APPENDIX C

AIR QUALITY ASSESSMENT (REVISED, JULY 2012)

AIR QUALITY ASSESSMENT

Campo Verde Solar
County of Imperial

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EXECUTIVE SUMMARY

This air quality analysis has been completed to determine impacts, which may be associated with the construction and operation of the proposed Campo Verde Solar Energy Project (Project). The Project site is made up of agricultural lots totaling 1,990 acres. The Project consists of installing solar panels and ancillary equipment throughout the entire project site.

During construction, the proposed Project would be expected to produce significant impacts for ~~both~~ Particulate Matter ~~and Oxides of Nitrogen~~ or PM_{10} ~~and NO_x~~. These impacts were found to be fully mitigated through the implementation of the required Imperial County Air Pollution Control Districts (ICAPCD) mitigation measures and regulations under the California Environmental Quality Act (CEQA). No significant CO, oxides of nitrogen (NOx) or ROG impacts are expected during this period.

PM_{10} impacts were found to be reduced to levels considered less than significant primarily through the following methods.

1. *Apply water during grading/grubbing activities to all active disturbed areas as needed to comply with its Dust Control Plan and comply with the ICAPCD's opacity limits.*
2. *Apply water to all onsite roadways as needed to comply with its Dust Control Plan and comply with the ICAPCD's opacity limits.*

~~1. Apply water during grading/grubbing activities to all active disturbed areas at least twice daily.~~
~~2. Apply water to all onsite roadways at least three times daily or use of magnesium chloride or other County approved dust suppression additives and apply water one time daily.~~
~~3. Reduce all construction related traffic speeds onsite to below 15 Miles per Hour (MPH).~~

~~NOx emissions would be reduced below significance through the implementation~~ The project will be required to use Tier 2 equipment as defined by the EPA as necessary to comply with the CARBs Airborne Toxic Control Measure (ATCM) requirements and would also be required to implement ~~of~~ ICAPCDs required mitigation measures. Utilizing these measures ~~and would~~ demonstrate that the project would not be expected to exceed the ~~100 lb/day~~ threshold of significance for NOx established by the ICAPCD as

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required by ICAPCD and CEQA. ~~The primary reduction measures required are shown below and it should be noted that the required reduction measures are part of ICAPCD's typical mitigation measures – therefore, no additional measures for NOx control would be required:~~

~~*Use Diesel Oxidation Catalyst on all diesel equipment*~~

Additionally, a screening-level health risk assessment was conducted to determine the potential for the Project to result in a significant impact on nearby sensitive receptors during short-term construction activities. For purposes of this analysis, the primary pollutant of concern is diesel particulate matter (DPM) which is emitted by the operation of heavy diesel equipment during construction activities. The health risk assessment indicates that the proposed Project would not result in a significant impact to either existing or future sensitive receptors. However, because the health risk assessment determined that the Project would increase cancer risk between 1 and 10 per million, T-BACT approved technologies would need to be implemented. But it should be noted that ~~mitigation~~ CARBs ATCM requirements ~~for~~ and the use of Tier 2 construction equipment~~NOx reductions~~ would be considered T-BACT and would be acceptable under CEQA. Also, it was found that the worst case emission plume could extend out to 2,000 meters.

Cumulatively, the Project would not be expected to incrementally add emissions to any Reasonably Foreseeable (RF) projects as the RF projects are either not going to be under peak construction simultaneous during the proposed Project's peak emission period or the RF projects' estimated worst-case construction emissions would not overlap ~~with~~ the proposed Project's worst-case estimated construction emissions. In other words, no significant RF Project peak construction is either going to coincide simultaneously or be within a 4,000-meter radius of the proposed Project. Therefore, no cumulative health risk impacts are expected and no mitigation for cancer risk would be necessary.

The Project does not have any unmitagable impacts with respect to ozone precursors or PM10 as compared to County standards during the daily construction activities and since the other RF projects are either not going to be under construction simultaneously or are considerably distant from the project. Therefore, cumulative impacts would not be expected from the daily construction activities.

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~~Finally, the~~The proposed Project would not ~~be expected to~~ generate significant operational impacts offsite either during construction or during post construction operations. The project would add 50 worst-case daily trips to nearby roads, which is considered incrementally insignificant. Comparing these trips to only two of largest projects within the "Reasonably Foreseeable" (RF) cumulative network, the project would only incrementally add 0.1% to the network. Therefore, no cumulative operational impacts are expected.

~~Additionally~~Finally, the project would not be expected to generate offensive objective odors during ~~these~~either the construction or operation of the project. ~~periods as well.~~

~~The Project does not have any unmitagable impacts with respect to ozone precursors or PM10 as compared to County standards during the daily construction activities and since the other RF projects are either not going to be under construction simultaneously or are considerably distant from the project. Therefore, cumulative impacts would not be expected from the daily construction activities.~~

~~Finally, the proposed Project would not be expected to generate operational impacts offsite either during construction or during post construction operations. Additionally, the project would not be expected to generate offensive objective odors during these periods as well.~~

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1.0 INTRODUCTION

The purpose of this Air Quality study is to determine whether potential air quality impacts are significant under the California Environmental Quality Act (CEQA) and Imperial County Air Pollution Control District (ICAPCD), if any, that may be created during the construction or operation of the proposed Campo Verde Solar Project. The Project site is spread out and encompasses various agricultural lots totaling 1,990 acres. The Project is within the County of Imperial west of the City of Calexico. Additionally, portions of the Gen-Tie line would traverse through federal lands under the control of the Bureau of Land Management (BLM.)

1.1 Project Location

The Project is a proposed solar photovoltaic (PV) energy-generating facility located in the County approximately 7 miles southwest of the community of El Centro, California. The Project site is south of I-8 and west of Drew Road and northeast of Westside Main Canal. The Project site is located in the Salton Sea Air Basin (SSAB). The general location of the Project is shown below in Figure 1-A. The Project site includes several parcels which total approximately 1,990 acres of private lands that have been used for agriculture. A Project overview and layout is provided in Figure 1-B below.

1.2 Project Description

The Project is being developed to sell its electricity and all renewable and environmental attributes to an electric utility purchaser under a long-term contract to help meet California renewable goals. The applicant has a long-term Power Purchase Agreement (PPA) with San Diego Gas and Electric (SDG&E) to purchase output from the Project.

The Project would use First Solar PV modules that are generally non-reflective and convert sunlight into direct current (DC) electricity. The DC output of multiple rows of PV modules is collected through one or more combiner boxes and directed to an inverter that converts the DC electricity to alternating current (AC) electricity. From the inverter, the generated energy flows to a transformer where it is stepped up to distribution level voltage (approximately 34.5 kV). Multiple transformers are

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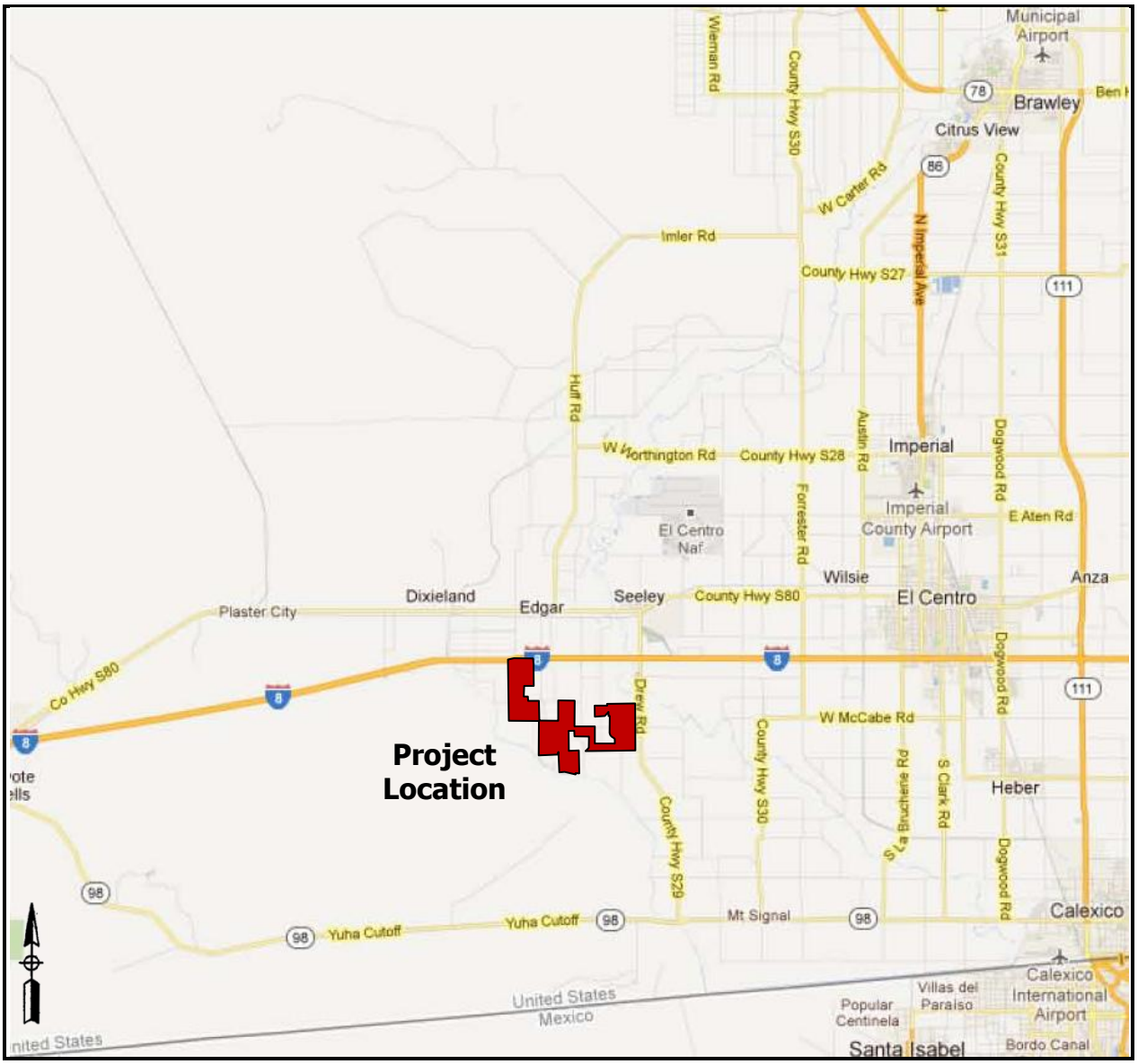
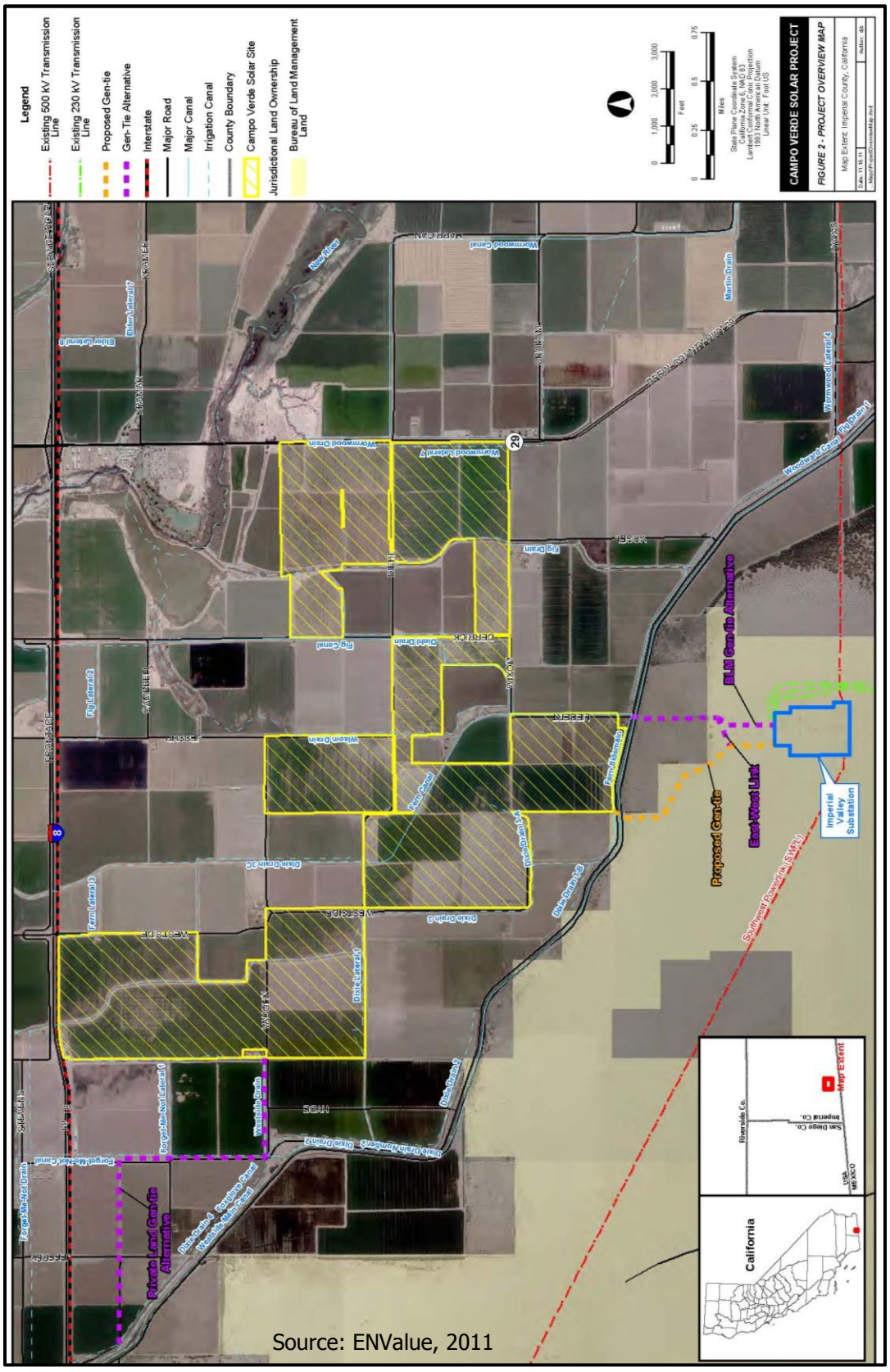
connected in parallel via 34.5 kV lines to the Project substation, where the power will be stepped up to 230 kV.

