AIR QUALITY IMPACT ASSESSMENT FOR THE PROPOSED ANAHEIM REGIONAL TRANSPORTATION INTERMODAL CENTER (ARTIC) ANAHEIM, CALIFORNIA

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CEQA Air Quality Analysis for
The Proposed Anaheim Regional
Transportation Intermodal Center (ARTIC)

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AAQS	Ambient Air Quality Standards
AB 32	California's Global Warming Solutions Act of 2006
AQIA	Air Quality Impact Analysis
AQMP	Air Quality Management Plan
ARTIC	Anaheim Regional Transportation Intermodal Center
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL3QHC	Dispersion model
CARB	California Air Resources Board
CCR	Code of California Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHSR	California High-Speed Rail
CNSST	California-Nevada Superspeed Train
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalents
EMFAC	Mobile source emissions model
USEPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Authority
GHG	Greenhouse Gas
GWP	Global Warming Potential
KW	Kilowatt
lb/day	Pound per day
LOSSAN	Los Angeles to San Diego
mph	Miles per hour
MT/yr	Metric tons per year
MUD	Mixed Use Development
NAAQS	National Ambient Air Quality Standards
N_2O	Nitrous oxide
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NSPS	New Source Performance Standards

NSR	New Source Review
OCTA	Orange County Transit Authority
OEHHA	Office of Environmental Health Hazard Assessment
OPR	California Office of Planning and Research
PM_{10}	Respirable particulate matter less than 10 micron mean aerodynamic diameter
$PM_{2.5}$	Fine particulate matter less than 2.5 micron mean aerodynamic diameter
PMI	Point of Maximum Impact
ppm	parts per million (by volume)
PSD	Prevention of Significant Deterioration
PTC	Permit to construct
RCEM	Road Construction Emissions Model
ROG	Reactive Organic Gases
ROW	Right-of-way
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SO_x	Oxides of sulfur
sqft	Square feet
SR	State Route
ug/m^3	micrograms per cubic meter (of air)
URBEMIS	Urban Emissions Model
U.S.	United States
VOC	Volatile Organic Compound

1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

The City of Anaheim (City) in collaboration with the Orange County Transportation Authority (OCTA), is proposing to relocate the existing Metrolink/Amtrak Anaheim Station (located within the Angels Stadium parking lot), approximately one quarter (0.25) mile east along the existing OCTA rail right-of-way (ROW). The proposed project would be known as the Anaheim Regional Transportation Intermodal Center (ARTIC). The OCTA ROW is also known as the Los Angeles to San Diego (LOSSAN) Corridor.

Construction is scheduled to begin in the spring of 2011 with operation to begin in the fall of 2013.

1.2 EXISTING ENVIRONMENT AND PROPOSED PROJECT LOCATION

The proposed location of the new Metrolink/Amtrak facility is approximately 0.25 miles east of the existing station. This location is south of Katella Avenue, on an approximately 16 acre site which is partially owned by OCTA (13.5 acres exclusive of the ROW) and the remaining by the City (2.2 acres). In addition to the two main parcels there are anticipated improvements to approximately 0.50 acre of rail ROW between the Santa Ana River and Katella Avenue, and improvements to Douglass Road as well. The new facility would be known as the Anaheim Regional Transportation Intermodal Center (ARTIC) and will be integrated into the Platinum Triangle, a joint mixed-use development in the City. Access to the ARTIC will be via Douglass Road from Katella Avenue, which also serves as an entry and exit during events occurring at Angel Stadium. The site location and surrounding area is shown in Figures 1-1 and 1-2.

The proposed project site is currently developed land and was previously a working maintenance yard for the County of Orange. After the transfer to OCTA, the facilities on-site were closed and their functions were transferred to other County facilities. The site is comprised of six (6) industrial buildings and is completely paved, including some ornamental landscaping along Douglass Road.

The proposed project site is located west of the Orange Freeway (State Route [SR]-57) freeway, north of the Anaheim Stadium, and south of Katella Avenue within the City of Anaheim. The City of Anaheim is part of the South Coast Air Basin (SCAB or Basin), a 6,600 square-mile area encompassing all of Orange County and the non-desert parts of

Los Angeles, Riverside and San Bernardino Counties. The ambient air quality within the SCAB is better than state and Federal ambient air quality standards (California Ambient Air Quality Standards [CAAQS] and National Ambient Air Quality Standards [NAAQS]) for all pollutants except ozone and particulate matter. Ambient air quality monitoring data obtained from a monitoring location relatively near the proposed project site (within about six miles) are consistent with the overall SCAB ambient air quality conditions.

1.3 PROPOSED PROJECT EMISSIONS

Emissions associated with the proposed project include emitting activities of construction, operation, and traffic changes. Construction emissions include fugitive dust and equipment exhaust. Phases of construction activities that will yield emissions include demolition, mass site grading, fine site grading, excavation and soil hauling offsite, building construction, paving, and architectural coating. Several different types of equipment will be used throughout the construction phases, including loaders, graders, scrapers, generators, and water trucks, among others. Construction emissions were assessed using the Urban Emissions Model, 2007, version 9.2.4 (URBEMIS), which is used by SCAQMD to estimate emissions for land use development projects. A detailed description of the construction equipment and the emissions by year is provided in Appendix A.

Road improvement projects are also included in the proposed project. Road improvements include widening of Douglass Road and elevation lowering, as well as bridge lowering and reconstruction and the addition of a widened sidewalk. Also included is an additional right turn lane at Katella Avenue. The placement of stub end rail tracks is also included and considered similar to road construction.

Table 1-1 provides a summary of the daily emissions associated with construction of the proposed project. A more detailed discussion of construction emissions is provided in Section 4.3 of this AQIA. Construction emissions are less than the significance thresholds for each of the criteria pollutants. (The significance thresholds are discussed in Section 3.5 of this AQIA.) NO_x emissions would be considered potentially significant without the proposed required mitigation measures discussed in Section 8.

Table 1-1
Proposed Project Construction Emissions

Pollutant	Daily Construction Emissions (lb/day)	Maximum Emission Year	SCAQMD Significance Thresholds (lb/day)	Exceeds Significance Threshold?
NO_x	98.0[1]	2012	100	No
ROG	55.0	2013	75	No
CO	89.2	2012	550	No
PM_{10}	53.1	2012	150	No
$PM_{2.5}$	15.6	2012	55	No
SO_x	0.1	2012	150	No
CO_2e	18,784.1	2012	-	-

[1] Mitigation required to reduce emissions below significance thresholds; see Section 8

Emissions associated with operation of the ARTIC facility will include typical building operations, such as heating and electricity usage. Emitting activities will also include a backup emergency generator and an increase in vehicle traffic. Operational emissions assessed for the proposed project will be shown as an increase in emissions from the existing Metrolink/Amtrak station to the proposed ARTIC facility. Table 1-2 provides a summary of the operational emissions associated with the proposed project. A more detailed discussion of operational emissions is provided in Section 4.4 with the modeling details provided in Appendix B of this AQIA. Operational emissions are less than the significance thresholds for each of the criteria pollutants.

Table 1-2
Maximum Proposed Project Daily Operational Emissions Increase

Pollutant	Daily Operation Emissions Increase (lb/day)	SCAQMD Significance Thresholds (lb/day)	Exceeds Significance Threshold?
NO_x	42.40	55	No
ROG	26.45	55	No
CO	269.00	550	No
PM_{10}	3.36	150	No
$PM_{2.5}$	2.19	55	No
SO_x	0.84	150	No
CO_2e	5,530.8 MT/yr	10,000 MT/yr(1)	No

Notes:

1. SCAQMD CEQA interim GHG Significance Threshold is 10,000 MT/yr CO_2e. The threshold is compared to the total increase in operational emissions and the construction activity averaged over 30 years.

1.4 NEARBY AND REGIONAL AIR QUALITY IMPACT

The proposed project is located in an area of existing and planned urban development, including a number of new housing units and expansion of existing businesses as discussed in Section 7.0 of this AQIA. The area is also a gateway area for three future possible additional major transportation projects: Anaheim Fixed Guideway Transit Corridor, California High-Speed Rail, and the California-Nevada Super Speed Train. These projects are relevant to ARTIC but are separate, distinct, and independent from ARTIC in terms of funding, lead agency status, purpose and need, and regulatory requirements. Each project has undergone or is currently undergoing their own separate project clearance process, including but not limited to CEQA and NEPA. The proposed project emissions and potential ambient air quality impact will be considered in combination with the existing and future development.

Potential ambient air quality impacts within existing development is assessed by evaluating the existing ambient air quality and comparing proposed project emissions to SCAQMD significance thresholds as discussed in previous sections of this AQIA. Potential ambient air quality impacts within future development is discussed in the following sections.

1.5 CUMULATIVE IMPACTS

Construction emissions are not considered cumulatively considerable since various construction projects are not likely to occur at the same time and in close proximity to each other. Construction emissions are highly variable and localized, such that even if there are more than one construction projects occurring in close proximity to each other, it is not likely for the combination of emissions to exceed the significance thresholds as long as the individual construction project emissions do not exceed the thresholds.

An improved transportation center and other nearby development projects will result in increased traffic within the regional area. Development of a transportation center, that will increase the availability of mass transit alternatives, will help reduce the number of vehicles on the road regionally, which is consistent with the AQMP and other regional plan strategies. A CO Hotspot analysis was also performed to show that the increased traffic levels will not result in CO impacts above the State and Federal ambient air quality standards. In addition, more stringent regulation of vehicle emissions will help to mitigate the air quality issues associated with additional development projects to some

extent. The regional cumulative impact due to operations of the proposed project and nearby development projects is not considered cumulatively considerable.

1.6 MITIGATION MEASURES

The proposed project will incorporate a number of mitigation measures that are discussed in Section 8.0 of this AQIA. These mitigation measures result in an insignificant ambient air quality impact for all emissions.

1.7 EMISSIONS ASSOCIATED WITH A NO PROJECT ALTERNATIVE

If the proposed project is not constructed, there will be increased traffic congestion in the area (since mass transit will be less available), and other planned future projects will continue to be built. The ambient air quality impact of the No Project Alternative is potentially greater than the proposed project.

1.8 SUMMARY OF SIGNIFICANCE

Section 10 summarizes air quality significance of the proposed project and nearby future projects. Only NO_x emissions potentially exceed the thresholds with all stages of construction considered. Construction emissions from ARTIC will not be considered significant as shown in Table 1-1 through the use of mitigation measures that include schedule and equipment controls for NO_x. None of the emissions of the proposed project, as shown in Table 1-1, exceed SCAQMD significance levels, and the remaining pollutant emissions are less than about thirty percent of the significance levels. It is not likely that ARTIC could cause or contribute to a local or regional exceedance of the ambient air quality standards. Operational emissions of ARTIC are less than about fifteen percent of SCAQMD significance levels, and are not likely to cause or contribute to an exceedance of ambient air quality standards.

The cumulative effect of construction of the proposed project and other future projects in the area is not considered cumulatively considerable or significant because construction is temporary, highly variable, and localized. Cumulative impacts of ARTIC operational emissions and future projects are also not considered significant since the proposed project emissions are relatively low and other projects in the area would have similar or lower emissions. There is no anticipated cumulative exceedance of the ambient air quality standards caused by the proposed project.

The operational emissions of greenhouse gases are less than the SCAQMD greenhouse gas interim significance threshold. ARTIC's location relative to major event and destination centers within the Platinum Triangle creates availability of current and future mass transit systems to occupants and visitors. The result will be less motor vehicle traffic on local roadways and freeways and a general reduction in motor vehicle travel throughout the region. Since motor vehicle traffic is the primary source of air pollution in the region, plans to reduce traffic will result in lower GHG emissions regionally. ARTIC's greenhouse gas emissions are relatively small compared to the significance threshold, and ARTIC should reduce regional traffic so ARTIC should not have a significant impact with effect to greenhouse gas.

Figure 1-1 Proposed Project Location Map

Figure 1-2 Proposed Project Vicinity

2.0 SUMMARY OF PROPOSED ACTION

The City of Anaheim (City) in collaboration with the Orange County Transportation Authority (OCTA), is proposing to relocate the existing Metrolink/Amtrak Anaheim Station (located within the Angels Stadium parking lot), approximately one-quarter (0.25) mile east along the existing OCTA rail right-of-way (ROW). The OCTA ROW is also known as the Los Angeles to San Diego (LOSSAN) corridor. The proposed project would be known as the Anaheim Regional Transportation Intermodal Center (ARTIC), which is bound by Angel Stadium to the east, the Honda Center to the north, the Santa Ana River to the west, and the LOSSAN corridor to the south. The facility will incorporate the following public transportation services:

- Metrolink
- Amtrak
- OCTA local bus
- OCTA Bravo! BRT
- Anaheim Resort Transit shuttles and circulators
- Anaheim Go Local rubber tired mixed-flow shuttles
- "Fly-Away" airport shuttles
- Connection to offsite private intercity buses
- Private tourism buses
- Taxi Services

The project includes a new 322,000 square feet (sqft), three level intermodal terminal building, with 30,000 sqft public plaza/drop off space. The below building level will include the Bus Transit Center, the Metrolink/Amtrak Concourse, and Program Space. The at-grade and above-grade levels will include the Public Hall/Waiting Area and Program Space. The remainder of the 16-acre parcel will be graded for roadways, parking areas, and open civic space. Figure 2-1 shows the ARTIC site plan.

The ARTIC project includes the following tasks to be completed:

- Demo of existing 16-acre site;
- Building of new intermodal terminal and open space surrounding the facility;
- Creation of surface parking area to the north and south of new terminal.
- Adding a third track, or a single-ended siding track (stub-end track), to accommodate the construction of the other two tracks;
- Widening/Improvements to Douglass Road south of Katella Avenue, including relocation of utilities;

- Widening and lengthening of the existing railroad bridge over Douglass Road; and
- Adding right turn lane to Katella Avenue;

Figure 2-1 ARTIC Site Plan

3.0 EXISTING ENVIRONMENT

3.1 PROPOSED PROJECT ENVIRONMENTAL SETTING

The project site is located within the City of Anaheim, which is part of the South Coast Air Basin (SCAB or Basin), a 6,600 square-mile area encompassing all of Orange County and the non-desert parts of Los Angeles, Riverside and San Bernardino Counties. The Basin is an area of high air pollution potential, particularly from June through September. Light winds and shallow vertical atmospheric mixing frequently reduce pollutant dispersion and cause elevated air pollution levels. Pollutant concentrations in the Basin vary with location, season and time of day. Ozone concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the Basin and adjacent desert. SCAB is under the jurisdiction of the South Coast Air Quality District (SCAQMD).

The air quality assessment for the proposed project includes estimating emissions associated with short-term construction and long-term operation of the proposed project. A number of air quality modeling tools are available to assess air quality impacts of projects. In addition, certain air districts, such as SCAQMD, have created guidelines and requirements to conduct air quality analyses. SCAQMD's current guidelines, *California Environmental Quality Act* (*CEQA) Air Quality Handbook*, *1993*, and updated through March, 2010, were adhered to in the assessment of air quality impacts for the proposed project.

3.2 REGIONAL CLIMATE

ARTIC is located in Anaheim, which is southeast of Los Angeles, about 15 miles inland from the Pacific Ocean in Southern California. The elevation is approximately 160 feet above mean sea level. The climate in the region is Mediterranean, with low humidity and an average of 328 days of sunshine each year. The average annual rainfall is 14 inches per year, with an annual average temperature of 73°F.

Climate in the SCAB is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern border, and high mountains surround the rest of the SCAB. SCAB lies in the semi-permanent high-pressure zone of the eastern Pacific; the resulting climate is

mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. Periods of extremely hot weather, winter storms, or Santa Ana wind conditions do occur. Santa Ana condition describes a dry and warm wind in southwestern California that blows westward from the desert through the canyons and towards coastal areas. This seasonal phenomenon typically occurs from October through March.

The climate and topography are highly conducive to the formation and transport of air pollution. The local wind is generally light and the dominant wind pattern is a daytime on-shore breeze and nighttime offshore breezes. Air stagnation may occur during the early evening and early morning during periods of transition between day and night wind patterns. Santa Ana wind conditions occasionally occur to disrupt this pattern. If the Santa Ana winds are strong, they can surpass the sea breeze and carry suspended dust and pollutants from the desert into the SCAB and off the coast. If they are weak, they are opposed by the sea breeze and cause air stagnation, resulting in high pollution events.

The combination of topography, low mixing height, abundant sunshine, and emissions from the second largest urban area in the United States gives the SCAB the worst air pollution problem in the nation.

3.3 REGIONAL AIR QUALITY

Over the past 30 years, the South SCAQMD has made substantial progress in reducing air pollution levels in southern California. The area was previously designated nonattainment for all of the National Ambient Air Quality Standards (NAAQS), except for sulfur dioxide (SO_2) and lead. The area is now defined as in attainment for nitrogen dioxide (NO_2), SO_2, lead, and carbon monoxide (CO). Levels of particulate matter and ozone, while reduced substantially from their peak levels, are still far from attainment in the Basin.

Both the state of California and the federal government have established health-based ambient air quality standards (AAQS) for six air pollutants. As shown in Table 3-1, these pollutants include ozone, CO, NO_2, SO_2, respirable particulate matter equal to or less than 10 microns in diameter (PM_{10}), and lead. In July 1997, the United States Environmental Protection Agency (USEPA) adopted new standards for eight-hour ozone and for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). The

State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Typically, the California AAQS (CAAQS), which have been adopted by the California Air Resources Board (CARB), are more stringent than the Federal AAQS (NAAQS).

Table 3-1
National and California Ambient Air Quality Standards
(All standards expressed in ug/m^3 except as noted.)

