conservative analysis, a content of 150 grams per liter was used to calculate emissions. Table 4 summarizes the construction equipment parameters.

Table 4 Construction Schedule and Equipment		
Phase	Length (Days)	Equipment
Demolition	85	1 Concrete/Industrial Saws
		1 Rubber Tired Dozers
		3 Tractors/Loaders/Backhoes
Site Preparation	110	1 Tractors/Loaders/Backhoes
		1 Grader
		1 Scraper
Grading	50	1 Tractor/Loader/Backhoe
		1 Rubber Tired Dozer
		1 Grader
Building Construction	501	1 Tractors/Loaders/Backhoes
		1 Crane
		2 Forklifts
		1 Generator Set
		3 Welder
Paving	41	1 Tractor/Loader/Backhoe
		1 Paving Equipment
		2 Rollers
		1 Paver
Architectural Coatings	239	1 Air Compressor

Table 5 shows the total projected construction maximum daily emission levels for each criteria pollutant. The CalEEMod output files for construction emissions are contained in Attachment 1.

Table 5 Summary of Worst-case Construction Emissions (pounds per day)						
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2016	3	31	22	0	2	2
2017	4	28	20	0	8	5
2018	3	22	19	0	2	1
2019	5	20	18	0	1	1
2020	5	11	12	0	1	1
Maximum Daily Emission	**5**	**31**	**22**	**0**	**8**	**5**
Significance Threshold	*75*	*100*	*550*	*150*	*150*	*55*

Standard dust control measures would be implemented as a part of project construction in accordance with SDAPCD rules and regulations. Fugitive dust emissions were calculated using CalEEMod default values, and did not take into account the required dust control measures. Thus, the emissions shown in Table 5 are conservative.

For assessing the significance of the air quality emissions resulting during construction of the project, the construction emissions were compared to the trigger levels shown in Table 5. As seen in Table 5, maximum daily construction emissions are projected to be less than the applicable thresholds for all criteria pollutants. Impacts would be less than significant.

5.2 Operation-related Emissions

5.2.1 Mobile and Area Source Emissions

Mobile source emissions would originate from traffic generated by the project. Area source emissions would result from activities such as the use of natural gas and consumer products. In addition, landscaping maintenance activities associated with the proposed land uses would produce pollutant emissions.

Operational emissions due to implementation of the project were calculated using CalEEMod. CalEEMod estimates vehicle emissions by first calculating trip rate, trip length, trip purpose (e.g., home to work, home to shop, home to other), and trip type percentages for each land use type, based on the land use types and quantities. Vehicle trip generation rates were based on the traffic report prepared for the project (Linscott, Law, and Greenspan 2015). According to the traffic report, the project would generate 20 trips per bed. An average regional trip length of 5.8 miles for urban areas was used to determine vehicle miles traveled (VMT) based on SANDAG regional data (SANDAG 2014). All other CalEEMod default trip characteristics were used.

Area source emissions associated with the project include consumer products, architectural coatings, and landscaping equipment. Hearths (fireplaces) and woodstoves are also a typical source of area emissions; however, the project would not include hearths or woodstoves.

Consumer products are chemically formulated products used by household and institutional consumers, including, but not limited to, detergents, cleaning compounds, polishes, floor finishes, disinfectants, sanitizers, and aerosol paints but not including other paint products, furniture coatings, or architectural coatings. Emissions due to consumer products are calculated using total building area and product emission factors.

For architectural coatings, ROG off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers. ROG evaporative emissions are calculated using building surface area, architectural coating emission factors, and a reapplication rate of 10 percent of area per year.

Landscaping maintenance includes fuel combustion emission from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers as well as air compressors, generators, and pumps. Emission calculations take into account building area, equipment emission factors, and the number of operational days (summer days).

Table 6 provides a summary of the operational emissions generated by the project. CalEEMod output files for project operation are contained in Attachment 1. As shown, project-generated emissions are projected to be less than the significance thresholds for all criteria pollutants.

Table 6
Summary of Project Operational Emissions
(pounds per day)

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Sources[1]	5	3	2	0	0	0
Mobile Sources	8	12	64	0	10	3
Total[2]	13	15	66	0	10	3
Significance Threshold	*55*	*55*	*550*	*150*	*150*	*55*

[1]CalEEMod calculates emissions due to area and energy sources. These emissions were combined and are reported together as area sources in this table.
[2]Totals may vary due to independent rounding.

5.2.2 Stationary Source Emissions

As discussed previously, the project proposes the installation of new mechanical equipment including boilers, chillers, a cooling tower, air handling units, and an emergency generator. The analysis of potential air quality impacts presented here only addresses those pieces of equipment that are a part of the project that would generate air emissions, which would be the boilers. The cooling tower would generate minimal amounts of PM_{10}. As discussed previously, the cooling tower must comply with the requirements of SDAPCD Rule 1202 and, thus, is not anticipated to generate substantial amounts of air pollutant or toxic emissions.

The project would include three Cleaver Brooks ClearFire®-LC 10000 high-efficiency, low-NO_x, condensing boilers. Only one of the three boilers would typically operate. A second boiler would provide additional capacity, as necessary, during extreme weather days to maintain room temperatures. The third boiler is required as a standby unit under the building code. It would not operate unless one of the other boilers failed, i.e., at no time would three boilers be operating. Emissions due to the boilers were calculated using emission factors included in the equipment specifications. Emissions were calculated based on the full operation of a single boiler (100 percent) and partial operation of a second boiler during the day (20 percent), which is proportional to three boilers operating at 40 percent, 24 hours per day.

The project would also include a Kohler 1,000 kilowatt emergency generator. The generator would be tested monthly. For the purposes of estimating emissions due to monthly testing, emissions were calculated using U.S. EPA AP-42 emission factors and assuming 15 minutes of operation per day. It should also be noted that the emergency generator would be subject to SDAPCD permit requirements.

Table 7 summarizes the total daily emissions due to the boilers and emergency generator as well as the project's other operational emissions discussed in Section 5.2.1. As shown, combined emissions are projected to be less than the significance thresholds for all criteria pollutants. Emission calculations are contained in Attachment 2.

Table 7
Summary of Total Project Stationary and Operational Emissions (pounds per day)

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Mobile and Area Sources (see Table 5)	13	15	66	0	10	3
Boilers	0	7	2	0	3	3
Emergency Generator	0	4	0	1	0	0
Total	**13**	**26**	**68**	**1**	**13**	**6**
Significance Threshold	*55*	*55*	*550*	*150*	*150*	*55*

5.2.3 Localized CO Impacts

Localized CO concentration is a direct function of motor vehicle activity at signalized intersections (e.g., idling time and traffic flow conditions), particularly during peak commute hours and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses. Guidance for the evaluation of CO hot spots is provided in the *Transportation Project-level Carbon Monoxide Protocol* (CO protocol) (University of California, Davis 1997) prepared for the Environmental Program of the California Department of Transportation by the Institute of Transportation Studies, University of California, Davis.

The SDAB is a CO maintenance area under the federal CAA. This means that SDAB was previously a non-attainment area and is currently implementing a 10-year plan for continuing to meet and maintain air quality standards. As a result, ambient CO levels have declined significantly. According to the County of San Diego, CO hot spots have been found to occur only at signalized intersections that operate at or below level of service (LOS) E with peak-hour trips for that intersection exceeding 3,000 trips (County of San Diego 2013). In addition, according to the CO Protocol, in maintenance areas, only projects that are likely to worsen air quality necessitate further analysis. The CO Protocol indicates projects may worsen air quality if they worsen traffic flow, defined as increasing average delay at signalized intersections operating at LOS E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F. Unsignalized intersections are not evaluated as they are typically signalized as volumes increase and delays increase, and traffic volumes at unsignalized intersections are typically much lower than at signalized intersections.