Figure 1-A: Project Vicinity Map and Project Footprint



Source: Google Maps, 12/11

Figure 1-B: Project Area Overview Map



Source: ENValue, 2011

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The main components of the Project are:

- The installation of PV Panels
- Power Conversion Stations (PCS)
- 1000V DC collection system comprised of underground cabling and combiner boxes
- Medium voltage (12 kV and/or 34.5 kV) collection system
- Photovoltaic Combining Switchgear (PVCS)
- A Project Substation with 34.5 kV to 230kV/220kV step-up transformer(s) and switchyard
- Meteorological stations
- O&M buildings with parking and other associated facilities
- Telecommunications equipment

Construction of the Project includes site preparation, foundation construction, erection of equipment and structures, installation of electrical systems, control systems, and start-up/testing. These construction activities are expected to require approximately 12 to 24 months. The applicant anticipates construction to start in the second quarter of 2012 following approval of a Conditional Use Permit (CUP) by the County. According to the applicant, the construction workforce is expected to reach a peak during month number seven (7), anticipated to occur during the 1st quarter of 2013, with a peak of up to 325 daily vehicles for construction workers and 50 daily truck deliveries. It was assumed that these trucks would travel an average of 150 miles to the project site which is the average distance between trips originating in San Diego and ~~T~~trips originating in Long-Beach or Los Angeles.

During operations and maintenance, the Project will primarily operate during daylight hours and will require (on average) less than 10 fulltime personnel for operations and maintenance. Operations personnel include employees running the facility, security, and any other work associated with the operations. Maintenance personnel include employees addressing maintenance on a daily basis. On average, the operations and maintenance trip generation is estimated at about 20 daily trips with approximately 10 AM and 10 PM peak hour trips but on occasion could reach 50 trips.

During operations, ~~all~~ it is assumed that PV modules at the site will ~~require~~ be ~~washing~~ washed at ~~an~~ a ~~estimated~~ worst-case frequency of one to four times each

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year (Note: ~~this~~module washing is not expected to be required). Washing the modules is estimated to require up to 10 daily water trucks over approximately 15 business days. During the washing period, the total project daily traffic may increase to 40 or 50 daily trips over a 15 business day period. It is not known how many miles will be traveled to the site each day however; LDN consulting assumed a worst-case distance of 112 miles or the equivalent for a trip from San Diego to the project site. This estimate is highly unlikely but was computed as a worst-case long haul distance for operations. Utilizing these estimates, 5,625 miles per day was assumed for operations.

~~Since the operations and maintenance traffic generation is significantly less than the construction traffic generation, the higher and more conservative construction trip generation is used to determine potential Project transportation related impacts. In other words, the construction phase was used for the analysis because it is calculated to generate significantly higher traffic than the Project operations and maintenance.~~

~~111 miles from Campo Verde to San Diego by Driving~~

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2.0 EXISTING ENVIRONMENTAL SETTING

2.1 Existing Setting

All of the parcels that comprise the Solar Facility site are used as agricultural lands. Most of the 1,990 acres are in active agricultural production of non-food crops (predominantly forage crops such as Bermuda grass and alfalfa). The project site is also transected by irrigation canals, ditches and public roads. The Gen-the line will traverse through federal lands managed by the Bureau of Land Management (BLM). Overall, the Project site is relatively flat with elevations ranging from 20 to 25 feet below sea level.

Existing operations on these properties is mainly for agriculture where operations typically include heavy agricultural equipment to till the soil, fertilizers, maintenance of the crops. Harvest periods and in some cases agricultural burns to remove excess plant matter occur on an annual basis, which are known to produce high levels of PM emissions through dust.

2.2 Climate and Meteorology

Climate within the SSAB experiences mild and dry winters with daytime temperatures ranging from 65 to 75 ºF, extremely hot summers with daytime temperatures ranging from 104 to 115 ºF, and very little rain. Imperial County usually receives approximately three inches of rain per year mostly occurring in late summer or midwinter. Summer weather patterns are dominated by intense heat induction low-pressure areas over the interior desert. The flat terrain of the Imperial Valley and the strong temperature differentials created by intense solar heating produce moderate winds and deep thermal convection.

The general wind speeds in the area are less than 10 mph, but occasionally experience winds speeds of greater than 30 mph during the months of April and May. Statistics reveal that prevailing winds blow from the northwest-northeast; a secondary trend of wind direction from the southeast is also evident.

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2.3 Regulatory Standards

2.3.1 Federal Standards and Definitions

The Federal Air Quality Standards were developed per the requirements of the federal Clean Air Act, which was passed in 1970 and amended in 1990. This law provides the basis for the national air pollution control effort. The Clean Air Act established two types of air quality standards; primary and secondary standards. ***Primary Standards*** define limits for the intention of protecting public health, which includes sensitive populations such as asthmatics, children and the elderly. ***Secondary Standards*** define limits to protect public welfare which includes protection against decreased visibility, damage to animals, crops, vegetation and buildings.

The Environmental Protection Agency (EPA) Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards (NAAQS) for "criteria" pollutants which are defined below:

1. ***Carbon Monoxide (CO):*** *is a colorless, odorless, and tasteless gas and is produced from the partial combustion of carbon-containing compounds, notably in internal-combustion engines. CO usually forms when there is a reduced availability of oxygen present during the combustion process. Exposure to CO near the levels of the ambient air quality standards can lead to fatigue, headaches, confusion, and dizziness. CO interferes with the blood's ability to carry oxygen.*
2. ***Lead (Pb):*** *is a potent neurotoxin that accumulates in soft tissues and bone over time. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Because lead is only slowly excreted, exposures to small amounts of lead from a variety of sources can accumulate to harmful levels. Effects from inhalation of lead near the level of the ambient air quality standard include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms can include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children.*
3. ***Nitrogen Dioxide (NO_2):*** *is a reactive, oxidizing gas capable of damaging cells lining the respiratory tract and is one of the nitrogen oxides emitted from high-temperature combustion, such as those occurring in trucks, cars, power plants, home heaters, and gas stoves. In the presence of other air contaminants, NO_2 is usually visible as a reddish-brown air layer over urban areas. NO_2 along with other traffic-related pollutants is associated with respiratory symptoms, respiratory illness and respiratory impairment. Studies in animals have reported biochemical, structural, and cellular changes in the lung when exposed to NO_2 above the level of the current state air quality standard.*

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Clinical studies of human subjects suggest that NO_2 exposure to levels near the current standard may worsen the effect of allergens.

4. ***Particulate Matter (P_{M10} or $P_{M2.5}$):*** *is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary in shape, size and chemical composition, and can be made up of multiple materials such as metal, soot, soil, and dust. P_{M10} particles are 10 microns (µm) or less and $P_{M2.5}$ particles are 2.5 (µm) or less Exposure to PM levels exceeding current air quality standards increases the risk of allergies such as asthma and respiratory illness.*
5. ***Ozone (O_3)****: is a highly oxidative unstable gas capable of damaging the linings of the respiratory tract. This pollutant forms in the atmosphere through reactions between chemicals directly emitted from vehicles, industrial plants, and many other sources. Exposure to ozone above ambient air quality standards can lead to human health effects such as lung inflammation, tissue damage and impaired lung functioning.*
6. ***Sulfur Dioxide (SO_2)****: is a gaseous compound of sulfur and oxygen and is formed when sulfur-containing fuel is burned by mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing. Effects from SO_2 exposures at levels near the one-hour standard include bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, especially during exercise or physical activity. Continued exposure at elevated levels of SO_2 results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality.*

2.3.2 State Standards and Definitions

The State of California Air Resources Board (ARB) sets the laws and regulations for air quality on the state level. ARB has established the California Ambient Air Quality Standards (CAAQS), which include the six federal criteria air pollutants identified as well as the following four air pollutants. The CAAQS are either the same as or more restrictive than the NAAQS. Table 2.1 on the following page identifies both the NAAQS and CAAQS.

1. ***Visibility Reducing Particles****: particles in the air that obstruct visibility.*
2. ***Sulfates****: are salts of Sulfuric Acid. Sulfates occur as microscopic particles (aerosols) resulting from fossil fuel and biomass combustion. They increase the acidity of the atmosphere and form acid rain.*
3. ***Hydrogen Sulfide (H_2S)****: is a colorless, toxic and flammable gas with a recognizable smell of rotten eggs or flatulence. Usually, H_2S is formed from bacterial breakdown of organic matter. Exposure to low concentrations of hydrogen sulfide may cause irritation to the eyes, nose, or throat.*
4. ***Vinyl Chloride****: is also known as chloroethene and is a toxic, carcinogenic, colorless gas with a sweet odor. It is an industrial chemical mainly used to produce its polymer, polyvinyl chloride (PVC).*

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Table 2.1: Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	**Average Time**	**California Standards[1]**		**Federal Standards[2]**		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m3)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m3)		0.075 ppm (147 µg/m3)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m3	Gravimetric or Beta Attenuation	150 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m3		-		
Fine Particulate Matter PM2.5	24 Hour	No Separate State Standard		35 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m3	Gravimetric or Beta Attenuation	15 µg/m3		
Carbon Monoxide (CO)	8 hour	9.0 ppm (10mg/m3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m3)	None	Non-Dispersive Infrared Photometry
	1 hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m3)		-	-	-
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m3)[8]	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m3)		0.100 ppm[8]	None	
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 µg/m3)	Ultraviolet Fluorescence	-	-	Ultraviolet Flourescence; Spectrophotometry (Pararoosaniline Method)[9]
	3 Hour	-		-	0.5 ppm (1300 µg/m3)	
	1 Hour	0.25 ppm (655 µg/m3)		75 ppb (196 µg/m3) (See Footnote 9)	-	
Lead[10]	30 Day Average	1.5 µg/m3	Atomic Absorption	-		-
	Calendar Quarter			1.5 µg/m3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average			0.15 µg/m3		
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more (0.07 -30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape				
Sulfates	24 Hour	25 µg/m3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m3)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing articles, 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 averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone 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 PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 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 U.S. EPA for further clarification and current federal 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 procedure 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 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 EPA.
8. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010). Note that the EPA 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 standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
9. On June 2, 2010, the U.S. EPA established a new 1-hour SO2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. EPA also proposed a new automated Federal Reference Method (FRM) using ultraviolet technology, but will retain the older pararosaniline methods until the new FRM have adequately ~~permeated~~ permitted State monitoring networks. The EPA also revoked both the existing 24-hour SO2 standard of 0.14 ppm and the annual primary SO2 standard of 0.030 ppm, effective August 23, 2010. The secondary SO2 standard was not revised at that time; however, the secondary standard is undergoing a separate review by EPA. Note that the new standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the new primary 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.
10. 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.
11. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Source: California Air Resources Board (9/8/10)

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2.3.3 Regional Standards

The State of California has 35 specific air districts, which are each responsible for ensuring that the criteria pollutants are below the NAAQS and CAAQS. Air basins that exceed either the NAAQS or the CAAQS for any criteria pollutants are designated as "non-attainment areas" for that pollutant. Currently, there are 15 non-attainment areas for the federal ozone standard and two non-attainment areas for the PM2.5 standard. The state therefore created the California State Implementation Plan (SIP), which is designed to provide control measures needed for California Air basins to attain ambient air quality standards.

The Imperial County Air Pollution Control District (ICAPCD) is the government agency which regulates stationary sources of air pollution within Imperial County and the SSAB. Currently, the SSAB is in "non-attainment" status for O_3 and serious non-attainment of PM10. Therefore, the ICAPCD developed an Ambient Air Quality Plan (AAQP) to provide control measures to try to achieve attainment status. The AAQP was adopted in 1991. A new NAAQS for ozone was adopted by EPA in 1997 and required modified strategies to decrease higher ozone concentrations. In order to guide non-attainment areas closer to NAAQS requirements an 8-hr Ozone Air Quality Management Plan (AQMP) was approved by ICAPCD in 2009 and was accepted by the EPA in 2010. Similarly, in 2009 the County revised there SIP to address the serious non-attainment status of PM 10. The purpose of the SIP is to outline a plan that would provide attainment status as expeditiously as possible and require a 5% yearly reduction of emissions. The criteria pollutant standards are generally attained when each monitor within the region that has had no exceedances during the previous three calendar years.