Pollutant	Averaging Time	CAAQS [(1)] (ug/m^3)	NAAQS [(2)] (ug/m^3)	Most Stringent Standard (ug/m^3)
Ozone	1-hour	90 ppb (180 ug/m3)	No separate standard	90 ppb
	8-hour	70 ppb (137 ug/m3)	75 ppb (147 ug/m^3)	70 ppb
PM_{10}	24-hour	50	150	50
	Annual	20	No separate standard	20
$PM_{2.5}$	24-hour	No separate standard	35	35
	Annual	12	15	12
CO	1-hour	23,000	35 ppm (40,000 ug/m^3)	23,000
	8-hour	10,000	9 ppm (10,000 ug/m^3)	10,000
NO_2	1-hour	339	0.100 ppm [(3)] (189 ug/m^3)	189
	Annual	57	0.053 ppm (100 ug/m^3)	57
SO_2	1-hour	655	No separate standard	655
	3-hour	No separate standard	1,300	1,300
	24-hour	105	365	105
	Annual	No separate standard	80	80
Lead	30-day	1.5	No separate standard	1.5
	Quarterly	No separate standard	1.5	1.5
Sulfates	24-hour	25	No separate standard	25
Visibility Reducing Particulate	8-hour b_{ext}	<0.23 km^{-1}	No separate standard	<0.23 km^{-1}

Pollutant	Averaging Time	CAAQS (1) (ug/m^3)	NAAQS (2) (ug/m^3)	Most Stringent Standard (ug/m^3)
Hydrogen sulfide	1-hour	42	No separate standard	42
Vinyl chloride	24-hour	26	No separate standard	26

Notes:
1. California standards for ozone, CO (except Lake Tahoe), SO_2 (1 and 24 hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual 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 PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact USEPA for further clarification and current federal policies.
3. 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).
N/A = standard is not applicable
ppm = parts per million by volume
AAM = annual arithmetic mean
µg/m3 = micrograms per cubic meter
km = kilometer
Source: CARB, March 2010

3.3.1 Area Designations and Pollutant Descriptions

The SCAB fails to meet national standards for ozone, $PM_{2.5}$, and PM_{10} and is considered a federal nonattainment area for these pollutants. Nonattainment designations are categorized into four levels of severity: (1) moderate, (2) serious, (3) severe and (4) extreme. The following are descriptions of the attainment classifications:

- Unclassified: a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
- Attainment: a pollutant is designated attainment if the state AAQS for that pollutant was not violated at any site in the area during a three year period.
- Nonattainment: a pollutant is designated nonattainment if there was at least one violation of a state AAQS for that pollutant in the area.
- Nonattainment/Transitional: is a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

All air pollution control districts have been formally designated as attainment or nonattainment for each CAAQS. Table 3-2 lists the criteria pollutants and their relative attainment status. Serious or worse nonattainment areas are required to prepare air quality management plans (AQMPs) to include specified emission reduction strategies in an effort to meet clean air goals. Brief descriptions of the various regulated pollutants and others of concern follow the table.

Table 3-2
Attainment Status of Criteria Pollutants in SCAB

Pollutant	California State Standards	Federal Standards
Ozone – 1-hour [1]	Extreme Nonattainment	Extreme Nonattainment[1]
Ozone – 8 hour	Extreme Nonattainment	Severe-17 Nonattainment[2]
PM_{10}	Serious Nonattainment	Serious Nonattainment[3]
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Attainment[4]
SO_2	Attainment	Attainment
NO_2	Attainment	Attainment/Maintenance
Lead	Attainment	Attainment
All Others	Attainment/Unclassified	Attainment/Unclassified

Source: CARB; changes to State Area Designations became effective July 26, 2007; changes to National Area Designations current as of February 2009 (http://www.arb.ca.gov/desig/adm/adm.htm).
1 National 1-hour ozone standard was revoked in June 2005.
2 CARB may petition for Extreme designation.
3 Annual Standard Revoked September 2006.
4 USEPA granted the request to redesignate the SCAB from nonattainment to attainment for the CO NAAQS on May 11, 2007 (Federal Register Volume 71, No.91), which became effective as of June 11, 2007.

Ozone

Ozone (smog) is formed by photochemical reactions between oxides of nitrogen (NO_x) and reactive organic gases (ROG, or volatile organic compounds [VOC]) rather than being directly emitted. Ozone is a pungent, colorless gas typical of Southern California smog. Elevated ozone concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors

such as the sick, the elderly, and young children. Ozone levels peak during summer and early fall. USEPA has classified the SCAB as an “extreme” nonattainment area for both Federal and State one-hour ozone standards, however USEPA revoked the one-hour ozone standard, effective June 2005. USEPA had officially designated the status for the SCAB regarding the eight-hour ozone standard as “Severe 17.” SCAQMD formally requested CARB to submit a request to USEPA for a voluntary reclassification of the SCAB from “Severe-17” to “Extreme” nonattainment for ozone with the submission of their 2007 AQMP on June 15, 2007. Through this request, the ozone attainment date for SCAB will be extended until June 15, 2024.

Particulate Matter Less than 10 Microns

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air (e.g., soot, dust, smoke, fumes, and aerosols). Coarse particles (i.e., PM_{10}) derive from a variety of sources, including windblown dust and grinding operations. PM_{10} can accumulate in the respiratory system and aggravate health problems such as asthma. PM_{10} also causes visibility reduction. The entire SCAB is a nonattainment area for the Federal and State PM_{10} standards.

Particulate Matter Less than 2.5 Microns

Fine particulate matter (i.e., $PM_{2.5}$) is primarily the result of fuel combustion and exhaust from power plants, diesel buses, and trucks. Primary gas emissions, including SO_2 releases from power plants and industrial facilities and NO_X releases from power plants, automobiles and other types of combustion sources, chemically react in the atmosphere to form $PM_{2.5}$. USEPA’s scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The entire SCAB is a nonattainment area for the Federal and State $PM_{2.5}$ standards.

Carbon Monoxide

CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. Orange County has been designated by CARB to be an attainment area for State CO standards. The SCAB was formerly in nonattainment with federal CO standards. Effective June 11, 2007, USEPA designated the SCAB as attainment with federal CO standards.

Sulfur Dioxide

SO_2 is a colorless irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire SCAB is in attainment with both Federal and State SO_2 standards.

Nitrogen Oxides

NO_2, a reddish-brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to collectively as NO_x. NO_x is a primary component of and the photochemical smog (or ozone) reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. SCAB is designated as a maintenance area under the Federal standards and an attainment area under the State standards.

Lead

Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of lead from gasoline, there have been no violations at any of SCAQMD's regular air monitoring stations since 1982. The entire SCAB is in attainment for the Federal and State standards for lead.

Reactive Organic Gases/ Volatile Organic Compounds

Both ROG and volatile organic compounds (VOC) are precursors in forming ozone. ROG consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. VOCs are hydrocarbon compounds (i.e., any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. Smog is formed when ROG and NO_x react through atmospheric photochemical reactions. ROG and VOCs often have an odor and can also, in some cases, be classified as a toxic air contaminant (TAC). ROGs are typically found in vehicle exhaust. VOCs may be found in products such as gasoline, alcohol, degreasers, and solvent-based paints.

Toxic Air Contaminants

TACs refer to a diverse group of air pollutants that can affect human health, however there are no ambient air quality standards adopted for TACs. With relation to the proposed project, the primary TACs of concern includes diesel particulate matter. In 1998, CARB identified diesel engine particulate matter as a TAC. Although there are no published ambient air quality standards for TACs, there are significance levels established as discussed in Section 3.5 of this AQIA.

Greenhouse Gases

GHGs have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Atmospheric GHG, such as CO_2, plays a role in determining the earth's surface temperature. Solar radiation enters earth's atmosphere from space, and a portion of the radiation is absorbed by the earth's surface. Earth re-radiates this energy back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. This radiation (that otherwise would have escaped back into space) is now retained in the atmosphere, and results in a warming of the atmosphere. This phenomenon is known as the greenhouse effect.

Since each GHG absorbs radiation at different rates, emissions of each GHG must be normalized based on a standard global warming potential. Equivalent carbon dioxide (or CO_2e) describes how much global warming a given type and amount of greenhouse

gas may cause, using the functionally equivalent amount or concentration of CO_2 as the reference.

3.3.2 Regulatory Settings

Federal Regulations/Standards

USEPA established NAAQS for six major pollutants, termed "criteria" pollutants pursuant to the Federal Clean Air Act (CAA) of 1970. Criteria pollutants are defined as those pollutants for which the Federal and State governments have established AAQS, or criteria, for outdoor concentrations in order to protect public health (see Table 3-1). USEPA has designated SCAG as the Metropolitan Planning Organization responsible for ensuring compliance with the requirements of the CAA for the SCAB.

These standards were set as primary standards to protect human health and as secondary standards to protect property. The standards are based on pollution concentrations averaged over specified time periods. Regulation towards attainment of these standards is conducted through USEPA, State and regional Air Districts.

State Regulations/Standards

Based on the CAA, state agencies are empowered to enforce the federal standards and develop additional standards as deemed necessary to protect public health and the environment. CARB was formed for this purpose and established the CAAQS, many of which are more stringent than the corresponding NAAQS (see Table 3.1). CARB and the regional air districts operate numerous air quality monitoring stations throughout the state to collect data used to measure regional pollutant concentrations to determine the level of attainment with the standards. CARB develops a State Implementation Plan (SIP) which incorporates local nonattainment plans developed by air districts for regions found to be in nonattainment with the standards. The attainment plans are required to achieve a minimum five percent annual reduction in the emissions of nonattainment pollutants unless all feasible measures have been implemented. The air districts are responsible for assuring that both federal and state standards are attained and maintained within their regions.

Regional Air Quality Planning Framework

The 1976 Lewis Air Quality Management Act established SCAQMD and other air districts throughout the State. The Federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the Federal standards in nonattainment areas of the state.

CARB coordinates and oversees both State and Federal air pollution control programs in California. CARB oversees activities of local air quality management agencies and is responsible for incorporating AQMPs for local air basins into a State Implementation Plan (SIP) for USEPA approval. CARB maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by CARB to classify air basins as "attainment" or "nonattainment" with respect to each pollutant and to monitor progress in attaining air quality standards. CARB has divided the State into 15 air basins. Significant authority for air quality control within them has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

SCAQMD Air Quality Management Plan

SCAQMD is required to promulgate an AQMP that will bring the area into attainment for all nonattainment pollutants. The most recent plan was approved by SCAQMD Governing Board on June 1, 2007. The AQMP included attainment plans for both annual and 24-hour $PM_{2.5}$ as well as 8-hour ozone. In subsequent meetings with CARB, AQMD Board Members and staff recommended more aggressive actions to reduce emissions from mobile sources, which contribute over 80 percent of the particulate matter pollution in the SCAB. CARB staff worked closely with SCAQMD to strengthen the plan to further reduce emissions. As a result of this joint effort, CARB staff identified several mobile source control strategies that could be strengthened together with local, federal and AQMP measures that resulted in NO_x reductions to assure attainment of the $PM_{2.5}$ standard in 2015. CARB Board adopted the State Strategy for the 2007 SIP and the 2007 South Coast AQMP as part of the SIP on September 27, 2007.

3.4 PROPOSED PROJECT AREA AIR QUALITY

3.4.1 Local Air Quality

SCAQMD, together with CARB, maintain ambient air quality monitoring stations in the SCAB. The air quality monitoring station closest to the site is the Anaheim Loara School (Pampas Lane) station, and its air quality trends are representative of the ambient air quality in the proposed project area. The pollutants monitored are CO, ozone, NO_2, PM_{10}, and $PM_{2.5}$.

The Anaheim Loara School Station is located at 1630 Pampas Lane in Anaheim. The Anaheim monitoring station at Pampas Lane began operation in 2001, as its original location was off Harbor Boulevard in Anaheim. The location of the Anaheim air quality monitoring station with respect to the ARTIC facility is shown in Figure 3-1.

Figure 3-1 Location of Anaheim Air Quality Monitor

Table 3-3 shows the most recent five years of monitoring data, from 2004 through 2008. The ambient air quality data shows that NO_2 and CO levels are below the relevant State and Federal standards at the Anaheim Pampas Lane Station. Ozone and particulate matter levels show exceedances of both the state and federal standards.

Table 3-3 – Air Quality Monitoring Summary 2004-2008
Anaheim Pampas Lane Monitoring Station

Pollutant/ Averaging Period	Standard	Year	Maximum Concentration (ppm)	Days Exceeding	
				State Standard	Federal Standard
Ozone 1-hour	State: 0.09 ppm Federal: revoked	2004	0.120	14	-
		2005	0.095	1	-
		2006	0.113	6	-
		2007	0.127	2	-
		2008	0.105	2	-
Ozone 8-hour	State: 0.070 ppm Federal: 0.075 ppm	2004	0.098	50	29
		2005	0.078	8	2
		2006	0.089	5	3
		2007	0.100	7	1
		2008	0.086	10	5
Carbon Monoxide (CO) 8-hour	State: 9.0 ppm Federal: 9 ppm	2004	4.09	0	0
		2005	3.27	0	0
		2006	2.90	0	0
		2007	2.91	0	0
		2008	3.44	0	0
Respirable Particulate Matter (PM_{10}) 24-hour	State: 50 ug/m3 Federal: 150 ug/m3	2004	74.0	7	0
		2005	65.0	3	0
		2006	104.0	7	0
		2007	489.0	6	1
		2008	61.0	3	0
Fine Particulate Matter ($PM_{2.5}$) 24-hour	State: N/A Federal: 35 ug/m3	2004	58.9	-	20
		2005	54.7	-	13
		2006	56.2	-	7
		2007	79.4	-	14
		2008	67.8	-	13
Nitrogen Dioxide (NO_2) 1-hour	State: 0.18 ppm Federal: 0.100 ppm (98^{th} percentile)	2004	0.122	0	-
		2005	0.089	0	-
		2006	0.114	0	-
		2007	0.086	0	-
		2008	0.093	0	-

Source: CARB Air Quality Data Statistics, data after 2008 is considered preliminary.
ppm: parts per million; µg/m3: micrograms per cubic meter
Monitor Location: Anaheim Loara School Station, 1630 Pampas Ln, Anaheim CA 92802

3.5 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

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

3.5.1 South Coast Air Quality Management District Thresholds

CEQA allows for the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. SCAQMD has established emission quantity thresholds of significance for air quality for construction activities and project operation as shown in Table 3-4.

Table 3-4
SCAQMD Significance Thresholds (Pounds per Day)

Air Pollutant	Construction Phase	Operational Phase
Reactive Organic Gases (ROG)	75	55
Carbon Monoxide (CO)	550	550
Nitrogen Oxides (NOx)	100	55
Sulfur Oxides (SOx)	150	150
Particulate Matter (PM_{10})	150	150
Particulate Matter ($PM_{2.5}$)	55	55

In addition to the daily emission thresholds listed above, projects are also subject to the ambient air quality standards. These are addressed though an analysis of localized CO impacts. The California 1-hour and 8-hour CO standards are:

- 1-hour = 20 parts per million
- 8-hour = 9 parts per million

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below State and Federal CO standards. If ambient levels are below the standards, a project is considered to have significant impacts if project emissions results exceed one or more of these standards. If ambient levels already exceed a State or Federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. SCAQMD defines a measurable amount as 1.0 ppm or more for the 1-hour CO concentration or 0.45 ppm or more for the 8-hour CO concentration.

For TACs, SCAQMD has established an ambient impact threshold of not causing more than 10 in a million increased cancer risk or non-cancer health effects with a hazard index greater than 1.0.

3.5.2 SCAQMD Interim Greenhouse Gas Threshold of Significance

SCAQMD has established an interim GHG Significance Threshold on December 5, 2008 for projects in which they are the lead agency for CEQA. The threshold is 10,000 metric tones per year (MT/yr) of carbon dioxide equivalents (CO_2e). The threshold is compared to the total increase in operational emissions and the construction activity averaged over 30 years. Although this threshold is used for comparison purposes in this project, the threshold does not apply to CEQA projects where the lead agency is not SCAQMD.

4.0 PROPOSED PROJECT EMISSIONS

4.1 OPERATIONAL PLANS

Potential emitting activities at ARTIC include the following:

- Construction;
- Onsite Operations with Increased Vehicle Trips; and
- Intersection and Traffic Flow Changes.

A baseline, no build scenario, was used to assess the current emissions from the existing Metrolink/Amtrak station. The difference in emissions from the no build scenario to ARTIC will be shown as the increase in emissions for the proposed project.

The following sections include a detailed description of the emitting activities that will occur during the proposed project.

4.2 BASELINE EMISSIONS

Baseline emissions for the no build scenario would include the emissions associated with the existing Metro station located west of the SR-57 freeway, north of the Stadium, and south of Katella Avenue, with The Grove to the west. The existing Metro station consists of a 6,814 square foot (sqft) facility, currently providing 405 parking spaces for passengers using automobiles to access the station site. The station parking demand approaches the allocated number of spaces.

Facility emissions were assessed using the Urban Emissions Model, 2007, version 9.2.4 (URBEMIS), which is used by SCAQMD to estimate emissions for land use development projects. The model uses CARB's Emission Factors, 2007 (EMFAC2007) model for on-road vehicle emissions and CARB's OFFROAD2007 model for off-road vehicle emissions. The Anaheim Metrolink/Amtrak Station was modeled using the blank land use category, with user inputs to define the project. A 6,820 sqft Metro station was added to the model and used with the 405 parking spaces to calculate the daily trip rate, assuming two trip endpoints for arrival and departure. The calculated trip rate of 118.77 trips, per 1,000 sqft, per day was used for the model assessment. Emissions for the Anaheim Metrolink/Amtrak Station are summarized in Table 4-3, with the detailed URBEMIS model results provided in Appendix B.

4.3 CONSTRUCTION EMISSIONS

Construction of ARTIC is scheduled to begin in the spring of 2011, with final construction scheduled to conclude in the fall of 2013.

Construction emissions were estimated using URBEMIS and the Road Construction Emissions Model, July 2009, Version 6.3.2 (RCEM) provided by the Sacramento Metropolitan Air Quality Management District. The following sections define the construction sequences with included activities and the anticipated schedule.

4.3.1 Construction of New Intermodal Terminal

The main construction for the new intermodal terminal will include demolition, mass grading, fine grading, excavation, building construction, paving, and architectural coating. The URBEMIS model will be used to assess the construction emissions based on the land use data entered, the duration on each construction sequence and the equipment used. The detailed model inputs and results are provided in Appendix A.

Demolition of the existing buildings and parking area will occur first. This will include 2.2 acres of parking area south of the LOSSAN corridor and the remaining 13.8 acres reserved for the intermodal terminal, civic space, drop-off areas, and parking. The demolition sequence is scheduled to occur over a period of four months. Emissions from demolition will include heavy equipment tailpipe emissions, worker trip emissions, and fugitive dust emissions.

Excavation for the terminal building will include removal of approximately 80,000 cubic yards of soil. The excavation phase will occur over a five-month period. Emissions from excavation include heavy equipment tailpipe emissions, worker trip emissions, truck travel to haul soil offsite, and fugitive dust emissions.

The grading phase will encompass the entire 16-acre site and is scheduled to occur over a six-month period. Emissions from grading include heavy equipment tailpipe emissions, worker trip emissions, and fugitive dust emissions.

Construction for ARTIC includes a 310,000 square-foot Intermodal Terminal, 86,000 sqft of platforms, and 12,000 sqft for a Stadium Pavilion. The Intermodal Terminal includes operations, bus waiting and boarding areas, and convenience retail and food

services. The construction sequence will occur over a period of fourteen months. Emissions from construction include heavy equipment tailpipe emissions, worker trip emissions, landscaping emissions, and architectural coating.

