Appendix A-
Air Quality Impact Analysis

Imperial County Office of Education

AIR QUALITY IMPACT ANALYSIS

CITY OF EL CENTRO

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LIST OF ABBREVIATED TERMS

(1)	Reference
µg/m3	Microgram per Cubic Meter
AADT	Annual Average Daily Trips
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
ARB	California Air Resources Board
BACM	Best Available Control Measures
BMPs	Best Management Practices
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DPM	Diesel Particulate Matter
EPA	Environmental Protection Agency
ICAPCD	Imperial County Air Pollution Control District
LST	Localized Significance Threshold
NAAQS	National Ambient Air Quality Standards
NO2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
Pb	Lead
PM10	Particulate Matter 10 microns in diameter or less
PM2.5	Particulate Matter 2.5 microns in diameter or less
PPM	Parts Per Million
Project	Imperial County Office of Education
ROG	Reactive Organic Gases
SIPs	State Implementation Plans
TAC	Toxic Air Contaminant
TIA	Traffic Impact Analysis
TOG	Total Organic Gases
VMT	Vehicle Miles Traveled

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EXECUTIVE SUMMARY

CONSTRUCTION-SOURCE EMISSIONS

REGIONAL IMPACTS

For regional construction-source emissions, the Project would not exceed the numerical thresholds of significance established by the ICAPCD. As such, no mitigation is required and a less than significant impact would occur. Consequently, Project construction-source emissions would not cause or substantively contribute to violation of the CAAQS NAAQS.

Project construction-source emissions would not conflict with the applicable Clean Air Plans. As discussed herein, the Project will comply with all applicable ICAPCD construction-source emission reduction rules and guidelines.

ODORS

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less-than-significant.

OPERATIONAL-SOURCE EMISSIONS

REGIONAL IMPACTS

For regional operational-source emissions, the Project would not exceed the regional thresholds of significance established by the ICAPCD for any criteria pollutant. Thus a less than significant impact would occur for Project-related operational-source emissions and no mitigation is required.

Project traffic will not cause or result in CO hotspots. Project operational-source emissions would therefore not adversely affect sensitive receptors within the Study Area.

Project operational-source emissions would not conflict with the applicable Clean Air Plans. As discussed herein, Project features and attributes are consistent with and support air pollution reduction strategies and attainment goals articulated in the Clean Air Plans.

ODORS

Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential sources of operational odors generated by the Project would include disposal of miscellaneous commercial refuse. Consistent with applicable requirements, all

Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations. Potential operational-source odor impacts are therefore considered less-than-significant.

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1 INTRODUCTION

This report presents the results of the air quality impact analysis (AQIA) prepared by Urban Crossroads, Inc., for the proposed Imperial County Office of Education ("Project").

The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the proposed Project, and recommend measures to mitigate impacts considered potentially significant in comparison to thresholds established by the ICAPCD.

1.1 SITE LOCATION

The proposed Imperial County Office of Education Project is located at the southwest corner of Mccabe Road and Sperber Road, in the City of El Centro, as shown on Exhibit 1-A. Existing residential land uses in the Project study area are located northeast of the Project site with an existing commercial building located to the east. Agricultural-designated land uses are also located north, south, and west of the Project site.

1.2 PROJECT DESCRIPTION

The project involves the annexation of 80 acres of land (APN 054-510-001) for the construction of a 21,685 square-foot administrative annex building for the Imperial County Office of Education. The building would be located on a 5.932-acre parcel and the remaining land would continue to be used for agricultural purposes. The new building would accommodate 150 to 200 employees.

For the purposes of this AQIA, it is assumed that the Project will be constructed and at full occupancy in 2019.

1.3 CONSTRUCTION-SOURCE AIR POLLUTANT EMISSIONS MITIGATION MEASURES

1.3.1 MONITORING OF AND COMPLIANCE WITH STANDARD REGULATORY REQUIREMENTS/BEST AVAILABLE CONTROL MEASURES (BACMS)

All construction sites, regardless of size, must comply with the requirements contained within Regulation VIII. Although compliance with Regulation VIII does not constitute mitigation under the reductions attributed to environmental impacts its main purposed is to reduce the amount of PM_{10} entrained into the atmosphere as a result of anthropenic (man-made) fugitive dust sources. Therefore, under all preliminary modeling a presumption is made that all projects are in compliance with Regulation VIII (1).

The following measures, consistent with ICAPCD Rule VIII, are applicable during construction activity for this Project:

BACM AQ-1

The operator shall implement the following standard mitigation measures for fugitive PM_{10} control:

a. The operator shall insure that all disturbed areas, including bulk material storage which is not being actively utilized, will be effectively stabilized and visible emissions will be limited to no greater than 20% opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps, or other suitable material such as vegetative ground cover.
b. The operator shall insure that all on-site and off-site unpaved roads will be effectively stabilized and visible emissions be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
c. The operator shall insure that all unpaved traffic areas with 75 or more average vehicle trips per day will be effectively stabilized and visible emission be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
d. The operator shall insure that all transport (import or export) of borrow material used as cover material will be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of borrow material. In additions, the cargo compartment of all haul trucks is to be cleaned and/or washed at delivery site after removal of bulk material.
e. The operator shall insure that all track-out or carryout will be cleaned at the end of each workday.
f. The operator shall insure that all movement of borrow material handling or at points of transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers, or by sheltering or enclosing the operation and transfer line.

BACM AQ-2

The operator shall implement the following standard mitigation measures for construction combustion equipment:

a. The operator shall insure the use of Tier 2 vehicles or the equivalent alternative fueled or catalyst equipped diesel construction equipment.
b. The operator shall insure that idling time will be minimized by either shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
c. The operator shall limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use.
d. The operator shall, where practicable, replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

1.3.2 Construction-Source Mitigation Measures

Project construction-source emissions will be less than significant. Therefore, no mitigation measures are required.

1.4 Operational-Source Air Pollutant Emissions Mitigation Measures

The Project would not result in any significant impacts during operational activity. Therefore, no mitigation measures are required.