2.4 California Environmental Quality Act (CEQA) Significance Thresholds

The California Environmental Quality Act has provided a checklist to identify the significance of air quality impacts. These guidelines are found in Appendix G of the CEQA Guidelines. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

A: Conflict with or obstruct implementation of the applicable air quality plan?

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B: Violate any air quality standard or contribute substantially to an existing or project air quality violation?

C: 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 releasing emissions which exceed quantitative thresholds for ozone precursors)?

D: Expose sensitive receptors to substantial pollutant concentrations?

E: Create objectionable odors affecting a substantial number of people?

2.5 ICAPCD Air Quality Impact Assessment Screening Thresholds (CEQA)

The ICAPCD has established significance thresholds in the 2007 ICAPCD CEQA Handbook for the preparation of Air Quality Impact Assessments (AQIA). The screening criteria within this handbook can be used to determine whether a project's total emissions would result in a significant impact as defined by CEQA. Should emissions be found to exceed these thresholds, additional modeling is required to demonstrate that the project's total air quality impacts are below the state and federal ambient air quality standards. These screening thresholds for construction and daily operations are shown in Table 2.2 below.

Table 2.2: Screening Threshold for Criteria Pollutants

Pollutant	Total Emissions (Pounds per Day)	
Construction Emissions		
Respirable Particulate Matter (PM_{10} and $PM_{2.5}$)	150	
Nitrogen Oxide (NO_x)	100	
Carbon Monoxide (CO)	550	
Reactive Organic Gases (ROG)	75	
Operational Emissions		
Pollutant	Tier ~~1~~ I (Pounds per Day)	Tier ~~2~~ II (Pounds per Day)
PM_{10} and Sulfur Oxide (SO_x)	< 150	150 or greater
NO_x and ROG	< 55	55 or greater
CO	< 550	550 or greater
Level of Significance:	Less Than Significant	Significant Impact
Level of Analysis:	Initial Study	Comprehensive Air Quality Analysis Report
Environmental Document:	Negative Declaration	Mitigated ND or EIR
Source: ICAPCD-CEQA Air Quality Handbook (11/2007)		

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The CEQA handbook further states that any proposed project with a potential to emit less than the Tier ~~1~~ I thresholds during operations may potentially still have adverse impacts on the local air quality and would be required to develop an Initial Study to help the Lead Agency determine whether the project would have a less than significant impact. On the other hand, if the proposed project's operational development fits within the Tier II classification, it is considered to have a significant impact on regional and local air quality. Therefore, Tier II projects are required to implement **all** standard mitigation measures as well as all feasible discretionary mitigation measures.

Additionally, ICAPCD defined standard mitigation measures for construction equipment and fugitive PM_{10} must be implemented at all construction sites. The implementation of mitigation measures discretionary, as listed in the ICAPCD CEQA handbook, apply to those construction sites which are 5 acres or more for non-residential developments such as the proposed Project. Additionally, in an effort to reduce PM_{10} or Fugitive Dust from ambient air, the Project would be required to develop a dust management plan consistent with ~~Rule 801~~ Regulation VIII of ICAPCD's Rules and Regulations. Additionally, the project shall not exceed the 20 percent opacity threshold under Rule 801.

Should the project be sufficiently large enough that operational mitigation measures simply cannot reduce pollutant levels below thresholds of significance, pollutant levels the ICAPCD has adopted the Operation Development Fee as was adopted under Rule 310 which provides the ICAPCD with a sound method for mitigating the emissions produced from the operation of new commercial and residential development projects. Projects ~~immitigable~~ ~~umn~~mitigable through standard procedures are assessed a one-time fee for either Ozone Precursors or PM_{10} impacts, which is based upon either the square footage of the commercial development or the number of residential units. ~~Operational impacts are not anticipated given that the project creates renewable energy and only is expected to add a peak of 50 daily traffic trips or less.~~ Impacts of this sort are calculated based on the assumption that the worst-case daily emissions are allowed for an entire year and then converted to an annual emission equivalent. Emissions exceeding annual thresholds would pay a fair share sum to reduce impacts to below significance.

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Furthermore, to be consistent with the California Air Resource Board, ICAPCD requires PM_{10} emitted by diesel powered construction equipment (DPM) to be analyzed. DPM can potentially increase the cancer risk for nearby residential receptors if any. Generally, sites increasing the cancer risk between one and ten in one million need to implement toxics best available control technology or impose effective emission limitations, emission control devices or control techniques to reduce the cancer risk. Finally, at no time shall the project increase the cancer risk to over 10 in one million.

2.6 Local Air Quality

Criteria pollutants are measured continuously throughout the County of Imperial and the data is used to track ambient air quality patterns throughout the County. As mentioned earlier, this data is also used to determine attainment status when compared to the NAAQS and CAAQS. The ICAPCD is responsible for monitoring four sites which collect meteorological and criteria pollutant data ~~which is~~ used by the district to assist with pollutant forecasting, data analysis and characterization of air pollutant transport. ~~and reporting~~ Also, ~~monitoring data and operates 10 monitoring sites~~a fifth monitoring locations is located in the City of Calexico which is monitored by CARB., ~~which collect data on criteria pollutants. Four additional sites collect meteorological data, which is used by the ICAPCD to assist with pollutant forecasting, data analysis and characterization of pollutant transport.~~

The monitoring stations that are closest to the proposed Project are the Grant Street and Ethel Street monitoring stations in Calexico, which are approximately 13 and 14 miles from the project site, respectively. Table 2.3 provides the criteria pollutant levels monitored at these two stations for 2008, 2009 and 2010, which is the most current data at this time. The criteria pollutants monitored closest to the Project [Ambient data was obtained from the California Environmental Protection Agency's Air Resources Board Website (Source: http://www.arb.ca.gov/adam)]. Figure 2-A below shows the relative locations of the ambient air quality monitoring sites.

Based on review of the ambient data, Both Ozone and PM emissions exceed AAQS and therefore are in non-attainment status. The 8 hour Ozone non-Attainment is considered moderate Non-Attainment while the 24-Hour PM10 is considered "Serious" Non-Attainment. Therefore, to comply with the ICAPCDs SIP and AAQP,

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the project must implement Best Available Control Measure (BACM) and BACT as outlined in Section 2.5 of this report above.

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Table 2.3: Latest Three-Year Ambient Air Quality data near Project Site

Pollutant	Closest Recorded Ambient Monitoring Site	Averaging Time	CAAQS	NAAQS	2008	2009	2010
O3 (ppm)	Calexico Ethel Street	1 Hour	0.09 ppm	-	**0.128**	**0.104**	**0.102**
	Calexico Ethel Street	8 Hour	0.070 ppm	0.075 ppm	**0.093**	**0.083**	**0.082**
PM10 (µg/m3)	Calexico Ethel Street	24 Hour	50 µg/m3	150 µg/m3	**110.5**	**275.9**	**112.6**
PM2.5 (µg/m3)	Calexico Ethel Street	24 Hour	-	35 µg/m3	**37.12**	**45.0**	**50.9**
	Calexico Ethel Street	Annual Arithmetic Mean	12 µg/m3	15 µg/m3	**N/A**	**18.7**	**12.7**
NO2 (ppm)	Calexico Ethel Street	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	0.015	0.014	0.014
	Calexico Ethel Street	1 Hour	0.18 ppm	-	0.146	0.102	0.080
CO	Calexico Ethel Street	8 Hour	9 ppm	9 ppm	6.34	7.46	4.46
ppm=Parts per Million N/A=Not Available for give year 2010 data is the latest data as of 1-13-2012							

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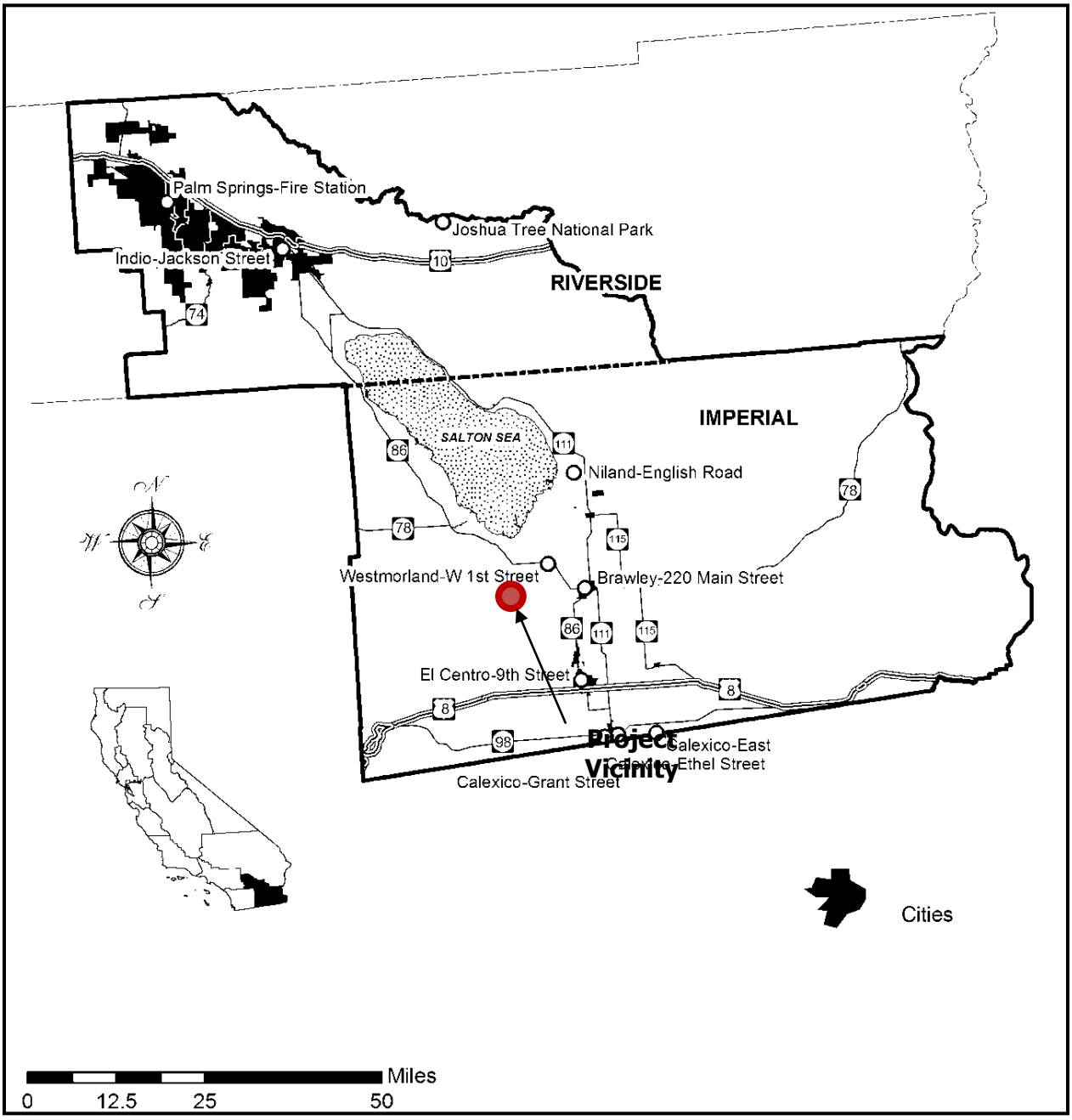
FIGURE 2-A: Ambient Air Quality Monitoring Stations (SSAB – ARB)



2.7 Construction Equipment Emissions Regulations

The United States EPA first began adopting emission standards for Nonroad Diesel Engines in 1994 and are published in the US Code of Federal Regulations, Title 40, Part 89. The EPA definition of nonroad engines is passed on the principle of mobility or portability and includes engines installed on self-propelled equipment, equipment

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that is propelled while performing its function or on equipment that is portable or transportable as indicated by the presence of wheels, skids, carrying handles, dolly, trailer or platform (Source: 40 CFR 1068.30) and includes diesel engines. The regulations are better known as the Tier 1-4 standards with each Tier generally requiring more stringent emission standards for diesel engines. This should not be confused with ICAPCD's Tier I and II operational thresholds. Originally this was limited to equipment sizes exceeding 50 HP however, in 1998 Tier 1 regulations were also adopted for equipment under 50hp and more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. The Tier 1-3 standards are met through advanced engine design, with no or only limited use of exhaust gas after treatment (oxidation catalysts) (Source: http://www.dieselnet.com/standards/us/nonroad.php). It should also be noted that Tier 3 standards only apply to engines greater than 50 hp and Tier 1 and -2 standards are required for all portable engines.