Site finishing, hardscape, and paving for ARTIC includes the remainder of the site area. Finish grading and preparation of the site will occur for two months. Paving will occur over a three-month period. Emissions from paving and landscape finishing include worker trips, paving equipment emissions, pavement off-gas emissions, and landscaping equipment emissions.

4.3.2 Construction of New Stub-End Track

The main construction sequences for the new sub-end track and platform will include minor track demolition, grading or site clearing, new tracks, and berms. RCEM will be used to assess emissions from the railway track construction, since the construction of the foundation for railway tracks is similar to the construction of roads.

Improvements to the track will include a new 2,500-ft stub-end track reaching from the current station to just west of the Santa Ana River. Construction of the railway tracks and platforms is scheduled to occur over at last seven months. Emissions from this construction activity include worker trips, heavy equipment emissions, utility modification, soil placement and fugitive dust. During construction, a modular temporary station will be used that will not have any impact on air emissions.

4.3.3 Roadway Improvement Activities

Several roadway construction/improvement activities are included in the proposed project assessment. These include lowering of Douglass Road by eight feet, widening of Douglass Road to eight lanes, construction of a sidewalk along Douglass Road, construction of a new Douglass Road rail bridge, and the addition of a right turn lane on Katella Avenue. The RCEM will be used to assess these project emissions.

The Douglass Road vertical profile will be lowered by eight feet from the existing roadway surface to provide additional clearance necessary for the widened railroad bridge. Regrading of approximately 1,100 feet north and south of the railroad bridge along Douglass Road will be necessary to meet the grade requirements. Douglass Road will remain four lanes wide from Angels Stadium to the bridge and will be widened to eight lanes as it approaches the intersection at Katella Avenue. Road widening will

include demolition of two existing buildings near the intersection and some rework of the adjacent parking area for the remaining business area. Improvements to Douglass Road are anticipated to occur over a two-month period. Emissions from the Douglass Road improvement will include worker trips, roadway regrading, heavy equipment emissions, paving emissions, and fugitive dust. These emissions were assessed using the road widening project type in the RCEM model.

An 800-foot long pedestrian sidewalk will be constructed along one side of Douglass Road under the SR-57 overpass. Construction of the sidewalk is anticipated to occur over a one-month period. Emissions from the sidewalk construction will include minimal equipment, concrete placement, and fugitive dust.

The Douglass Road Bridge will be demolished and reconstructed in three sequences over a thirteen-month period. The new bridge will be three tracks wide to accommodate the new rail stub-end track. Emissions from the bridge reconstruction will include worker trips, demolition and heavy equipment emissions, paving emissions, and fugitive dust. The bridge construction project type was used to model the emissions in the RCEM model.

Katella Avenue will be widened by five feet to add a right turn lane in the east-bound lanes for traffic turning into ARTIC. Improvements to Katella Avenue are anticipated to occur over a two-month period. Emissions from the Katella Avenue improvement projects will include worker trips, heavy equipment emissions, paving emissions, and fugitive dust.

4.3.4 Utility Relocation and Modification

Construction along Douglass Road and within the project area will require some reconfiguration of underground utilities. Utilities, drainage, and sub-grade trenching activities are included and calculated concurrently with each construction activity using either URBEMIS or RCEM.

4.3.5 Total Construction Emissions

Total construction emissions for the development of the project site and intermodal terminal were assessed using URBEMIS for each year that construction activities would occur. Road, sidewalk, bridge, and railroad track construction projects were assessed using RCEM for each specific sequence. Intermodal terminal construction will occur in

2011, 2012, and 2013, while road construction projects are anticipated to occur mainly in 2012 and 2013. The construction year with the worst case (or maximum) emissions for all projects is 2012. Emissions for the intermodal terminal construction are shown in Table 4-1.

Table 4-1
Intermodal Terminal Construction Worst-Case Daily Emissions

Intermodal Terminal Construction	NO_x (lb/day)	ROG (lb/day)	CO (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
2011 Max Emissions	70.7	7.6	31.7	0.02	44.4	11.4	8,741.7
2012 Max Emissions	86.5	9.7	57.1	0.1	45.0	12.0	12,977.8
2013 Max Emissions	47.5	51.8	47.9	0.05	43.8	10.8	9,212.3

Note: The emission calculations and URBEMIS model results are shown in Appendix A.

The total proposed project emissions will include both the intermodal terminal construction and the road improvement projects. The total project emissions were used in comparison to SCAQMD significance thresholds for project construction. The total project emissions are shown in Table 4-2 and further details are provided in Appendix A.

Table 4-2
Total Proposed Project Construction Emissions from All Stages – Unmitigated

Construction Activity	NO_x (lb/day)	ROG (lb/day)	CO (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Intermodal Terminal	86.5	51.8	57.1	0.1	45.0	12.0	12,977.8
Stub-end Track	10.5	1.4	7.6	<1	2.6	1.0	1,258.3
Douglass Road Bridge	19.9	2.4	10.7	<1	1.9	1.1	2,284.0
Douglass Road Widening	17.5	2.5	11.7	<1	3.0	1.3	2,012.5
Douglass Road Sidewalk	1.4	0.4	2.1	<1	0.6	0.2	251.5
Katella Ave Right Turn Lane	15.2	1.8	7.8	<1	1.6	0.8	1,541.60
Total Proposed Project – All Stages	151.0	60.3	96.9	<1	54.7	16.4	20,325.7
Significance Thresholds	100	75	550	150	150	55	-

Construction Activity	NO_x (lb/day)	ROG (lb/day)	CO (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Significant?	Potentially	No	No	No	No	No	No

Notes:

1. The construction URBEMIS model and RCEM calculation results are shown in Appendix A.
2. This represents a worst case where all stages of construction occur simultaneously for comparison to significance thresholds. The summary table in Appendix A provides the breakout by year.
3. RCEM model does not calculate SO_x emissions; assumed to be <1 lb/day based on URBEMIS results.

The total project emissions do not exceed the significance thresholds for construction, with the exception of NO_x. Maximum unmitigated NO_x emissions from all construction sequences was estimated at 151 lbs/day, which potentially exceeds the threshold. Mitigation of NO_x emissions below the significance thresholds can occur through considerations of schedule and the addition of controls as discussed in Section 8.0.

4.4 ON-SITE OPERATIONAL EMISSIONS

4.4.1 On-Site Operational Criteria Pollutant Emissions

Operational emissions were assessed to included criteria pollutants and greenhouse gases. The details of the calculations are shown in Appendix B.

On-Site Operational Emissions include:

- ARTIC operations;
- An increase in vehicle trips per day; and
- A emergency backup generator

ARTIC operation emissions were also assessed using URBEMIS, using SCAQMD database for vehicle emission factors (i.e., EMFAC). ARTIC was modeled using the "blank land use" category, as a 322,000 sqft building. The platforms were also modeled using the "blank land use" category, as a 42,000 sqft structure. Within the terminal building, a 5,000 sqft "convenience market" category was included to represent the retail area located and an 18,000 sqft "fast food restaurant" category was used to model the food and concessions area. The 30,000 sqft civic area was modeled using the "city park land use" category. Potential emission sources modeled include electricity and natural gas usage for building heat and power, and convenience retail and food services. Emissions from these land use sources include criteria pollutants and greenhouse gases.

The vehicle trip rates for both the existing station and the proposed ARTIC facility were provided by the traffic study performed for the project (Linscott, Law and Greenspan Engineers, 2010) and included in the URBEMIS model runs. Based on the traffic study, users of the existing Metrolink/Amtrak station average 1,015 daily trips, and 4,714 daily trips are expected for the new ARTIC facility. Emissions for the proposed ARTIC operations are summarized in Table 4-3, with the detailed URBEMIS model results provided in Appendix B.

Table 4-3
ARTIC Operational Daily Emissions

Operational Activity	NO_x (lb/day)	ROG (lb/day)	CO (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Stationary Source (Electricity, Natural Gas Usage, Landscaping)	2.75	1.25	9.96	0.00	0.03	0.03
Emergency Backup Generator(2)	1.54	0.93	8.02	0.57	0.22	0.17
Mobile Sources	46.43	29.69	323.78	0.37	3.96	2.54
Total ARTIC Operational	50.72	31.87	341.76	0.94	4.21	2.74
Baseline Operations – Existing Metrolink/Amtrak Station	-8.32	-5.42	-72.76	-0.10	-0.85	-0.55
Difference in Emissions (ARTIC – Existing Station)	42.40	26.45	269.00	0.84	3.36	2.19
SCAQMD Significance Threshold	55	55	550	150	150	55
Significant?	No	No	No	No	No	No

Note: 1. Detailed emission calculations are shown in Appendix B.
2. Emergency generator modeled conservatively at one hour per day

Additionally, a 1,000-kW emergency power backup generator will be available. Daily emissions conservatively assumed testing would occur for a maximum of one hour on a given day, although typical testing and maintenance operations are anticipated to be 15 minutes per week. Emissions from the emergency generator were assessed using emission factors based on CARB Off-Road Diesel Engine Standards for criteria pollutants and AP-42 emission factors for greenhouse gases. Using PM_{10} emissions as

a surrogate indicator for diesel particulate matter, TAC emissions are considered negligible and insignificant.

4.4.2 On-Site Operational Greenhouse Gas Emissions

GHG emissions for the proposed project are the result of the use of electricity, natural gas combustion, and increased vehicles exhaust. URBEMIS and RCEM were used to quantify the GHG emissions from the operational on-site sources of the proposed ARTIC facility, including the terminal building and the emergency generator, as well as the temporary construction emissions. CO_2e was calculated based on the total operational emissions plus construction emissions amortized over 30 years (per SCAQMD guidance). The emissions shown in Table 4-4 demonstrate that the proposed project is below the GHG significance thresholds.

Table 4-4
Proposed Project Operational Greenhouse Gas Emissions

Operational Activity	CO_2 (lb/day)	CO_2e (MT/yr)
Stationary Source (Electricity, Natural Gas Usage, Landscaping)	3,178.8	526.3
Emergency Backup Generator	1,624.0	38.3
Mobile Sources	39,434.8	6,528.9
Construction(1)	–	197.3
Total Proposed Project Operational	44,237.6	7,093.5
Existing Metrolink/ Amtrak Station	-9,438.3	-1,562.6
Difference in Emissions (Proposed Project – Existing Station)	34,799.3	5,530.8
SCAQMD Significance Threshold	–	10,000(1)
Significant?	–	No

1. Per SCAQMD CEQA interim GHG guidance, emissions from construction activity is averaged over 30 years.

4.5 ADDITIONAL TRAFFIC EMISSIONS

The proposed project will increase the number of parking spaces available for persons utilizing the transportation services. In addition, there may be increased traffic flow and possible congestion at various intersections near the proposed project site. The potential for increased traffic flow and possible congestion to cause an adverse ambient air quality impact was assessed as described in Section 6.3.2 of this AQIA.

5.0 AIR QUALITY REGULATORY REQUIREMENTS AFFECTING OPERATIONS AND EMISSIONS

ARTIC is located in SCAQMD. ARTIC is subject locally to SCAQMD rules and regulations. The applicable CARB and USEPA regulations must be followed. The applicability of the various rules and regulations to the proposed project will be discussed in this section.

5.1 CONSTRUCTION EMISSIONS

Construction activities are required to comply with applicable SCAQMD prohibitions (Regulation IV) and the following source-specific standards:

Rule 401 – Visible Emissions prohibits the emission of air contaminants that result in exceedances of the opacity limits for more than three minutes in any one hour. Diesel soot from un-tuned construction equipment and vehicles or excessive fugitive dust from the site may cause visibility issues.

Rule 402 – Nuisance states that air contaminant emissions from a given source shall not cause “injury, detriment, nuisance, or annoyance” to any large number of people or create an endangerment to “comfort, repose, health or safety” of any such people. Excessive emissions of regulated pollutants or odors from equipment or construction activities such as asphalt paving and architectural coating are typical examples of nuisance air contaminants

Rule 403 – Fugitive Dust targets excessive amounts of local atmospheric dust created from activities on man-made, unpaved areas, such as an active construction site. Dust can originate from large exposed areas where work is occurring or from vehicles driven through the site. Several dust control measures are listed in the rule, including the following:

- No visible dust emissions beyond the property line
- No dust emissions exceeding 20% opacity anywhere on the property
- No off-site increase in ambient PM_{10} concentrations greater than 50 ug/m3
- No track-out exceeding 25 feet from the property
- Wheel washing or paving to eliminate track out
- Employment of a dust control supervisor who has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance
- Watering to maintain soil moisture at 12% on haul roads and other active unpaved surfaces that are not chemically stabilized

- Watering to prevent visible dust more than 100 feet from any earth moving or mining activity
- Watering, dust suppressants, and/or re-vegetation of inactive disturbed areas to prevent wind driven dust
- Daily watering and 15 mph speed limit on unpaved roads
- Chemical stabilization, watering, covering, and/or enclosing storage piles.

5.2 OPERATIONAL EMISSIONS

5.2.1 New Source Review

The purpose of New Source Review (NSR) is to prevent emissions from new, modified or relocated facilities from causing an exceedance in the region's attainment of the NAAQs. In SCAQMD, Regulation XIII, which implements NSR, governs projects that result in an emissions increase of any nonattainment air pollutant associated with a stationary source of emissions. If certain thresholds are exceeded, projects may be required to mitigate emissions using controls or obtain emission offsets.

For the proposed project, relocation of the intermodal to a new location within the air district will primarily result in increases to air emissions associated with mobile sources. The only permitted source of emissions expected will be a 1000 kilowatt (KW) emergency backup generator with an USEPA Certified Tier 4 engine, whose planned operation typically will be one hour per month for maintenance and testing purposes.

5.2.2 New Source Performance Standards

New Source Performance Standards (NSPS) refer to technology-based standards that were developed for specific categories of stationary sources. These standards found in 40 Code of Federal Regulations (CFR) Part 60 are intended to promote use of the best air pollution control technologies by comparing available technologies based on cost of incremental pollution reduction and any other non-air quality, health, and environmental impact and energy requirements. Since the proposal of NSPS, USEPA has promulgated 88 standards for new, modified and reconstructed affected facilities in specific source categories such as manufacturers of glass, cement, rubber tires and wool fiberglass.

The NSPS for compression ignition internal combustion engines will be applicable to the emergency generator planned for ARTIC. ARTIC will include a 1,000 KW diesel-fueled emergency generator. This engine (termed a compression ignition internal combustion

engine) will be regulated by the NSPS promulgated at 40 CFR Part 60, Subpart IIII (40 CFR 4200 et seq.). Subpart IIII specifies emission limits for emissions from the compression ignition internal combustion engine of 1.2 grams per horsepower hour NO_x and 0.11 grams per horsepower hour PM_{10} (40 CFR 4205(d)) with recordkeeping and labeling requirements. The manufacturer of the engine is required to certify that the engine does not exceed the emission limits required by this regulation.

5.2.3 AB2588 Hot Spots Program

In 1987, the California legislature passed Assembly Bill (AB) 2588, the Air Toxics "Hot Spots" Information and Assessment Act. AB 2588 requires stationary sources of air pollutants to periodically report the type and quantities of specified TACs that are routinely or intermittently released. The collected data is used by CARB to assess potential health risks caused by certain facilities on the surrounding population. Facilities subject to AB 2588 are those that emit more than ten tons per year of criteria pollutants other than carbon monoxide.

The only device at ARTIC that would potentially be subject to AB 2588 is the emergency generator. Emissions from this generator are much less than the applicable thresholds and AB 2588 requirements would not apply.

5.2.4 CARB Diesel Regulations

In 1998, after a 10-year scientific assessment process, CARB identified diesel exhaust particulate as a TAC. To follow up the listing of diesel exhaust particulate, CARB approved a "Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles" ("the Plan") in 2000 that leads toward control measure requirements. CARB's regulatory goal is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel particulate emissions. The goal of the Plan is to reduce diesel particulate matter emissions and the associated health risk by 75 percent by 2010 and 85 percent by 2020. CARB only has authority to regulate equipment and vehicles that operate within California as USEPA has not granted authority to regulate mobile sources that cross state lines.

CARB has promulgated several regulations with the objective of reducing diesel particulate matter and other criteria pollutants from diesel equipment and commercial vehicles. Much of the construction equipment that will be operated for this project is

diesel powered and would be governed by the Off-Road Diesel or the On-Road Heavy-Duty Diesel Vehicle regulations. The Off-Road Diesel regulation pertains to equipment with engines 25 brake horsepower or greater that are not licensed to be driven on road. Heavy-Duty Diesel regulations pertain to licensed vehicles that are rated greater than 14,000 pounds gross vehicle weight rating. The equipment owner is responsible for managing this equipment such that emissions meet specified fleet averages required by CARB. For ARTIC, the equipment owner would be the construction contractor(s).

5.2.5 GHG Regulations

This subsection reviews the pertinent greenhouse gas regulations that affect ARTIC. Regulations plus additional actions by the California Attorney General's office, the California Public Utilities Commission, the Governor, and other California legislative activities are aimed at reducing greenhouse gas emissions.

CEQA guidance requires projects to consider both direct emissions (those associated with the project itself) and indirect emissions (those emissions that result from the facility, but which are not immediately generated on site). Direct emissions for the proposed project would include natural gas combustion from heating, diesel exhaust emissions from transit vehicles, the emergency generator, and increased exhaust due to commuter vehicles. Indirect emissions would primarily be due to electricity usage.

Federal

In October 1993, President Clinton announced his "Climate Change Action Plan," with the goal of returning GHG emissions to 1990 levels by the year 2000. This was to be accomplished through 50 initiatives, relying on innovative voluntary partnerships between the private sector and government aimed at producing cost-effective reductions in GHG emissions.

Although USEPA has historically maintained that it did not have authority to regulate such emissions, more recently, on March 10, 2009, it released a proposed rule that would create a comprehensive national system for reporting emissions of CO_2 and other GHGs produced by major sources in the United States. This reporting system would create the first comprehensive inventory of GHG emissions in the United States.

State

California Code of Regulations Title 24 Part 6

California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards, located in California Code of Regulations (CCR) Title 24 Part 6, are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Energy efficient buildings require less electricity. Overall GHG emissions will decrease as energy efficiency is increased.

California Assembly Bill 1493

Enacted on July 22, 2002, California Assembly Bill 1493 required CARB to develop and adopt regulations that reduce GHG emitted by passenger vehicles and light-duty trucks. Regulations adopted by CARB would apply to 2009 and later model year vehicles. When implemented, Assembly Bill 1493 will result in substantial reductions in transportation-based emissions throughout the State.