The traffic study prepared for the project includes anticipated traffic volumes at intersection near the project site. The following four signalized intersections are anticipated to operate at LOS E or worse under the existing plus project condition:

- E Palomar Street and Heritage Road *(LOS F/D during AM/PM Peak Hour)*
- Olympic Parkway at the Interstate 805 (I-805) southbound ramps (*LOS E/E during AM/PM Peak Hour*)
- Olympic Parkway at the I-805 northbound ramps (*LOS F/D during AM/PM Peak Hou*r)
- Olympic Parkway and Brandywine Avenue (*LOS E/D during AM/PM Peak Hour*)

The following seven signalized intersections are anticipated to operate at LOS E or worse under the near-term plus project scenario:

- Telegraph Canyon Road at the I-805 northbound ramps (LOS D/E during AM/PM Peak Hour)
- E Palomar Street and Heritage Road (LOS F/D during AM/PM Peak Hour)
- Olympic Parkway at the I-805 southbound ramps (LOS E/F during AM/PM Peak Hour)
- Olympic Parkway at the I-805 northbound ramps (LOS F/D during AM/PM Peak Hour)
- Olympic Parkway and Oleander Avenue (LOS E/D during AM/PM Peak Hour)
- Olympic Parkway and Brandywine Avenue (LOS E/D during AM/PM Peak Hour)
- Olympic Parkway and Heritage Road (*LOS D/E during AM/PM Peak Hour*)

According to the CO protocol, the three worst intersections would require detailed modeling in order to determine if the CO emissions exceeded the thresholds. If one of the intersections fail then the next worse intersection would be modeled until it is determined that all remaining intersections would not exceed the NAAQS or CAAQS. The three worst intersections were chosen based on traffic volumes, delay, and intersection configuration. Based on a review of these intersections, the following three intersections are included in the detailed modeling:

- East Palomar Street and Heritage Road
- Olympic Parkway at the I-805 southbound ramps
- Olympic Parkway at the I-805 northbound ramps

CALINE4, a computer air emission dispersion model, with a graphic interface (CalRoads View), was used to calculate CO concentrations at receivers located at each intersection. These concentrations were derived from inputs including traffic volumes from the traffic analysis and emission factors from EMFAC2014 (CARB 2014). The detailed modeling is based on the 2020 and 2035 peak hour traffic volumes and emission factors from EMFAC2014. The one-hour background concentration of CO for the area, 3.0 ppm, was included in the model. This ambient concentration is considered conservative, as it was the highest recorded hourly concentration over the past five years at the San Diego – Beardsley Street monitoring station (CARB 2015b). This concentration was assumed for all intersections. The average regional winter low temperature of 49°F was included in the model as reported by the Western Regional Climate Center data for the project area. For a worst-case meteorological setting, the wind angle assumes all wind is blowing at each receptor. The mixing height of pollutants was set at 1,000 meters with a stable atmosphere.

The results of the modeling for these intersections are summarized in Table 8. CALINE4 output is contained in Attachment 3.

Table 8
Maximum CO Concentrations
(ppm)

Roadway	Operation Year (2020)		Cumulative (2035)		Standard CAAQS/ NAAQS	
	1-Hour Conc.	8-Hour Conc.	1-Hour Conc.	8-Hour Conc.	1-Hour	8-Hour
E Palomar Street and Heritage Road	3.2	2.2	3.2	2.2	20/35	9.0/9
Olympic Parkway at the I-805 southbound ramps	3.3	2.3	3.3	2.3		
Olympic Parkway at the I-805 northbound ramps	3.3	2.3	3.4	2.4		

[1]8-hour concentrations developed based on a 0.7 persistence factor.

As shown, the maximum 1-hour concentration would be 3.4 ppm. This concentration is below the federal and state 1-hour standards. In order to determine the 8-hour concentration, the 1-hour value was multiplied by a persistence factor of 0.7, as recommended in the CO Protocol. Based on this calculation, the maximum 8-hour concentration would be 2.4 ppm. Thus, increases of CO due to the project would be below the federal and state 8-hour standards. Therefore, localized air quality emissions would be less than significant.

5.3 Impact Analysis

1. *Would the project obstruct or conflict with the implementation of the San Diego RAQS or applicable portions of the SIP?*

The SIP is a collection of documents that set forth the state's strategies for achieving the NAAQS. The SDAB is designated non-attainment for the federal ozone standard. As discussed, the SIP plans for San Diego County specifically include the Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County (2012), which is pending U.S. EPA approval, and the 2004 Revision to the California State Implementation Plan for Carbon Monoxide – Updated Maintenance Plan for Ten Federal Planning Areas. Additionally, the California Clean Air Act requires areas that are designated as non-attainment of state ambient air quality standards for ozone, CO,

SO_2, and NO_2 to prepare and implement plans to attain the standards by the earliest practicable date. The SDAB is designated non-attainment for the state ozone standard. Accordingly, the RAQS was developed to identify feasible emission control measures and provide expeditious progress toward attaining the state standards for ozone, PM_{10}, and $PM_{2.5}$; however, the California Clean Air Act only requires, in this case, a plan for ozone. The two pollutants addressed in the RAQS are ROG and NOx, which are precursors to the formation of ozone. Projected increases in motor vehicle usage, population, and growth create challenges in controlling emissions, and by extension, to maintaining and improving air quality. The RAQS, in conjunction with the TCM, were most recently adopted in 2009 as the air quality plan for the region.

The CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed in general plans. As such, projects that propose development that is consistent with the growth anticipated by SANDAG's growth projections and/or the General Plan would be consistent with the RAQS and applicable portions of the SIP. In the event that a project would propose development that is less dense than anticipated by the growth projections, the project would likewise be consistent with the RAQS and applicable portions of the SIP. In the event a project proposes development that is greater than anticipated in the growth projections, further analysis would be warranted to determine if the project would exceed the growth projections used in the RAQS and applicable portions of the SIP for the specific subregional area.

The project site is designated as PQ (Public and Quasi-Public) land use in the General Plan and is zoned COP. The project site is currently used as a hospital and the project would not alter that land use. While the proposed project would intensify the existing land uses, the project would not generate any additional population nor would it encourage population growth in excess of what is considered in the RAQS and applicable portions of the SIP. As the project would be consistent with the General Plan land use designation and with the growth anticipated by the General Plan and SANDAG. The proposed project would therefore not interfere with implementation of the RAQS and applicable portions of the SIP.

2. *Would the project result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?*

As shown in Table 5, project construction would not exceed the applicable regional emissions thresholds. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality. Therefore, as project emissions are well below these limits, project construction would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations. Additionally, construction emissions would be temporary, intermittent, and would cease at the end of project construction.

Long-term emissions of regional air pollutants occur from operational sources. As shown in Table 6, project operation would not exceed the applicable regional emissions thresholds. Additionally, as shown in Table 7, when combined with emissions from stationary equipment, emissions would be less than the significance thresholds for all criteria pollutants. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality. Because project emissions are well below these limits, project operations would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations. Therefore, the project would result in a less than significant impact.

3. *Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including release emissions which exceed quantitative thresholds for ozone precursors)?*

The region is classified as attainment for all criterion pollutants except ozone, PM_{10}, and $PM_{2.5}$. The SDAB is non-attainment for the 8-hour federal and state ozone standards. Ozone is not emitted directly, but is a result of atmospheric activity on precursors. NO_X and ROG are known as the chief “precursors” of ozone. These compounds react in the presence of sunlight to produce ozone.

As shown in Tables 5, 6, and 7, emissions of ozone precursors (ROG and NO_X), PM_{10}, and $PM_{2.5}$ from construction and operation would be below the applicable thresholds. Therefore, the project would not generate emissions in quantities that would result in an exceedance of the NAQQS or CAAQS for ozone, PM_{10}, or $PM_{2.5}$, and impacts would be less than significant.

4. *Would the project expose sensitive receptors to substantial pollutant concentration including air toxics such as diesel particulates?*

CO Hot Spots

As shown in Table 8, the maximum 1-hour and 8-hour concentrations of CO would occur at the intersection of E Palomar Street and Heritage Road and would be 8.6 ppm and 6.0 ppm, respectively. These concentrations are less than the CAAQS and NAAQS. All other intersections would carry less peak hour traffic and experience shorter delays than the intersection of East Palomar Street and Heritage Road. Thus, it can be concluded that CO concentrations at these intersections would be less than the CO concentrations shown in Table 8. There would be no harmful concentrations of CO and localized air quality emission would not exceed applicable standards with implementation of the project; therefore, sensitive receptors would not be exposed to substantial pollutant concentrations.

Construction – Diesel Particulate Matter

Short-term project-generated emissions of diesel PM would result from the exhaust of off-road heavy-duty diesel equipment used for site grading and paving. 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. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of

Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TACs emissions, should be based on a 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, because the use of off-road heavy-duty diesel equipment would be temporary, short in duration when compared to 30 years, and in combination with the highly dispersive properties of diesel PM beyond 300 feet (Zhu et al. 2002), project-generated, construction-related emissions of TACs would not expose off-site sensitive receptors to substantial emissions of TACs and the impact would be less than significant.

Stationary Equipment

The project proposes the installation of new mechanical equipment including boilers, chillers, a cooling tower, air handling units, and an emergency generator. These sources would be subject to the requirements of SDAPCD Rule 1200. Under SDACPD Rule 1200 the project would be required to prepare a HRA to demonstrate that impacts are less than 1 in a million excess cancer risk without use of T-BACT, or less than 10 in a million excess cancer risk with T-BACT. TAC emission sources are also be required to obtain a permit to construct and operate from the SDAPCD. The HRA demonstrating the Risk associated with the new sources would be required prior to issuance of these permits. Thus, TAC impacts associated with the project itself would be less than significant.