EXHIBIT 1-A: LOCATION MAP

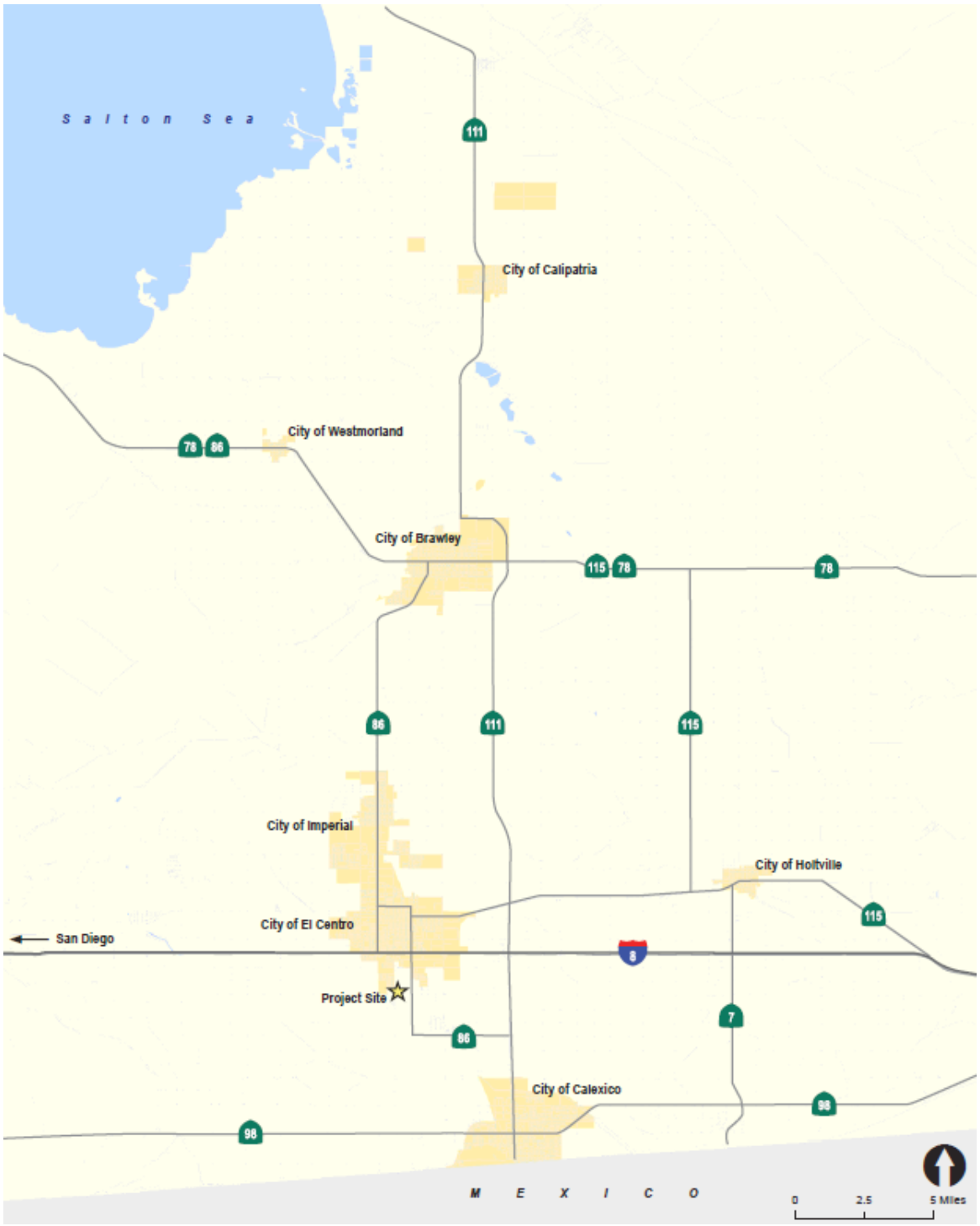
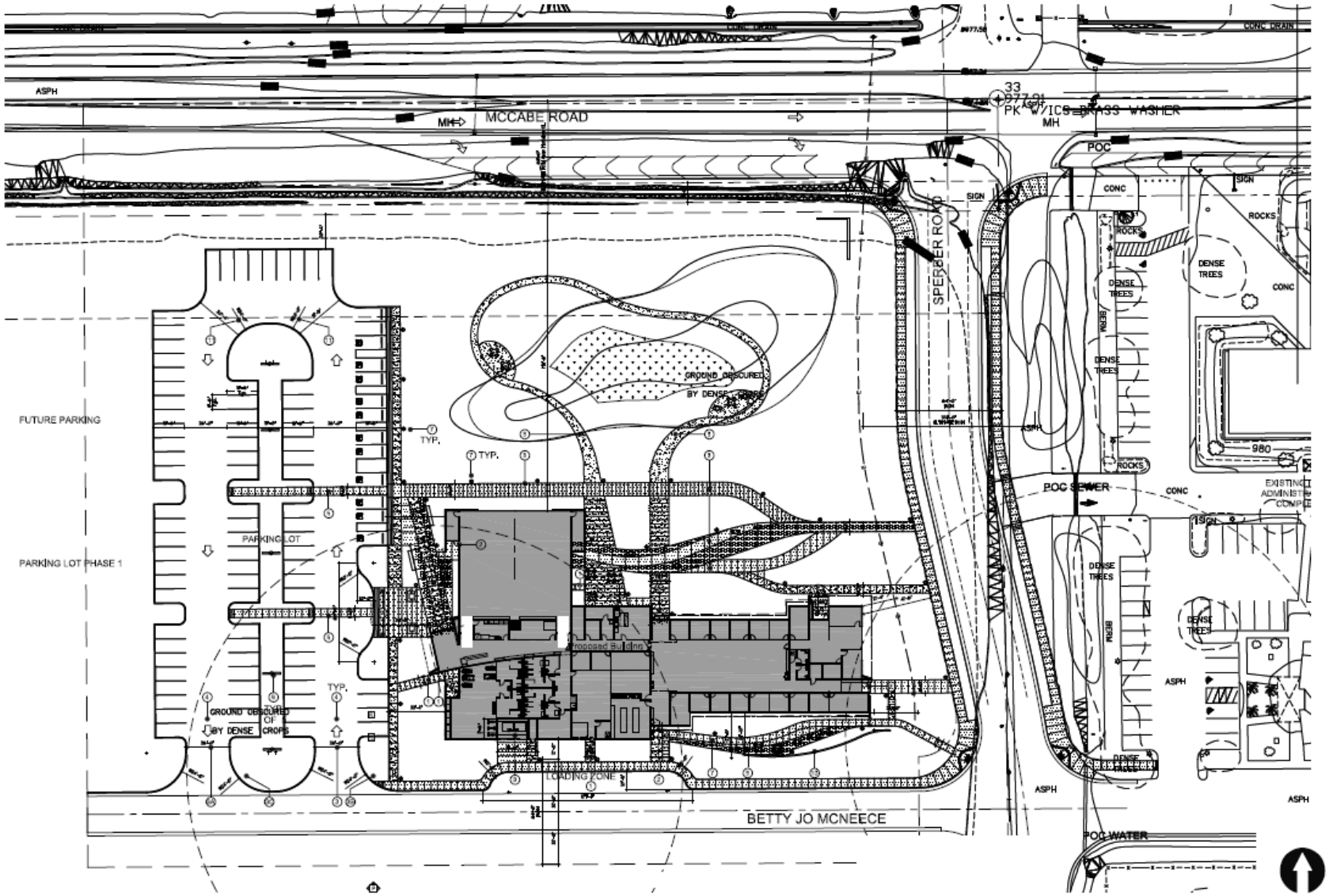