California Assembly Bill 32

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG emissions from stationary sources in California.

AB 32 requires CARB to adopt rules and regulations that would reduce GHG emissions, equivalent to the statewide levels existing in 1990, by 2020. As a result, CARB published a list of discrete early action GHG emission reduction measures that can be implemented by 2010. The law further required that measures achieve the maximum technologically feasible and cost-effective reductions in GHGs from sources or categories of sources to achieve the statewide GHG emissions goal for 2020.

Senate Bill 97

Senate Bill 97, enacted in August 2007, directs the Office of Planning and Research (OPR) to propose CEQA Guidelines advising local agencies how to mitigate the impacts of GHG emissions. OPR released its preliminary draft CEQA guideline amendments in January 2009. The proposed Guidelines directs lead agencies to adopt their own

individual standards of significance provided those standards and conclusions as to the significance of a project's cumulative climate change impacts are supported by substantial evidence and are consistent with available guidance and current CEQA practice.

Local

SCAQMD Interim GHG Significance Threshold

SCAQMD established an interim GHG Significance Threshold on December 5, 2008 for projects in which SCAQMD is the lead agency for CEQA. The threshold is 10,000 metric tons per year (MT/yr) of carbon dioxide equivalents (CO_2e). The threshold is compared to the total increase in operational emissions as a result of the proposed project and the construction emissions from the proposed project averaged over 30 years.

5.2.6 Transportation Conformity

The concept of transportation conformity was introduced in the 1977 amendments to the CAA, which includes a provision to ensure that transportation investments conform to the SIP in meeting the NAAQS. Conformity requirements were made substantially more rigorous in the federal CAA amendments of 1990, and the transportation conformity regulation that details implementation of the conformity requirements was first issued in November 1993, with a number of subsequent amendments. The most recent complete set of amendments to the Transportation Conformity Rule is found at 40 CFR Part 51 (Subparts T and W) and Part 93 (Subpart A).

Transportation conformity is considered the project level (as opposed to a transportation plan or similar process), unless exempted by regulation. A project is subject to the transportation conformity regulations if it is located in a federal nonattainment or maintenance area and is either (a) funded, approved, or implemented by the Federal Highway Administration (FHWA) or Federal Transit Authority (FTA) or it is (b) "regionally significant." A regionally significant project means "a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc.,

or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel" (40 CFR 93.101). Exempt projects are specified in 40 CFR 93.126, and include reconstruction or renovation of transit buildings and structures and rehabilitation or reconstruction of track structures, track, and track bed in existing rights of ways.

The proposed project is a rehabilitation/reconstruction of existing transportation facilities and thus is exempt from federal transportation conformity.

5.2.7 General Conformity

General conformity applies to any project (whether or not transportation related) that is located in a federal nonattainment or maintenance area and (a) is not funded, approved, or implemented by FHWA or FTA, (b) involves a "federal action", and (c) emits more than threshold quantities of nonattainment pollutants (40 CFR 51.853). In SCAQMD, the threshold quantities of federal nonattainment pollutants are 10 tons per year of VOC or NO_x for ozone nonattainment, 70 tons per year PM_{10} for PM_{10} nonattainment, and 100 tons per year of $PM_{2.5}$, NO_2, SO_2, or VOC for $PM_{2.5}$ nonattainment. Emissions from the proposed project are less than these thresholds and General Conformity does not apply.

5.2.8 SCAQMD Rules

SCAQMD regulates emissions from stationary sources through the permitting process and, pursuant to SCAQMD Rules 201 and 212, requires permits to construct (PTC) and a permit to operate for all stationary equipment that has the potential to release air contaminants. Most of the activities associated with ARTIC do not require a PTC, as PTCs are not required for mobile sources. Any new or modified sources are subject to SCAQMD NSR, Regulation XIII for criteria pollutants. The major NSR requirements include modeling, emission offsets, and installation of best available control technology (BACT).

The NSR requirements for toxics and non-criteria pollutants emissions are enforced through Regulation XIV. SCAQMD Rule 1401 requires that the maximum increase of

individual cancer risk due to TAC emissions from a new, relocated, or modified stationary source permit unit be less than one in a million (1×10^{-6}) at any residential or worker receptors, or 10 in a million (1×10^{-5}) if the permit unit is installed with BACT for toxics. The increase in total chronic hazard index and total acute hazard index because TAC emissions must be less than one.

The new facility will have a new 1000 kW emergency backup generator that will be regulated by Rule 1470. For a new stationary emergency generator, the rule requires diesel particulate matter emissions to meet the specified Off-Road Compression Ignition Engine Standard for off-road engines with the same maximum rated power (Title 13 CCR Section 2423). For generator engines greater than 750 brake horsepower, the engine must have PM_{10} emissions less than or equal to 0.7 grams per brake horsepower-hour, or the engine must be certified to USEPA Tier 4 Interim standards.

In addition to the regulations discussed above, the ongoing operations are required to comply with applicable SCAQMD prohibitions per Regulation IV. See Section 5.1 for a detailed discussion on the applicable source-specific standards.

6.0 LOCAL AIR QUALITY IMPACT OF PROPOSED PROJECT

6.1 AMBIENT AIR QUALITY SIGNIFICANCE THRESHOLDS

SCAQMD provides both emissions and ambient air quality impact significance thresholds for criteria pollutants under CEQA. The emission thresholds are shown in Table 6-1, and the ambient air quality impact thresholds are shown in Table 6-2. Specific ambient air quality impact thresholds are published only for NO_2, PM_{10}, $PM_{2.5}$, sulfate, and CO.

Table 6-1
CEQA Ambient Air Quality Emission Significance Thresholds for Criteria Pollutants

Air Pollutant	Construction Sequence	Operational Phase
Reactive Organic Gases (ROG)	75	55
Carbon Monoxide (CO)	550	550
Nitrogen Oxides (NOx)	100	55
Sulfur Oxides (SOx)	150	150
Particulate Matter (PM_{10})	150	150
Particulate Matter ($PM_{2.5}$)	55	55

Source: SCAQMD CEQA Handbook (SCAQMD, 1993)

Table 6-2
CEQA Ambient Air Quality Impact Significance Thresholds for Criteria Pollutants

Pollutant	Averaging Time	Ambient Air Quality Threshold
NO_2	1-hour Annual	0.18 ppm 0.03 ppm
PM_{10}	24-hour (construction) 24-hour (operation) Annual	10.4 ug/m^3 2.5 ug/m^3 1.0 ug/m^3
$PM_{2.5}$	24-hour (construction) 24-hour (operation)	10.4 ug/m^3 2.5 ug/m^3
Sulfate	24-hour	1 ug/m^3
CO	1-hour 8-hour	20 ppm 9.0 ppm

Source: SCAQMD Rule 1303 and SCAQMD CEQA Handbook, 1993

For TACs and odor, SCAQMD significance thresholds are an incremental (i.e., an increase solely related to the proposed project) potential cancer risk of more than 10 in a million, a potential cancer burden of more than 0.5 excess cancer cases in areas that have over 1 million exposed persons, and a hazard index for non-cancer effects of more than 1.0. Significant odors are those that pose a nuisance pursuant to SCAQMD Rule 402.

The potential for the proposed project emissions and ambient air quality impact to exceed these significance thresholds is discussed in the following sections.

6.2 CONSTRUCTION IMPACTS

Construction activities from the proposed project will yield criteria pollutant emissions, as shown in Section 4.3 of this AQIA. Emissions for all of the criteria pollutants will be less than the significance thresholds with mitigation measures in affect (to be discussed in Section 8). Since construction is a temporary operation and emissions are less than significant for particulate matter and CO, ambient air quality impacts were not modeled. It is not anticipated that ambient air quality thresholds from construction activities will be exceeded.

6.3 WORST CASE CRITERIA POLLUTANT IMPACTS

6.3.1 Onsite Operational Impacts

Operations of the proposed project will yield criteria pollutant emissions, as shown in Section 4.4 of this AQIA. Emissions for all of the criteria pollutants will be less than the significance thresholds. Potential onsite operational impacts were not modeled, since the maximum daily emissions do not exceed the significance thresholds. Since emissions are less than the significance thresholds for the proposed project, ambient air quality thresholds are not anticipated to be exceeded.

6.3.2 CO Hot Spot Assessment from On-Road Vehicles

An analysis was conducted to assess the potential ambient air quality impacts of CO from traffic affected by the project. The City (David Kennedy, 2010) is referenced as the basis for traffic data used for identifying affected intersections and evaluating CO Hotspots. Based on the Traffic Data, and access to the proposed project, the

intersection of Katella Avenue and Douglass Road was identified as having the greatest increase in trip generation due to the project. The contribution to the volume of vehicles due to the project is greatest at this intersection. The level of service (LOS) for this intersection was shown to degrade to LOS F by 2030 (which is shown to be mostly due to area growth regardless of the project). The project would not cause CO Hotspots at other intersections based on traffic data if the CO impacts at the Katella Avenue and Douglass Road intersection are not significant.

Consistent with the traffic study data, the assessment included a scenario for conditions of the ARTIC in year 2013 and a scenario for full additional ARTIC services in year 2030 with mixed use development. The CO Hotspots analysis was conducted using the CAL3QHC modeling program in accordance with SCAQMD CEQA Air Quality Handbook, the Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) and EPA CAL3QHC user guide. The assumptions, model input and model output files are provided in Appendix C.

Emission factors were derived from the EMFAC2007 program, which used default parameters with the following program inputs:

- Geography: Orange County
- Average Temperature: 73ºF
- Relative Humidity: 65%

A speed of two miles per hour (mph) was included in the EMFAC analysis in order to obtain representative CO emission factors for queuing vehicles, including light autos (i.e., taxis), and urban buses. The EMFAC program predicts zero emission for these vehicles types if a speed of zero mph is used. Because taxis and busses are a significant portion of the vehicle types that would access the site, utilizing a speed of two mph is considered more representative of the average fleet vehicle emission factors. The EMFAC input and output files are also provided in Appendix C.

CAL3QHC calculates only a 1-hour average concentration, assuming worst case hypothetical meteorology. The 1-hour concentration was converted to an 8-hour concentration by multiplying the 1-hour concentration by a persistence factor of 0.7, as recommended by SCAQMD for nonattainment areas. The area is currently designated as attainment for CO, and the recommended persistence factor is 0.6. As a

conservative approach, the nonattainment 1-hour to 8-hour persistence factor was chosen.

The maximum modeled CO impacts are summarized in Table 6-3. The impacts from the traffic are a small fraction of the overall impacts with background included. The project impacts at Year 2030 are lower than the no project impacts due to configuration of the intersection to accommodate the project. The resulting cumulative impacts with the project and background are less than 50% of the CAAQS. The project is therefore considered to have insignificant affects on CO impacts from traffic.

Table 6-3
Maximum CO Impacts of Traffic at the Katella Avenue and Douglass Road Intersection

Scenario	Maximum CAL3QHC Result (ppmv)	Ave. Time	Max Impact (ppmv)	Background[1] (ppmv)	Total with Background (ppmv)	CAAQS (ppmv)	Percent of CAAQS w/o Background	Percent of CAAQS with Background
2013 no project	0.30	1-hr	0.30	5.8	6.1	20	1.5%	31%
		8-hr	0.21	3.9	4.1	9.0	2.3%	46%
2013 w/ ARTIC	0.60	1-hr	0.60	5.8	6.4	20	3.0%	32%
		8-hr	0.42	3.9	4.3	9.0	4.7%	48%
2030 No Project	0.30	1-hr	0.30	5.8	6.1	20	1.5%	31%
		8-hr	0.21	3.9	4.1	9.0	2.3%	46%
2030 w/ ARTIC	0.20	1-hr	0.20	5.8	6.0	20	1.0%	30%
		8-hr	0.14	3.9	4.0	9.0	1.6%	44%

1) Future background CO concentrations obtained from SCAQMD CEQA guidance at: http://www.aqmd.gov/ceqa/handbook/CO/CO.html

6.4 AIR TOXIC IMPACTS OF THE PROPOSED PROJECT

The most significant TAC emission related to construction is diesel exhaust particulate from construction equipment. Modeling shows that for the maximum year (i.e., 2012), PM_{10} from engine exhaust is 6.29 lbs per day, or less than five percent of the significance threshold. Construction is a temporary activity and the potential incremental cancer risk from construction activities is very small. (Potential cancer risks are large only when there is very long continuous exposure, on the order of tens of years). The incremental cancer risk that could be caused by construction activities is not expected to exceed the cancer risk significance thresholds. Likewise, the hazard indices are not expected to be exceeded.

Diesel particulate matter is also expected to be the most significant TAC emission related to the operations of buses and other diesel-fueled vehicles that will approach the facility on public roads and use the facility for loading and unloading passengers. Currently, buses use the existing streets and the Anaheim Amtrak/Metrolink Station. Although ridership will increase as a result of the proposed project, there is no large increase in the number of buses or mileage traveled by the buses. There are no sensitive receptors within about 0.4 miles of the proposed site, which is about the same distance to sensitive receptors as currently exists. Potential diesel particulate impacts drop off rapidly with distance from roadways. Since no large increases in the number and mileage of diesel fueled vehicles are anticipated and there are no sensitive receptors close to the proposed site, exceedance of the incremental TAC significance thresholds are not anticipated.

7.0 CUMULATIVE IMPACTS

7.1 EXISTING AND FUTURE NON-PROJECT EMISSIONS AND IMPACTS IN THE PROJECT AREA

SCAB currently does not meet the air quality standards for ozone (including NO_2 and VOC) and particulate matter (including PM_{10}, and $PM_{2.5}$). NO_2, VOC, PM_{10}, and $PM_{2.5}$ are considered nonattainment pollutants. The remaining criteria pollutants (CO, SO_2, lead) are attainment pollutants. The following logic is used to assess the potential for cumulatively considerable or significant air quality impacts.

1. Construction emissions are not considered cumulatively considerable since various construction projects are not likely to occur at the same time and in close proximity to each other. Construction emissions are highly variable and localized. It is not likely for the combination of emissions to exceed the significance thresholds as long as the individual construction project emissions do not exceed the thresholds even if there are more than one construction projects occurring in close proximity to each other.

2. For the nonattainment pollutants, if the emissions from the proposed project alone are about 55 percent of the significance thresholds, as long as there are no planned future projects in the vicinity of the proposed project that would individually likely have relatively large emissions (e.g., a proposed electrical generating station or major new hospital or sports arena), the emissions are not considered cumulatively considerable. If there are some major projects in the vicinity that could have relatively large emissions, then the proposed project emissions and nearby projects would be considered cumulatively considerable and potentially cumulatively significant.

3. If emissions of attainment pollutants from the proposed project are less than the significance thresholds, the emissions are not considered cumulatively considerable unless there are a number of nearby projects that could cause the combination of emissions to exceed the significance thresholds.

7.1.1 Future Projects

Table 7-1 provides a list of anticipated future projects in the proposed project area. Several of the nearby future development projects involve construction associated with

expansion of existing business or building of new housing units in accordance with the adopted City of Anaheim General Plan. The emissions during construction from these development projects and the proposed project are primarily from fugitive dust emissions and construction equipment exhaust. Considering the temporary, highly variable, and localized nature of construction emissions, the proposed project emissions and potential emissions from other construction projects are not considered cumulatively significant.

Table 7-1
Possible Future Projects Near the Proposed Project

Name	Project Description	Potential Cumulative Impacts
CITY OF ANAHEIM		
The Platinum Triangle		
The Platinum Triangle Project	Location: southeastern section of the City Site Size: 820 acres General Summary: expand the PTMU Overlay Zone and increase permitted development intensities. Status: Draft Subsequent EIR to be circulated and public hearings to be held in Summer/Fall 2010.	• Air Quality • Traffic
Stadium Lofts	Location: 1801 East Katella Avenue Site Size: 6.3 acres General Summary: 390 condominium units; 7,839 square foot restaurant and 2,820 square feet of retail, 61.9-units/acre. Status: Completed in January 2007.	None; development is complete.
Archstone Gateway	Location: 2150 South State College Boulevard Site Size: 8.44 acres General Summary: 884 apartments on 20.81 acres; of which 352 units are on 8.44 acres in Anaheim and 532 units on 12.37 acres in the City of Orange. Status: Leasing/partially occupied.	None; development is complete.
Stadium Towers Retail Center	Location: 2430 East Katella Avenue Site Size: 2.02 acres General Summary: 14,185 square foot retail center Status: Completed in December 2006.	None; development is complete.
Stadium Park Apartments	Location: 1551 East Wright Circle Site Size: 4.25 acres General Summary: 250 apartments Status: Redesign to increase the number of units approved.	• Air Quality • Traffic

Name	Project Description	Potential Cumulative Impacts
1818 (Former Element Pt)	Location: 1818 South State College Boulevard Site Size: 3.35 acres General Summary: 265 apartments Status: Completed.	None; development is complete.
Park Viridian	Location: 1515 East Katella Avenue Site Size: 3.37 acres General Summary: 320 apartments. Status: Completed.	None; development is complete.
Stadium Club Condos	Location: 1761 and 1781 South Campton Avenue Site Size: 3.21 acres General Summary: 196 condominiums. Status: Redesign to increase the number of units pending.	• Air Quality • Traffic
Anavia	Location: 2045 South State College Boulevard Site Size: 3.85 acres General Summary: 250 condominiums. Status: Completed.	None; development is complete.
Platinum Triangle Condominium Development	Location: 1331 East Katella Avenue Site Size: 4.45 acres General Summary: 336 condominiums and one 1,248 square foot retail tenant space. Status: Completed.	None; development is complete.
Avalon Angel Stadium (Formerly Anaheim Stadium)	Location: 2100 East Katella Avenue Site Size: 3.5 acres General Summary: 251 apartments and 11,807 square feet of retail and restaurant uses. Status: Completed.	None; development is complete.
Lennar's A-Town Metro	Location: 1404 East Katella Avenue Site Size: 40.6 acres General Summary: A Master Site Plan that will include two public parks, 2,681 residential units and up to 229,800 square feet of commercial/retail use. Status: The Final Master Tract Map has been recorded and various off-site and on-site improvements, including backbone streets, have been completed. A Final Site Plan for Development Area C has also been approved. Project is currently on hold.	• Air Quality • Traffic

Name	Project Description	Potential Cumulative Impacts
The Experience At Gene Autry Way	Location: 1969 South State College Boulevard Site Size: 17.58 acres General Summary: A Master Site Plan for 1,208 residential units, 50,000 square feet of commercial space, 100,000 square feet of office space and a 1.7-acre public park. Status: Approved by City Council on August 21, 2007. Demolition of existing buildings completed. Redesign of site configuration pending.	• Air Quality • Traffic
Lennar's A-Town Stadium	Location: 2115, 2125, 2025 East Orangewood Avenue and 2050 South State College Boulevard Site Size: 12.48 acres General Summary: 878 condominiums. Status: City Council approval on December 11, 2007. Construction schedule to be determined.	• Air Quality • Traffic
Orangewood Condominiums	Location: 2211 East Orangewood Avenue Site Size: 3.8 acres General Summary: 370 condominiums. Status: City Council approval on June 5, 2007. Construction schedule to be determined.	• Air Quality • Traffic
Platinum Tower	Location: 2210-2220 East Orangewood Avenue and 2231 and 2130 East Dupont Drive Site Size: 3.83 acres General Summary: 20-story building containing 590,000 square feet of office area, 10,000 square feet of commercial area and a 2,001 space parking structure. Status: City Council approval on August 21, 2007. Construction pending.	• Air Quality • Traffic
Platinum Vista	Location: 1015 and 1105 East Katella Avenue Site Size: 4.6 acres General Summary: 327 residential units and 9,500 square feet of commercial space. Status: Approved by City Council December 18, 2007.	• Air Quality • Traffic

Name	Project Description	Potential Cumulative Impacts
Platinum Gateway	Location: 915 East Katella Avenue Site Size: 8.7 acres General Summary: 320 residential units, an 11-story office building (192,000 square feet) and a 130-room hotel with a 7-story parking structure. Status: Approved by City Council June 10, 2008.	• Air Quality • Traffic
Fire Station No. 12	Location: 1050 Stanford Court Site Size: 1.03 acres General Summary: 15,000 square feet. Status: Construction plans under review.	• Air Quality • Traffic
The Anaheim Resort		
Amendment to the Anaheim Resort Specific Plan	Location: Area that surrounds the Disneyland Resort and Anaheim GardenWalk and includes the Anaheim Convention Center. Site Size: 581 acres General Summary: Modifications to the Anaheim Resort Specific Plan to update the document and associated Master EIR and allow for expansion of the Anaheim Convention Center. Status: Draft Supplemental EIR to be circulated and public hearings to be held in Fall/Winter 2010.	• Air Quality • Traffic
Anaheim Gardenwalk	Location: 321 West Katella Avenue Site Size: 29.1 acres General Summary: The project includes: 569,750 square feet of retail, restaurants, and entertainment uses; 1,628 hotel rooms and 278,817 square feet of hotel accessory uses. Status: Grand opening of retail concourse in May 2008. Hotel and timeshare construction ongoing.	• Air Quality • Traffic
Trendwest Resorts Timeshare	Location: 201 West Katella Avenue Site Size: 2.06 acres General Summary: 14-story, 247-unit timeshare resort. Status: Completed in August 2008.	None; development is complete.