5. *Would the project create objectionable odors affecting a substantial number of people?*

The project would involve the use of diesel-powered construction equipment. Diesel exhaust may be noticeable temporarily at adjacent properties; however, construction activities would be temporary. The project does not include industrial or agricultural uses that are typically associated with objectionable odors. Therefore, this impact would be less than significant.

6.0 Conclusions

The primary goal of the RAQS is to reduce ozone precursor emissions. The project site is designated as PQ (Public and Quasi-Public) land use in the General Plan and is zoned COP. Therefore, the project would be consistent with the General Plan land use designation. Additionally, while the project would increase the development intensity of the project site, due to the proposed development, the project would not result in growth in population beyond that anticipated by the General Plan and SANDAG. Therefore, the proposed project is not anticipated to result in an increase in emissions that are not already accounted for in the RAQS. Thus, the project would not interfere with implementation of the RAQS or other air quality plans.

As shown in Table 5, project construction emissions would not exceed the applicable regional emissions thresholds. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality. Therefore, as project emissions are well below these limits, project construction would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations.

Additionally, construction emissions would be temporary, intermittent, and would cease at the end of project construction.

Long-term emissions of regional air pollutants occur from operational sources. As shown in Table 6, project operational emissions would not exceed the applicable regional emissions thresholds. Additionally, as shown in Table 7, when combined with emissions from stationary equipment, emissions would be less than the significance thresholds for all criteria pollutants. Therefore, as project emissions are well below these limits, project operations would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations.

Maximum CO concentrations occur at the intersection of East Palomar Street and Heritage Road and would be less than the CAAQS and NAAQS. All other intersections would carry less peak hour traffic and experience shorter delays than the intersection of E Palomar Street and Heritage Road. Thus, it can be concluded that CO concentrations at these intersections would be less than the CO concentrations shown in Table 8. There would be no harmful concentrations of CO and localized air quality emission would not exceed applicable standards with implementation of the project; therefore, sensitive receptors would not be exposed to substantial pollutant concentrations.

The project does not include industrial or agricultural uses that are typically associated with objectionable odors. The project would involve the use of diesel-powered construction equipment. Diesel exhaust may be noticeable temporarily at adjacent properties; however, construction activities would be temporary. The stationary equipment proposed for the project would be subject to permitting by the SDAPCD and, as such, would be required to comply with the applicable SDAPCD rules and regulations. Under SDACPD Rule 1200 the project would be required to prepare an HRA) to demonstrate that impacts are less than 1 in a million excess cancer risk without use of T-BACT, or less than 10 in a million excess cancer risk with T-BACT. TAC emission sources are also be required to obtain a permit to construct and operate from the SDAPCD. The HRA demonstrating the Risk associated with the new sources would be required prior to issuance of these permits. Therefore, this impact would be less than significant.

7.0 References Cited

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ATTACHMENTS

ATTACHMENT 1

CalEEMod Output – Project Emissions

Sharp Chula Vista Hospital - 2020

San Diego County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hospital	138.00	Bed	2.50	197,696.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2020
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	537.56	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - RPS 2020

Land Use - Based on project description

Construction Phase - based on project construction schedule

On-road Fugitive Dust - No change

Demolition - 2,500 square feet

Grading - based on project description

Architectural Coating - SDAPCD Rule 67

Vehicle Trips - Based on Traffic Report and SANDAG average trip distance

Vechicle Emission Factors - 2020 model default

Vechicle Emission Factors - 2020 model default

Vechicle Emission Factors - 2020 model default

Area Coating - SDAPCD Rule 67

Energy Use - Title 24 2013

Water And Wastewater - Title 24 2013 20% reduction

Solid Waste - 25% Reduction

Construction Off-road Equipment Mitigation - No mitigation

Mobile Land Use Mitigation - No mitigation

Mobile Commute Mitigation - No mitigation

Area Mitigation - No change

Energy Mitigation - No mitigation

Water Mitigation - No mitigation

Waste Mitigation - No mitigation

Trips and VMT -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150

tblAreaCoating	Area_EF_Nonresidential_Interior	250	150
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	250
tblConstructionPhase	NumDays	10.00	239.00
tblConstructionPhase	NumDays	220.00	501.00
tblConstructionPhase	NumDays	20.00	85.00
tblConstructionPhase	NumDays	6.00	50.00
tblConstructionPhase	NumDays	10.00	41.00
tblConstructionPhase	NumDays	3.00	110.00
tblConstructionPhase	PhaseStartDate	12/31/2016	1/1/2017
tblEnergyUse	T24E	6.68	5.22
tblEnergyUse	T24NG	51.31	42.69
tblGrading	AcresOfGrading	25.00	2.50
tblGrading	AcresOfGrading	165.00	2.50
tblLandUse	LandUseSquareFeet	98,774.55	197,696.00
tblLandUse	LotAcreage	2.27	2.50
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	720.49	537.56
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblProjectCharacteristics	OperationalYear	2014	2020
tblSolidWaste	SolidWasteGenerationRate	402.96	302.22
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	WD_TR	11.81	20.00
tblWater	IndoorWaterUseRate	12,394,283.06	9,915,426.45

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	2.9576	30.8606	22.0965	0.0258	0.1384	1.7458	1.8842	0.0334	1.6340	1.6673	0.0000	2,602.8975	2,602.8975	0.7516	0.0000	2,618.6804
2017	3.6114	28.2026	19.7698	0.0318	6.1573	1.5556	7.7129	3.3377	1.4312	4.7689	0.0000	2,958.1839	2,958.1839	0.6489	0.0000	2,971.8100
2018	3.1634	21.9354	18.9664	0.0318	0.3691	1.2716	1.6407	0.1000	1.2181	1.3181	0.0000	2,924.7161	2,924.7161	0.5128	0.0000	2,935.4843
2019	4.5935	20.0335	18.3204	0.0318	0.3691	1.1039	1.4729	0.1000	1.0575	1.1576	0.0000	2,892.2401	2,892.2401	0.4911	0.0000	2,902.5534
2020	4.5683	11.4961	12.1125	0.0191	0.1232	0.6505	0.7737	0.0327	0.5996	0.6323	0.0000	1,790.4406	1,790.4406	0.5391	0.0000	1,801.7623
Total	**18.8940**	**112.5282**	**91.2655**	**0.1403**	**7.1570**	**6.3274**	**13.4844**	**3.6038**	**5.9404**	**9.5442**	**0.0000**	**13,168.4781**	**13,168.4781**	**2.9434**	**0.0000**	**13,230.2904**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	2.9576	30.8606	22.0965	0.0258	0.1384	1.7458	1.8842	0.0334	1.6340	1.6673	0.0000	2,602.8974	2,602.8974	0.7516	0.0000	2,618.6804
2017	3.6114	28.2026	19.7698	0.0318	6.1573	1.5556	7.7129	3.3377	1.4312	4.7689	0.0000	2,958.1839	2,958.1839	0.6489	0.0000	2,971.8100
2018	3.1634	21.9354	18.9664	0.0318	0.3691	1.2716	1.6407	0.1000	1.2181	1.3181	0.0000	2,924.7161	2,924.7161	0.5128	0.0000	2,935.4843
2019	4.5935	20.0335	18.3204	0.0318	0.3691	1.1039	1.4729	0.1000	1.0575	1.1576	0.0000	2,892.2401	2,892.2401	0.4911	0.0000	2,902.5534
2020	4.5683	11.4961	12.1125	0.0191	0.1232	0.6505	0.7737	0.0327	0.5996	0.6323	0.0000	1,790.4406	1,790.4406	0.5391	0.0000	1,801.7623
Total	**18.8940**	**112.5282**	**91.2655**	**0.1403**	**7.1570**	**6.3274**	**13.4844**	**3.6038**	**5.9404**	**9.5442**	**0.0000**	**13,168.4781**	**13,168.4781**	**2.9434**	**0.0000**	**13,230.2904**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.6083	1.3000e-004	0.0142	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0302	0.0302	8.0000e-005		0.0319
Energy	0.2898	2.6344	2.2129	0.0158		0.2002	0.2002		0.2002	0.2002		3,161.2244	3,161.2244	0.0606	0.0580	3,180.4630
Mobile	7.6289	12.0322	63.7273	0.1405	9.7747	0.1689	9.9437	2.6092	0.1559	2.7651		10,740.6651	10,740.6651	0.4382		10,749.8662
Total	**12.5270**	**14.6667**	**65.9544**	**0.1563**	**9.7747**	**0.3692**	**10.1439**	**2.6092**	**0.3562**	**2.9654**		**13,901.9197**	**13,901.9197**	**0.4988**	**0.0580**	**13,930.3612**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.6083	1.3000e-004	0.0142	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0302	0.0302	8.0000e-005		0.0319
Energy	0.2898	2.6344	2.2129	0.0158		0.2002	0.2002		0.2002	0.2002		3,161.2244	3,161.2244	0.0606	0.0580	3,180.4630
Mobile	7.6289	12.0322	63.7273	0.1405	9.7747	0.1689	9.9437	2.6092	0.1559	2.7651		10,740.6651	10,740.6651	0.4382		10,749.8662
Total	**12.5270**	**14.6667**	**65.9544**	**0.1563**	**9.7747**	**0.3692**	**10.1439**	**2.6092**	**0.3562**	**2.9654**		**13,901.9197**	**13,901.9197**	**0.4988**	**0.0580**	**13,930.3612**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/4/2016	7/29/2016	5	85	
2	Site Preparation	Site Preparation	7/30/2016	12/30/2016	5	110	
3	Grading	Grading	1/1/2017	3/10/2017	5	50	
4	Building Construction	Building Construction	3/11/2017	2/11/2019	5	501	
5	Architectural Coating	Architectural Coating	2/12/2019	1/10/2020	5	239	
6	Paving	Paving	1/11/2020	3/9/2020	5	41	