EXHIBIT 1-B: SITE PLAN



2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

2.1 SALTON SEA AIR BASIN

The entire Imperial County, including the Project site, lies within the Salton Sea Air Basin (SSAB), which is under jurisdiction of ICAPCD. The SSAB consists of all of Imperial County and the southeast portion of Riverside County.

The SSAB is generally an arid desert region, with a significant portion located below sea level. A semi-permanent high-pressure cell blocks mid-latitude storms and causes sunny skies most of the time. The high-pressure zone tends to be weaker in the winter and it is during this time that the SSAB usually receives its average 2.8 inches of yearly precipitation. The wettest month in the SSAB is December, averaging 0.5 inches of rainfall, while the driest month is June, with measurable rainfall recorded only twice since 1914. Rainfall is highly variable, with precipitation from a single heavy storm event one year exceeding the entire annual total during a drought year. Average humidity can range from 28 percent in summer to 52 percent in winter. A large daily oscillation of temperature produces a corresponding large variation in the relative humidity (Imperial County 1993).

These climatic conditions are strongly influenced by the large-scale sinking and warming of air in the semi-permanent subtropical high-pressure center of the Pacific Ocean. The Peninsular Mountain range to the west blocks any coastal influence, such as cool and damp marine air. The geographic barriers and atmospheric conditions limit precipitation in the area. The flat terrain of the SSAB and the strong temperature differentials created by intense solar heating produce moderate winds and deep thermal convection. The combination of subsiding air, protective mountains, and distance from the ocean all combine to severely limit precipitation. As a result, the climate of the Imperial Valley is arid, with hot summers and mild winters. Temperatures exceed 100 degrees for more than 110 days out of the year, and there are more than 300 frost-free days per year. While summers are intensely hot, the climate for the rest of the year is mild.

Wind in the project area blows from west to east most of the time and high winds are occasionally experienced in the SSAB. Wind speeds more than 30 miles per hour occur most frequently in April and May. On an annual basis, strong winds (greater than 30 miles per hour) are observed 0.6 percent of the time; speeds of less than 6.8 miles per hour account for more than one-half of the observed winds (Imperial County 1993).

Regional air quality within the SSAB is affected by topography and atmospheric inversions. The area is generally very flat and bordered to the west by the Peninsular Mountain range, to the north by the Salton Sea, and to the east by the Cargo Muchacho mountains. The prevailing winds tend to come from the west-northwest through southwest. The mountains to the east act as physical barriers to the dispersion of airborne contaminants.

The SSAB also experiences surface inversions almost every day of the year. These inversions are caused by the presence of the region's typical subtropical high-pressure cell, which causes the air mass aloft to sink. Air masses are large bodies of air with similar temperature and moisture content. An air mass aloft refers to the higher-altitude air mass which inductively suggests that there is a separate (and thus different in temperature and moisture content) air mass at ground level. As this air mass sinks, the temperature thereof rises through compressional heating, thus exceeding the temperature of the air below. This stable atmospheric condition, known as a subsidence inversion, becomes a nearly impenetrable barrier to the vertical mixing of pollutants. These inversions often last for long periods of time, which allows for air stagnation and the buildup of pollutants. During the winter, the area experiences radiation inversions in which the air near the ground surface cools by radiation, whereas the air higher in the atmosphere remains warmer. A shallow inversion layer is created between the two layers and precludes the vertical dispersion of air, thus trapping pollutants. Highest ozone levels are often associated with subsidence inversions.

2.2 EXISTING AIR QUALITY

Existing air quality is measured at established ICAPCD air quality monitoring stations. Monitored air quality is evaluated and in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect are shown in Table 2-1 (2).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented in Table 2-1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for Ozone (O_3), CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O_3, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not exceeded more than once per year. The O3 standard is attained when the fourth highest eight-hour concentration 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 says per calendar year with a 24-hour average concentration above 150 µg/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.

TABLE 2-1: AMBIENT AIR QUALITY STANDARDS (1 OF 2)

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 (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	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 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No National Standards**		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page …

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

TABLE 2-1: AMBIENT AIR QUALITY STANDARDS (2 OF 2)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, 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 PM10, 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 PM2.5, 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 ARB 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 PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 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 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard 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.

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

2.3 REGIONAL AIR QUALITY

The ICAPCD monitors levels of various criteria pollutants at 5 permanent monitoring stations in the Salton Sea Air Basin (3). In 2015, the federal and state ambient air quality standards (NAAQS and CAAQS) were exceeded on one or more days for ozone, PM_{10}, and $PM_{2.5}$ at most monitoring locations (4). No areas of the SSAB exceeded federal or state standards for NO_2, SO_2, CO, sulfates or lead. See Table 2-2 for attainment designations for the SSAB (5) (6). Appendix 3.2 provides geographic representation of the state and federal attainment status for applicable criteria pollutants within the SSAB.

TABLE 2-2: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SALTON SEA AIR BASIN (SSAB)

Criteria Pollutant	State Designation	Federal Designation
Ozone - 1hour standard	Nonattainment	Attainment
Ozone - 8 hour standard	Nonattainment	Nonattainment (Severe)
PM_{10}	Nonattainment	Nonattainment (Serious)
$PM_{2.5}$	Attainment	Unclassifiable/Attainment
Carbon Monoxide	Attainment	Unclassifiable/Attainment
Nitrogen Dioxide	Attainment	Unclassifiable/Attainment
Sulfur Dioxide	Attainment	Unclassifiable/Attainment
Lead	Attainment	Unclassifiable/Attainment

Source: State/Federal designations were taken from http://www.arb.ca.gov/desig/adm/adm.htm and 2016 AQMP Tables 2-4 and 2-5.
Note: See Appendix 3.1 for a detailed map of State/National Area Designations within the Salton Sea Air Basin and excerpts from the 2016 AQMP.