Name	Project Description	Potential Cumulative Impacts
Anaheim Convention Center Expansion	Location: 800 West Katella Avenue Site Size: 4 acres General Summary: A public/private partnership to expand the Anaheim Convention Center and provide an opportunity for additional hotels and recreation uses. Status: Ongoing.	• Air Quality • Traffic
Grand Californian Hotel Expansion	Location: 1600 South Disneyland Drive Site Size: 2.50 acres General Summary: Add 280 hotel rooms including 25 2-bedroom timeshare units. Status: Completed in Winter 2009/2010.	None; development is complete.
Doubletree Hotel (Phase 1)	Location: 2065 South Harbor Boulevard Site Size: 2,500 square-foot restaurant, 3,760 square-foot meeting/banquet facilities and 4,189 square-foot retail area. General Summary: A two-phase hotel project. Phase I includes a 252-room hotel and Phase II includes a 292-room hotel. Status: Completed in March 2007.	None; development is complete.
Springhill Suites Marriott	Location: 1240 South Walnut Site Size: 5.59 acres General Summary: A 120-unit hotel in addition to an existing Holiday Inn. Status: Ongoing.	• Air Quality • Traffic
Hermosa Village Phase IV	Location: Southwest corner Walnut St. and Cerritos Ave. Site Size: 5 acres General Summary: Comprehensive neighborhood revitalization of an existing apartment complex to add 36 low income units. Status: Completed in January 2008.	None; development is complete.
Lake Hotel Development	Location: 1820 South Harbor Boulevard General Summary: A 252-room hotel with retail and restaurant space. Status: Approved by City Council on March 31, 2009.	• Air Quality • Traffic
Ruth Chris Steak House	Location: 2041 South Harbor Boulevard General Summary: An 8,517 square-foot restaurant. Status: Completed in April 2007.	None; development is complete.
Morton's Steak House	Location: 1855 South Harbor Boulevard General Summary: An 8,000 square-foot restaurant. Status: Completed in March 2007.	None; development is complete.

Name	Project Description	Potential Cumulative Impacts
Battle of the Dance (Development Case #: DEV2009-0083)	Location: 2230 South Harbor Boulevard General Summary: A 42,360 square-foot dinner/dance theater. Status: Ongoing	• Air Quality • Traffic
Other Anaheim Projects		
SR-57 Northbound Widening between Katella Avenue and Lincoln Avenue	This project will widen the northbound side of SR-57 from 0.31 mile south of Katella Avenue to 0.31 mile north of Lincoln Avenue.	• Air Quality • Traffic
Relocation of a Portion of the Orange County Feeder SCH #: 2009108081	MWD proposes to enter into a mutual agreement with Extron Electronics to relocate a portion of the Orange County Feeder, within the City. The agreement will include funds for final design, materials procurement, inspection, pipeline construction and relocation, and documentation for the new easement.	None.
Anaheim Public Utilities Pilot Storm Water Infiltration Project SCH #: 2009088239	This project will include constructing a pre-treatment system for stormwater runoff, installing an infiltration well down-gradient of the pre-treatment system, installing groundwater monitoring wells up and down-gradient of the infiltration system, and installing lysimeters to collect soil pore water below the infiltration system.	None.
CITY OF ORANGE		
City of Orange General Plan Update	The Orange City Council adopted the 2010 General Plan on March 9, 2010. The General Plan provides the City of Orange with a multi-disciplinary strategy for achieving the vision in the context of the land use, circulation and mobility, housing, open space, conservation, public safety, noise, cultural resources and historic preservation, growth management, economic development, infrastructure and urban design elements.	None.

Name	Project Description	Potential Cumulative Impacts
Orange Transportation Center Parking Structures	A proposal to construct two parking structures wrapped with liner (commercial/residential) uses- one structure is proposed on the "West Chapman lot" and one on the "Lemon Street lot". The West Chapman lot is located immediately west of the Orange Transportation Center (between Palm Avenue and Chapman Avenue). 509 parking spaces (406 in the proposed structure and 103 surface parking spaces) and 7,500 square feet of restaurant/retail uses are proposed on this lot. The Lemon Street lot is located on West Chapman Avenue and Lemon Street. 679 parking spaces in the proposed structure, 27 residential units and 23,000 square feet of commercial/retail uses are proposed on this lot. This project is in the planning and design phase.	• Air Quality • Traffic
Main Street Widening Project	A proposal to widen Main Street between Chapman Avenue and Culver Avenue to add a NB and SB through lane, and restriping between Culver and La Veta Avenue to add a NB through lane. This project is approved and construction is scheduled for Spring 2011.	• Air Quality
The Block Expansion Project	20 The City Blvd. West. (Reference Application Nos. MJSP No. 558-09, CUP No. 2725-08 & DRC No. 4370-08) Proposed expansion to The Block consisting of 105,000 sq ft. Phase I would entail of the construction of the proposed 35,000 square foot major tenant building. Modifications would be made to the existing parking area and landscaping surrounding the proposed 35,000 square foot building, to adjust traffic flow. Phase I would also entail the creation of a new parking area on the out-parcels on the southeastern corner of the project site. A portion of this new parking area would be used for valet parking. Phase II would involve the construction of the remaining 70,000 square feet of building space and reconfiguration of parking spaces and drop-off areas near the new buildings. This project is approved.	• Air Quality

Name	Project Description	Potential Cumulative Impacts
Orange Gateway	Located at the southeast corner of West Chapman Avenue & I-5. (Reference Application Nos. ENV 1804-08, ZC 1251-08, CUP -2724-08, MJSP 0557-08, DRC 4368-08.) A proposal to develop a new commercial center with a Jack in the Box drive thru restaurant, and two commercial buildings with various retail services. 75,652 sq ft. subject parcel is currently un-zoned and also needs a General Plan designation. Applicant also proposes to utilize and obtain two remnant properties owned by the City of Orange. This project is approved and is in the building plan check process.	• Air Quality
Coca-Cola Warehouse Expansion	700 West Grove Avenue. (Reference Application Nos. ENV 1817-09, MJSP No 0594-09, DRC No. 4412-09) Proposal to add 51, 045 sq. ft to the west elevation of an existing Coca-Cola distribution warehouse facility. This project is approved and awaiting building plancheck submittals.	• Air Quality
Main Medical Plaza	396 South Main Street. (Reference Application No. MNSP 535-07). Request to construct a 7,981 SF medical office building with 38 parking spaces. This project is approved and awaiting building plancheck submittals.	• Air Quality

Name	Project Description	Potential Cumulative Impacts
CHOC Hospital Expansion-	455 South Main Street. (Reference Application Nos. ZC No. 1252-08, MJSP No. 0504-07, CUP No. 2726-08, DRC No. 4209-07, TM No. 0024-08 (TPM 2008-162) & ENV No. 1805-08.) A proposal to expand the existing hospital facilities and associated medical offices through multi-phased demolition, remodeling, and new construction. Project milestones are scheduled for 2012, 2015 and 2020. The primary focus of the project is to increase the number of hospital beds from 202 to 404, through the addition of 425,524 square feet and remodel of 54,250 square feet of the hospital towers. The existing 91,000 square foot medical offices and related parking structure at the northwest corner of La Veta and Pepper would be demolished. Approximately 85,600 square feet of general office space would be converted into medical offices in the existing building at the southeast corner of Main and La Veta. A new 175,000 square foot, with accompanying 875-space parking structure, is proposed at the northeast corner of Main and SR-22. This project is approved and under construction.	• Air Quality
Projects Within the Western Area of the City of Orange		
City of Orange 2006-2014 Housing Element SCH #: 2010011009	The Housing Element contains policies and actions to accommodate the City's Regional Housing Needs Assessment (RHNA) growth needs through vacant land and the General Plan mixed-use land use designations. The quantified objective summary for the 2006-2014 planning period includes 5,079 new construction units, 260 rehabilitation units, and 75 conservation and/or preservation units.	None.

Name	Project Description	Potential Cumulative Impacts
Five Coves Bypass Pipeline Project SCH #: 2009121067	This proposed project involves the construction and operation of a 62-inch diameter bypass pipeline that will extend through Upper Five Coves Basin, Lower Five Coves Basin, and into the northern end of Burris Basin. The bypass pipeline will allow the individual isolation of Upper Five Coves Basin, Lower Five Coves Basin and Lincoln Basin while maintaining flow to the rest of the system. The project will increase storm water capture, improve groundwater recharge capability of the basins and provide greater operational flexibility of OCWD groundwater management system.	None.
Application to Appropriate Santa Ana River Water Recirculated Draft Program Environmental Impact Report SCH #: 2002081024	OCWD seeks to divert 505,000 acre-feet per annum of water from the Santa Ana River after it is released from Prado Dam by the USACE. OCWD will use the water to replenish the Basin through 26 recharge facilities. The recharge facilities were originally constructed for the purpose of flood control by USACE and the OCWD. OCWD proposes to collect the water to store year-round for the purpose of irrigation, domestic, recreation, municipal, industrial, fish and wildlife preservation and/or enhancement uses. The proposed project is an addendum to the Program Final EIR amending the program-level location of where a future surface water recharge basin could be constructed.	None.

Name	Project Description	Potential Cumulative Impacts
Santa Fe Depot Specific Plan Update SCH #: 2009101033	The proposed Santa Fe Depot Specific Plan Update (SFDSPU) project area is 101.6 acres. 21.8 acres of the project area are currently within the existing Santa Fe Depot Specific Plan boundary. The SFDSPU will expand the boundary of the existing Santa Fe Depot Specific, which is centered on the Santa Fe Depot and the block in the immediate area, to add 79.8 acres. The majority of the SFDSPU area is developed with a mixture of residential, commercial, industrial and institutional uses. Build-out of the SFDSPU area under the current zoning will yield up to 770,510 square feet of development and a total of 448 residential units. Under the proposed SFDSPU, the uses will be reorganized and will yield up to 740,234 square feet of development and 506 residential units.	None.
City of Orange Focus Areas		
West Katella Avenue Corridor	The proposed West Katella Avenue Corridor is immediately west of ARTIC, across the Santa Ana River. Implementation of West Katella Avenue Corridor will result in the establishment of an active, mixed use residential gateway to the City of Orange. It will feature high-density residential uses that capitalize on development of expanded entertainment uses and housing across the Santa Ana River in the City; enhance retail options and convenience throughout west Orange; and maintain Katella Avenue's commercial character with neighborhood-scale mixed use developments that transition into adjacent residential areas. Implementation of the West Katella Avenue Corridor urban mixed use corridor will increase the number of dwelling units per acre from 30 to 60, with a maximum floor area ratio of 3.0.	None.

Name	Project Description	Potential Cumulative Impacts
Eckhoff Street/Collins Avenue	The Eckhoff Street/Collins Avenue focus area encompasses the area north of Orangewood Avenue and south of Collins Channel (City of Orange, 2010). This area largely consists of professional offices, commercial uses, warehouses, and distribution centers. It has historically been planned and zoned for industrial use. Properties have been allowed to develop as offices, and areas adjacent to the offices have been allowed to develop as industrial parks. Demand for industrial and office use in this area has been strong, and the City of Orange seeks to provide options for lower-scale office uses and business-park oriented light industrial uses, as well as warehouse and distribution uses.	None.
Industrial Area	The Industrial focus area is located immediately west of the Eckhoff Street focus area and north of the West Katella Corridor. The area's land use is currently designated as industrial, and the General Plan discourages professional office uses in favor of true industrial uses within this area located west of Batavia Street and generally south of Grove Avenue. The General Plan encourages the expansion of current businesses and infill of vacant properties by increasing the maximum allowed development intensity. Primary uses permitted within the Industrial designation generally involve the manufacture, processing and distribution of goods. Wholesale activities, as well as small-scale, support retail, service commercial and offices may be established. Over time, market forces may create a demand for more office space, a category that is also permitted in this land use. Implementation of projects in the industrial focus area will result in higher traffic associated with the mobilization of goods, merchandise and workers.	None.
OTHER TRANSIT PROJECTS		

Name	Project Description	Potential Cumulative Impacts
Anaheim Rapid Connection	The project is envisioned to operate as a high-capacity system, providing convenient and efficient transfers to/from Metrolink, Amtrak, BRT, local bus, and future high-speed train services connecting at ARTIC.	• Air Quality • Traffic
California High-Speed Rail	A high-speed train service for travel between major metropolitan areas in California. A program-level EIS/EIR was completed in 2005, which studied the environmental impacts of a proposed state-wide high-speed rail system connecting the San Francisco Bay Area and Sacramento in the north, through the Central Valley, to Los Angeles and San Diego in the south. CHSRA anticipates releasing a Draft EIR/EIS for the Los Angeles-Anaheim section in 2010.	• Air Quality • Traffic
CNSST	CNSST is a proposal to connect southern California with southern Nevada. Recently this project did not receive stimulus funds and lost support for earmark funds from the 2005 transportation bill for Maglev.	None.
Desert Express	The Desert Express is a privately funded high-speed rail project and is in the final stages of the EIR/EIS process. Construction could begin this year and begin operations in 2014. Expansion to Anaheim will be through Los Angeles County with an anticipated connection to the California High Speed Rail system. No date has been stated for the expansion.	None.

7.1.2 Future Traffic

An improved transportation center and other nearby development projects will result in increased traffic within the area. Development of a transportation center that will increase the availability of mass transit alternatives will help reduce the number of vehicles on the road regionally, which is consistent with the 2007 AQMP, the 2006 Regional Transportation Improvement Program, and other regional plan strategies. A CO hotspot analysis performed for the intersection most affected by the proposed project (i.e., Douglass Rd. and Katella Ave.) using the City of Anaheim's traffic analysis model to predict traffic impacts from future development projects. The results showed that increased traffic levels in 2013 (with ARTIC) and in 2030 will not result in CO impacts above the State and Federal ambient air quality standards. The year 2013 and 2030 traffic analysis includes potential traffic from the nearby future projects. In addition, more stringent regulation of vehicle emissions will help to mitigate the air quality issues associated with additional development projects to some extent. The regional cumulative impact of the proposed project and nearby development projects is not considered cumulatively considerable.

7.1.3 Cumulative Greenhouse Gas Emissions

SCAQMD has released an interim significance threshold of 10,000 MT/yr, which was used as a point of comparison for the proposed project (see Table 4-4). ARTIC's location relative to major event and destination centers within the Platinum Triangle creates availability of current and future mass transit systems to occupants and visitors. The result is less motor vehicle traffic on local roadways and freeways and a general reduction in motor vehicle travel throughout the region. Since motor vehicle traffic is the primary source of air pollution in the region, plans to reduce traffic, and thus GHG emissions, are consistent with the intent of the AQMP. Potential GHG emissions are not considered cumulatively considerable.

8.0 MITIGATION MEASURES AND EFFECT

8.1 MITIGATION MEASURES REQUIRED BY REGULATION AND VOLUNTARILY CONDUCTED BY ARTIC

Any significant environmental impact of a proposed project must be identified and mitigated. The analysis of significant effects must include both direct project impacts and indirect impacts that may exceed significance thresholds or may potentially result in violations of ambient air quality standards. Construction activities from the proposed project (Table 4-2) will yield criteria pollutant emissions that will be less than the significance thresholds, with the exception of NO_x. Operational emissions, both for criteria pollutants (Table 4-3) and TACS, are below significance thresholds. Since emissions of NO_x during construction exceed the significance thresholds, there is a possibility that the construction activities could result in an exceedance of the ambient air quality standards on a local, temporary basis.

8.1.1 Construction Phase Mitigation Measures

Mitigation of NO_x emissions can occur through considerations of schedule and the addition of controls. Several of the road improvement stages will not occur simultaneously. The worst case emissions for the construction of the intermodal terminal occurs during the excavation activities. Excavation of the building basement and lowering of Douglass Road will be occurring along with the installation of the building piles and foundation. Work will also be occurring on the Douglass Road bridge and the stub-end track. Construction activities to widen Douglass Road, add the sidewalk, and add the turn lane to Katella Avenue will occur following this sequence.