On May 11,2004, the EPA also signed the final rule introducing Tier 4 emissions standards, which are to be phased in over the period of 2008-2015 (Source: 69 FR 38957-39273, 29 Jun 2004). The requirements of Tier 4 standards require that emissions of PM and NOx be further reduced by 90% and can be achieved through control technologies including advanced exhaust gas after treatment. Table 2.4 on the following page identifies EPA Tier standards and compares each tiered standard with the previous tiered threshold to determine a best case control efficiency reduction.

In Addition to EPA emission standards, the project equipment will be required to adhere to the Airborne Toxic Control Measures (ATCM) as defined by the California Air Resource Board (CARB) that include the ATCM For Diesel Particulate Matter From Portable Engines Rated At 50 Horsepower and Greater. These latest standards are defined in 17 CCR § 93116 under section 93116.3. The general purpose of these requirements is to establish emission thresholds which meet the most current federal or state thresholds and then provide permits to equipment meeting such thresholds. EPA approved Tier 1 and -2 –equipment would be issued a permit to operate up until January 1, 2017 and would be exempt from additional permitting or requirements to show equipment meets latest federal or state emission standards and is found under 93116.3-b-(E)-2.

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Table 2.4: Tiered Emission Standards and NO_x and PM Reductions over Tier 1

Engine Power	Tier	CO (g/bhp·hr)	HC (g/bhp·hr)	NMHC+NOx (g/bhp·hr)	NOx (g/bhp·hr)	NOx (Percent Reduction from Lowest Tier)	PM (g/bhp·hr)	PM Percent Reduction from lowest Tier
<11	1	6	-	7.8	-		0.75	-
	2	6	-	5.6	-	28.21%	0.6	20.00%
	4	6	-	5.6	-	28.21%	0.3	60.00%
11-25	1	4.9	-	7.1	-		0.6	-
	2	4.9	-	5.6	-	21.13%	0.6	0.00%
	4	4.9	-	5.6	-	21.13%	0.3	50.00%
25-50	1	4.1	-	7.1	-		0.6	-
	2	4.1	-	5.6	-	21.13%	0.45	25.00%
	4	4.1	-	5.6	-	21.13%	0.22	63.33%
50-100	1	-	-	-	6.9		-	-
	2	3.7	-	5.6	-	18.84%	0.3	-
	3	3.7	-	3.6	-	47.83%	0.3	-
50-75	4	3.7	-	3.5	-	49.28%	0.22	26.67%
75-100	4	3.7	0.14	-	0.3	93.62%	0.15	50.00%
100-175	1	-		-	6.9		-	-
	2	3.7		4.9	-	28.99%	0.22	-
	3	3.7		3	-	56.52%	0.22	-
100-175	4	3.7	0.14	-	0.3	93.62%	0.15	31.82%
175-300	1	8.5	1	-	6.9		0.4	-
	2	2.6		4.9	-	37.97%	0.15	62.50%
	3	2.6		3	-	62.03%	0.15	62.50%
175-300	4	2.6	0.14	-	0.3	94.43%	0.15	62.50%
300-600	1	8.5	1	-	6.9		0.4	-
	2	2.6		4.8	-	39.24%	0.15	62.50%
	3	2.6		3	-	62.03%	0.15	62.50%
300-750	4	2.6	0.14	-	0.3	94.43%	0.15	62.50%

Source: US EPA Nonroad Emission Standards (Construction Equipment)
Percentage reductions were calculated on worst case standards only
Only the 2008 Tier 4 Standards are included in this table

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3.0 METHODOLOGY

3.1 Construction Emissions Calculations

Air quality impacts related to construction were calculated using the latest URBEMIS2007 air quality model, which was developed by CARB. URBEMIS2007 has been approved by ICAPCD and the County for construction emission calculations. URBEMIS incorporates emission factors from the EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions. Default settings were used within the model.

Cancer Risk will be determined for Diesel Particulate Matter (DPM) at the point of maximum exposure which is determined through dispersion modeling. The SCREEN3 dispersion model can be used to determine the maximum concentration for air pollutants at a calculated maximum radius from the project centroid. Ldn Consulting utilized the worst case exhaust emissions generated from the Project from construction equipment as calculated within the URBEMIS2007 model. The worst case cancer risk if exposed to a DPM dose for 70 years is defined as:

$$CR_{DPM} = C_{DPM} \times URF_{DPM}$$

Where, CR_{DPM} = Cancer risk from diesel particulate matter (DPM) (probability on an individual developing Cancer)
C_{DPM} = Annual average DPM concentration in µg/m3
URF_{DPM} = Unit risk factor is 0.0003 per continuous exposure of 1 µg/m^3 of DPM over 70-year period per person)
Source: Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling emissions for CEQA Air Quality Analysis (August 2003)

3.2 Construction Assumptions

Project construction activities are expected to require approximately 12 to 24 months of work. The applicant anticipates construction to start in the second quarter of 2012 following County approval of a Conditional Use Permit (CUP). According to the applicant, the construction workforce is expected to reach a peak

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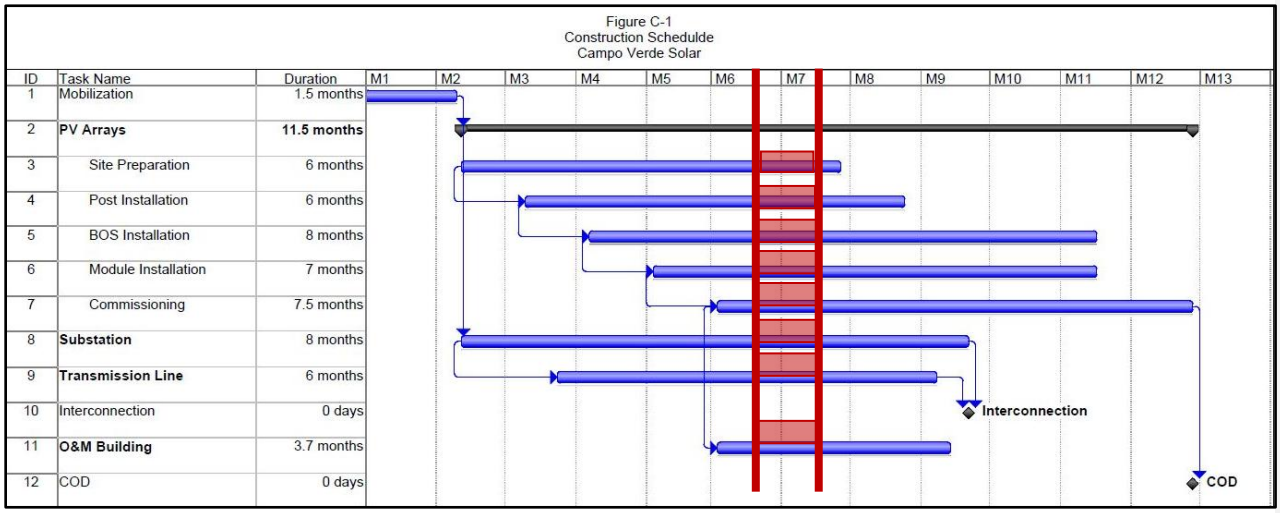
during month number seven (7), which is anticipated to occur during the 1st quarter of 2013. For purposes of analysis, it was assumed that all the construction would occur in a compressed 12 month period which would be considered worst-case as it would result in the highest annual emissions due to the shorter time period associated with construction activities and the need to use the same or an increased amount of equipment. Also, since ICAPCD thresholds are daily, this modeling condition would yield the highest emission concentration per day.

Ldn Consulting utilized the project engineer's worst case schedule which assumes that simultaneous construction activities may occur with PV Array and facility installations along transmission line installation. Again, this peak construction activity would occur during month seven of the project construction schedule (See Table 3.1 below) and would also be expected to generate 375 ADT from construction workers, deliveries and vendors. ~~URBEMIS~~The model was updated to include 325 trips for construction workers and 50 trips for vendors each day for a long-haul scenario. ~~T~~It was assumed that the vendor trips for construction materials could originate as far as San Diego, Los Angeles or Long Beach ~~for~~ which ~~construction materials~~ would be ~~delivered at~~ an average distance of 150 miles. Worker trips were also assumed in this scenario and were assumed to originate in the same location.

Table 3.1: Expected Worst-Case Construction Period (Month 7)



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The URBEMIS 2007 Model does not differentiate between phases other than Demolition, Mass Grading, Fine Grading, Trenching, Building Construction, Architectural Coating and Paving. During month seven, there will be Building Construction, Mass Grading, and Trenching and all modeled phases would be simultaneous as would be worst case for this project. All tasks identified within the month seven construction schedule were classified into these three construction emission sources for the model which are shown in Table 3.2 below. Furthermore, calculations based in this report utilize percentage reductions from Tier 1 to Tier 2 as identified in Table 2.4 above. URBEMIS2007 inputs from OFFROAD2007 ~~are~~ utilizi~~nge~~ non-tiered average emission factors as inputs. Demolition activities are not scheduled during this period and are not analyzed given demolition activities are scheduled during less intensive construction stages. These assumptions were then assumed during the entire year for a worst-case analysis.

~~3.3 Operational Impacts~~

~~Daily operations of the project will involve primarily periodic maintenance and worker trips only and although emissions are expected, they would be minimal given the project only expects to add 15 to 20 ADT daily and on occasion (up to four times annually) the project could add up to 50 ADT during periodic PV module cleaning periods. With this being said, for purposes of a worst case analysis, Ldn Consulting is modeling the daily trips with respect to construction (375 ADT) and reporting it as operations.~~

Table 3.2: Phase I Construction Equipment and Durations as Modeled

Equipment Identification	Proposed Dates	Quantity	Hours per day
Building Construction	1/01/2013 – 12/31/2013		
Rough Terrain Forklifts		15	1.7
Other Equipment		6	4
Cranes		4	7
Other General Industrial Equipment		3	4
Air Compressors		2	2
Forklifts		1	3.8
Aerial Lifts		1	1
Generator Sets		1	8
Tractors/Loaders/Backhoes		1	5
Welder			
Mass Grading	1/01/2013 – 12/31/2013		

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Graders		2	6.8
Rubber Tired Dozers		2	6.8
Water Trucks		4	6.8
Other Equipment		3	8
Rollers		2	6.8
Tractors/Loaders/Backhoes		2	6.8
Rough Terrain Forklifts		2	1.7
Trenching	1/01/2013 – 12/31/2013		
Other General Industrial Equipment		2	8
Tractors/Loaders/Backhoes		2	6.8
Trenchers		2	4.1
Excavators		1	4.5
Generator Sets		1	0.5
This equipment list is based upon equipment inventory within URBEMIS2007. The quantity and types are based upon assumptions from projects of similar size and scope.			

3.3 Operational Impacts

Daily operations of the project will involve primarily periodic maintenance and worker trips only. ~~and a~~Although emissions are expected, they would be minimal given the project only expects to normally add only 15 to 20 ADT daily during operations. Further, although PV module washing is not anticipated to be necessary, in order to assess the worst case it is assumed that~~and~~ on occasion (up to four times annually) ~~the project could add~~ up to 50 additional ADT during periodic PV module cleaning periods. ~~With this being said, f~~For purposes of providing a worst-case analysis, Ldn Consulting ~~is modeling the daily trips with respect to construction (375 ADT) and reporting it as operations.~~assumed that these occasional trips ~~were~~would occur daily and that the trips would originate over 112 miles away (or the equivalent of a trip originating in San Diego).

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4.0 FINDINGS

4.1 Construction Findings

Air quality impacts related to construction will be calculated using the latest URBEMIS2007 air quality model, which was developed by ARB. URBEMIS2007 has been approved by ICAPCD and the County for construction emission calculations. URBEMIS incorporates emission factors from the EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions.

Construction during the seventh month of the Project is considered worst-case (the highest amount of activity and equipment). This level of construction was assumed to ~~and was projected~~ occur ~~for~~over the ~~an~~ entire year to provide the most conservative estimate of construction impacts. A summary of the construction emissions including construction worker trips is shown in Table 4.1 below and the URBEMIS model outputs are provided as ***Attachment A*** of this report which shows detailed emission breakdowns for Off Road Diesel, Vendor and Worker trips to and from the construction site. These emissions are used to compare both Project related unmitigated and mitigated emissions with ICAPCD's significance thresholds as required by CEQA.

Nox and PM_{10} Exhaust calculations utilize URBEMISs mitigated outputs to report unmitigated emissions due to the fact the ICAPCD will require the contractor to utilize permitted equipment under CARBs ATCM requirements. All equipment will be required to utilize equipment with valid CARB PERP registrations. These requirements will require the contractor to meet or exceed the latest State ATCM standards.