2.4 LOCAL AIR QUALITY

Relative to the Project site, the nearest long-term air quality monitoring site for Ozone (O_3), Oxides of Nitrogen (NO_x), and Inhalable Particulates (PM_{10}), is the Imperial Valley Air El Centro air monitoring station, located approximately 2.89 miles north of the Project site in El Centro. Relative to the Project site, the nearest long-term air quality monitoring site for Ultra-Fine Particulates ($PM_{2.5}$), is the Imperial Valley Air Calexico air monitoring station, located approximately 6.95 miles southeast of the Project site in El Centro.

The most recent three (3) years of data available is shown on Table 2-3 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Project site (7). Additionally, data for SO2 has been omitted as attainment is regularly met in the Salton Sea Air Basin and few monitoring stations measure SO_2 concentrations.

TABLE 2-3: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2014-2016

POLLUTANT	STANDARD	YEAR		
		2014	2015	2016
Ozone (O_3)				
Maximum 1-Hour Concentration (ppm)		0.101	0.099	0.108
Maximum 8-Hour Concentration (ppm)		0.080	0.079	0.82
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	2	2	--
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	13	12	11
Number of Days Exceeding Federal 8-Hour Standard	> 0.07 ppm	5	6	11
Number of Days Exceeding Health Advisory	≥ 0.15 ppm	0	0	--
Nitrogen Dioxide (NO_2)				
Maximum 1-Hour Concentration (ppm)		0.059	0.059	0.059
Annual Arithmetic Mean Concentration (ppm)		0.007	0.007	0.007
Number of Days Exceeding State 1-Hour Standard	> 0.18 ppm	0	0	0
Particulate Matter ≤ 10 Microns (PM_{10})				
Maximum 24-Hour Concentration (µg/m^3)		120.4	165.9	284.9
Number of Samples		--	--	--
Number of Samples Exceeding State Standard	> 50 µg/m^3	15	7	--
Number of Samples Exceeding Federal Standard	> 150 µg/m^3	0	1	10
Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)				
Maximum 24-Hour Concentration (µg/m^3)		27.5	31.2	31.3
Annual Arithmetic Mean (µg/m^3)		6.5	6	6
Number of Samples Exceeding Federal 24-Hour Standard	> 35 µg/m^3	0	0	0

-- = data not available from ARB

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and effects are identified below (8):

- Carbon Monoxide (CO): Is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- Sulfur Dioxide (SO_2): Is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms sulfates (SO_4). Collectively, these pollutants are referred to as sulfur oxides (SO_X).

- Nitrogen Oxides (Oxides of Nitrogen, or NO_x): Nitrogen oxides (NO_x) consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with oxygen (O_2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO_2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO_2 than those indicated by regional monitors.
- Ozone (O_3): Is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_X) undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- PM_{10} (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM_{10} also causes visibility reduction and is a criteria air pollutant.
- $PM_{2.5}$ (Particulate Matter less than 2.5 microns): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_X release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. $PM_{2.5}$ is a criteria air pollutant.
- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a precursor to O_3, which is a criteria pollutant. The SCAQMD uses the terms VOC and ROG (see below) interchangeably.
- Reactive Organic Gases (ROG): Similar to VOC, Reactive Organic Gases (ROG) are also precursors in forming ozone. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. The SCAQMD uses the terms ROG and VOC (see previous) interchangeably.
- Lead (Pb): Lead is a heavy metal that is highly persistent in the environment. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of lead from gasoline, there have been no violations at any of the SCAQMD's regular air monitoring stations since 1982. Currently, emissions of lead are largely limited to stationary sources such as lead smelters. It should be noted that the Project is not anticipated to generate a quantifiable amount of lead emissions. Lead is a criteria air pollutant.

Health Effects of Air Pollutants

Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

Particulate Matter

A consistent correlation between elevated ambient fine particulate matter (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in $PM_{2.5}$ concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long-term exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM_{10} and $PM_{2.5}$.

Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO_2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO_2.

Sulfur Dioxide

A few minutes of exposure to low levels of SO_2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2.

Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple

commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

2.5 REGULATORY BACKGROUND

2.5.1 FEDERAL REGULATIONS

The U.S. EPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_x, SO_2, PM_{10}, $PM_{2.5}$, and lead (2). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (9). The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and lead. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for PM2.5. Table 2-1 (previously presented) provides the NAAQS within the basin.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and nitrogen oxides (NO_x). NOx is a collective term that includes all forms of nitrogen oxides (NO, NO_2, NO_3) which are emitted as byproducts of the combustion process.

2.5.2 CALIFORNIA REGULATIONS

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However, at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the SCAB or SSAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (10) (2).

Local air quality management districts, such as the ICAPCD, regulate air emissions from commercial and light industrial facilities. All basins have been formally designated as attainment or non-attainment for each CAAQS.

Non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROGs, NOx, CO and PM10. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

2.5.3 LOCAL REGULATIONS AND STANDARDS

The ICAPCD also has the authority to adopt and enforce regulations dealing with controls for specific types of sources, emissions of hazardous air pollutants, and New Source Review. The ICAPCD Rules and Regulations are part of the State Implementation Plan (SIP) and are separately enforceable by the EPA. The following ICAPCD rules potentially apply to the proposed project:

- Rules 800 (General Requirements for Control of Fine Particulate Matter), 801 (Construction and Earthmoving Activities), 802 (Bulk Materials), 803 (Carry-out and Track-out), 804 (Open Areas), and 805 (Paved and Unpaved Roads) are intended to reduce the amount of PM10 entrained in the ambient air as a result of emissions generated by anthropogenic fugitive dust sources by requiring actions to prevent, reduce, or mitigate PM10 emissions. These rules include opacity limits, control measure requirements, and dust control plan requirements that apply to activities at the Facility.

2.5.4 AIR QUALITY MANAGEMENT PLANNING (CLEAN AIR PLAN)

OZONE PLAN

On December 3, 2009, the EPA issued a final ruling determining that the Imperial County "moderate" 8-hour ozone non-attainment area attained the 1997 8-hour NAAQS for ozone. The determination by EPA was based upon complete, quality-assured, and certified ambient air monitoring data for the years 2006 thru 2008. This determination effectively suspended the requirement for the state to submit an attainment demonstration, a RFP plan, contingency measures and other planning requirements for so long as Imperial County continues to attain the 1997 8-hour ozone NAAQS. However, this determination did not constitute a re-designation to attainment; therefore, the classification and designation status for Imperial County remain as a "moderate" non-attainment area of the 1997 8-hour ozone NAAQS. As such, Imperial County was required to submit for EPA approval a 2009 8-Hour Ozone "Modified" Air Quality Management Plan (Modified AQMP), which was approved July 13, 2010.