Greater mitigation can be achieved by the addition of diesel oxidation catalysts to large construction equipment. Diesel oxidation catalysts can achieve 20 percent reduction or more in NO_x emissions when applied to mobile equipment greater than 150 brake horsepower, such as dozers, loaders, and water trucks. Table 8-1 shows that when mitigation measures of schedule and NO_x controls are implemented, NO_x emissions from the proposed construction project are less than the significance threshold.

Table 8-1
Proposed Project Construction Daily Emissions with NO_x Mitigation

Construction Activity	NO_x (lb/day)	ROG (lb/day)	CO (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Intermodal Terminal	73.6	9.7	57.0	0.1	45.0	12.0	12,977.8
Stub-end Track	8.4	1.4	7.6	<1	2.6	1.0	1,258.3
Douglass Road Bridge	16.1	2.4	10.7	<1	1.9	1.1	2,284.0
Total Proposed Project	98.1	13.5	75.3	<1	49.5	14.1	16,520.7
Significance Thresholds	100	75	550	150	150	55	-
Significant?	No	No	No	No	No	No	No

Mitigation Measures: Consideration of scheduled construction sequences and addition of diesel oxidation catalyst with 20% NO_x reduction.

In order to ensure NO_x mitigation as described above, mitigation measures will be implemented to reduce NO_x emissions below the level of significance. Mitigation measures are presented below:

AQ1 Excavation of the soil for the Intermodal Terminal shall precede excavation of Douglass Road under the bridge, and both activities shall occur in sequence. The sequencing of grading/excavation activities shall be noted on the grading plans submitted to the Anaheim Public Works Department for review and approval and in the contractor's specifications.

AQ2 Exporting of soil during the excavation stage of the project shall be limited to 25 on-road truck trips per day during excavation and grading. An export plan showing quantities and identified haul route shall be shown on grading plans submitted to the Anaheim Public Works Department for review and approval and in the contractor's specifications.

AQ3 Road widening and sidewalk improvement projects shall occur following the completion of the excavating activities. Street improvement plans submitted to the Anaheim Public Works Department for review and approval shall indicate sequencing of the street improvements.

AQ4 Construction off-road equipment with engines greater than or equal to 150 brake horsepower shall meet or exceed USEPA Tier 2 engine standards and shall be required to have diesel oxidation catalysts installed that meet or exceed 20 percent reduction in NOx. A complete list of construction equipment to be used at the project site shall be submitted to the contractor to confirm compliance with USEPA Tier 2 standards.

AQ5 Diesel or gasoline power generators shall be limited to less than two hours of use per day. This restriction shall be clearly noted on the

grading/excavation and building plans submitted to the Anaheim Public Works Department and Building Division for review and approval. This information shall also be included in the contractor's specifications.

BMPs will be implemented during construction activities to further minimize potential NO_x emissions and potential ambient air quality impacts. BMPs:

AQBMP1	Prohibit all diesel trucks from idling in excess of five minutes, both onsite and offsite.
AQBMP2	Configure construction parking to minimize traffic interference.
AQBMP3	Provide temporary traffic controls such as a flag person, during all sequences of construction to maintain smooth traffic flow.
AQBMP4	Provide dedicated turn lanes for movement of construction trucks and equipment on and offsite.
AQBMP5	Schedule construction activities that affect traffic flow on the arterial system to off-peak hour to the extent practicable.
AQBMP6	Reroute construction trucks away from congested streets or sensitive receptor areas.
AQBMP7	Improve traffic flow by signal synchronization.
AQBMP8	Ensure that all vehicles and equipment will be properly tuned and maintained according to manufacturers' specifications.

Although potential fugitive emissions during construction do not exceed SCAQMD significance thresholds, SCAQMD Rule 403 specifies BMPs to control dust during the construction portion of the project.

AQBMP9	No visible dust emissions beyond the property line.
AQBMP10	No dust emissions exceeding 20 percent opacity anywhere on the property.
AQBMP11	No offsite increase in ambient PM_{10} concentrations greater than 50 µg/m3.
AQBMP12	No track-out exceeding 25 feet from the property.
AQBMP13	Implement wheel washing or paving to eliminate track out.
AQBMP14	Employment of a dust control supervisor who has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance.
AQBMP15	Use of watering to maintain soil moisture at 12 percent on haul roads and other active unpaved surfaces that are not chemically stabilized.
AQBMP16	Use of watering to prevent visible dust more than 100 feet from any earth moving activity.

AQBMP17 Use of watering, dust suppressants, covering with larger aggregate, and re-vegetation of inactive disturbed areas to prevent wind driven dust.

AQBMP18 Implement daily watering and 15 mph speed limit on unpaved roads.

AQBMP19 Use chemical stabilization, watering, covering, and enclosing methods for storage piles.

AQBMP20 Cover, wet, and or maintain at least two free of freeboard on trucks hauling dirt, sand, soil, or other loose materials off-site.

AQBMP21 Sweep streets hourly if visible soil material has been carried onto adjacent public paved roads (reclaim water shall be used if available).

AQBMP22 Water active areas at least twice daily.

AQBMP23 Cease grading activities that result in dust generation second stage smog alerts and periods of high winds (i.e., greater than 25 miles per hour [mph]) if dust is being transported to offsite locations and cannot be controlled by watering.

8.1.2 Operational Phase Mitigation Measures

The facility will be designed to minimize emissions of all pollutants, including greenhouse gases as much as feasible. ARTIC's location relative to major event and destination centers within the Platinum Triangle creates availability of current and future mass transit systems to occupants and visitors. The result will be less motor vehicle traffic on local roadways and freeways, and a general reduction in motor vehicle travel throughout the region. Since motor vehicle traffic is the primary source of air pollution in the region, plans to reduce traffic will result in lower emissions. No mitigation measures are required.

8.2 EFFECT OF MITIGATION MEASURES

The required mitigation measures during construction will reduce potential emissions during construction below the level of significance. The planned operational mitigation measures will reduce emissions.

9.0 EMISSIONS ASSOCIATED WITH A NO PROJECT ALTERNATIVE

If the proposed project is not constructed, there will be increased traffic congestion in the area (since mass transit will be less available), and other planned future projects will continue to be built. The potential ambient air quality impact of the No Project Alternative is greater than the proposed project.

10.0 SUMMARY OF SIGNIFICANCE

10.1 CONSTRUCTION EMISSIONS OF THE PROPOSED PROJECT ALONE

With all sequences of construction considered, only NO_x emissions potentially exceed the thresholds. With mitigation measures, which include schedule and equipment controls, construction emissions from ARTIC will be less than significant.

10.2 OPERATIONAL EMISSIONS OF THE PROPOSED PROJECT ALONE

None of the emissions from the proposed project exceed SCAQMD emission thresholds and thus the operational emissions are less than significant.

10.3 AMBIENT AIR QUALITY STANDARDS, TOXIC AIR CONTAMINANTS, AND ODOR IMPACTS OF THE PROPOSED PROJECT ALONE

Since the operational emissions of the proposed project are less than the SCAQMD emissions thresholds, it is not likely that the proposed project will cause or contribute to an exceedance of the ambient air quality standards. After the required mitigation measures are implemented, construction emissions will not cause or contribute to a localized exceedance of the ambient air quality standards for NO_x and regionally for ozone (as NO_x contributes to ozone formation). The remaining construction emissions are less than about 30 percent of the significance thresholds. Since construction activities are highly variable and there are a number of mitigation measures required, construction emissions for the other pollutants are not expected to cause an exceedance of an ambient air quality standard.

Future traffic from the proposed project will not result in significant impacts of CO at the intersection most affected by the proposed project (i.e., Douglass Rd. and Katella Ave.) as shown in a CO Hotspots analysis.

The proposed project will not create meaningful emissions of TACs other than diesel exhaust particulate. Other than during construction, there are no meaningful increases in emissions of diesel exhaust particulate (i.e., the diesel-fueled buses and trains already come into the area and the proposed project will not cause a meaningful increase in the number of buses and trains). Construction emissions of diesel exhaust particulate are of a relatively short term nature (few years) and would not contribute to a

significant health risk since such risks occur only over relatively long term exposures (forty to seventy years). Potential TAC impacts are not significant.

Potential odors from operations will not be distinguishable from the current uses of the areas surrounding the project location. Potential odors from construction activities would include vehicle exhaust, asphalt paving, and architectural coating. Nuisance odors from these activities would be confined to the immediate vicinity of the activity itself. Receptors immediately off-site may occasionally smell diesel exhaust from construction equipment. Any odors outside of the immediate area would be sufficiently diluted well below any objectionable levels. In either case, such exposure may result in brief periods of noticeable, yet not objectionable, odor from a minimal number of people. Therefore potential odor impacts are not considered significant.

10.4 CUMULATIVE IMPACTS OF THE PROPOSED PROJECT AND OTHER FUTURE PROJECTS

There are no future projects that alone would have meaningfully large emissions such that when combined with the operational emissions of the proposed project would likely cause or contribute to an exceedance of the ambient air quality standards. The proposed project operational emissions are below the SCAQMD significance thresholds. The emissions from the future proposed projects in the area would be similarly small or much smaller than the proposed project. Emissions are not considered cumulatively significant. Since construction emissions are highly variable, are of a short term nature, and do not occur at the same time as other projects, the construction emissions are not considered cumulatively significant.

10.5 GREENHOUSE GASES

SCAQMD interim significance threshold of 10,000 MT/yr was used as a point of comparison for the proposed project. GHG emissions for the proposed project are the result of the use of electricity, natural gas combustion, and increased vehicle exhaust. The operational emissions from ARTIC (2030) were determined to be 5,531 MT/yr CO_2e, which is about 55 percent of SCAQMD GHG significance threshold.

The location of ARTIC relative to major event and destination centers within the Platinum Triangle creates availability of current and future mass transit systems to occupants and visitors. The result will be less motor vehicle traffic on local roadways

and freeways, and a general reduction in motor vehicle travel throughout the region. Since motor vehicle traffic is the primary source of air pollution in the region, plans to reduce traffic will result in lower GHG emissions regionally. GHG emissions from the project would not have a significant impact on the environment.

11.0 REFERENCES

California Air Resources Board, EMFAC2007 Computer Model, Version 2.3, November 2006.

Linscott, Law and Greenspan Engineers, Traffic Impact Analysis Report ARTIC, April 2010 (updated 4/29).

Sacramento Metropolitan Air Quality Management District, Road Construction Emissions Model (RCEM), Version 6.3.2, July 2009.

South Coast Air Quality Management District, Draft 2007 Air Quality Management Plan, November 2006.

South Coast Air Quality Management District, SCAQMD CEQA Air Quality Handbook, April 1993.

South Coast Air Quality Management District, Rules and Regulations, March 2010.

South Coast Air Quality Management District, Urban Emissions Model (URBEMIS) Computer Model, version 9.2.4, June 2007

USEPA, CAL3QHC Computer Model, MCB#6, September 2004.

University of California, Davis, Transportation Project-Level Carbon Monoxide Protocol, December 1997.

APPENDIX A
Construction Emissions of Criteria Pollutants

A-1: Construction Emissions Summary

A-2: Road Construction Emission Model – Douglas Road Bridge Reconstruction

A-3: Road Construction Emission Model – Douglas Road 800 ft Sidewalk

A-4: Road Construction Emission Model – Widen Douglas Road

A-5: Road Construction Emission Model – Katella Avenue Right Turn Lane

A-6: Road Construction Emission Model – Stub End Track

A-7: Combined Summer Emission Report

A-8: Combined Winter Emission Report

A-1: Construction Emission Summary

ARTIC Construction Emissions Summary - No Mitigation

	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	SO2 (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
2011											
Urbemis Site & Building Construction	7.64	31.74	70.72	0.02	44.40	3.02	41.38	11.43	2.78	8.65	8,741.73
Stub-End Track (multiple stages)	-	-	-	-	-	-	-	-	-	-	-
Douglass Road Sidewalk	-	-	-	-	-	-	-	-	-	-	-
Douglass Road Bridge	2.4	10.7	19.9	-	1.9	0.9	1.0	1.1	0.9	0.2	2,284.00
Douglass Road Widening (S. of Katella)	-	-	-	-	-	-	-	-	-	-	-
Katella Road Widening (Rt. Turn Lane)	-	-	-	-	-	-	-	-	-	-	-
2011 Total	10.04	42.44	90.62	0.02	46.30	3.92	42.38	12.53	3.68	8.85	11,025.73
2012											
Urbemis Site & Building Construction	9.69	57.1	86.5	0.08	44.98	3.59	41.63	11.95	3.3	8.74	12,977.76
Stub-End Track (multiple stages)	1.4	7.6	10.5	-	2.6	0.6	2.0	1	0.6	0.4	1,258.30
Douglass Road Sidewalk	0.4	2.1	1.4	-	0.6	0.1	0.5	0.2	0.1	0.1	251.50
Douglass Road Bridge	2.4	10.7	19.9	-	1.9	0.9	1.0	1.1	0.9	0.2	2,284.00
Douglass Road Widening (S. of Katella)	2.5	11.7	17.5	-	3	1.1	2	1.3	1	0.4	2,012.50
Katella Road Widening (Rt. Turn Lane)	-	-	-	-	-	-	-	-	-	-	-
2012 Total	16.39	89.2	135.8	0.08	53.08	6.29	47.13	15.55	5.9	9.84	18,784.06
2013											
Urbemis Site & Building Construction	51.76	47.88	47.51	0.05	43.78	2.50	41.49	10.79	2.29	8.69	9,212.30
Stub-End Track (multiple stages)	1.4	7.6	10.5	-	2.6	0.6	2.0	1	0.6	0.4	1,258.30
Douglass Road Sidewalk	-	-	-	-	-	-	-	-	-	-	-
Douglass Road Bridge	-	-	-	-	-	-	-	-	-	-	-
Douglass Road Widening (S. of Katella)	-	-	-	-	-	-	-	-	-	-	-
Katella Road Widening (Rt. Turn Lane)	1.8	7.8	15.2	-	1.6	0.9	1	0.8	0.8	0.2	1,541.60
2013 Total	54.96	63.28	73.21	0.05	47.98	4.00	44.49	12.59	3.69	9.29	12,012.20
Total "Worst Case", by Pollutant by Year	54.96	89.20	135.80	0.08	53.08	6.29	47.13	15.55	5.90	9.84	18,784.06
Significance Threshold	75	550	100	150	150	-	-	55	-	-	See Note.

Greenhouse Gas Emissions Summary

Construction Year	CO_2e (lb/day)	CO_2e (MT/yr)	CO_2e (MT/30-yrs)
2011	11,025.73	1,560.37	-
2012	18,784.06	2,658.34	-
2013	12,012.20	1,699.98	-
Total	41,821.99	5,918.68	197.29

Note: The SCAQMD in December 2008 published an "interim" threshold for GHG significance for stationary sources for which SCAQMD is the lead agency (only) of 10,000 metric tonnes (MT) of CO_2
30-yr average CO_2e (MT/30-yrs): (41,822.0 lb CO_2/day) x (312 days/yr) / (2000 lb/ton) / (1.1023 ton/MT) / (30 yrs) = 197.3 MT/yr CO2e for construction

A-2: Road Construction Emission Model – Douglas Road Bridge Reconstruction

Road Construction Emissions Model

Version 6.3.2

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells C10 through C25.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

Input Type		
Project Name	C - Douglass Rd Bridge Reconstruction	
Construction Start Year	2012	Enter a Year between 2005 and 2025 (inclusive)
Project Type	3	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	9.0	months
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	0.019	miles
Total Project Area	0.3	acres
Maximum Area Disturbed/Day	0.1	acres
Water Trucks Used?	1	1. Yes 2. No
Soil Imported		yd^3/day
Soil Exported	10.0	yd^3/day
Average Truck Capacity	20.0	yd^3 (assume 20 if unknown)

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> ARTIC - Douglass Rd Bridge Reconstruction Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	2.2	10.3	19.8	1.8	0.8	1.0	1.0	0.7	0.2	2,015.4
Grading/Excavation	2.4	10.7	19.9	1.9	0.9	1.0	1.1	0.9	0.2	2,284.0
Drainage/Utilities/Sub-Grade	2.2	9.0	14.5	1.9	0.9	1.0	1.0	0.8	0.2	1,586.0
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (pounds/day)	2.4	10.7	19.9	1.9	0.9	1.0	1.1	0.9	0.2	2,284.0
Total (tons/construction project)	0.2	1.0	1.8	0.2	0.1	0.1	0.1	0.1	0.0	207.4

Notes:

Project Start Year ->	2012
Project Length (months) ->	9
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> ARTIC - Douglass Rd Bridge Reconstruction Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	1.0	4.7	9.0	0.8	0.4	0.5	0.4	0.3	0.1	916.1
Grading/Excavation	1.1	4.9	9.0	0.9	0.4	0.5	0.5	0.4	0.1	1,038.2
Drainage/Utilities/Sub-Grade	1.0	4.1	6.6	0.9	0.4	0.5	0.5	0.4	0.1	720.9
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (kilograms/day)	1.1	4.9	9.0	0.9	0.4	0.5	0.5	0.4	0.1	1,038.2
Total (megagrams/construction project)	0.2	0.9	1.7	0.2	0.1	0.1	0.1	0.1	0.0	188.1

Notes:

Project Start Year ->	2012
Project Length (months) ->	9
Total Project Area (hectares) ->	0
Maximum Area Disturbed/Day (hectares) ->	0
Total Soil Imported/Exported (meters ^{3}/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

With NOx Mitigation

Emission Estimates for -> ARTIC - Douglass Rd Bridge Reconstruction Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing			16.1							
Grading/Excavation			16.1							
Drainage/Utilities/Sub-Grade			12.0							
Paving			-							
Maximum (pounds/day)			16.1							
Total (tons/construction project)			1.5							

Notes:
Project Start Year -> 2012
Project Length (months) -> 9
Total Project Area (acres) -> 0
Maximum Area Disturbed/Day (acres) -> 0
Total Soil Imported/Exported (yd^3/day)-> 0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> ARTIC - Douglass Rd Bridge Reconstruction Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	-	-	7.3	-	-	-	-	-	-	-
Grading/Excavation	-	-	7.3	-	-	-	-	-	-	-
Drainage/Utilities/Sub-Grade	-	-	5.5	-	-	-	-	-	-	-
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (kilograms/day)	-	-	7.3	-	-	-	-	-	-	-
Total (megagrams/construction project)	-	-	1.4	-	-	-	-	-	-	-

Notes:
Project Start Year -> 2012
Project Length (months) -> 9
Total Project Area (hectares) -> 0
Maximum Area Disturbed/Day (hectares) -> 0
Total Soil Imported/Exported ($meters^3$/day)-> 0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