Table 4.1: Expected Construction Emissions Summary (Pounds per Day)

Year	ROG	NO_x	CO	PM_{10} (Dust)	PM_{10} (Exhaust)	PM_{10} (Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exhaust)	$PM_{2.5}$ (Total)
201~~2~~3 (lb/day) Unmitigated	23.00~~17.92~~	90.61~~13 0.31~~	300.52~~9 9.92~~	198.89~~198.28~~	6.06~~7.59~~	206.15~~205.87~~	41.67~~41.44~~	6.68~~6.98~~	48.35~~48.42~~
Significance Threshold (lb/day)	75	100	550	-	-	150	-	-	150
ICAPCD Impact?	No	No~~YES~~	No	-	-	**Yes**	-	-	No

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201~~2~~3 (lb/day) Mitigated	23.00~~17~~.92	90.61~~93.~~59	300.52~~9~~9.92	89.99~~14.25~~	6.06~~7.59~~	96.05~~21.8~~4	18.93~~3.01~~	5.57~~6.98~~	24.50~~9.99~~
ICAPCD Impact?	No	No~~O~~	No	-	-	**No**	-	-	No

Given the findings identified in Table 4.1, ~~NO_x and~~ PM_{10} emissions would exceed ICAPCD air quality standards of ~~100 and~~ 150 lbs/day ~~respectively~~ and would require mitigation to comply. It should be noted that ICAPCD requires the use of ~~all~~ standard mitigation measures identified within the CEQA Air Quality Handbook which are shown later in this report. However, the following discretionary mitigation measures were found (through modeling) to reduce PM_{10} impacts ~~for these pollutants~~ to a level below significance under CEQA:

- ~~—~~PM_{10} impact mitigation required to reduce emission generation to below significance:

1. *Apply water during grading/grubbing activities to all active disturbed areas at least twice daily. which would have an assumed reduction efficiency of .55 for all dust emissions generated while grading.*
2. ~~*Apply water to onsite roadways at least threetwo times daily or use of magnesium chloride or other County approved dust suppression additives and apply water one time daily.*~~
2.
1. ~~*Reduce all construction related traffic speeds onsite to below 15 Miles per Hour (MPH).*~~

The above mitigation recommendations are based on control efficiencies established by SCAQMD CEQA air quality handbook and recommended within the URBEMIS 2007 air quality model and are accepted by ICAPCD. The CEQA handbook states that watering twice daily can reduce PM10 from 34-68% however; an average 55% was utilized as recommended by URBEMIS.

- ~~The [NO_x] impact mitigation measures listed below are required by ICAPCD to reduce emissions generation. No other mitigation would be required to reduce NOx emissions to below significance:.~~

~~*also [In response to Randy's question, my view is this sentence and the associated commitment to meet ATCM should stay in the document. – Buzz]Use Diesel Oxidation Catalyst on all diesel equipment*~~

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~~The above mitigation recommendations are based on typical control efficiencies used in industry. Ldn Consulting utilized an average NO_x reduction up to 40% for using Diesel Oxidation Catalyst. These reductions would only be used on construction equipment not on vehicles registered to drive on public highways.~~Tier 2 emission reduction requirements are identified in Table 2.4 above and were used in the URBEMIS modeling based on calculated reductions as identified in the Table. Also, ATCM control measures defined by the California Air Resource Board allow the use of Tier 2 equipment and up through January 1, 2017. All equipment used onsite would be required to meet regulations set forth within regulations 17 CCR § 93116. This would be verified by the applicant to make sure the applicant's grading contractor complies with ATCM for equipment utilized onsite.

Additionally, the Project would be required to follow ~~Rule 801~~Regulation VIII of Imperial County's Rules and Regulations for Construction and Earthmoving Activities. A dust control plan should be developed for approval by the County. The dust control plan should be kept onsite. The plan should indicate how mitigation measures will be implemented with start and completion dates. The plan should indicate specific treatments and control measures as identified within this report. The dust control plan should be updated daily and monitored daily for compliance as ICAPCD will show up at various times randomly to verify that compliance with the plan.

4.2 Construction Health Risk from Diesel Particulate Matter (Exhaust Only)

Based upon this air quality modeling, we find that worst-case PM_{10} from exhaust could be as high ~~7.59~~6.06 lbs per construction day (10-hours) or 0.~~0955~~ 0762 grams per second DPM during the construction day. Averaging this emission rate over the project site area gives us the average emission rate for the project area. Converting pounds (lbs) per day to grams per second is shown below:

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$$\frac{6.13\frac{lb}{day}*453\frac{grams}{lb}}{36{,}000\frac{seconds}{Constructionday}}=0.0762\frac{grams}{second}$$

The average emission rate over the grading area is ~~7.551~~9.47x10^{-9} g/m^2/s, which was calculated as follows:

$$\frac{0.0762\frac{grams}{second}}{1990acres*4{,}046\frac{meters^2}{acre}}=9.47*10^{-9}\frac{\frac{grams}{meters^2}}{second}$$

Utilizing the SCREEN3 dispersion model, we find that the peak maximum 1-hr concentration is ~~2.414~~ 1.927 µg/m^3 during grading at a distance of roughly 2,~~000~~ 000 meters from the centroid of the Project site. The SCREEN3 dispersion model outputs are provided as ***Attachment B*** to this report. This concentration would be lowered at any other distance from the project site. Utilizing the risk equation identified in Chapter 3 we calculate that the cancer risk over a 70-year continuous dose would be:

$$CR_{DPM\text{-}70yr\ dose} = 0.0003 \text{ x } \text{~~2.414~~}1.927 = \text{~~7.242~~}5.78 \text{ x } 10^{-4}$$

Based on these calculations, the project is expected to generate maximum DPM during the heaviest construction period of the Project. This period would be for one month and assuming a worst case construction day of 10 hours for a period of six days per week. The project could be operational 260 hours during that month. There are 25,550 days within a 70 year period so it would be expected that the CR_{DPM} would be 10.83-24 hour periods in 70 years or 10.83 days/25,550 days or 0.000424 times the CR_{DPM}. If one million people were exposed to the maximum DPM for the duration of grading at 2,000 meters from the project site, the estimated increased cancer risk for month seven could be:

0.000424 x .~~0007242~~ 000578 x 1,000,000 = 0.~~307~~ 245 individuals per million

To estimate emissions during the entire project and for purposes of this health risk assessment only, if we assume worst-case diesel emissions within month seven were generated during the entire construction period of the project (12 months) the

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estimate would be off by a factor as high as 12. Multiplying the worst-case risk by 12 we would expect that the risk would at no time exceed **~~3.68~~2.94** individuals per million exposed for the entire construction duration over a 70 year period. Therefore, because the project could increase the risk to more than one person per million the Project would be required to ~~utilize equipment meeting requirements of T-BACT such as using diesel particulate filters, catalytic converters and or selective catalytic reduction technologies or through the~~ use ~~of~~ Tier 2 equipment required by CARB ATCM requirements.~~.~~

Furthermore, because the risk is less than 10 in one million at the worst case contour of 2,000 meters, no sensitive receptors either adjacent to the project or beyond the project would be exposed to significant cancer causing DPM. In other words, though there are sensitive receptors in the area, they will not be exposed to emissions that would increase their risk to above 10 in one million.

For example, the Westside School site is located approximately 84-me~~a~~ters from the closest boundary of the project and would be considered the nearest sensitive receptor. Utilizing SCREEN3 we determine that the emissions could have concentrations as high as 1.~~747~~ 395 µg/m^3 at the school site which would have a cancer risk dose of:

$$CR_{DPM\text{-}70yr\ dose} = 0.0003 \times 1.\text{~~747~~}395 = \text{~~54.24x~~}19 \times 10^{-4}$$

With a corresponding monthly Cancer Risk of:

0.~~00043~~ 000424 x .~~000524~~ 000419 x 1,000,000 = 0.~~222~~ 1777 individuals per million

And Multiplying the worst-case risk by 12 we would expect that the risk would at no time exceed 2.~~664~~13 individuals per million which is lower than the ~~3.68~~2.94 individuals per million project related maximum as calculated above. Therefore no DPM cancer risks would be expected at any sensitive receptor. The SCREEN3 dispersion model output for the discrete modeling of the Westside School is also provided in ***Attachment B*** to this report. Again, it should also be noted that this analysis demonstrates that there would be no risk to sensitive receptors before or after the worst case contour and that the emissions will meet applicable regulations. Also, the Westside School has recently been closed and it i~~'~~s ~~not sure if~~uncertain whether the school will re-open.

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Finally, it should be noted that ~~potential~~ utilizing Tier 2~~NOx impacts and mitigation~~ equipment ~~measures~~ as identified in Section 4.1 of this report would also be classified as T-BACT reduction measures. Therefore, because the project will be utilizing T-BACT technologies per ICAPCD protocols, all health risks would be considered reduced to less than significant.

4.3 Odor Impacts

The project by nature is a renewable energy solar generation facility. The project is not expected to generate impactive odors and would not be considered an impact.

4.4 Cumulative Construction Impacts

The County provided the environmental team with the latest cumulative projects list for the County and the list was reviewed to determine cumulative "reasonably foreseeable" (termed in this report as RF projects) for simultaneous construction of the proposed project. Many of the projects on the list were either speculative, put on hold indefinitely or were already built, so a large portion of projects were removed. Additionally, it should be noted that there were multiple solar projects that recently submitted project applications and have started the environmental review process. Although the applications came in subsequent to issuance of the NOP, because of their proximity to the project site as well as the fact that they were "reasonably foreseeable" they were considered as RF within the confines of this analysis.

Without specific emission outputs and coordination of project schedules, it's difficult to quantify cumulative emissions but making worst-case assumptions simplifies the assessment. Given our already overly conservative approach to health risk analysis we found that our worst case DPM emission plume is greatest at 2,000 meters from the center of the construction activities. Also given that we assumed emissions generated during the worst-case seventh month construction operation and were projected over the entire construction period we found that cancer risk was still less than ten in one million as shown in Section 4.2 above.

Similarly, if we assume every other RF project has an equal worst-case DPM emission radius extended out 2,000 meters and they are under construction at the same time, there could be a cumulative impact if the two contours coincide. This

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would be simplified by extending the radius of the project out 4,000 meters and verifying that either no RF projects are within the contour or if the RF projects are within the contour that both projects peak construction will not occur simultaneously. If this verification can be made, then no cumulative health risk impacts would be expected and no mitigation for cancer risk would be necessary.

The RF project list as taken from the Project's Traffic Study is shown below:

1) *"S" Line Upgrade 230-kV Transmission Line Project* – a power line project of approximately 18 miles extending from approximately 10 miles southwest of the City of El Centro near Libert Road and Wixom Road along I-8 and SR-86. The construction and delivery traffic associated with a transmission line moves along the project corridor as work progresses; therefore, an estimate of 240 ADT with 45 AM peak hour trips and 45 PM peak hour trips is for the segment or work area under construction. EIR reference [A].

2) *Imperial Valley Solar Project (Formerly SES Solar Two)* – an electric generating facility capable of producing approximately 750 megawatts of electricity on approximately 6,500 acres generally located west of Dunaway Road and north of I-8. The construction phase of the project is calculated to generate 1,736 ADT with 772 AM peak hour trips and 772 PM peak hour trips. EIR reference [B].

3) *Sunrise 500-kV Line IV West Solar Farm Interconnection to Imperial Valley Substation* – a power line project extending from Imperial Valley to Penasquitos in the City of San Diego. The construction and delivery traffic associated with a transmission line moves along the project corridor as work progresses; therefore, an estimate of 240 ADT with 45 AM peak hour trips and 45 PM peak hour trips is for the segment or work area under construction. EIR reference [C].

4) *SDG&E Photovoltaic Solar Field* – a photovoltaic solar facility capable of producing approximately 14 megawatts of electricity on approximately 100 acres located adjacent to the SDG&E Imperial Valley Substation. The construction phase of the project is calculated to generate approximately 40 ADT with 15 AM peak hour trips and 15 PM peak hour trips.

5) *SDG&E Geotechnical Investigation* – an exploratory analysis to determine the quality and compaction of the soil around the SDG&E Imperial Valley substation. Limited construction traffic is anticipated to last no longer than one week in September 2011.

6) *North Gila to Imperial Valley #2* - a power line project of approximately 75 miles extending from the SDG&E Imperial Valley substation to Yuma County, Arizona. The construction and delivery traffic associated with a transmission line moves along the project corridor as work progresses; therefore, an estimate of 240 ADT with 45 AM peak hour trips and 45 PM peak hour trips is for the segment or work area under construction.

7) *Dixieland Connection to Imperial Irrigation District Transmission System* – a power line project connecting the Imperial Irrigation District's "S" line from the Imperial Irrigation District substation to the Imperial Valley substation. The construction and delivery traffic associated with a transmission line moves along the project corridor as work progresses; therefore, an estimate of 240 ADT with 45 AM peak hour trips and 45 PM peak hour trips is for the segment or work area under construction.

8) *Solar Reserve Imperial Valley* – a 100 megawatt solar power tower generally located approximately 35 miles east of the Imperial Valley substation. The construction phase of the project is calculated to generate approximately 283 ADT with 110 AM peak hour trips and 112 PM peak hour trips.

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9) *Linda Vista* – A mixed use project of 182 single family homes and a 6 acre commercial lot generally located on the west side of Clark Road between I-8 and McCabe Road. The traffic generation for this cumulative project is calculated at 7,175 ADT with 252 AM and 676 PM peak hour trips.

10) *County Center II Expansion* – a mixed use project of a commercial center, expansion of the Imperial County Office of Education, a Joint-Use Teacher Training and Conference Center, Judicial Center, County Park, Jail expansion, County Administrative Complex, Public Works Administration, and a County Administrative Complex located on the southwest corner of McCabe Road and Clark Road. The total project is calculated to generate 24,069 ADT with 2,581 AM peak hour trips and 2,242 PM peak hour trips.