The Modified AQMP serves as a comprehensive planning document intended to provide guidance to the ICAPCD, the County, and other local agencies on how to continue maintaining the 1997 8-hour ozone NAAQS. The Modified AQMP includes control measures consisting of three components: 1) the ICAPCD's Stationary Source Control Measures; 2) Regional Transportation Control Measures; and 3) the State Strategy. These measures primarily rely on the traditional command and control approach and as such provide the framework for ICAPCD rules that reduce ROG and NO_X emissions.

PM_{10} PLAN

The ICAPCD District Board of Directors adopted the PM_{10} State Implementation Plan (SIP) for Imperial County on August 11, 2009 (ICAPCD 2009). The PM_{10} SIP meets EPA requirements to demonstrate that the County will attain the PM10 standard as expeditiously as practicable. The PM_{10} SIP was required to address and meet the following elements, required under the FCAA of areas classified to be in serious nonattainment of the NAAQS:

- Best available emission inventories;
- A plan that enables attainment of the PM_{10} federal air quality standards;
- Annual reductions in PM_{10} or PM_{10} precursor emissions that are of not less than 5 percent from the date of SIP submission until attainment;
- Best available control measures and best available control technologies for significant sources and major stationary sources of PM_{10}, to be implemented no later than 4 years after reclassification of the area as serious;

- Transportation conformity and motor vehicle emission budgets in accord with the attainment plan;
- Reasonable further progress and quantitative milestones; and
- Contingency measures to be implemented (without the need for additional rulemaking actions) in the event that the control measure regulations incorporated in the plan cannot be successfully implemented or fail to give the expected emission reductions.

The PM_{10} SIP updated the emission inventory to incorporate revised cattle emissions, revised windblown dust model results, revised South Coast Association of Governments activity data, and updated entrained and windblown unpaved road dust estimates. The adjustments made to the emission inventory fell in two categories: (i) adjustments to incorporate new methodology and updated information (e.g., throughputs, activity data, etc.), and (ii) adjustments to incorporate emission reductions arising from the implementation of new control measures.

Additionally, the PM_{10} SIP demonstrates that Imperial County attained the Federal PM10 NAAQS, but-for international emissions from Mexico, based on 2006-2008 monitoring data. Attainment was due, in part, to ICAPCD's November 2005 adoption and subsequent implementation of Regulation VIII fugitive dust rules; those rules were based on the related 2005 Best Available Control Measure (BACM) analysis.

Since the reclassification of Imperial County to serious nonattainment for PM_{10} occurred on August 2004 and control of fugitive PM_{10} emissions from the significant source categories that meets BACM stringency identified in the PM_{10} SIP began in January 2006.

Major stationary sources are required to implement Best Available Control Technology (BACT) to control PM_{10} emissions (Rule 207) and they are required to comply with the 20 percent opacity (Rule 403). In addition, stationary sources will be required to mitigate fugitive dust emissions from access roads, construction activities, handling and transferring of bulk materials, and track-out/carry-out according to the requirements of Regulation VIII.

Because the Imperial County is shown in the PM_{10} SIP to have attained the 24-hour PM_{10} NAAQS but-for international transport of Mexicali emissions in 2006-2008, reasonable further progress (RFP) and milestone requirements are unnecessary, and specifically the 5% yearly emission reductions requirement does not apply to future years. As documented in the PM_{10} SIP, all remaining SIP requirements applicable to the 2009 Imperial County PM_{10} Plan have been successfully addressed.

$PM_{2.5}$ PLAN

The ICAPCD adopted the 2013 SIP for the 2006 24-hour $PM_{2.5}$ Moderate Nonattainment Area on December 2, 2014 (ICAPCD 2014). On October 17, 2006, the U.S EPA strengthened the primary and secondary 24-hour PM 2.5 NAAQS from 6535 $\mu g/m^{3\ to\ 35}$ 35 $\mu g/m^3$. However, on January 4, 2013 the United States Court of Appeals for the District of Columbia (D.C) Circuit held that the U.S EPA had incorrectly interpreted the CAA with respect to the statutory requirements for the implementation of the 1997 PM2.5 NAAQS. The D.C. Circuit remanded the Final "Clean Air Fine Particle Implementation Rule" (72 FR 20586, April 25, 2007) and the "Implementation of the New Source Review (NSR) Program for Particulate Matter Less than 2.5 micrometers ($PM_{2.5}$)" final rule

(73 FR 28321, May 16, 2008) with instructions to "repromulgate" these rules pursuant to Subpart 4. The Courts reasoning explained that the plain meaning of the CAA required implementation of the 1997 $PM_{2.5}$ NAAQS under subpart 4 because $PM_{2.5}$ particles fall within the statutory definition of Particulate Matter less than 10 microns (PM_{10}) and are thus subject to the same statutory requirements.

The U.S. EPA interpreted the Courts ruling as necessarily applying Subpart 4 requirements onto the implementation of the 2006 PM2.5 NAAQS. As interim guidance the U.S. EPA directed states to rely on the CAA and U.S. EPA's 1992 General Preamble (Preamble) and the 1994 Addendum to the General Preamble (Addendum). As a result, U.S. EPA is instructing states to implement subpart 1 and subpart 4 provisions as a part of the $PM_{2.5}$ SIP development process. Under subpart 4 provisions, the Imperial County has been classified as a "Moderate" $PM_{2.5}$ non-attainment area, CAA Section 188(a). PM2.5 "Moderate" nonattainment areas must attain the 2006 standard within five years of the effective date of U.S. EPA designation.

Imperial County is one of California's international gateways, in particular, Calexico shares a border with the densely populated city of Mexicali, Mexico. As is demonstrated in this SIP, the primary reason for elevated $PM_{2.5}$ levels in Imperial County is transport from Mexico. Essentially, this 2013 $PM_{2.5}$ SIP demonstrates attainment of the 2006 $PM_{2.5}$ NAAQS "but-for" transport of international emissions from Mexicali, Mexico. In accordance with section 179B of the CAA, this 2013 $PM_{2.5}$ SIP satisfies the attainment demonstration requirement satisfying the provisions of subpart 1 and subpart 4 of the CAA.