A-3: Road Construction Emission Model – Douglas Road 800 ft Sidewalk

Road Construction Emissions Model

Version 6.3.2

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells C10 through C25.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type		
Project Name	LRTIC - Doug Rd. 800 ft Sidewalk	
Construction Start Year	2012	Enter a Year between 2005 and 2025 (inclusive)
Project Type	1	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	2.0	months
Predominant Soil/Site Type: Enter 1, 2, or 3	2	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	0.15	miles
Total Project Area	0.1	acres
Maximum Area Disturbed/Day	0.1	acres
Water Trucks Used?	1	1. Yes 2. No
Soil Imported		yd^3/day
Soil Exported		yd^3/day
Average Truck Capacity	20.0	yd^3 (assume 20 if unknown)

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> ARTIC - Doug Rd. 800 ft Sidewalk Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	0.4	2.1	1.4	0.6	0.1	0.5	0.2	0.1	0.1	251.5
Drainage/Utilities/Sub-Grade	0.1	1.1	0.4	0.5	0.0	0.5	0.1	0.0	0.1	164.3
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (pounds/day)	0.4	2.1	1.4	0.6	0.1	0.5	0.2	0.1	0.1	251.5
Total (tons/construction project)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6

Notes:		
	Project Start Year ->	2012
	Project Length (months) ->	2
	Total Project Area (acres) ->	0
	Maximum Area Disturbed/Day (acres) ->	0
	Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> ARTIC - Doug Rd. 800 ft Sidewalk Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	0.2	0.9	0.6	0.3	0.0	0.2	0.1	0.0	0.0	114.3
Drainage/Utilities/Sub-Grade	0.1	0.5	0.2	0.2	0.0	0.2	0.1	0.0	0.0	74.7
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (kilograms/day)	0.2	0.9	0.6	0.3	0.0	0.2	0.1	0.0	0.0	114.3
Total (megagrams/construction project)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1

Notes:		
	Project Start Year ->	2012
	Project Length (months) ->	2
	Total Project Area (hectares) ->	0
	Maximum Area Disturbed/Day (hectares) ->	0
	Total Soil Imported/Exported (meters ^{3}/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

With NOx Mitigation

Emission Estimates for -> ARTIC - Doug Rd. 800 ft Sidewalk Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation			1.1							
Drainage/Utilities/Sub-Grade			0.4							
Paving			-							
Maximum (pounds/day)			1.1							
Total (tons/construction project)			0.0							

Notes:	Project Start Year ->	2012
	Project Length (months) ->	2
	Total Project Area (acres) ->	0
	Maximum Area Disturbed/Day (acres) ->	0
	Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> ARTIC - Doug Rd. 800 ft Sidewalk Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	-	-	0.5	-	-	-	-	-	-	-
Drainage/Utilities/Sub-Grade	-	-	0.2	-	-	-	-	-	-	-
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (kilograms/day)	-	-	0.5	-	-	-	-	-	-	-
Total (megagrams/construction project)	-	-	0.0	-	-	-	-	-	-	-

Notes:	Project Start Year ->	2012
	Project Length (months) ->	2
	Total Project Area (hectares) ->	0
	Maximum Area Disturbed/Day (hectares) ->	0
	Total Soil Imported/Exported ($meters^3$/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

A-4: Road Construction Emission Model – Widen Douglas Road

Road Construction Emissions Model

Version 6.3.2

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells C10 through C25.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type		
Project Name	- Widen Douglass Road (S. of Katella)	
Construction Start Year	2012	Enter a Year between 2005 and 2025 (inclusive)
Project Type	2	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	2.0	months
Predominant Soil/Site Type: Enter 1, 2, or 3	2	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	0.34	miles
Total Project Area	2.2	acres
Maximum Area Disturbed/Day	0.2	acres
Water Trucks Used?	1	1. Yes 2. No
Soil Imported		yd^3/day
Soil Exported		yd^3/day
Average Truck Capacity	20.0	yd^3 (assume 20 if unknown)

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> ARTIC - Widen Douglass Road (S. of Katella)				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (English Units)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**CO2 (lbs/day)**
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	2.5	11.7	17.5	3.0	1.0	2.0	1.3	0.9	0.4	2,012.5
Drainage/Utilities/Sub-Grade	2.1	8.9	13.4	2.9	0.9	2.0	1.2	0.8	0.4	1,441.6
Paving	2.3	8.9	12.9	1.1	1.1	-	1.0	1.0	-	1,240.2
Maximum (pounds/day)	2.5	11.7	17.5	3.0	1.1	2.0	1.3	1.0	0.4	2,012.5
Total (tons/construction project)	0.1	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	37.1

Notes:

Project Start Year ->	2012
Project Length (months) ->	2
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	0
Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> ARTIC - Widen Douglass Road (S. of Katella)				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (Metric Units)	**ROG (kgs/day)**	**CO (kgs/day)**	**NOx (kgs/day)**	**PM10 (kgs/day)**	**PM10 (kgs/day)**	**PM10 (kgs/day)**	**PM2.5 (kgs/day)**	**PM2.5 (kgs/day)**	**PM2.5 (kgs/day)**	**CO2 (kgs/day)**
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	1.1	5.3	7.9	1.4	0.4	0.9	0.6	0.4	0.2	914.8
Drainage/Utilities/Sub-Grade	1.0	4.0	6.1	1.3	0.4	0.9	0.5	0.4	0.2	655.3
Paving	1.1	4.0	5.9	0.5	0.5	-	0.5	0.5	-	563.7
Maximum (kilograms/day)	1.1	5.3	7.9	1.4	0.5	0.9	0.6	0.5	0.2	914.8
Total (megagrams/construction project)	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	33.7

Notes:

Project Start Year ->	2012
Project Length (months) ->	2
Total Project Area (hectares) ->	1
Maximum Area Disturbed/Day (hectares) ->	0
Total Soil Imported/Exported (meters ^{3}/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

With NOx Mitigation

Emission Estimates for -> ARTIC - Widen Douglass Road (S. of Katella) Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation			14.2							
Drainage/Utilities/Sub-Grade			11.7							
Paving			12.9							
Maximum (pounds/day)			14.2							
Total (tons/construction project)			0.3							

Notes:

Project Start Year ->	2012
Project Length (months) ->	2
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	0
Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> ARTIC - Widen Douglass Road (S. of Katella) Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	-	-	6.5	-	-	-	-	-	-	-
Drainage/Utilities/Sub-Grade	-	-	5.3	-	-	-	-	-	-	-
Paving	-	-	5.9	-	-	-	-	-	-	-
Maximum (kilograms/day)	-	-	6.5	-	-	-	-	-	-	-
Total (megagrams/construction project)	-	-	0.3	-	-	-	-	-	-	-

Notes:

Project Start Year ->	2012
Project Length (months) ->	2
Total Project Area (hectares) ->	1
Maximum Area Disturbed/Day (hectares) ->	0
Total Soil Imported/Exported ($meters^3$/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

A-5: Road Construction Emission Model – Katella Avenue Right Turn Lane

Road Construction Emissions Model

Version 6.3.2

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells C10 through C25.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

Input Type		
Project Name	RTIC - Katella Ave Right Turn Lane	
Construction Start Year	2012	Enter a Year between 2005 and 2025 (inclusive)
Project Type	2	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	1.0	month
Predominant Soil/Site Type: Enter 1, 2, or 3	2	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	0.019	miles
Total Project Area	0.1	acres
Maximum Area Disturbed/Day	0.1	acres
Water Trucks Used?	1	1. Yes 2. No
Soil Imported		yd^3/day
Soil Exported		yd^3/day
Average Truck Capacity	20.0	yd^3 (assume 20 if unknown)

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> ARTIC - Katella Ave Right Turn Lane				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (English Units)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**CO2 (lbs/day)**
Grubbing/Land Clearing	1.8	7.8	15.2	1.6	0.6	1.0	0.8	0.6	0.2	1,541.6
Grading/Excavation	1.5	7.6	10.9	1.6	0.6	1.0	0.8	0.6	0.2	1,260.7
Drainage/Utilities/Sub-Grade	-	-	-	0.0	0.0	-	-	-	-	-
Paving	1.6	6.4	9.6	0.9	0.9	-	0.8	0.8	-	936.6
Maximum (pounds/day)	1.8	7.8	15.2	1.6	0.9	1.0	0.8	0.8	0.2	1,541.6
Total (tons/construction project)	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	13.6

Notes:

Project Start Year ->	2012
Project Length (months) ->	1
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> ARTIC - Katella Ave Right Turn Lane				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (Metric Units)	**ROG (kgs/day)**	**CO (kgs/day)**	**NOx (kgs/day)**	**PM10 (kgs/day)**	**PM10 (kgs/day)**	**PM10 (kgs/day)**	**PM2.5 (kgs/day)**	**PM2.5 (kgs/day)**	**PM2.5 (kgs/day)**	**CO2 (kgs/day)**
Grubbing/Land Clearing	0.8	3.6	6.9	0.7	0.3	0.5	0.4	0.3	0.1	700.7
Grading/Excavation	0.7	3.5	5.0	0.7	0.3	0.5	0.4	0.3	0.1	573.0
Drainage/Utilities/Sub-Grade	-	-	-	0.0	0.0	-	-	-	-	-
Paving	0.7	2.9	4.4	0.4	0.4	-	0.4	0.4	-	425.7
Maximum (kilograms/day)	0.8	3.6	6.9	0.7	0.4	0.5	0.4	0.4	0.1	700.7
Total (megagrams/construction project)	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	12.3

Notes:

Project Start Year ->	2012
Project Length (months) ->	1
Total Project Area (hectares) ->	0
Maximum Area Disturbed/Day (hectares) ->	0
Total Soil Imported/Exported (meters ^{3}/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

A-6: Road Construction Emission Model – Stub End Track

Road Construction Emissions Model

Version 6.3.2

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells C10 through C25.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

Input Type		
Project Name	ARTIC - Stub End Track	
Construction Start Year	2012	Enter a Year between 2005 and 2025 (inclusive)
Project Type	1	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	13.0	months
Predominant Soil/Site Type: Enter 1, 2, or 3	2	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	0.4735	miles
Total Project Area	1.1	acres
Maximum Area Disturbed/Day	0.2	acres
Water Trucks Used?	1	1. Yes 2. No
Soil Imported	0.0	yd^3/day
Soil Exported	0.0	yd^3/day
Average Truck Capacity	20.0	yd^3 (assume 20 if unknown)

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> ARTIC - Stub End Track Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	1.4	7.6	10.5	2.6	0.6	2.0	1.0	0.6	0.4	1,258.3
Drainage/Utilities/Sub-Grade	1.3	5.5	8.5	2.5	0.5	2.0	0.9	0.5	0.4	1,054.6
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (pounds/day)	1.4	7.6	10.5	2.6	0.6	2.0	1.0	0.6	0.4	1,258.3
Total (tons/construction project)	0.2	1.0	1.4	0.3	0.1	0.2	0.1	0.1	0.0	166.5

Notes:

Project Start Year ->	2012
Project Length (months) ->	13
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	0
Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> ARTIC - Stub End Track Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	0.7	3.5	4.8	1.2	0.3	0.9	0.4	0.3	0.2	572.0
Drainage/Utilities/Sub-Grade	0.6	2.5	3.9	1.1	0.2	0.9	0.4	0.2	0.2	479.4
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (kilograms/day)	0.7	3.5	4.8	1.2	0.3	0.9	0.4	0.3	0.2	572.0
Total (megagrams/construction project)	0.2	0.9	1.2	0.3	0.1	0.2	0.1	0.1	0.0	151.0

Notes:

Project Start Year ->	2012
Project Length (months) ->	13
Total Project Area (hectares) ->	0
Maximum Area Disturbed/Day (hectares) ->	0
Total Soil Imported/Exported (meters ^{3}/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

With NOx Mitigation

Emission Estimates for -> ARTIC - Stub End Track Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation			8.4							
Drainage/Utilities/Sub-Grade			7.6							
Paving			-							
Maximum (pounds/day)			8.4							
Total (tons/construction project)			1.1							

Notes:	Project Start Year ->	2012
	Project Length (months) ->	13
	Total Project Area (acres) ->	1
	Maximum Area Disturbed/Day (acres) ->	0
	Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> ARTIC - Stub End Track Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	-	-	3.8	-	-	-	-	-	-	-
Drainage/Utilities/Sub-Grade	-	-	3.4	-	-	-	-	-	-	-
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (kilograms/day)	-	-	3.8	-	-	-	-	-	-	-
Total (megagrams/construction project)	-	-	1.0	-	-	-	-	-	-	-

Notes:	Project Start Year ->	2012
	Project Length (months) ->	13
	Total Project Area (hectares) ->	0
	Maximum Area Disturbed/Day (hectares) ->	0
	Total Soil Imported/Exported ($meters^3$/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

A-7: Combined Summer Emission Report

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\jdill\My Documents\Projects\ARTIC\June 2010 Docs\ARTIC Building_R15_mitigation.urb924

Project Name: ARTIC Building

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (lbs/day unmitigated)	7.64	70.72	31.74	0.02	41.38	3.02	44.40	8.65	2.78	11.43	8,741.73
2011 TOTALS (lbs/day mitigated)	7.64	61.37	31.74	0.02	10.99	3.02	14.01	2.30	2.78	5.08	8,741.73
2012 TOTALS (lbs/day unmitigated)	9.69	86.50	57.10	0.08	41.63	3.59	44.98	8.74	3.30	11.95	12,977.76
2012 TOTALS (lbs/day mitigated)	9.69	73.55	57.10	0.08	23.68	3.59	26.83	4.99	3.30	7.88	12,977.76
2013 TOTALS (lbs/day unmitigated)	51.76	47.51	47.88	0.05	41.49	2.50	43.78	8.69	2.29	10.79	9,212.30
2013 TOTALS (lbs/day mitigated)	47.25	40.45	47.88	0.05	21.58	2.50	23.88	4.54	2.29	6.64	9,212.30

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.25	2.75	9.96	0.00	0.03	0.03	3,192.84

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	27.43	38.65	337.98	0.44	3.96	2.54	43,574.05

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	28.68	41.40	347.94	0.44	3.99	2.57	46,766.89

Construction Unmitigated Detail Report:

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CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 5/2/2011-5/10/2011 Active Days: 8	3.99	34.21	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Demolition 05/01/2011-08/31/2011	3.99	34.21	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Fugitive Dust	0.00	0.00	0.00	0.00	8.59	0.00	8.59	1.79	0.00	1.79	0.00
Demo Off Road Diesel	3.52	28.82	13.29	0.00	0.00	1.44	1.44	0.00	1.32	1.32	3,160.93
Demo On Road Diesel	0.42	5.31	2.04	0.01	0.03	0.21	0.24	0.01	0.20	0.20	802.34
Demo Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.55
Time Slice 5/11/2011-8/31/2011 Active Days: 97	5.07	41.52	22.37	0.01	8.68	2.21	10.89	1.81	2.03	3.84	4,979.20
Demolition 05/01/2011-08/31/2011	3.99	34.21	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Fugitive Dust	0.00	0.00	0.00	0.00	8.59	0.00	8.59	1.79	0.00	1.79	0.00
Demo Off Road Diesel	3.52	28.82	13.29	0.00	0.00	1.44	1.44	0.00	1.32	1.32	3,160.93
Demo On Road Diesel	0.42	5.31	2.04	0.01	0.03	0.21	0.24	0.01	0.20	0.20	802.34
Demo Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.55
Demolition 05/11/2011-08/31/2011	1.09	7.31	5.57	0.00	0.06	0.55	0.61	0.01	0.51	0.52	829.38
Fugitive Dust	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.01	0.00	0.01	0.00
Demo Off Road Diesel	1.05	7.22	4.58	0.00	0.00	0.55	0.55	0.00	0.50	0.50	700.30
Demo On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.71
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.37

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Time Slice 11/1/2011-12/31/2011 Active Days: 53	7.64	70.72	31.74	0.02	41.38	3.02	44.40	8.65	2.78	11.43	8,741.73
Mass Grading 11/01/2011-01/31/2012	7.64	70.72	31.74	0.02	41.38	3.02	44.40	8.65	2.78	11.43	8,741.73
Mass Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Mass Grading Off Road Diesel	6.48	56.59	24.40	0.00	0.00	2.45	2.45	0.00	2.25	2.25	6,373.79
Mass Grading On Road Diesel	1.10	14.01	5.39	0.02	0.07	0.56	0.63	0.02	0.52	0.54	2,119.20
Mass Grading Worker Trips	0.06	0.11	1.95	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.74
Time Slice 1/2/2012-1/31/2012 Active Days: 26	9.69	**86.50**	40.87	0.02	41.39	**3.59**	**44.98**	8.66	**3.30**	**11.95**	12,254.58
Mass Grading 11/01/2011-01/31/2012	7.24	65.04	30.03	0.02	41.38	2.71	44.09	8.65	2.49	11.14	8,741.68
Mass Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Mass Grading Off Road Diesel	6.17	52.45	23.40	0.00	0.00	2.21	2.21	0.00	2.03	2.03	6,373.79
Mass Grading On Road Diesel	1.01	12.48	4.82	0.02	0.07	0.49	0.56	0.02	0.45	0.48	2,119.20
Mass Grading Worker Trips	0.05	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.69
Trenching 01/01/2012-03/31/2012	2.45	21.46	10.83	0.00	0.01	0.88	0.88	0.00	0.81	0.81	3,512.89
Trenching Off Road Diesel	2.41	21.38	9.47	0.00	0.00	0.87	0.87	0.00	0.80	0.80	3,326.37
Trenching Worker Trips	0.04	0.08	1.36	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.52

Time Slice 2/1/2012-3/31/2012 Active Days: 52	6.31	61.80	29.16	0.04	41.45	2.55	44.01	8.68	2.35	11.02	9,379.70
Fine Grading 02/01/2012-06/30/2012	3.86	40.35	18.33	0.04	41.45	1.68	43.12	8.67	1.54	10.22	5,866.81
Fine Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Fine Grading Off Road Diesel	1.83	15.34	8.01	0.00	0.00	0.69	0.69	0.00	0.63	0.63	1,535.15
Fine Grading On Road Diesel	2.01	24.96	9.64	0.04	0.14	0.98	1.13	0.05	0.91	0.95	4,238.40
Fine Grading Worker Trips	0.02	0.04	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.26
Trenching 01/01/2012-03/31/2012	2.45	21.46	10.83	0.00	0.01	0.88	0.88	0.00	0.81	0.81	3,512.89
Trenching Off Road Diesel	2.41	21.38	9.47	0.00	0.00	0.87	0.87	0.00	0.80	0.80	3,326.37
Trenching Worker Trips	0.04	0.08	1.36	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.52
Time Slice 4/2/2012-6/30/2012 Active Days: 78	8.40	71.63	**57.10**	**0.08**	**41.63**	3.15	44.78	**8.74**	2.89	11.63	**12,977.76**
Building 04/01/2012-07/31/2013	4.54	31.28	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	26.58	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Fine Grading 02/01/2012-06/30/2012	3.86	40.35	18.33	0.04	41.45	1.68	43.12	8.67	1.54	10.22	5,866.81
Fine Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Fine Grading Off Road Diesel	1.83	15.34	8.01	0.00	0.00	0.69	0.69	0.00	0.63	0.63	1,535.15
Fine Grading On Road Diesel	2.01	24.96	9.64	0.04	0.14	0.98	1.13	0.05	0.91	0.95	4,238.40
Fine Grading Worker Trips	0.02	0.04	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.26