Acres of Grading (Site Preparation Phase): 2.5

Acres of Grading (Grading Phase): 2.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 148,162; Non-Residential Outdoor: 49,387 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	11.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	32.00	16.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0293	0.0000	0.0293	4.4400e-003	0.0000	4.4400e-003			0.0000			0.0000
Off-Road	2.9066	28.2579	21.4980	0.0245		1.7445	1.7445		1.6328	1.6328		2,487.1296	2,487.1296	0.6288		2,500.3343
Total	**2.9066**	**28.2579**	**21.4980**	**0.0245**	**0.0293**	**1.7445**	**1.7738**	**4.4400e-003**	**1.6328**	**1.6372**		**2,487.1296**	**2,487.1296**	**0.6288**		**2,500.3343**

3.2 Demolition - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8200e-003	0.0374	0.0334	1.0000e-004	2.2500e-003	5.0000e-004	2.7500e-003	6.2000e-004	4.6000e-004	1.0700e-003		9.7306	9.7306	7.0000e-005		9.7321
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0482	0.0598	0.5650	1.2700e-003	0.1068	8.0000e-004	0.1076	0.0283	7.4000e-004	0.0291		106.0373	106.0373	5.6600e-003		106.1561
Total	**0.0510**	**0.0973**	**0.5985**	**1.3700e-003**	**0.1090**	**1.3000e-003**	**0.1103**	**0.0290**	**1.2000e-003**	**0.0301**		**115.7679**	**115.7679**	**5.7300e-003**		**115.8882**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0293	0.0000	0.0293	4.4400e-003	0.0000	4.4400e-003			0.0000			0.0000
Off-Road	2.9066	28.2579	21.4980	0.0245		1.7445	1.7445		1.6328	1.6328	0.0000	2,487.1296	2,487.1296	0.6288		2,500.3343
Total	**2.9066**	**28.2579**	**21.4980**	**0.0245**	**0.0293**	**1.7445**	**1.7738**	**4.4400e-003**	**1.6328**	**1.6372**	**0.0000**	**2,487.1296**	**2,487.1296**	**0.6288**		**2,500.3343**

3.2 Demolition - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8200e-003	0.0374	0.0334	1.0000e-004	2.2500e-003	5.0000e-004	2.7500e-003	6.2000e-004	4.6000e-004	1.0700e-003		9.7306	9.7306	7.0000e-005		9.7321
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0482	0.0598	0.5650	1.2700e-003	0.1068	8.0000e-004	0.1076	0.0283	7.4000e-004	0.0291		106.0373	106.0373	5.6600e-003		106.1561
Total	**0.0510**	**0.0973**	**0.5985**	**1.3700e-003**	**0.1090**	**1.3000e-003**	**0.1103**	**0.0290**	**1.2000e-003**	**0.0301**		**115.7679**	**115.7679**	**5.7300e-003**		**115.8882**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0241	0.0000	0.0241	2.6000e-003	0.0000	2.6000e-003			0.0000			0.0000
Off-Road	2.6992	30.8238	18.0600	0.0239		1.5116	1.5116		1.3907	1.3907		2,480.1000	2,480.1000	0.7481		2,495.8099
Total	**2.6992**	**30.8238**	**18.0600**	**0.0239**	**0.0241**	**1.5116**	**1.5357**	**2.6000e-003**	**1.3907**	**1.3933**		**2,480.1000**	**2,480.1000**	**0.7481**		**2,495.8099**

3.3 Site Preparation - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0296	0.0368	0.3477	7.8000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		65.2537	65.2537	3.4800e-003		65.3268
Total	**0.0296**	**0.0368**	**0.3477**	**7.8000e-004**	**0.0657**	**4.9000e-004**	**0.0662**	**0.0174**	**4.5000e-004**	**0.0179**		**65.2537**	**65.2537**	**3.4800e-003**		**65.3268**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0241	0.0000	0.0241	2.6000e-003	0.0000	2.6000e-003			0.0000			0.0000
Off-Road	2.6992	30.8238	18.0600	0.0239		1.5116	1.5116		1.3907	1.3907	0.0000	2,480.1000	2,480.1000	0.7481		2,495.8099
Total	**2.6992**	**30.8238**	**18.0600**	**0.0239**	**0.0241**	**1.5116**	**1.5357**	**2.6000e-003**	**1.3907**	**1.3933**	**0.0000**	**2,480.1000**	**2,480.1000**	**0.7481**		**2,495.8099**