Elements in a revision to the SIP for the Imperial County $PM_{2.5}$ NA consist of the following: 1) an emission inventory; 2) 179B demonstration; 3) transportation conformity budgets; 4) updated NSR rule; 5) analysis of Reasonable Available Control Measures and Technologies (RACM/RACT); 6) assessment of Reasonable Further Progress (RFP); and, 7) contingency measures. (11)

2.6 EXISTING PROJECT SITE AIR QUALITY CONDITIONS

Existing air quality conditions at the Project site would generally reflect ambient monitored conditions as presented previously at Table 2-3.

3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will violate an air quality standard or contribute to an existing or projected air quality violation. Additionally, the Project has been evaluated to determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the SSAB is non-attainment under an applicable federal or state ambient air quality standard. The significance of these potential impacts is described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.) and the ICAPCD CEQA Air Quality Handbook. Based on these thresholds, a project would result in a significant impact related to air quality if it would (12):

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

OPERATIONAL THRESHOLDS

The ICAPCD has determined in their Guidelines that, because the operational phase of a proposed project has the potential of creating lasting or long term impacts on air quality, it is important that a proposed development evaluate the potential impacts carefully. Therefore, air quality analyses should compare all operational emissions of a project, including motor vehicle, area source, and stationary or point sources to the thresholds in Table 3-1 below. Table 3-1 provides general guidelines for determining the significance of impacts and the recommended type of environmental analysis required based on the total emissions that are expected from the operational phase of a project.

TIER I THRESHOLDS

From the ICAPCD's perspective, residential, commercial, and industrial developments with a potential to emit below the Tier I level will not be required to develop a Comprehensive Air Quality Analysis Report or an Environmental Impact Report. However, an Initial Study would be required to help the Lead Agency determine whether the project would have a less than significant impact. The Lead Agency is required by CEQA to disclose the identified environmental effects and the ways in which the environmental effects will be mitigated to achieve a level of

less than significant. To achieve a level of insignificance the Lead Agency should require the implementation of all feasible standard mitigation measures listed in Section 7.2 in the ICAPCD Guidelines. It is important to note that the measures identified in Section 7.2 do not represent a comprehensive list of all mitigation measures. Alternative mitigation measures may be proposed by the project proponent, the Lead Agency or the ICAPCD. The ICAPCD requires that alternative mitigation measures be fully documented with a copy of the documentation attached to the Initial Study. In addition, for some residential and commercial development projects, the developer may be required to implement off-site mitigation measures in order to reduce the air quality impacts further.

TIER II THRESHOLDS

Any proposed residential, commercial, or industrial development with a potential to meet or exceed Tier II Levels is considered to have a significant impact on regional and local air quality and, therefore required to implement all standard mitigation measures as well as all feasible discretionary mitigation measures. These measures must be listed and incorporated into the environmental document which is prepared by the Lead Agency. Typically, Tier II projects are required, by the Lead Agency, to prepare an EIR however, should a Lead Agency exempt a project from the development of an EIR the ICAPCD requires, at a minimum, a Comprehensive Air Quality Analysis Report (CAQAR). A properly developed CAQAR will identify the significant air quality impacts and the required mitigation measures associated with the project. A menu of standard and discretionary mitigation measures is listed in Sections 7.2 and 7.3. These mitigation measures serve to provide the project proponent with feasible measures to help reduce the air quality impacts identified in the CAQAR. In addition, residential, commercial, and industrial development projects may be required to implement off-site mitigation measures in order to reduce the air quality impacts further. All residential, commercial, and industrial projects are required to abide by off-site mitigation requirements under Section 7.4 of the ICAPCD Guidelines.

TABLE 3-1: MAXIMUM OPERATIONAL DAILY EMISSIONS REGIONAL THRESHOLDS

Pollutant	Tier I	Tier II
NOx	≤55 lbs/day	≥55 lbs/day
VOC	≤55 lbs/day	≥55 lbs/day
PM10	≤150 lbs/day	≥150 lbs/day
PM2.5	≤55 lbs/day	≥55 lbs/day
SOx	≤150 lbs/day	≥150 lbs/day
CO	≤550 lbs/day	≥550 lbs/day

CONSTRUCTION THRESHOLDS

Even though construction emissions are generally temporary in nature, they can have a temporary adverse impact on air quality. Construction, by its very nature may produce a variety of emissions however PM_{10} is the pollutant of greatest concern. While construction PM_{10} emissions can vary greatly depending on the phase of the construction, level of activity, and other factors, ICPACD states there are feasible mitigation or control measures which can be reasonably implemented to reduce PM_{10} emissions significantly. Because particulate emissions from construction activities have the potential of leading to adverse health effects as well as nuisance concerns, such as reduced visibility, all projects are required to mitigate construction impacts by regulation, i.e. ICAPCD Regulation VIII. Another source of construction related emissions comes from the use of diesel powered construction equipment which has been known to produce ozone precursor emissions and combustion related particulate emissions.

To help projects address these emissions The ICAPCD has also listed standard mitigation measures for construction equipment. The ICAPCD suggests that the approach of the CEQA analyses for construction PM_{10} impacts should be qualitative as opposed to quantitative. While a Lead Agency may elect to quantify construction emissions, the ICAPCD recommends the implementation of effective and comprehensive mitigation measures. Standard mitigation measures for construction equipment and fugitive PM_{10} must be implemented at all construction sites. However, Table 3-2 shows construction thresholds ICAPCD provides to serve as a guide for project developers and interested parties in determining the recommended type of mitigation measures.

TABLE 3-2: MAXIMUM CONSTRUCTION DAILY EMISSIONS REGIONAL THRESHOLDS

Pollutant	Tier I
NO_x	≤100 lbs/day
VOC	≤75 lbs/day
PM_{10}	≤150 lbs/day
$PM_{2.5}$	≤55 lbs/day
CO	≤550 lbs/day

3.3 CALIFORNIA EMISSIONS ESTIMATOR MODEL™ EMPLOYED TO ESTIMATE AQ EMISSIONS

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

On October 25, 2017, the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (13). Accordingly, the latest version of

CalEEMod™ has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendix 3.2.