11) *Imperial Solar Energy Center West* – a photovoltaic solar facility capable of producing approximately 250 megawatts of electricity on approximately 1,130 acres generally located east of Dunaway Road and located both north and south of I-8. The construction phase of the project is calculated to generate 750 ADT with 306 AM peak hour trips and 315 PM peak hour trips.

12) *Imperial Solar Energy Center South* – a photovoltaic solar facility capable of producing approximately 200 megawatts of electricity on approximately 950 acres generally located south of SR-98 and east of Drew Road. The construction phase of the project is calculated to generate 680 ADT with 271 AM peak hour trips and 280 PM peak hour trips.

13) *Mount Signal Solar Farm I* – a photovoltaic solar facility capable of producing approximately 200 megawatts of electricity on approximately 1,375 acres generally located south of SR-98 between Pulliam Road and Ferrell Road. The construction phase of the project is calculated to generate 522 ADT with 162 AM peak hour trips and 162 PM peak hour trips.

14) *Mayflower Solar Farm Project* - a photovoltaic solar facility capable of producing approximately 50 megawatts of electricity on approximately 482 acres generally located 5.5 miles southeast of the town of Calipatria. The construction phase is calculated to generate 142 daily trips with 56 AM peak hour trips and 57 PM peak hour trips.

15) *Arkansas* - a photovoltaic solar facility capable of producing approximately 50 megawatts of electricity on approximately 481 acres generally located 2.5 miles east of the town of Calipatria. The construction phase is calculated to generate 142 daily trips with 56 AM peak hour trips and 57 PM peak hour trips.

16) *Sonora* - a photovoltaic solar facility capable of producing approximately 50 megawatts of electricity on approximately 488 acres generally located 4.5 miles northeast of the town of Calipatria. The construction phase is calculated to generate 142 daily trips with 56 AM peak hour trips and 57 PM peak hour trips.

17) *Alhambra* - a photovoltaic solar facility capable of producing approximately 50 megawatts of electricity on approximately 482 acres generally located 3.5 miles south of the town of Calipatria. The construction phase is calculated to generate 142 daily trips with 56 AM peak hour trips and 57 PM peak hour trips.

18) *Acorn Greenworks* - a photovoltaic solar facility capable of producing approximately 150 megawatts of electricity on approximately 693 acres generally located 10 miles southwest of the City of El Centro. The construction phase is calculated to generate 425 daily trips with 166 AM peak hour trips and 169 PM peak hour trips.

19) *Calexico I-A* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity on approximately 666 acres generally located 6 miles west of the City of Calexico. The construction phase is calculated to generate 283 daily trips with 110 AM peak hour trips and 112 PM peak hour trips.

20) *Calexico I-B* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity on approximately 666 acres generally located 6 miles west of the City of Calexico. The

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construction phase is calculated to generate 283 daily trips with 110 AM peak hour trips and 112 PM peak hour trips.

21) *Calexico II-A* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity on approximately 733 acres generally located 6 miles west of the City of Calexico. The construction phase is calculated to generate 283 daily trips with 110 AM peak hour trips and 112 PM peak hour trips.

22) *Calexico II-B* - a photovoltaic solar facility capable of producing approximately 100 megawatts of electricity on approximately 732 acres generally located 6 miles west of the City of Calexico. The construction phase is calculated to generate 283 daily trips with 110 AM peak hour trips and 112 PM peak hour trips.

23) *Centinella Solar Park* - a 2000+ acre photovoltaic solar facility capable of producing approximately 275 megawatts of electricity on approximately 2,067 acres generally located 9 miles west of the City of Calexico and approximately 9,000 Meters from the proposed Campo Verde Project. The construction phase is calculated to generate 1,260 daily trips.

24) Silverleaf Solar Energy – a photovoltaic solar facility capable of producing approximately 160 megawatts of electricity generally located west of Drew Road and south of I-8 (adjacent to the proposed Campo Verde project). According to the County of Imperial staff, the Silverleaf project is estimated to start construction approximately one year after the proposed Campo Verde project. This means the Silverleaf peak construction will occur in 2014, which is one year after the proposed Campo Verde construction peak of early 2013. Since the construction peaks do not coincide, the Silverleaf project is noted as a cumulative project, but the Silverleaf construction peak is not added to the cumulative peak construction or traffic volumes.

Furthermore, the Project does not have any unmitagable impacts with respect to ozone precursors or PM_{10} per County standards during the construction activities as shown in Section 4.1 above. Since the other RF projects are either not going to be under construction simultaneously or are considerably distant from the project cumulative impacts would not be expected from the daily construction activities.

4.5 Operational Emissions

Daily operations of the project will involve primarily periodic maintenance and worker trips ~~only and although emissions are expected, they are almost insignificant given the project~~and would be expected to ~~only a~~add up to 50 ADT during a worst case project traffic generation day~~.~~. Also as stated above, LDN consulting utilized a worst-case assumption that all operational trips would originate~~d~~ from 112 miles from the site or roughly the distance from the project site to San Diego. ~~and 375 ADT during construction. For purposes of this analysis, LDN Consulting utilized the 375 ADT that would be expected during project construction and reported T~~the ~~values~~ operational emission ~~predictions~~estimates as calculated within URBEMIS 2007 ~~in~~ are shown in Table 4.2 below. ~~Given that the 375 ADT input is greater than the operational years after construction is complete. If no impacts are found using the~~

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~~375 ADT further analysis of the expected post construction operation of 50 ADT would not be warranted. Therefore, Table 4.2 represents construction trips only but again should demonstrate compliance of post construction operations as projected trips are significantly less.~~

Table 4.2: Expected Operational Daily Pollutant Generation

	ROG	NO_x	CO	SO_x	PM_{10}
Summer Scenario					
Operational Vehicle Emissions (Lb/Day)	6.14~~4.52~~	10.85~~5.49~~	77.24~~43.68~~	0.06~~0.03~~	9.82~~4.48~~
ICAPCD Thresholds	55	55	550	150	150
Significant?	No	No	No	No	No
Winter Scenario					
Operational Vehicle Emissions (Lb/Day)	6.14~~4.52~~	10.85~~5.49~~	77.24~~43.68~~	0.06~~0.03~~	9.82~~4.48~~
ICAPCD Thresholds	75	250	550	250	100
Significant?	No	No	No	No	No
Daily pollutant generation assumes trip distances within URBEMIS 2007					

The URBEMIS output for all potential pollutant emissions during operations was below significance as set forth in Rule 310 of ICAPCD Regulations and would therefore not require additional measures to comply with CEQA. As mentioned previously, the URBEMIS 2007 output is shown in ***Attachment A*** to this report.

4.6 Cumulative Operational Emissions

Cumulative operational emissions are difficult to calculate for a solar project such as ~~this one~~the Campo Verde project because operational trips are so low compared to the post-construction levels associated with other types projects (such as residential or commercial projects like two of the RF projects - the Linda Vista residential project or the County Center II Expansion project. The combination of these two RF projects would have operationally significant project trip generation -(projected to be 31,244 daily trips) compared to only 50 operational trips generated by the proposed project. The additional of the 50 project operational trips could increase the operational emissions within the general RF project vicinity by approximately 0.1%. This increase would not be considered cumulatively significant.

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4.~~6~~ 7 Conclusion of Findings

Based upon our analysis of operational activities, no significant operational air quality impacts would be expected. However, based upon our analysis of worst-case construction activities, significant but mitagable construction-related PM_{10} ~~and NO_x~~ impacts would be expected. The following mitigation measures would reduce expected construction related PM_{10} impacts to a level below significance:

1. *Apply water during grading/grubbing activities to all active disturbed areas as needed to comply with its Dust Control Plan and comply with the ICAPCD's opacity limits.*
2. *Apply water to all onsite roadways as needed to comply with its Dust Control Plan and comply with the ICAPCD's opacity limits.*

~~1. *Apply water during grading/grubbing activities to all active disturbed areas at least three times daily.*~~

~~2. *Apply water to all onsite roadways at least three times daily or use of magnesium chloride or other County approved dust suppression additives and apply water one time daily.*~~

~~3. *Reduce all construction related traffic speeds onsite to below 15 Miles per Hour (MPH).*~~

As a standard specified by the District, Tier 2 rated or better construction equipment will be required which will meet ATCM control measures defined by the California Air Resource Board.

~~NO_x impacts would be reduced to less than significant by implementing the following mitigation requirements:~~

~~1. *Use Diesel Oxidation Catalyst on all diesel equipment*~~

Based upon guidance within ICAPCD's Air Quality Handbook; construction sites in excess of 5 Acres must implement all standard mitigation measures as well as the abovementioned discretionary mitigation measures. These standard mitigation measures are identified below:

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Standard Mitigation Measures for Fugitive PM_{10} Control

a. All disturbed areas, including Bulk Material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall 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. All on site and off site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.
c. All unpaved traffic areas one (1) acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emission shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.
d. The transport of Bulk Materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of Bulk Material. In addition, the cargo compartment of all Haul Trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.
e. All Track-Out or Carry-Out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area.
f. Movement of Bulk Material handling or 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.
g. The construction of any new Unpaved Road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.

Standard Mitigation Measures for Construction Combustion Equipment

a. Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.
b. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
c. Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.

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d. Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

Because the Project could increase the risk to more than one person per million, the Project would be required to utilize equipment meeting requirements of T-BACT ~~such as using diesel particulate filters, catalytic converters and/or selective catalytic reduction technologies~~. It should be noted that the project will be required to utilize Tier 2 equipment and comply with ATCMs which ~~would also be classified~~classify qualify as T-BACT reduction measures for PM_{10} DPM ~~reductions as well~~. Therefore because the Project will be utilizing T-BACT technologies per ICAPCD protocols, all health risks will be reduced to below significance. Additionally, no cumulative health risk impacts are expected and therefore, no further mitigation for cancer risk would be necessary. Again, since the other RF projects are either not going to be under construction simultaneously or are considerably distant from the project cumulative impacts would not be expected from the daily construction activities.

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5.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the air quality environment and impacts within and surrounding the Campo Verde Solar Energy Project. The information contained in this report was based on the best available data at the time of preparation.

DRAFT

Jeremy Louden, Principal
Ldn Consulting, Inc.
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jlouden@ldnconsulting.net

Date ~~March~~ July ~~15~~23, 2012

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ATTACHMENT A

URBEMIS 2007 MODEL DAILY EMISSIONS

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Jeremy 5-3-12\Campo Verde Air\3-15-12\Urbemis with tier 2 NOX and PM reductions per EPA data.urb924

Project Name: Campo Verde

Project Location: Imperial County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (tons/year unmitigated)	3.60	19.23	47.03	0.03	31.13	1.14	32.26	6.52	1.05	7.57	4,541.48
2013 TOTALS (tons/year mitigated)	3.60	14.18	47.03	0.03	14.08	0.95	15.03	2.96	0.87	3.83	4,541.48
Percent Reduction	0.00	26.25	0.00	0.00	54.75	16.57	53.41	54.58	16.58	49.33	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.12	1.98	14.10	0.01	1.79	0.36	1,080.30

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.12	1.98	14.10	0.01	1.79	0.36	1,080.30

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

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	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013	3.60	19.23	47.03	0.03	31.13	1.14	32.26	6.52	1.05	7.57	4,541.48
Building 01/01/2013-12/31/2013	1.40	6.52	21.95	0.01	0.07	0.33	0.41	0.03	0.31	0.33	1,981.73
Building Off Road Diesel	0.78	5.23	2.74	0.00	0.00	0.30	0.30	0.00	0.28	0.28	577.17
Building Vendor Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
Building Worker Trips	0.62	1.29	19.21	0.01	0.07	0.03	0.11	0.03	0.03	0.06	1,404.46
Mass Grading 01/01/2013-12/31/2013	1.57	9.51	17.34	0.01	31.03	0.56	31.59	6.49	0.51	7.00	1,855.63
Mass Grading Dust	0.00	0.00	0.00	0.00	30.99	0.00	30.99	6.47	0.00	6.47	0.00
Mass Grading Off Road Diesel	1.17	8.68	4.97	0.00	0.00	0.53	0.53	0.00	0.49	0.49	951.24
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.40	0.83	12.37	0.01	0.05	0.02	0.07	0.02	0.02	0.04	904.39
Trenching 01/01/2013-12/31/2013	0.63	3.20	7.74	0.00	0.02	0.25	0.27	0.01	0.23	0.23	704.12
Trenching Off Road Diesel	0.45	2.80	1.92	0.00	0.00	0.24	0.24	0.00	0.22	0.22	278.53
Trenching Worker Trips	0.19	0.39	5.82	0.00	0.02	0.01	0.03	0.01	0.01	0.02	425.59

Phase Assumptions

Phase: Mass Grading 1/1/2013 - 12/31/2013 - Month 7 Mass Grading

Total Acres Disturbed: 1990

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1000 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Graders (174 hp) operating at a 0.55 load factor for 6.8 hours per day