3.3 Site Preparation - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0296	0.0368	0.3477	7.8000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		65.2537	65.2537	3.4800e-003		65.3268
Total	**0.0296**	**0.0368**	**0.3477**	**7.8000e-004**	**0.0657**	**4.9000e-004**	**0.0662**	**0.0174**	**4.5000e-004**	**0.0179**		**65.2537**	**65.2537**	**3.4800e-003**		**65.3268**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0751	0.0000	6.0751	3.3160	0.0000	3.3160			0.0000			0.0000
Off-Road	2.6973	28.1608	18.9679	0.0206		1.5550	1.5550		1.4306	1.4306		2,104.573 7	2,104.573 7	0.6448		2,118.115 3
Total	**2.6973**	**28.1608**	**18.9679**	**0.0206**	**6.0751**	**1.5550**	**7.6301**	**3.3160**	**1.4306**	**4.7466**		**2,104.573 7**	**2,104.573 7**	**0.6448**		**2,118.115 3**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0336	0.0418	0.3912	9.8000e-004	0.0822	6.0000e-004	0.0827	0.0218	5.5000e-004	0.0223		78.4148	78.4148	4.0300e-003		78.4994
Total	**0.0336**	**0.0418**	**0.3912**	**9.8000e-004**	**0.0822**	**6.0000e-004**	**0.0827**	**0.0218**	**5.5000e-004**	**0.0223**		**78.4148**	**78.4148**	**4.0300e-003**		**78.4994**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0751	0.0000	6.0751	3.3160	0.0000	3.3160			0.0000			0.0000
Off-Road	2.6973	28.1608	18.9679	0.0206		1.5550	1.5550		1.4306	1.4306	0.0000	2,104.5737	2,104.5737	0.6448		2,118.1153
Total	**2.6973**	**28.1608**	**18.9679**	**0.0206**	**6.0751**	**1.5550**	**7.6301**	**3.3160**	**1.4306**	**4.7466**	**0.0000**	**2,104.5737**	**2,104.5737**	**0.6448**		**2,118.1153**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0336	0.0418	0.3912	9.8000e-004	0.0822	6.0000e-004	0.0827	0.0218	5.5000e-004	0.0223		78.4148	78.4148	4.0300e-003		78.4994
Total	**0.0336**	**0.0418**	**0.3912**	**9.8000e-004**	**0.0822**	**6.0000e-004**	**0.0827**	**0.0218**	**5.5000e-004**	**0.0223**		**78.4148**	**78.4148**	**4.0300e-003**		**78.4994**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3275	22.8585	16.2492	0.0249		1.4621	1.4621		1.3998	1.3998		2,334.8503	2,334.8503	0.5189		2,345.7479
Total	**3.3275**	**22.8585**	**16.2492**	**0.0249**		**1.4621**	**1.4621**		**1.3998**	**1.3998**		**2,334.8503**	**2,334.8503**	**0.5189**		**2,345.7479**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1764	1.3881	2.2688	3.7800e-003	0.1062	0.0201	0.1263	0.0303	0.0185	0.0488		372.4062	372.4062	2.8600e-003		372.4663
Worker	0.1074	0.1339	1.2518	3.1300e-003	0.2629	1.9100e-003	0.2648	0.0697	1.7600e-003	0.0715		250.9274	250.9274	0.0129		251.1980
Total	**0.2839**	**1.5220**	**3.5206**	**6.9100e-003**	**0.3691**	**0.0220**	**0.3911**	**0.1000**	**0.0203**	**0.1203**		**623.3336**	**623.3336**	**0.0157**		**623.6643**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3275	22.8585	16.2492	0.0249		1.4621	1.4621		1.3998	1.3998	0.0000	2,334.850 3	2,334.850 3	0.5189		2,345.747 9
Total	**3.3275**	**22.8585**	**16.2492**	**0.0249**		**1.4621**	**1.4621**		**1.3998**	**1.3998**	**0.0000**	**2,334.850 3**	**2,334.850 3**	**0.5189**		**2,345.747 9**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1764	1.3881	2.2688	3.7800e-003	0.1062	0.0201	0.1263	0.0303	0.0185	0.0488		372.4062	372.4062	2.8600e-003		372.4663
Worker	0.1074	0.1339	1.2518	3.1300e-003	0.2629	1.9100e-003	0.2648	0.0697	1.7600e-003	0.0715		250.9274	250.9274	0.0129		251.1980
Total	**0.2839**	**1.5220**	**3.5206**	**6.9100e-003**	**0.3691**	**0.0220**	**0.3911**	**0.1000**	**0.0203**	**0.1203**		**623.3336**	**623.3336**	**0.0157**		**623.6643**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9004	20.5600	15.6637	0.0249		1.2511	1.2511		1.1992	1.1992		2,317.2089	2,317.2089	0.4980		2,327.6664
Total	**2.9004**	**20.5600**	**15.6637**	**0.0249**		**1.2511**	**1.2511**		**1.1992**	**1.1992**		**2,317.2089**	**2,317.2089**	**0.4980**		**2,327.6664**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1654	1.2533	2.1722	3.7700e-003	0.1062	0.0187	0.1249	0.0303	0.0172	0.0475		366.0045	366.0045	2.8100e-003		366.0635
Worker	0.0976	0.1222	1.1305	3.1300e-003	0.2629	1.8800e-003	0.2648	0.0697	1.7400e-003	0.0715		241.5027	241.5027	0.0120		241.7543
Total	**0.2630**	**1.3754**	**3.3027**	**6.9000e-003**	**0.3691**	**0.0206**	**0.3896**	**0.1000**	**0.0189**	**0.1189**		**607.5072**	**607.5072**	**0.0148**		**607.8179**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9004	20.5600	15.6637	0.0249		1.2511	1.2511		1.1992	1.1992	0.0000	2,317.2089	2,317.2089	0.4980		2,327.6664
Total	**2.9004**	**20.5600**	**15.6637**	**0.0249**		**1.2511**	**1.2511**		**1.1992**	**1.1992**	**0.0000**	**2,317.2089**	**2,317.2089**	**0.4980**		**2,327.6664**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1654	1.2533	2.1722	3.7700e-003	0.1062	0.0187	0.1249	0.0303	0.0172	0.0475		366.0045	366.0045	2.8100e-003		366.0635
Worker	0.0976	0.1222	1.1305	3.1300e-003	0.2629	1.8800e-003	0.2648	0.0697	1.7400e-003	0.0715		241.5027	241.5027	0.0120		241.7543
Total	**0.2630**	**1.3754**	**3.3027**	**6.9000e-003**	**0.3691**	**0.0206**	**0.3896**	**0.1000**	**0.0189**	**0.1189**		**607.5072**	**607.5072**	**0.0148**		**607.8179**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5471	18.7802	15.2049	0.0249		1.0846	1.0846		1.0399	1.0399		2,299.7816	2,299.7816	0.4771		2,309.8005
Total	**2.5471**	**18.7802**	**15.2049**	**0.0249**		**1.0846**	**1.0846**		**1.0399**	**1.0399**		**2,299.7816**	**2,299.7816**	**0.4771**		**2,309.8005**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1542	1.1404	2.0769	3.7700e-003	0.1062	0.0174	0.1235	0.0303	0.0160	0.0463		359.6944	359.6944	2.7400e-003		359.7520
Worker	0.0906	0.1129	1.0387	3.1200e-003	0.2629	1.8600e-003	0.2647	0.0697	1.7300e-003	0.0715		232.7642	232.7642	0.0113		233.0009
Total	**0.2448**	**1.2532**	**3.1156**	**6.8900e-003**	**0.3691**	**0.0192**	**0.3883**	**0.1000**	**0.0177**	**0.1177**		**592.4586**	**592.4586**	**0.0140**		**592.7529**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5471	18.7802	15.2049	0.0249		1.0846	1.0846		1.0399	1.0399	0.0000	2,299.7816	2,299.7816	0.4771		2,309.8005
Total	**2.5471**	**18.7802**	**15.2049**	**0.0249**		**1.0846**	**1.0846**		**1.0399**	**1.0399**	**0.0000**	**2,299.7816**	**2,299.7816**	**0.4771**		**2,309.8005**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1542	1.1404	2.0769	3.7700e-003	0.1062	0.0174	0.1235	0.0303	0.0160	0.0463		359.6944	359.6944	2.7400e-003		359.7520
Worker	0.0906	0.1129	1.0387	3.1200e-003	0.2629	1.8600e-003	0.2647	0.0697	1.7300e-003	0.0715		232.7642	232.7642	0.0113		233.0009
Total	**0.2448**	**1.2532**	**3.1156**	**6.8900e-003**	**0.3691**	**0.0192**	**0.3883**	**0.1000**	**0.0177**	**0.1177**		**592.4586**	**592.4586**	**0.0140**		**592.7529**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.3100					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		281.9473
Total	**4.5765**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**281.9473**

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0170	0.0212	0.1948	5.9000e-004	0.0493	3.5000e-004	0.0496	0.0131	3.2000e-004	0.0134		43.6433	43.6433	2.1100e-003		43.6877
Total	**0.0170**	**0.0212**	**0.1948**	**5.9000e-004**	**0.0493**	**3.5000e-004**	**0.0496**	**0.0131**	**3.2000e-004**	**0.0134**		**43.6433**	**43.6433**	**2.1100e-003**		**43.6877**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.3100					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		281.9473
Total	**4.5765**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**281.9473**

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0170	0.0212	0.1948	5.9000e-004	0.0493	3.5000e-004	0.0496	0.0131	3.2000e-004	0.0134		43.6433	43.6433	2.1100e-003		43.6877
Total	**0.0170**	**0.0212**	**0.1948**	**5.9000e-004**	**0.0493**	**3.5000e-004**	**0.0496**	**0.0131**	**3.2000e-004**	**0.0134**		**43.6433**	**43.6433**	**2.1100e-003**		**43.6877**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.3100					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9057
Total	**4.5522**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9057**

3.6 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0161	0.0198	0.1819	5.9000e-004	0.0493	3.5000e-004	0.0496	0.0131	3.2000e-004	0.0134		41.8843	41.8843	2.0100e-003		41.9265
Total	**0.0161**	**0.0198**	**0.1819**	**5.9000e-004**	**0.0493**	**3.5000e-004**	**0.0496**	**0.0131**	**3.2000e-004**	**0.0134**		**41.8843**	**41.8843**	**2.0100e-003**		**41.9265**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.3100					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9057
Total	**4.5522**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9057**

3.6 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0161	0.0198	0.1819	5.9000e-004	0.0493	3.5000e-004	0.0496	0.0131	3.2000e-004	0.0134		41.8843	41.8843	2.0100e-003		41.9265
Total	**0.0161**	**0.0198**	**0.1819**	**5.9000e-004**	**0.0493**	**3.5000e-004**	**0.0496**	**0.0131**	**3.2000e-004**	**0.0134**		**41.8843**	**41.8843**	**2.0100e-003**		**41.9265**

3.7 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1414	11.4467	11.6577	0.0176		0.6496	0.6496		0.5988	0.5988		1,685.7298	1,685.7298	0.5341		1,696.9460
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1414**	**11.4467**	**11.6577**	**0.0176**		**0.6496**	**0.6496**		**0.5988**	**0.5988**		**1,685.7298**	**1,685.7298**	**0.5341**		**1,696.9460**