3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the Project will result in emissions of NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO. Construction related emissions are expected from the following construction activities:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating
- Construction Workers Commuting

Construction is expected to commence in July 2018 and will last through September 2019. Construction duration by phase is shown on Table 3-3. The construction schedule utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.[1] The duration of construction activity was based on CalEEMod model defaults and consultation with the client. A detailed summary of construction equipment assumptions by phase is provided at Table 3-4. The associated construction equipment was based on CalEEMod model defaults and past project experience. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA guidelines. Site specific construction fleet may vary due to specific project needs at the time of construction. Please refer to specific detailed modeling inputs/outputs contained in Appendix 3.2 of this analysis.

Dust is typically a major concern during rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Project will require approximately 2,000 cubic yards of soil import.

[1] As shown in the California Emissions Estimator Model (CalEEMod) User's Guide Version 2016.3.2, Section 4.3.2 "OFFROAD Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

The Project site contains an existing asphalt pad which is reportedly 150 square feet in total size. This asphalt will be demolished prior to building construction.

Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips (construction materials delivered to the Project site) were estimated based on CalEEMod model defaults.

OFF-SITE UTILITY AND INFRASTRUCTURE IMPROVEMENTS

Construction emissions associated with off-site utility and infrastructure improvements may occur, however at this time, a specific schedule of off-site utility and infrastructure improvements is unknown. However, impacts associated with these expected activities are not expected to exceed the emissions identified for Project-related construction activities. As such, no impacts beyond what has already been identified in this report are expected to occur.

TABLE 3-3: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Demolition	7/1/2018	7/27/2018	20
Site Preparation	7/28/2018	8/10/2018	10
Grading	8/11/2018	9/7/2018	20
Building Construction	9/8/2018	7/26/2019	230
Paving	7/27/2019	8/23/2019	20
Architectural Coating	8/24/2019	9/20/2019	20

TABLE 3-4: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Activity	Equipment	Number	Hours Per Day
Demolition	Concrete/Industrial Saws	1	8
	Excavators	3	8
	Rubber Tired Dozers	1	8
	Tractors/Loaders/Backhoes	3	8
Site Preparation	Graders	1	8
	Rubber Tired Dozers	3	8
	Tractors/Loaders/Backhoes	4	8
Grading	Excavators	1	8
	Graders	1	8
	Rubber Tired Dozers	1	8
	Tractors/Loaders/Backhoes	3	8
Building Construction	Cranes	1	8
	Forklifts	3	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	3	8
	Welders	1	8
Paving	Paving Equipment	2	8
	Rollers	2	8
	Pavers	2	8
Architectural Coating	Air Compressors	1	8

3.4.1 CONSTRUCTION EMISSIONS SUMMARY

Without Mitigation

The estimated maximum daily construction emissions without Mitigation are summarized on Table 3-5. Detailed construction model outputs are presented in Appendix 3.2. Under the assumed scenarios, emissions resulting from the Project construction would not exceed numerical thresholds established by the ICAPCD for any criteria pollutant. Therefore, a less than significant impact would occur.

TABLE 3-5: EMISSIONS SUMMARY OF CONSTRUCTION (WITHOUT MITIGATION)

Year	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2018	5.12	55.44	25.54	0.05	10.17	6.51
2019	16.18	24.10	19.67	0.03	1.60	1.36
Maximum Daily Emissions	**16.18**	**55.44**	**25.54**	**0.05**	**10.17**	**6.51**
ICAPCD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO. Operational emissions would be expected from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions

3.5.1 AREA SOURCE EMISSIONS

Architectural Coatings

Over a period of time the buildings that are part of this Project will be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of Project maintenance. The emissions associated with architectural coatings were calculated using the CalEEMod model.

Consumer Products

Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on assumptions provided in the CalEEMod model. In the case of the commercial uses proposed by the Project, no substantive on-site use of consumer products is anticipated.

Landscape Maintenance Equipment

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod model.

3.5.2 ENERGY SOURCE EMISSIONS

Combustion Emissions Associated with Natural Gas and Electricity

Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the Project area are located either outside the region (state) or offset through the use of pollution credits (RECLAIM) for generation within the SSAB, criteria pollutant emissions from offsite generation of electricity is generally excluded from the evaluation of significance and only natural gas use is considered. The emissions associated with natural gas use were calculated using the CalEEMod model.

3.5.3 MOBILE SOURCE EMISSIONS

Vehicles

Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the vehicle miles traveled. Project-related operational air quality impacts derive primarily from vehicle trips generated by the Project. Trip characteristics available from the report, Imperial County Office of Education Traffic Impact Analysis (Linscott, Law & Greenspan, Engineers 2018) were utilized in this analysis (14).

Fugitive Dust Related to Vehicular Travel

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust inclusive of tire wear particulates. The emissions estimates for travel on paved roads were calculated using the CalEEMod model.

3.5.4 OPERATIONAL EMISSIONS SUMMARY

Operational-source emissions are summarized on Table 3-7. As shown, Project operational-source emissions would not exceed the applicable ICAPCD regional thresholds of significance. Therefore, a less than significant impact would occur and no mitigation is required.

TABLE 3-7: SUMMARY OF PEAK OPERATIONAL EMISSIONS (1 OF 2)

Operational Activities – Summer Scenario	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source	0.57	1.10E-04	0.01	0.00	4.00E-05	4.00E-05
Energy Source	2.22E-03	0.02	0.02	1.20E-04	1.54E-03	1.54E-03
Mobile	3.04	17.85	24.98	0.05	2.34	0.66
Total Maximum Daily Emissions	**3.61**	**17.87**	**25.01**	**0.05**	**2.35**	**0.66**
ICAPCD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

TABLE 3-7: SUMMARY OF PEAK OPERATIONAL EMISSIONS (2 OF 2)

Operational Activities – Winter Scenario	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source	0.57	1.10E-04	0.01	0.00	4.00E-05	4.00E-05
Energy Source	2.22E-03	0.02	0.01	1.20E-04	1.54E-03	1.54E-03
Mobile	2.30	17.69	22.06	0.05	2.35	0.66
Total Maximum Daily Emissions	**2.87**	**17.71**	**22.09**	**0.05**	**2.35**	**0.66**
ICAPCD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

3.6 CO "HOT SPOT" ANALYSIS

The Project would not result in potentially adverse CO concentrations or "hot spots." As such, detailed modeling of Project-specific carbon monoxide (CO) "hot spots" is not needed to reach this conclusion.

It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels and implementation of control technology on industrial facilities, CO concentrations in the Project vicinity have historically been within acceptable limits and have not exceeded the state or federal standards in years.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. Therefore, a less than significant impact is expected as a result of the Project.