3 Other Equipment (80 hp) operating at a 0.62 load factor for 8 hours per day

2 Rollers (120 hp) operating at a 0.56 load factor for 6.8 hours per day

2 Rough Terrain Forklifts (75 hp) operating at a 0.5 load factor for 1.7 hours per day

2 Rubber Tired Dozers (175 hp) operating at a 0.55 load factor for 6.8 hours per day

2 Tractors/Loaders/Backhoes (120 hp) operating at a 0.55 load factor for 6.8 hours per day

4 Water Trucks (189 hp) operating at a 0.5 load factor for 6.8 hours per day

Phase: Trenching 1/1/2013 - 12/31/2013 - Month 7 Various Trenching Activities

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4.5 hours per day

1 Generator Sets (5 hp) operating at a 0.74 load factor for 0.5 hours per day

2 Other General Industrial Equipment (100 hp) operating at a 0.51 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (100 hp) operating at a 0.55 load factor for 6.8 hours per day

2 Trenchers (75 hp) operating at a 0.75 load factor for 4.1 hours per day

Phase: Building Construction 1/1/2013 - 12/31/2013 - Month 7 Building Construction

Off-Road Equipment:

1 Aerial Lifts (110 hp) operating at a 0.46 load factor for 1 hours per day

2 Air Compressors (75 hp) operating at a 0.48 load factor for 2 hours per day

4 Cranes (200 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (75 hp) operating at a 0.3 load factor for 3.8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

6 Other Equipment (40 hp) operating at a 0.4 load factor for 4 hours per day

3 Other General Industrial Equipment (200 hp) operating at a 0.51 load factor for 4 hours per day

15 Rough Terrain Forklifts (75 hp) operating at a 0.4 load factor for 1.7 hours per day

1 Tractors/Loaders/Backhoes (120 hp) operating at a 0.55 load factor for 7 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2013	3.60	14.18	47.03	0.03	14.08	0.95	15.03	2.96	0.87	3.83	4,541.48
Building 01/01/2013-12/31/2013	1.40	4.92	21.95	0.01	0.07	0.26	0.33	0.03	0.23	0.26	1,981.73
Building Off Road Diesel	0.78	3.63	2.74	0.00	0.00	0.22	0.22	0.00	0.20	0.20	577.17
Building Vendor Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
Building Worker Trips	0.62	1.29	19.21	0.01	0.07	0.03	0.11	0.03	0.03	0.06	1,404.46
Mass Grading 01/01/2013-12/31/2013	1.57	6.79	17.34	0.01	13.99	0.45	14.44	2.93	0.41	3.34	1,855.63
Mass Grading Dust	0.00	0.00	0.00	0.00	13.94	0.00	13.94	2.91	0.00	2.91	0.00
Mass Grading Off Road Diesel	1.17	5.95	4.97	0.00	0.00	0.42	0.42	0.00	0.39	0.39	951.24
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.40	0.83	12.37	0.01	0.05	0.02	0.07	0.02	0.02	0.04	904.39
Trenching 01/01/2013-12/31/2013	0.63	2.47	7.74	0.00	0.02	0.25	0.27	0.01	0.23	0.23	704.12
Trenching Off Road Diesel	0.45	2.08	1.92	0.00	0.00	0.24	0.24	0.00	0.22	0.22	278.53
Trenching Worker Trips	0.19	0.39	5.82	0.00	0.02	0.01	0.03	0.01	0.01	0.02	425.59

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 1/1/2013 - 12/31/2013 - Month 7 Mass Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

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For Water Trucks, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Other Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

The following mitigation measures apply to Phase: Trenching 1/1/2013 - 12/31/2013 - Month 7 Various Trenching Activities

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Other General Industrial Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Generator Sets, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

The following mitigation measures apply to Phase: Building Construction 1/1/2013 - 12/31/2013 - Month 7 Building Construction

For Cranes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Generator Sets, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 21.1% PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Aerial Lifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

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For Air Compressors, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Other General Industrial Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Other Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 21.1% PM10: 25% PM25: 25%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	1.12	1.98	14.10	0.01	1.79	0.36	1,080.30
TOTALS (tons/year, unmitigated)	1.12	1.98	14.10	0.01	1.79	0.36	1,080.30

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.50	1000 sq ft	100.00	50.00	5,625.00

	50.00	5,625.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	43.7	0.9	98.9	0.2
Light Truck < 3750 lbs	15.6	1.9	93.6	4.5
Light Truck 3751-5750 lbs	19.9	1.0	98.5	0.5
Med Truck 5751-8500 lbs	9.3	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.4	0.0	71.4	28.6
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.2	8.3	25.0	66.7
Heavy-Heavy Truck 33,001-60,000 lbs	4.0	0.0	2.5	97.5
Other Bus	0.1	0.0	100.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.1	58.1	41.9	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	11.1	77.8	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	150.0	0.0	150.0	150.0	150.0	0.0
Rural Trip Length (miles)	10.2	11.7	8.1	16.4	11.9	9.5
Trip speeds (mph)	40.0	40.0	40.0	45.0	45.0	40.0
% of Trips - Residential	80.0	0.0	20.0			

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Home-based work urban trip length changed from 7.3 miles to 150 miles

Home-based shop urban trip length changed from 3.3 miles to 0 miles

Home-based other urban trip length changed from 3.7 miles to 150 miles

Commercial-based commute urban trip length changed from 6.7 miles to 150 miles

Commercial-based non-work urban trip length changed from 8.9 miles to 150 miles

Commercial-based customer urban trip length changed from 5 miles to 0 miles

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Jeremy 5-3-12\Campo Verde Air\3-15-12\Urbemis with tier 2 NOX and PM reductions per EPA data.urb924

Project Name: Campo Verde

Project Location: Imperial County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (lbs/day unmitigated)	23.00	122.86	300.52	0.17	198.89	7.26	206.15	41.67	6.68	48.35	29,019.05
2013 TOTALS (lbs/day mitigated)	23.00	90.61	300.52	0.17	89.99	6.06	96.05	18.93	5.57	24.50	29,019.05

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	6.14	10.85	77.24	0.06	9.82	1.97	5,919.48

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	6.14	10.85	77.24	0.06	9.82	1.97	5,919.48

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

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	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2013-12/31/2013 Active Days: 313	**23.00**	**122.86**	**300.52**	**0.17**	**198.89**	**7.26**	**206.15**	**41.67**	**6.68**	**48.35**	**29,019.05**
Building 01/01/2013-12/31/2013	8.93	41.68	140.28	0.09	0.46	2.14	2.60	0.17	1.97	2.13	12,662.83
Building Off Road Diesel	4.99	33.39	17.50	0.00	0.00	1.92	1.92	0.00	1.76	1.76	3,687.96
Building Vendor Trips	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
Building Worker Trips	3.94	8.27	122.73	0.09	0.46	0.22	0.68	0.17	0.20	0.37	8,974.19
Mass Grading 01/01/2013-12/31/2013	10.03	60.77	110.81	0.06	198.29	3.55	201.84	41.46	3.27	44.72	11,857.05
Mass Grading Dust	0.00	0.00	0.00	0.00	198.00	0.00	198.00	41.35	0.00	41.35	0.00
Mass Grading Off Road Diesel	7.49	55.44	31.78	0.00	0.00	3.41	3.41	0.00	3.13	3.13	6,078.22
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	2.54	5.33	79.03	0.06	0.29	0.14	0.44	0.11	0.13	0.24	5,778.83
Trenching 01/01/2013-12/31/2013	4.05	20.42	49.43	0.03	0.14	1.58	1.71	0.05	1.45	1.50	4,499.17
Trenching Off Road Diesel	2.85	17.91	12.24	0.00	0.00	1.51	1.51	0.00	1.39	1.39	1,779.72
Trenching Worker Trips	1.19	2.51	37.19	0.03	0.14	0.07	0.21	0.05	0.06	0.11	2,719.45

Phase Assumptions

Phase: Mass Grading 1/1/2013 - 12/31/2013 - Month 7 Mass Grading

Total Acres Disturbed: 1990

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1000 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Graders (174 hp) operating at a 0.55 load factor for 6.8 hours per day

3 Other Equipment (80 hp) operating at a 0.62 load factor for 8 hours per day

2 Rollers (120 hp) operating at a 0.56 load factor for 6.8 hours per day

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2 Rough Terrain Forklifts (75 hp) operating at a 0.5 load factor for 1.7 hours per day

2 Rubber Tired Dozers (175 hp) operating at a 0.55 load factor for 6.8 hours per day

2 Tractors/Loaders/Backhoes (120 hp) operating at a 0.55 load factor for 6.8 hours per day

4 Water Trucks (189 hp) operating at a 0.5 load factor for 6.8 hours per day

Phase: Trenching 1/1/2013 - 12/31/2013 - Month 7 Various Trenching Activities

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4.5 hours per day

1 Generator Sets (5 hp) operating at a 0.74 load factor for 0.5 hours per day

2 Other General Industrial Equipment (100 hp) operating at a 0.51 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (100 hp) operating at a 0.55 load factor for 6.8 hours per day

2 Trenchers (75 hp) operating at a 0.75 load factor for 4.1 hours per day

Phase: Building Construction 1/1/2013 - 12/31/2013 - Month 7 Building Construction

Off-Road Equipment:

1 Aerial Lifts (110 hp) operating at a 0.46 load factor for 1 hours per day

2 Air Compressors (75 hp) operating at a 0.48 load factor for 2 hours per day

4 Cranes (200 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (75 hp) operating at a 0.3 load factor for 3.8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

6 Other Equipment (40 hp) operating at a 0.4 load factor for 4 hours per day

3 Other General Industrial Equipment (200 hp) operating at a 0.51 load factor for 4 hours per day

15 Rough Terrain Forklifts (75 hp) operating at a 0.4 load factor for 1.7 hours per day

1 Tractors/Loaders/Backhoes (120 hp) operating at a 0.55 load factor for 7 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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Time Slice 1/1/2013-12/31/2013 Active Days: 313	**23.00**	90.61	**300.52**	**0.17**	89.99	6.06	96.05	18.93	5.57	24.50	**29,019.05**
Building 01/01/2013-12/31/2013	8.93	31.46	140.28	0.09	0.46	1.63	2.09	0.17	1.50	1.66	12,662.83
Building Off Road Diesel	4.99	23.18	17.50	0.00	0.00	1.41	1.41	0.00	1.30	1.30	3,687.96
Building Vendor Trips	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
Building Worker Trips	3.94	8.27	122.73	0.09	0.46	0.22	0.68	0.17	0.20	0.37	8,974.19
Mass Grading 01/01/2013-12/31/2013	10.03	43.38	110.81	0.06	89.39	2.85	92.25	18.71	2.62	21.34	11,857.05
Mass Grading Dust	0.00	0.00	0.00	0.00	89.10	0.00	89.10	18.61	0.00	18.61	0.00
Mass Grading Off Road Diesel	7.49	38.05	31.78	0.00	0.00	2.71	2.71	0.00	2.49	2.49	6,078.22
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	2.54	5.33	79.03	0.06	0.29	0.14	0.44	0.11	0.13	0.24	5,778.83
Trenching 01/01/2013-12/31/2013	4.05	15.77	49.43	0.03	0.14	1.58	1.71	0.05	1.45	1.50	4,499.17
Trenching Off Road Diesel	2.85	13.26	12.24	0.00	0.00	1.51	1.51	0.00	1.39	1.39	1,779.72
Trenching Worker Trips	1.19	2.51	37.19	0.03	0.14	0.07	0.21	0.05	0.06	0.11	2,719.45

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 1/1/2013 - 12/31/2013 - Month 7 Mass Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Water Trucks, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Other Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

The following mitigation measures apply to Phase: Trenching 1/1/2013 - 12/31/2013 - Month 7 Various Trenching Activities

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Other General Industrial Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Generator Sets, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

The following mitigation measures apply to Phase: Building Construction 1/1/2013 - 12/31/2013 - Month 7 Building Construction

For Cranes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Generator Sets, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 21.1% PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Aerial Lifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

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For Air Compressors, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Other General Industrial Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Other Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 21.1% PM10: 25% PM25: 25%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	6.14	10.85	77.24	0.06	9.82	1.97	5,919.48
TOTALS (lbs/day, unmitigated)	6.14	10.85	77.24	0.06	9.82	1.97	5,919.48

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 90 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.50	1000 sq ft	100.00	50.00	5,625.00

	50.00	5,625.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	43.7	0.9	98.9	0.2
Light Truck < 3750 lbs	15.6	1.9	93.6	4.5
Light Truck 3751-5750 lbs	19.9	1.0	98.5	0.5
Med Truck 5751-8500 lbs	9.3	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.4	0.0	71.4	28.6
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.2	8.3	25.0	66.7
Heavy-Heavy Truck 33,001-60,000 lbs	4.0	0.0	2.5	97.5
Other Bus	0.1	0.0	100.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.1	58.1	41.9	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	11.1	77.8	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	150.0	0.0	150.0	150.0	150.0	0.0
Rural Trip Length (miles)	10.2	11.7	8.1	16.4	11.9	9.5
Trip speeds (mph)	40.0	40.0	40.0	45.0	45.0	40.0
% of Trips - Residential	80.0	0.0	20.0			

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Home-based work urban trip length changed from 7.3 miles to 150 miles