3.7 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0402	0.0494	0.4548	1.4600e-003	0.1232	8.7000e-004	0.1241	0.0327	8.1000e-004	0.0335		104.7108	104.7108	5.0200e-003		104.8163
Total	**0.0402**	**0.0494**	**0.4548**	**1.4600e-003**	**0.1232**	**8.7000e-004**	**0.1241**	**0.0327**	**8.1000e-004**	**0.0335**		**104.7108**	**104.7108**	**5.0200e-003**		**104.8163**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1414	11.4467	11.6577	0.0176		0.6496	0.6496		0.5988	0.5988	0.0000	1,685.7298	1,685.7298	0.5341		1,696.9460
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1414**	**11.4467**	**11.6577**	**0.0176**		**0.6496**	**0.6496**		**0.5988**	**0.5988**	**0.0000**	**1,685.7298**	**1,685.7298**	**0.5341**		**1,696.9460**

3.7 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0402	0.0494	0.4548	1.4600e-003	0.1232	8.7000e-004	0.1241	0.0327	8.1000e-004	0.0335		104.7108	104.7108	5.0200e-003		104.8163
Total	**0.0402**	**0.0494**	**0.4548**	**1.4600e-003**	**0.1232**	**8.7000e-004**	**0.1241**	**0.0327**	**8.1000e-004**	**0.0335**		**104.7108**	**104.7108**	**5.0200e-003**		**104.8163**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.6289	12.0322	63.7273	0.1405	9.7747	0.1689	9.9437	2.6092	0.1559	2.7651		10,740.6651	10,740.6651	0.4382		10,749.8662
Unmitigated	7.6289	12.0322	63.7273	0.1405	9.7747	0.1689	9.9437	2.6092	0.1559	2.7651		10,740.6651	10,740.6651	0.4382		10,749.8662

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hospital	2,760.00	1,123.32	992.22	3,805,756	3,805,756
Total	2,760.00	1,123.32	992.22	3,805,756	3,805,756

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hospital	5.80	5.80	5.80	64.90	16.10	19.00	73	25	2

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.513300	0.073549	0.191092	0.130830	0.036094	0.005140	0.012550	0.022916	0.001871	0.002062	0.006564	0.000586	0.003446

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2898	2.6344	2.2129	0.0158		0.2002	0.2002		0.2002	0.2002		3,161.2244	3,161.2244	0.0606	0.0580	3,180.4630
NaturalGas Unmitigated	0.2898	2.6344	2.2129	0.0158		0.2002	0.2002		0.2002	0.2002		3,161.2244	3,161.2244	0.0606	0.0580	3,180.4630

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hospital	26870.4	0.2898	2.6344	2.2129	0.0158		0.2002	0.2002		0.2002	0.2002		3,161.2244	3,161.2244	0.0606	0.0580	3,180.4630
Total		**0.2898**	**2.6344**	**2.2129**	**0.0158**		**0.2002**	**0.2002**		**0.2002**	**0.2002**		**3,161.2244**	**3,161.2244**	**0.0606**	**0.0580**	**3,180.4630**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hospital	26.8704	0.2898	2.6344	2.2129	0.0158		0.2002	0.2002		0.2002	0.2002		3,161.2244	3,161.2244	0.0606	0.0580	3,180.4630
Total		**0.2898**	**2.6344**	**2.2129**	**0.0158**		**0.2002**	**0.2002**		**0.2002**	**0.2002**		**3,161.2244**	**3,161.2244**	**0.0606**	**0.0580**	**3,180.4630**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.6083	1.3000e-004	0.0142	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0302	0.0302	8.0000e-005		0.0319
Unmitigated	4.6083	1.3000e-004	0.0142	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0302	0.0302	8.0000e-005		0.0319

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3763					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.2307					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.3300e-003	1.3000e-004	0.0142	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0302	0.0302	8.0000e-005		0.0319
Total	**4.6083**	**1.3000e-004**	**0.0142**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**		**0.0302**	**0.0302**	**8.0000e-005**		**0.0319**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3763					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.2307					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.3300e-003	1.3000e-004	0.0142	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0302	0.0302	8.0000e-005		0.0319
Total	**4.6083**	**1.3000e-004**	**0.0142**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**		**0.0302**	**0.0302**	**8.0000e-005**		**0.0319**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

ATTACHMENT 2

Boiler and Emergency Generator Emissions Calculations

BOILERS

3 units, each at:
10,000,000 BTU per hour,
10,000 cubic feet of natural gas per hour, or
283 cubic meters of natural gas per hour
40% of Total Capacity = 1 boiler operating at 100% capacity continuously and 1 boiler operating at 100% capacity for approximately 20% of the time

Pollutant	lb/MMBTU	Emission Rate Source	lb/hr per boiler	lb/day per boiler	lb/day per boiler (40% Capacity)	lb/day per 3 boilers (40% Capacity)
VOC	0.002	Boiler Specifications	0.02	0.38	0.15	0.46
NOx	0.024	Boiler Specifications	0.24	5.76	2.30	6.91
CO	0.007	Boiler Specifications	0.07	1.68	0.67	2.02
SO2	0.001	Boiler Specifications	0.01	0.24	0.10	0.29
PM	0.010	Boiler Specifications	0.10	2.40	0.96	2.88

Kohler Diesel Generator 1000REOZDE

Genset Power rating @ 0.8 pf	1250	kVA
Genset Power rating with fan	1000	ekW
Assumed generator efficiency	95%	

Engine Power:

100% Load	1052.632	bkW
75% Load	789.4737	bkW
50% Load	526.3158	bkW

Engine Power:

100% Load	1411.602	bhp
75% Load	1058.702	bhp
50% Load	705.8011	bhp

Fuel Consumption:			Ref.
100% Load	71.3	gal/hr	1
75% Load	54	gal/hr	1
50% Load	36.9	gal/hr	1

				Emission Rate (g/sec)			Emission Rate (lb/hr)			Emission Rate (lb/15-minutes)		
Pollutant	Emission Factor	Units	Emission Factor Source	100% Load	75% Load	50% Load	100% Load	75% Load	50% Load	100% Load	75% Load	50% Load
NOx	4.97	g/hp-hr	1	1.9488E+00	1.4616E+00	9.7440E-01	15.47	11.60	7.73	3.87	2.90	1.93
CO	0.45	g/hp-hr	1	1.7645E-01	1.3234E-01	8.8225E-02	1.40	1.05	0.70	0.35	0.26	0.18
HC	0.11	g/hp-hr	1	4.3132E-02	3.2349E-02	2.1566E-02	0.34	0.26	0.17	0.09	0.06	0.04
PM	0.03	g/hp-hr	1	1.1763E-02	8.8225E-03	5.8817E-03	0.09	0.07	0.05	0.02	0.02	0.01
SOx	0.93	g/hp-hr	2	3.6461E-01	2.7346E-01	1.8231E-01	2.89	2.17	1.45	0.72	0.54	0.36

1. http://www.kohlerpower.com/industrial/detail.htm?sectionNumber=13261&categoryNumber=12261&prodnum=21086302
2. USEPA AP-42 Table 3.3-1

ATTACHMENT 3

Carbon Monoxide Calculations Summary Output

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: C:\CALROADS\8063-Sharp\2035_Int_2_PM
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

        U=   0.5 M/S              Z0= 100. CM            ALT=     0. (M)
      BRG= WORST CASE             VD=  0.0 CM/S
     CLAS=     7 (G)              VS=  0.0 CM/S
     MIXH= 1000. M               AMB=  3.0 PPM
    SIGTH=    5. DEGREES        TEMP=  9.4 DEGREE (C)


  II.  LINK VARIABLES

       LINK      *  LINK COORDINATES (M)   *                EF     H     W
    DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. Link_1       * ***** ***** ***** ***** *  AG   2044   0.5    0.0  12.0
 B. Link_2       * ***** ***** ***** ***** *  AG   2044   0.5    0.0  12.0
 C. Link_3       * ***** ***** ***** ***** *  AG   1191   0.5    0.0  12.0
 D. Link_4       * ***** ***** ***** ***** *  AG   1191   0.5    0.0  12.0
 E. Link_5       * ***** ***** ***** ***** *  AG   1822   0.5    0.0  17.0
 F. Link_6       * ***** ***** ***** ***** *  AG   1834   0.5    0.0  17.0
 G. Link_7       * ***** ***** ***** ***** *  AG   1834   0.5    0.0  17.0
 H. Link_8       * ***** ***** ***** ***** *  AG   1293   0.5    0.0  17.0
 I. Link_9       * ***** ***** ***** ***** *  AG   1293   0.5    0.0  17.0
 J. Link_10      * ***** ***** ***** ***** *  AG   2134   0.5    0.0  17.0