3.7 CLEAN AIR PLAN

The current Clean Air Plans in the Project area include the ozone Air Quality Attainment Plan (AQAP) and PM_{10} State Implementation Plan (SIP). The basis for the Clean Air Plans is the distribution of population in the region, which is based in part on the land uses established by the General Plan. The County of Imperial designates the Project site as General Agriculture, which is primarily intended for limited agriculture uses and agricultural related compatible uses (15). Some land uses conditionally permitted under the A2 designation include electrical generation plants, flood control facilities, and public agency structures (16). The Project proposed includes the construction of a 21,685 square-foot administrative annex building for the Imperial County Office of Education. The building would be located on a 5.932-acre parcel and the remaining land would continue to be used for agricultural purposes. As such, the Project is permitted or conditionally permitted under the General Plan. The Furthermore, the Project would not exceed the applicable ICAPCD regional thresholds. As such, the Project would not conflict with the applicable Clean Air Plans.

3.8 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Sensitive receptors can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

As previously noted, the Project proposes to construct a public aquatics center, which is an amenity to the residents within the community. Furthermore, the Project would not exceed the applicable ICAPCD regional thresholds nor have the potential to create a CO hot spot. As such, impacts would be less than significant.

3.9 ODORS

The potential for the Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The Project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities and the temporary storage of typical solid waste (refuse) associated with the proposed Project's (long-term operational) uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction and is thus considered less than significant. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the City's solid waste regulations. Therefore, odors associated with the proposed Project construction and operations would be less than significant and no mitigation is required.

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4 FINDINGS & CONCLUSIONS

4.1 CONSTRUCTION-SOURCE EMISSIONS

REGIONAL IMPACTS

For regional construction-source emissions, the Project would not exceed the numerical thresholds of significance established by the ICAPCD. As such, no mitigation is required and a less than significant impact would occur. Consequently, Project construction-source emissions would not cause or substantively contribute to violation of the CAAQS NAAQS.

Project construction-source emissions would not conflict with the applicable Clean Air Plans. As discussed herein, the Project will comply with all applicable ICAPCD construction-source emission reduction rules and guidelines.

ODORS

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less-than-significant.

4.2 OPERATIONAL-SOURCE EMISSIONS

REGIONAL IMPACTS

For regional operational-source emissions, the Project would not exceed the regional thresholds of significance established by the ICAPCD for any criteria pollutant. Thus a less than significant impact would occur for Project-related operational-source emissions and no mitigation is required.

Project traffic will not cause or result in CO hotspots. Project operational-source emissions would therefore not adversely affect sensitive receptors within the Study Area.

Project operational-source emissions would not conflict with the applicable Clean Air Plans. As discussed herein, Project features and attributes are consistent with and support air pollution reduction strategies and attainment goals articulated in the Clean Air Plans.

ODORS

Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential sources of operational odors generated by the Project would include disposal of miscellaneous commercial refuse. Consistent with applicable requirements, all

Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations. Potential operational-source odor impacts are therefore considered less-than-significant.

5 REFERENCES

1. **Imperial County Air Pollution Control District.** *CEQA Air Quality Handbook.* El Centro : s.n., 2007.
2. **California Air Resources Board.** Ambient Air Quality Standards (AAQS). [Online] 2013. [Cited: April 6, 2015.] http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.
3. **Imperial Valley Air Quality.** Current Conditions. [Online] http://www.imperialvalleyair.org/.
4. **California Air Resource Board.** Top 4 Summary: Select Pollutant, Years, & Area. [Online] https://www.arb.ca.gov/adam/topfour/topfour1.php.
5. **Air Resources Board.** Air Quality Standards and Area Designations. [Online] 2012. [Cited: November 13, 2013.] http://www.arb.ca.gov/desig/desig.htm.
6. **Environmental Protection Agency.** Currently Designated Nonattainment Areas for All Criteria Pollutants. [Online] 2013. http://www.epa.gov/oaqps001/greenbk/ancl.html.
7. **California Air Resources Board.** Top 4 Summary: Select Pollutant, Years, & Area. [Online] https://www.arb.ca.gov/adam/topfour/topfour1.php.
8. **South Coast Air Quality Management District.** 2012 Air Quality Management Plan (AQMP). [Online] 2012. [Cited: September 17, 2014.] http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan.
9. **Environmental Protection Agency.** Air Pollution and the Clean Air Act. [Online] [Cited: September 17, 2014.] http://www.epa.gov/air/caa/.
10. **Air Resources Board.** California Ambient Air Quality Standards (CAAQS). [Online] 2009. [Cited: September 17, 2014.] http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm.
11. **Imperial County Air Pollution Control District.** Imperial County 2013 State Implementation Plan for the 2006 24-hour PM2.5 Moderate Nonattainment Area. [Online] December 2, 2014. https://www.arb.ca.gov/planning/sip/planarea/imperial/Final_PM2.5_SIP_%28Dec_2,_2014%29_Approved.pdf.
12. **California Environmental Quality Act.** Checklist. [Online] [Cited: Nnovember 13, 2013.] http://ceres.ca.gov/ceqa/guidelines/Appendix_G.html.
13. **California Air Pollution Control Officers Association (CAPCOA).** California Emissions Estimator Model (CalEEMod). [Online] September 2016. www.caleemod.com.
14. **Linscott, Law & Greenspan, Engineers.** *Imperial County Office of Education Traffic Impact Analysis.* 2018.
15. **Imperial County.** Imperial County Planning & Development Services Department. [Online] ftp://ftp.co.imperial.ca.us/icpds/eir/cluster-I-solar/15ch3-landuse-planning.pdf.
16. **County of Imperial.** Zoning Areas Established. [Online] http://www.icpds.com/CMS/Media/TITLE-9-DIVISION-5-AMENDED-10-24-17.pdf.
17. **City of El Centro.** City of El Centro Zoning Ordinance. *Municode.* [Online] https://www.municode.com/library/ca/el_centro/codes/code_of_ordinances?nodeId=CICO_CH29ZO_ARTIIZO_DIV6LIUSZO.

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6 CERTIFICATION

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Imperial County Office of Education Project. The information contained in this air quality impact assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

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AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
AB2588 Regulatory Standards – Trinity Consultants • November, 2006
Air Dispersion Modeling – Lakes Environmental • June, 2006

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APPENDIX 3.1:

STATE/FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS

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APPENDIX 3.2:

CALEEMOD EMISSIONS MODEL OUTPUTS

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