Home-based shop urban trip length changed from 3.3 miles to 0 miles

Home-based other urban trip length changed from 3.7 miles to 150 miles

Commercial-based commute urban trip length changed from 6.7 miles to 150 miles

Commercial-based non-work urban trip length changed from 8.9 miles to 150 miles

Commercial-based customer urban trip length changed from 5 miles to 0 miles

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Jeremy 5-3-12\Campo Verde Air\3-15-12\Urbemis with tier 2 NOX and PM reductions per EPA data.urb924

Project Name: Campo Verde

Project Location: Imperial County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (lbs/day unmitigated)	23.00	122.86	300.52	0.17	198.89	7.26	206.15	41.67	6.68	48.35	29,019.05
2013 TOTALS (lbs/day mitigated)	23.00	90.61	300.52	0.17	89.99	6.06	96.05	18.93	5.57	24.50	29,019.05

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	6.14	10.85	77.24	0.06	9.82	1.97	5,919.48

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	6.14	10.85	77.24	0.06	9.82	1.97	5,919.48

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

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	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2013-12/31/2013 Active Days: 313	**23.00**	**122.86**	**300.52**	**0.17**	**198.89**	**7.26**	**206.15**	**41.67**	**6.68**	**48.35**	**29,019.05**
Building 01/01/2013-12/31/2013	8.93	41.68	140.28	0.09	0.46	2.14	2.60	0.17	1.97	2.13	12,662.83
Building Off Road Diesel	4.99	33.39	17.50	0.00	0.00	1.92	1.92	0.00	1.76	1.76	3,687.96
Building Vendor Trips	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
Building Worker Trips	3.94	8.27	122.73	0.09	0.46	0.22	0.68	0.17	0.20	0.37	8,974.19
Mass Grading 01/01/2013-12/31/2013	10.03	60.77	110.81	0.06	198.29	3.55	201.84	41.46	3.27	44.72	11,857.05
Mass Grading Dust	0.00	0.00	0.00	0.00	198.00	0.00	198.00	41.35	0.00	41.35	0.00
Mass Grading Off Road Diesel	7.49	55.44	31.78	0.00	0.00	3.41	3.41	0.00	3.13	3.13	6,078.22
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	2.54	5.33	79.03	0.06	0.29	0.14	0.44	0.11	0.13	0.24	5,778.83
Trenching 01/01/2013-12/31/2013	4.05	20.42	49.43	0.03	0.14	1.58	1.71	0.05	1.45	1.50	4,499.17
Trenching Off Road Diesel	2.85	17.91	12.24	0.00	0.00	1.51	1.51	0.00	1.39	1.39	1,779.72
Trenching Worker Trips	1.19	2.51	37.19	0.03	0.14	0.07	0.21	0.05	0.06	0.11	2,719.45

Phase Assumptions

Phase: Mass Grading 1/1/2013 - 12/31/2013 - Month 7 Mass Grading

Total Acres Disturbed: 1990

Maximum Daily Acreage Disturbed: 8

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1000 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Graders (174 hp) operating at a 0.55 load factor for 6.8 hours per day

3 Other Equipment (80 hp) operating at a 0.62 load factor for 8 hours per day

2 Rollers (120 hp) operating at a 0.56 load factor for 6.8 hours per day

2 Rough Terrain Forklifts (75 hp) operating at a 0.5 load factor for 1.7 hours per day

2 Rubber Tired Dozers (175 hp) operating at a 0.55 load factor for 6.8 hours per day

2 Tractors/Loaders/Backhoes (120 hp) operating at a 0.55 load factor for 6.8 hours per day

4 Water Trucks (189 hp) operating at a 0.5 load factor for 6.8 hours per day

Phase: Trenching 1/1/2013 - 12/31/2013 - Month 7 Various Trenching Activities

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4.5 hours per day

1 Generator Sets (5 hp) operating at a 0.74 load factor for 0.5 hours per day

2 Other General Industrial Equipment (100 hp) operating at a 0.51 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (100 hp) operating at a 0.55 load factor for 6.8 hours per day

2 Trenchers (75 hp) operating at a 0.75 load factor for 4.1 hours per day

Phase: Building Construction 1/1/2013 - 12/31/2013 - Month 7 Building Construction

Off-Road Equipment:

1 Aerial Lifts (110 hp) operating at a 0.46 load factor for 1 hours per day

2 Air Compressors (75 hp) operating at a 0.48 load factor for 2 hours per day

4 Cranes (200 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (75 hp) operating at a 0.3 load factor for 3.8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

6 Other Equipment (40 hp) operating at a 0.4 load factor for 4 hours per day

3 Other General Industrial Equipment (200 hp) operating at a 0.51 load factor for 4 hours per day

15 Rough Terrain Forklifts (75 hp) operating at a 0.4 load factor for 1.7 hours per day

1 Tractors/Loaders/Backhoes (120 hp) operating at a 0.55 load factor for 7 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

7/23/2012 1:41:19 AM

Time Slice 1/1/2013-12/31/2013 Active Days: 313	**23.00**	90.61	**300.52**	**0.17**	89.99	6.06	96.05	18.93	5.57	24.50	**29,019.05**
Building 01/01/2013-12/31/2013	8.93	31.46	140.28	0.09	0.46	1.63	2.09	0.17	1.50	1.66	12,662.83
Building Off Road Diesel	4.99	23.18	17.50	0.00	0.00	1.41	1.41	0.00	1.30	1.30	3,687.96
Building Vendor Trips	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
Building Worker Trips	3.94	8.27	122.73	0.09	0.46	0.22	0.68	0.17	0.20	0.37	8,974.19
Mass Grading 01/01/2013-12/31/2013	10.03	43.38	110.81	0.06	89.39	2.85	92.25	18.71	2.62	21.34	11,857.05
Mass Grading Dust	0.00	0.00	0.00	0.00	89.10	0.00	89.10	18.61	0.00	18.61	0.00
Mass Grading Off Road Diesel	7.49	38.05	31.78	0.00	0.00	2.71	2.71	0.00	2.49	2.49	6,078.22
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	2.54	5.33	79.03	0.06	0.29	0.14	0.44	0.11	0.13	0.24	5,778.83
Trenching 01/01/2013-12/31/2013	4.05	15.77	49.43	0.03	0.14	1.58	1.71	0.05	1.45	1.50	4,499.17
Trenching Off Road Diesel	2.85	13.26	12.24	0.00	0.00	1.51	1.51	0.00	1.39	1.39	1,779.72
Trenching Worker Trips	1.19	2.51	37.19	0.03	0.14	0.07	0.21	0.05	0.06	0.11	2,719.45

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 1/1/2013 - 12/31/2013 - Month 7 Mass Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Water Trucks, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Other Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

The following mitigation measures apply to Phase: Trenching 1/1/2013 - 12/31/2013 - Month 7 Various Trenching Activities

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Other General Industrial Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Generator Sets, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

The following mitigation measures apply to Phase: Building Construction 1/1/2013 - 12/31/2013 - Month 7 Building Construction

For Cranes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Generator Sets, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 21.1% PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

For Aerial Lifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 28.9%

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For Air Compressors, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 18.8%

For Other General Industrial Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 37.9% PM10: 62.5% PM25: 62.5%

For Other Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

NOX: 21.1% PM10: 25% PM25: 25%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	6.14	10.85	77.24	0.06	9.82	1.97	5,919.48
TOTALS (lbs/day, unmitigated)	6.14	10.85	77.24	0.06	9.82	1.97	5,919.48

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 55 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.50	1000 sq ft	100.00	50.00	5,625.00

	50.00	5,625.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	43.7	0.9	98.9	0.2
Light Truck < 3750 lbs	15.6	1.9	93.6	4.5
Light Truck 3751-5750 lbs	19.9	1.0	98.5	0.5
Med Truck 5751-8500 lbs	9.3	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.4	0.0	71.4	28.6
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.2	8.3	25.0	66.7
Heavy-Heavy Truck 33,001-60,000 lbs	4.0	0.0	2.5	97.5
Other Bus	0.1	0.0	100.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.1	58.1	41.9	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	11.1	77.8	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	150.0	0.0	150.0	150.0	150.0	0.0
Rural Trip Length (miles)	10.2	11.7	8.1	16.4	11.9	9.5
Trip speeds (mph)	40.0	40.0	40.0	45.0	45.0	40.0
% of Trips - Residential	80.0	0.0	20.0			

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Home-based work urban trip length changed from 7.3 miles to 150 miles

Home-based shop urban trip length changed from 3.3 miles to 0 miles

Home-based other urban trip length changed from 3.7 miles to 150 miles

Commercial-based commute urban trip length changed from 6.7 miles to 150 miles

Commercial-based non-work urban trip length changed from 8.9 miles to 150 miles

Commercial-based customer urban trip length changed from 5 miles to 0 miles

ATTACHMENT B

SCREEN3 Model

07/22/12

21:56:40
  *** SCREEN3 MODEL RUN ***
  *** VERSION DATED 96043 ***

 Campo Verde Revised Tier II Run

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE   =   AREA
    EMISSION RATE (G/(S-M**2)) =   .947000E-08
    SOURCE HEIGHT (M)   =   3.0000
    LENGTH OF LARGER SIDE (M)   =   2837.8240
    LENGTH OF SMALLER SIDE (M) =   2837.8240
    RECEPTOR HEIGHT (M)   =   2.0000
    URBAN/RURAL OPTION   =   RURAL
 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

    MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

 BUOY. FLUX =   .000 M**4/S**3; MOM. FLUX =   .000 M**4/S**2.

 *** FULL METEOROLOGY ***

 ****
 *** SCREEN AUTOMATED DISTANCES ***
 ****

 *** TERRAIN HEIGHT OF   0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
10.	1.370	6	1.0	1.0	10000.0	3.00	45.
100.	1.401	6	1.0	1.0	10000.0	3.00	45.
200.	1.434	6	1.0	1.0	10000.0	3.00	45.
300.	1.466	6	1.0	1.0	10000.0	3.00	45.
400.	1.497	6	1.0	1.0	10000.0	3.00	45.
500.	1.528	6	1.0	1.0	10000.0	3.00	45.
600.	1.558	6	1.0	1.0	10000.0	3.00	45.
700.	1.586	6	1.0	1.0	10000.0	3.00	45.
800.	1.608	6	1.0	1.0	10000.0	3.00	45.
900.	1.637	6	1.0	1.0	10000.0	3.00	45.
1000.	1.666	6	1.0	1.0	10000.0	3.00	45.
1100.	1.694	6	1.0	1.0	10000.0	3.00	45.
1200.	1.721	6	1.0	1.0	10000.0	3.00	45.
1300.	1.748	6	1.0	1.0	10000.0	3.00	45.
1400.	1.775	6	1.0	1.0	10000.0	3.00	45.
1500.	1.801	6	1.0	1.0	10000.0	3.00	45.
1600.	1.827	6	1.0	1.0	10000.0	3.00	45.

1700.	1.853	6	1.0	1.0	10000.0	3.00	45.
1800.	1.878	6	1.0	1.0	10000.0	3.00	45.
1900.	1.903	6	1.0	1.0	10000.0	3.00	45.
2000.	1.927	6	1.0	1.0	10000.0	3.00	45.
2100.	1.776	6	1.0	1.0	10000.0	3.00	45.
2200.	1.647	6	1.0	1.0	10000.0	3.00	45.
2300.	1.545	6	1.0	1.0	10000.0	3.00	45.
2400.	1.463	6	1.0	1.0	10000.0	3.00	45.
2500.	1.397	6	1.0	1.0	10000.0	3.00	45.
2600.	1.340	6	1.0	1.0	10000.0	3.00	45.
2700.	1.293	6	1.0	1.0	10000.0	3.00	45.
2800.	1.252	6	1.0	1.0	10000.0	3.00	45.
2900.	1.215	6	1.0	1.0	10000.0	3.00	45.
3000.	1.182	6	1.0	1.0	10000.0	3.00	45.
3500.	1.054	6	1.0	1.0	10000.0	3.00	45.
4000.	.9670	6	1.0	1.0	10000.0	3.00	45.
4500.	.9012	6	1.0	1.0	10000.0	3.00	45.
5000.	.8487	6	1.0	1.0	10000.0	3.00	45.
5500.	.8049	6	1.0	1.0	10000.0	3.00	45.
6000.	.7673	6	1.0	1.0	10000.0	3.00	45.
6500.	.7345	6	1.0	1.0	10000.0	3.00	45.
7000.	.7057	6	1.0	1.0	10000.0	3.00	45.
7500.	.6800	6	1.0	1.0	10000.0	3.00	45.
8000.	.6571	6	1.0	1.0	10000.0	3.00	45.
8500.	.6365	6	1.0	1.0	10000.0	3.00	45.
9000.	.6178	6	1.0	1.0	10000.0	3.00	45.
9500.	.6006	6	1.0	1.0	10000.0	3.00	45.
10000.	.5845	6	1.0	1.0	10000.0	3.00	45.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 10. M:

2000.	1.927	6	1.0	1.0	10000.0	3.00	45.

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
84.	1.395	6	1.0	1.0	10000.0	3.00	45.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1.927	2000.	0.