 III.  RECEPTOR LOCATIONS

               *    COORDINATES (M)
   RECEPTOR    *    X      Y      Z
 ------------*---------------------
 1. R_001    * 496489 ******   1.8
 2. R_002    * 496509 ******   1.8
 3. R_003    * 496489 ******   1.8
 4. R_004    * 496511 ******   1.8

1

          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: C:\CALROADS\8063-Sharp\2035_Int_2_PM
```

RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	90.	3.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
2. R_002	233.	3.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
3. R_003	14.	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. R_004	347.	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK I	J
1. R_001	0.0	0.0
2. R_002	0.0	0.0
3. R_003	0.0	0.0
4. R_004	0.0	0.1

1
EXIT

RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	88.	3.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
2. R_002	187.	3.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
3. R_003	45.	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. R_004	259.	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK I	J
1. R_001	0.0	0.0
2. R_002	0.0	0.0
3. R_003	0.0	0.0
4. R_004	0.1	0.0

1
EXIT

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	75.	3.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
2. R_002	175.	3.2	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0
3. R_003	350.	3.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
4. R_004	326.	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1

1
EXIT

```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: C:\CALROADS\8063-Sharp\2020-Int_01_PM
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

         U=   0.5 M/S            Z0= 100. CM            ALT=     0. (M)
       BRG= WORST CASE           VD=  0.0 CM/S
      CLAS=     7 (G)            VS=  0.0 CM/S
      MIXH= 1000. M             AMB=  3.0 PPM
     SIGTH=    5. DEGREES      TEMP=  9.4 DEGREE (C)


  II.  LINK VARIABLES

      LINK      *  LINK COORDINATES (M)   *              EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
 A. Link_1      * ***** ***** ***** ***** *  AG    666   1.0    0.0  17.0
 B. Link_2      * ***** ***** ***** ***** *  AG    969   1.0    0.0  17.0
 C. Link_3      * ***** ***** ***** ***** *  AG    709   1.0    0.0  17.0
 D. Link_4      * ***** ***** ***** ***** *  AG    656   1.0    0.0  17.0
 E. Link_5      * ***** ***** ***** ***** *  AG    992   1.0    0.0  12.0
 F. Link_6      * ***** ***** ***** ***** *  AG    758   1.0    0.0  12.0
 G. Link_7      * ***** ***** ***** ***** *  AG    771   1.0    0.0  12.0
 H. Link_8      * ***** ***** ***** ***** *  AG    755   1.0    0.0  12.0


 III.  RECEPTOR LOCATIONS

              *    COORDINATES (M)
   RECEPTOR   *    X      Y      Z
------------*---------------------
 1. R_001     * 498302 ******   1.8
 2. R_002     * 498331 ******   1.8
 3. R_003     * 498319 ******   1.8
 4. R_004     * 498341 ******   1.8

1

           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   2

               JOB: C:\CALROADS\8063-Sharp\2020-Int_01_PM
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	79.	3.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
2. R_002	172.	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
3. R_003	347.	3.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
4. R_004	322.	3.3	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1

1
EXIT

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: C:\CALROADS\8063-Sharp\2020_Int_2_AM
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S            Z0= 100. CM            ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=     7 (G)            VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  3.0 PPM
    SIGTH=    5. DEGREES      TEMP=  9.4 DEGREE (C)


 II.  LINK VARIABLES

     LINK       *  LINK COORDINATES (M)   *                EF     H     W
  DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link_1       * ***** ***** ***** ***** *  AG    968   1.0    0.0  12.0
B. Link_2       * ***** ***** ***** ***** *  AG    968   1.0    0.0  12.0
C. Link_3       * ***** ***** ***** ***** *  AG   1289   1.0    0.0  12.0
D. Link_4       * ***** ***** ***** ***** *  AG   1289   1.0    0.0  12.0
E. Link_5       * ***** ***** ***** ***** *  AG   1627   1.0    0.0  17.0
F. Link_6       * ***** ***** ***** ***** *  AG   1060   1.0    0.0  17.0
G. Link_7       * ***** ***** ***** ***** *  AG   1060   1.0    0.0  17.0
H. Link_8       * ***** ***** ***** ***** *  AG   1300   1.0    0.0  17.0
I. Link_9       * ***** ***** ***** ***** *  AG   1300   1.0    0.0  17.0
J. Link_10      * ***** ***** ***** ***** *  AG   1546   1.0    0.0  17.0


III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
  RECEPTOR   *    X      Y      Z
-------------*--------------------
1. R_001     * 496489 ******   1.8
2. R_002     * 496509 ******   1.8
3. R_003     * 496489 ******   1.8
4. R_004     * 496511 ******   1.8

1
```

RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	88.	3.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
2. R_002	187.	3.3	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
3. R_003	45.	3.2	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
4. R_004	259.	3.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK I	J
1. R_001	0.0	0.1
2. R_002	0.0	0.0
3. R_003	0.0	0.1
4. R_004	0.1	0.0

1
EXIT

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: C:\CALROADS\8063-Sharp\SCV-OVT_Intersect
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

        U=   0.5 M/S              Z0= 100. CM            ALT=     0. (M)
      BRG= WORST CASE             VD=  0.0 CM/S
     CLAS=     7 (G)              VS=  0.0 CM/S
     MIXH= 1000. M               AMB=  3.0 PPM
    SIGTH=    5. DEGREES        TEMP=  9.4 DEGREE (C)


  II.  LINK VARIABLES

     LINK       *  LINK COORDINATES (M)   *                EF     H     W
  DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link_1       * ***** ***** ***** ***** *  AG   1858   1.0    0.0  12.0
B. Link_2       * ***** ***** ***** ***** *  AG   1858   1.0    0.0  12.0
C. Link_3       * ***** ***** ***** ***** *  AG   1084   1.0    0.0  12.0
D. Link_4       * ***** ***** ***** ***** *  AG   1084   1.0    0.0  12.0
E. Link_5       * ***** ***** ***** ***** *  AG   1658   1.0    0.0  17.0
F. Link_6       * ***** ***** ***** ***** *  AG   1668   1.0    0.0  17.0
G. Link_7       * ***** ***** ***** ***** *  AG   1668   1.0    0.0  17.0
H. Link_8       * ***** ***** ***** ***** *  AG   1176   1.0    0.0  17.0
I. Link_9       * ***** ***** ***** ***** *  AG   1176   1.0    0.0  17.0
J. Link_10      * ***** ***** ***** ***** *  AG   1940   1.0    0.0  17.0


III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
------------*---------------------
1. R_001    * 496489 ******   1.8
2. R_002    * 496509 ******   1.8
3. R_003    * 496489 ******   1.8
4. R_004    * 496511 ******   1.8

1

          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: C:\CALROADS\8063-Sharp\SCV-OVT_Intersect
```

RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	90.	3.3	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0
2. R_002	233.	3.4	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0
3. R_003	14.	3.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4. R_004	347.	3.3	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0

RECEPTOR	CONC/LINK I	J
1. R_001	0.0	0.1
2. R_002	0.0	0.0
3. R_003	0.1	0.0
4. R_004	0.0	0.1

1
EXIT

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\CALROADS\8063-Sharp\SCV-OVT_Intersect
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 0.5 M/S	Z0= 100. CM	ALT= 0. (M)
BRG= WORST CASE	VD= 0.0 CM/S	
CLAS= 7 (G)	VS= 0.0 CM/S	
MIXH= 1000. M	AMB= 3.0 PPM	
SIGTH= 5. DEGREES	TEMP= 9.4 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Olympic EB A	*****	*****	*****	*****	AG	1546	1.0	0.0	17.0
B. Olympic EB D	*****	*****	*****	*****	AG	1803	1.0	0.0	17.0
C. Olympic WB A	*****	*****	*****	*****	AG	2447	1.0	0.0	17.0
D. Olympic WB D	*****	*****	*****	*****	AG	1627	1.0	0.0	17.0
E. Link_1	*****	*****	*****	*****	AG	1036	1.0	0.0	17.0
F. Link_2	*****	*****	*****	*****	AG	1036	1.0	0.0	17.0
G. Link_3	*****	*****	*****	*****	AG	1599	1.0	0.0	12.0
H. Link_4	*****	*****	*****	*****	AG	1599	1.0	0.0	12.0

(X1, Y1, X2, Y2: LINK COORDINATES (M))

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. R_001	496701	******	1.8
2. R_002	496682	******	1.8
3. R_003	496681	******	1.8
4. R_004	496704	******	1.8

(COORDINATES (M))

1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\CALROADS\8063-Sharp\SCV-OVT_Intersect
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	198.	3.3	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
2. R_002	79.	3.4	0.0	0.0	0.3	0.0	0.0	0.0	0.1	0.0
3. R_003	56.	3.3	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0
4. R_004	338.	3.3	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1

1
EXIT

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: C:\CALROADS\8063-Sharp\SCV-OVT_Intersect
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=   0.5 M/S              Z0= 100. CM             ALT=     0. (M)
     BRG= WORST CASE             VD=  0.0 CM/S
    CLAS=     7 (G)              VS=  0.0 CM/S
    MIXH= 1000. M               AMB=  3.0 PPM
   SIGTH=    5. DEGREES        TEMP=  9.4 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *                EF     H     W
  DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
---------------*-------------------------*------------------------------
A. Olympic EB A * ***** ***** ***** ***** *  AG   1940   1.0    0.0  17.0
B. Olympic EB D * ***** ***** ***** ***** *  AG   2517   1.0    0.0  17.0
C. Olympic WB A * ***** ***** ***** ***** *  AG   1985   1.0    0.0  17.0
D. Olympic WB D * ***** ***** ***** ***** *  AG   1658   1.0    0.0  17.0
E. Link_1       * ***** ***** ***** ***** *  AG   1224   1.0    0.0  17.0
F. Link_2       * ***** ***** ***** ***** *  AG   1224   1.0    0.0  17.0
G. Link_3       * ***** ***** ***** ***** *  AG    974   1.0    0.0  12.0
H. Link_4       * ***** ***** ***** ***** *  AG    974   1.0    0.0  12.0


III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
  RECEPTOR   *    X      Y      Z
-------------*---------------------
1. R_001     * 496701 ******   1.8
2. R_002     * 496682 ******   1.8
3. R_003     * 496681 ******   1.8
4. R_004     * 496704 ******   1.8
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1

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: C:\CALROADS\8063-Sharp\SCV-OVT_Intersect
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	196.	3.3	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
2. R_002	91.	3.3	0.0	0.1	0.2	0.0	0.0	0.0	0.1	0.0
3. R_003	63.	3.4	0.1	0.3	0.0	0.0	0.0	0.1	0.0	0.0
4. R_004	263.	3.3	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0

1
EXIT

```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: C:\CALROADS\8063-Sharp\2035-Int-1-AM
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=   0.5 M/S             Z0= 100. CM             ALT=     0. (M)
     BRG= WORST CASE            VD=  0.0 CM/S
    CLAS=     7 (G)             VS=  0.0 CM/S
    MIXH= 1000. M              AMB=  3.0 PPM
   SIGTH=    5. DEGREES       TEMP=  9.4 DEGREE (C)


 II.  LINK VARIABLES

      LINK      *  LINK COORDINATES (M)   *                EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link_1       * ***** ***** ***** ***** *  AG    627   0.5    0.0  17.0
B. Link_2       * ***** ***** ***** ***** *  AG    731   0.5    0.0  17.0
C. Link_3       * ***** ***** ***** ***** *  AG   1421   0.5    0.0  17.0
D. Link_4       * ***** ***** ***** ***** *  AG    740   0.5    0.0  17.0
E. Link_5       * ***** ***** ***** ***** *  AG   1022   0.5    0.0  12.0
F. Link_6       * ***** ***** ***** ***** *  AG   1036   0.5    0.0  12.0
G. Link_7       * ***** ***** ***** ***** *  AG    926   0.5    0.0  12.0
H. Link_8       * ***** ***** ***** ***** *  AG   1489   0.5    0.0  12.0


III.  RECEPTOR LOCATIONS

              *    COORDINATES (M)
  RECEPTOR    *    X      Y      Z
------------*---------------------
1. R_001    * 498302 ******   1.8
2. R_002    * 498331 ******   1.8
3. R_003    * 498319 ******   1.8
4. R_004    * 498341 ******   1.8

1
```


```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   2

               JOB: C:\CALROADS\8063-Sharp\2035-Int-1-AM
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	75.	3.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
2. R_002	175.	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. R_003	350.	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. R_004	326.	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

1
EXIT

```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: C:\CALROADS\8063-Sharp\2035-Int-1-PM
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S            Z0= 100. CM           ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=     7 (G)            VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  3.0 PPM
    SIGTH=    5. DEGREES      TEMP=  9.4 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *             EF     H     W
  DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
---------------*-------------------------*-----------------------------
A. Link_1      * ***** ***** ***** ***** *  AG    730   0.5    0.0  17.0
B. Link_2      * ***** ***** ***** ***** *  AG   1064   0.5    0.0  17.0
C. Link_3      * ***** ***** ***** ***** *  AG    779   0.5    0.0  17.0
D. Link_4      * ***** ***** ***** ***** *  AG    720   0.5    0.0  17.0
E. Link_5      * ***** ***** ***** ***** *  AG   1090   0.5    0.0  12.0
F. Link_6      * ***** ***** ***** ***** *  AG    833   0.5    0.0  12.0
G. Link_7      * ***** ***** ***** ***** *  AG    848   0.5    0.0  12.0
H. Link_8      * ***** ***** ***** ***** *  AG    830   0.5    0.0  12.0


III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
------------*---------------------
1. R_001    * 498302 ******   1.8
2. R_002    * 498331 ******   1.8
3. R_003    * 498319 ******   1.8
4. R_004    * 498341 ******   1.8

1

           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   2

               JOB: C:\CALROADS\8063-Sharp\2035-Int-1-PM
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	79.	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. R_002	172.	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. R_003	347.	3.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
4. R_004	322.	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1
EXIT

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\CALROADS\8063-Sharp\20335-Int-3-AM
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	3.0 PPM		
SIGTH=	5. DEGREES	TEMP=	9.4 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Olympic EB A	*****	*****	*****	*****	AG	1700	0.5	0.0	17.0
B. Olympic EB D	*****	*****	*****	*****	AG	1981	0.5	0.0	17.0
C. Olympic WB A	*****	*****	*****	*****	AG	2691	0.5	0.0	17.0
D. Olympic WB D	*****	*****	*****	*****	AG	1789	0.5	0.0	17.0
E. Link_1	*****	*****	*****	*****	AG	1138	0.5	0.0	17.0
F. Link_2	*****	*****	*****	*****	AG	1138	0.5	0.0	17.0
G. Link_3	*****	*****	*****	*****	AG	1759	0.5	0.0	12.0
H. Link_4	*****	*****	*****	*****	AG	1759	0.5	0.0	12.0

LINK COORDINATES (M)

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. R_001	496701	******	1.8
2. R_002	496682	******	1.8
3. R_003	496681	******	1.8
4. R_004	496704	******	1.8

COORDINATES (M)

1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\CALROADS\8063-Sharp\20335-Int-3-AM
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	198.	3.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
2. R_002	79.	3.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0
3. R_003	56.	3.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4. R_004	338.	3.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1

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EXIT

```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: C:\CALROADS\8063-Sharp\20335-Int-3-AM
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

         U=   0.5 M/S            Z0= 100. CM            ALT=     0. (M)
       BRG= WORST CASE           VD=  0.0 CM/S
      CLAS=     7 (G)            VS=  0.0 CM/S
      MIXH= 1000. M             AMB=  3.0 PPM
     SIGTH=    5. DEGREES      TEMP=  9.4 DEGREE (C)


  II.  LINK VARIABLES

      LINK      *  LINK COORDINATES (M)   *               EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ---------------*-------------------------*-------------------------------
 A. Olympic EB A * ***** ***** ***** ***** *  AG   1700   1.0    0.0  17.0
 B. Olympic EB D * ***** ***** ***** ***** *  AG   1981   1.0    0.0  17.0
 C. Olympic WB A * ***** ***** ***** ***** *  AG   2691   1.0    0.0  17.0
 D. Olympic WB D * ***** ***** ***** ***** *  AG   1789   1.0    0.0  17.0
 E. Link_1       * ***** ***** ***** ***** *  AG   1138   1.0    0.0  17.0
 F. Link_2       * ***** ***** ***** ***** *  AG   1138   1.0    0.0  17.0
 G. Link_3       * ***** ***** ***** ***** *  AG   1759   1.0    0.0  12.0
 H. Link_4       * ***** ***** ***** ***** *  AG   1759   1.0    0.0  12.0


 III.  RECEPTOR LOCATIONS

               *    COORDINATES (M)
   RECEPTOR    *    X       Y      Z
 ------------*---------------------
 1. R_001    * 496701 ******   1.8
 2. R_002    * 496682 ******   1.8
 3. R_003    * 496681 ******   1.8
 4. R_004    * 496704 ******   1.8

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           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   2

               JOB: C:\CALROADS\8063-Sharp\20335-Int-3-AM
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. R_001	198.	3.4	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0
2. R_002	79.	3.4	0.0	0.0	0.3	0.0	0.0	0.0	0.1	0.0
3. R_003	56.	3.4	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0
4. R_004	338.	3.4	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1

1
EXIT