Time Slice 7/2/2012-10/31/2012 Active Days: 105	4.54	31.28	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building 04/01/2012-07/31/2013	4.54	31.28	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	26.58	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Time Slice 11/1/2012-12/31/2012 Active Days: 52	6.89	50.11	48.12	0.04	0.19	2.33	2.52	0.07	2.13	2.20	9,522.40
Building 04/01/2012-07/31/2013	4.54	31.28	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	26.58	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Trenching 11/01/2012-12/31/2012	2.36	18.82	9.35	0.00	0.01	0.85	0.86	0.00	0.79	0.79	2,411.45
Trenching Off Road Diesel	2.32	18.76	8.22	0.00	0.00	0.85	0.85	0.00	0.78	0.78	2,256.02
Trenching Worker Trips	0.03	0.06	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.43
Time Slice 1/1/2013-2/28/2013 Active Days: 51	6.58	47.51	47.88	0.04	41.49	2.29	43.78	8.69	2.10	10.79	9,212.30
Building 04/01/2012-07/31/2013	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	24.72	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Fine Grading 01/01/2013-02/28/2013	2.35	18.60	11.32	0.00	41.31	0.92	42.23	8.63	0.85	9.48	2,101.70
Fine Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Fine Grading Off Road Diesel	2.33	18.56	10.48	0.00	0.00	0.92	0.92	0.00	0.85	0.85	1,977.37
Fine 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
Fine Grading Worker Trips	0.02	0.05	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.33

Time Slice 3/1/2013-3/30/2013 Active Days: 26	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building 04/01/2012-07/31/2013	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	24.72	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Time Slice 4/1/2013-5/31/2013 Active Days: 53	49.30	28.94	37.01	0.04	0.18	1.37	1.56	0.07	1.25	1.32	7,175.97
Building 04/01/2012-07/31/2013	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	24.72	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Coating 04/01/2013-10/31/2013	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	45.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

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Time Slice 6/1/2013-7/31/2013 Active Days: 52	**51.76**	42.61	47.01	0.05	0.20	2.50	2.70	0.07	2.29	2.36	8,699.07
Asphalt 06/01/2013-08/31/2013	2.46	13.67	10.00	0.00	0.02	1.13	1.14	0.01	1.04	1.04	1,523.09
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.10	12.84	8.03	0.00	0.00	1.09	1.09	0.00	1.00	1.00	1,131.92
Paving On Road Diesel	0.06	0.74	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	142.52
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Building 04/01/2012-07/31/2013	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	24.72	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Coating 04/01/2013-10/31/2013	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	45.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Time Slice 8/1/2013-8/31/2013 Active Days: 27	47.52	13.69	10.45	0.00	0.02	1.13	1.15	0.01	1.04	1.04	1,588.47
Asphalt 06/01/2013-08/31/2013	2.46	13.67	10.00	0.00	0.02	1.13	1.14	0.01	1.04	1.04	1,523.09
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.10	12.84	8.03	0.00	0.00	1.09	1.09	0.00	1.00	1.00	1,131.92
Paving On Road Diesel	0.06	0.74	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	142.52
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Coating 04/01/2013-10/31/2013	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	45.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

Time Slice 9/2/2013-10/31/2013 Active Days: 52	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Coating 04/01/2013-10/31/2013	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	45.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

Phase Assumptions

Phase: Demolition 5/1/2011 - 8/31/2011 - Demo Buildings

Building Volume Total (cubic feet): 932000

Building Volume Daily (cubic feet): 20444.76

On Road Truck Travel (VMT): 189.3

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

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

Phase: Demolition 5/11/2011 - 8/31/2011 - Demo Parking Lot

Building Volume Total (cubic feet): 159000

Building Volume Daily (cubic feet): 120

On Road Truck Travel (VMT): 1.11

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Fine Grading 2/1/2012 - 6/30/2012 - Fine Site Grading (Construction Zone)

Total Acres Disturbed: 13.8

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Maximum Daily Acreage Disturbed: 4.13

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 1000

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 5 hours per day

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

Phase: Fine Grading 1/1/2013 - 2/28/2013 - Fine Parking Lot Grading

Total Acres Disturbed: 2.2

Maximum Daily Acreage Disturbed: 4.13

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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

Phase: Mass Grading 11/1/2011 - 1/31/2012 - Mass Site Grading & Excavation Activity

Total Acres Disturbed: 16

Maximum Daily Acreage Disturbed: 4.13

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 500

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Generator Sets (335 hp) operating at a 0.74 load factor for 2 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/1/2012 - 3/31/2012 - Trenching (Foundation, Piles)

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 2 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Plate Compactors (50 hp) operating at a 0.43 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 2 hours per day

Phase: Trenching 11/1/2012 - 12/31/2012 - Trenching (Utilities, Pipelines)

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 5 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 5 hours per day

1 Welders (45 hp) operating at a 0.45 load factor for 4 hours per day

Phase: Paving 6/1/2013 - 8/31/2013 - Parking Lot Area Paving

Acres to be Paved: 7.4

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

Phase: Building Construction 4/1/2012 - 7/31/2013 - Construct Building (Terminal, Passenger Area)

Off-Road Equipment:

1 Air Compressors (20 hp) operating at a 0.48 load factor for 8 hours per day

1 Cranes (200 hp) operating at a 0.43 load factor for 6 hours per day

1 Crawler Tractors (200 hp) operating at a 0.64 load factor for 6 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

1 Generator Sets (335 hp) operating at a 0.74 load factor for 2 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 4 hours per day

1 Plate Compactors (50 hp) operating at a 0.43 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (100 hp) operating at a 0.55 load factor for 6 hours per day

3 Welders (50 hp) operating at a 0.45 load factor for 4 hours per day

Phase: Architectural Coating 4/1/2013 - 10/31/2013 - Architectural Coating - Building Paint

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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

Time Slice 5/2/2011-5/10/2011 Active Days: 8	3.99	28.53	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Demolition 05/01/2011-08/31/2011	3.99	28.53	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Fugitive Dust	0.00	0.00	0.00	0.00	8.59	0.00	8.59	1.79	0.00	1.79	0.00
Demo Off Road Diesel	3.52	23.14	13.29	0.00	0.00	1.44	1.44	0.00	1.32	1.32	3,160.93
Demo On Road Diesel	0.42	5.31	2.04	0.01	0.03	0.21	0.24	0.01	0.20	0.20	802.34
Demo Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.55
Time Slice 5/11/2011-8/31/2011 Active Days: 97	5.07	34.48	22.37	0.01	8.68	2.21	10.89	1.81	2.03	3.84	4,979.20
Demolition 05/01/2011-08/31/2011	3.99	28.53	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Fugitive Dust	0.00	0.00	0.00	0.00	8.59	0.00	8.59	1.79	0.00	1.79	0.00
Demo Off Road Diesel	3.52	23.14	13.29	0.00	0.00	1.44	1.44	0.00	1.32	1.32	3,160.93
Demo On Road Diesel	0.42	5.31	2.04	0.01	0.03	0.21	0.24	0.01	0.20	0.20	802.34
Demo Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.55
Demolition 05/11/2011-08/31/2011	1.09	5.95	5.57	0.00	0.06	0.55	0.61	0.01	0.51	0.52	829.38
Fugitive Dust	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.01	0.00	0.01	0.00
Demo Off Road Diesel	1.05	5.86	4.58	0.00	0.00	0.55	0.55	0.00	0.50	0.50	700.30
Demo On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.71
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.37

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Time Slice 11/1/2011-12/31/2011 Active Days: 53	7.64	61.37	31.74	0.02	10.99	3.02	14.01	2.30	2.78	5.08	8,741.73
Mass Grading 11/01/2011-01/31/2012	7.64	61.37	31.74	0.02	10.99	3.02	14.01	2.30	2.78	5.08	8,741.73
Mass Grading Dust	0.00	0.00	0.00	0.00	10.90	0.00	10.90	2.28	0.00	2.28	0.00
Mass Grading Off Road Diesel	6.48	47.25	24.40	0.00	0.00	2.45	2.45	0.00	2.25	2.25	6,373.79
Mass Grading On Road Diesel	1.10	14.01	5.39	0.02	0.07	0.56	0.63	0.02	0.52	0.54	2,119.20
Mass Grading Worker Trips	0.06	0.11	1.95	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.74
Time Slice 1/2/2012-1/31/2012 Active Days: 26	9.69	73.55	40.87	0.02	11.00	**3.59**	14.58	2.31	**3.30**	5.61	12,254.58
Mass Grading 11/01/2011-01/31/2012	7.24	56.36	30.03	0.02	10.99	2.71	13.70	2.30	2.49	4.80	8,741.68
Mass Grading Dust	0.00	0.00	0.00	0.00	10.90	0.00	10.90	2.28	0.00	2.28	0.00
Mass Grading Off Road Diesel	6.17	43.78	23.40	0.00	0.00	2.21	2.21	0.00	2.03	2.03	6,373.79
Mass Grading On Road Diesel	1.01	12.48	4.82	0.02	0.07	0.49	0.56	0.02	0.45	0.48	2,119.20
Mass Grading Worker Trips	0.05	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.69
Trenching 01/01/2012-03/31/2012	2.45	17.18	10.83	0.00	0.01	0.88	0.88	0.00	0.81	0.81	3,512.89
Trenching Off Road Diesel	2.41	17.10	9.47	0.00	0.00	0.87	0.87	0.00	0.80	0.80	3,326.37
Trenching Worker Trips	0.04	0.08	1.36	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.52

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Time Slice 2/1/2012-3/31/2012 Active Days: 52	6.31	54.46	29.16	0.04	23.51	2.55	26.06	4.93	2.35	7.28	9,379.70
Fine Grading 02/01/2012-06/30/2012	3.86	37.28	18.33	0.04	23.50	1.68	25.18	4.93	1.54	6.47	5,866.81
Fine Grading Dust	0.00	0.00	0.00	0.00	23.36	0.00	23.36	4.88	0.00	4.88	0.00
Fine Grading Off Road Diesel	1.83	12.27	8.01	0.00	0.00	0.69	0.69	0.00	0.63	0.63	1,535.15
Fine Grading On Road Diesel	2.01	24.96	9.64	0.04	0.14	0.98	1.13	0.05	0.91	0.95	4,238.40
Fine Grading Worker Trips	0.02	0.04	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.26
Trenching 01/01/2012-03/31/2012	2.45	17.18	10.83	0.00	0.01	0.88	0.88	0.00	0.81	0.81	3,512.89
Trenching Off Road Diesel	2.41	17.10	9.47	0.00	0.00	0.87	0.87	0.00	0.80	0.80	3,326.37
Trenching Worker Trips	0.04	0.08	1.36	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.52
Time Slice 4/2/2012-6/30/2012 Active Days: 78	8.40	64.94	**57.10**	**0.08**	23.68	3.15	26.83	4.99	2.89	7.88	**12,977.76**
Building 04/01/2012-07/31/2013	4.54	27.67	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	22.97	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Fine Grading 02/01/2012-06/30/2012	3.86	37.28	18.33	0.04	23.50	1.68	25.18	4.93	1.54	6.47	5,866.81
Fine Grading Dust	0.00	0.00	0.00	0.00	23.36	0.00	23.36	4.88	0.00	4.88	0.00
Fine Grading Off Road Diesel	1.83	12.27	8.01	0.00	0.00	0.69	0.69	0.00	0.63	0.63	1,535.15
Fine Grading On Road Diesel	2.01	24.96	9.64	0.04	0.14	0.98	1.13	0.05	0.91	0.95	4,238.40
Fine Grading Worker Trips	0.02	0.04	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.26

Time Slice 7/2/2012-10/31/2012 Active Days: 105	4.54	27.67	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building 04/01/2012-07/31/2013	4.54	27.67	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	22.97	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Time Slice 11/1/2012-12/31/2012 Active Days: 52	6.89	44.00	48.12	0.04	0.19	2.33	2.52	0.07	2.13	2.20	9,522.40
Building 04/01/2012-07/31/2013	4.54	27.67	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	22.97	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Trenching 11/01/2012-12/31/2012	2.36	16.34	9.35	0.00	0.01	0.85	0.86	0.00	0.79	0.79	2,411.45
Trenching Off Road Diesel	2.32	16.27	8.22	0.00	0.00	0.85	0.85	0.00	0.78	0.78	2,256.02
Trenching Worker Trips	0.03	0.06	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.43
Time Slice 1/1/2013-2/28/2013 Active Days: 51	6.58	40.45	47.88	0.04	21.58	2.29	23.88	4.54	2.10	6.64	9,212.30
Building 04/01/2012-07/31/2013	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	21.36	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Fine Grading 01/01/2013-02/28/2013	2.35	14.89	11.32	0.00	21.40	0.92	22.33	4.47	0.85	5.32	2,101.70
Fine Grading Dust	0.00	0.00	0.00	0.00	21.40	0.00	21.40	4.47	0.00	4.47	0.00
Fine Grading Off Road Diesel	2.33	14.85	10.48	0.00	0.00	0.92	0.92	0.00	0.85	0.85	1,977.37
Fine 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
Fine Grading Worker Trips	0.02	0.05	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.33

Time Slice 3/1/2013-3/30/2013 Active Days: 26	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building 04/01/2012-07/31/2013	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	21.36	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Time Slice 4/1/2013-5/31/2013 Active Days: 53	44.80	25.58	37.01	0.04	0.18	1.37	1.56	0.07	1.25	1.32	7,175.97
Building 04/01/2012-07/31/2013	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	21.36	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Coating 04/01/2013-10/31/2013	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	40.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

Time Slice 6/1/2013-7/31/2013 Active Days: 52	47.25	39.25	47.01	0.05	0.20	2.50	2.70	0.07	2.29	2.36	8,699.07
Asphalt 06/01/2013-08/31/2013	2.46	13.67	10.00	0.00	0.02	1.13	1.14	0.01	1.04	1.04	1,523.09
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.10	12.84	8.03	0.00	0.00	1.09	1.09	0.00	1.00	1.00	1,131.92
Paving On Road Diesel	0.06	0.74	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	142.52
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Building 04/01/2012-07/31/2013	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	21.36	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Coating 04/01/2013-10/31/2013	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	40.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Time Slice 8/1/2013-8/31/2013 Active Days: 27	43.02	13.69	10.45	0.00	0.02	1.13	1.15	0.01	1.04	1.04	1,588.47
Asphalt 06/01/2013-08/31/2013	2.46	13.67	10.00	0.00	0.02	1.13	1.14	0.01	1.04	1.04	1,523.09
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.10	12.84	8.03	0.00	0.00	1.09	1.09	0.00	1.00	1.00	1,131.92
Paving On Road Diesel	0.06	0.74	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	142.52
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Coating 04/01/2013-10/31/2013	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	40.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

Time Slice 9/2/2013-10/31/2013 Active Days: 52	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Coating 04/01/2013-10/31/2013	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	40.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 5/1/2011 - 8/31/2011 - Demo Buildings

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Water Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Demolition 5/11/2011 - 8/31/2011 - Demo Parking Lot

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Fine Grading 2/1/2012 - 6/30/2012 - Fine Site Grading (Construction Zone)

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

PM10: 55% PM25: 55%

For Graders, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Water Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Fine Grading 1/1/2013 - 2/28/2013 - Fine Parking Lot Grading

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Water Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Mass Grading 11/1/2011 - 1/31/2012 - Mass Site Grading & Excavation Activity

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

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

PM10: 55% PM25: 55%

For Graders, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Water Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Excavators, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

The following mitigation measures apply to Phase: Trenching 1/1/2012 - 3/31/2012 - Trenching (Foundation, Piles)

For Excavators, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Other General Industrial Equipment, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Plate Compactors, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Bore/Drill Rigs, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Trenching 11/1/2012 - 12/31/2012 - Trenching (Utilities, Pipelines)

For Excavators, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Building Construction 4/1/2012 - 7/31/2013 - Construct Building (Terminal, Passenger Area)

For Cranes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Crawler Tractors, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Excavators, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

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The following mitigation measures apply to Phase: Architectural Coating 4/1/2013 - 10/31/2013 - Architectural Coating - Building Paint

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

A-8: Combined Winter Emission Report

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\jdill\My Documents\Projects\ARTIC\June 2010 Docs\ARTIC Building_R15_mitigation.urb924

Project Name: ARTIC Building

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (lbs/day unmitigated)	7.64	70.72	31.74	0.02	41.38	3.02	44.40	8.65	2.78	11.43	8,741.73
2011 TOTALS (lbs/day mitigated)	7.64	61.37	31.74	0.02	10.99	3.02	14.01	2.30	2.78	5.08	8,741.73
2012 TOTALS (lbs/day unmitigated)	9.69	86.50	57.10	0.08	41.63	3.59	44.98	8.74	3.30	11.95	12,977.76
2012 TOTALS (lbs/day mitigated)	9.69	73.55	57.10	0.08	23.68	3.59	26.83	4.99	3.30	7.88	12,977.76
2013 TOTALS (lbs/day unmitigated)	51.76	47.51	47.88	0.05	41.49	2.50	43.78	8.69	2.29	10.79	9,212.30
2013 TOTALS (lbs/day mitigated)	47.25	40.45	47.88	0.05	21.58	2.50	23.88	4.54	2.29	6.64	9,212.30

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.64	2.65	2.23	0.00	0.00	0.00	3,178.80

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	29.69	46.43	323.78	0.37	3.96	2.54	39,434.75

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	30.33	49.08	326.01	0.37	3.96	2.54	42,613.55

Construction Unmitigated Detail Report:

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CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 5/2/2011-5/10/2011 Active Days: 8	3.99	34.21	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Demolition 05/01/2011-08/31/2011	3.99	34.21	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Fugitive Dust	0.00	0.00	0.00	0.00	8.59	0.00	8.59	1.79	0.00	1.79	0.00
Demo Off Road Diesel	3.52	28.82	13.29	0.00	0.00	1.44	1.44	0.00	1.32	1.32	3,160.93
Demo On Road Diesel	0.42	5.31	2.04	0.01	0.03	0.21	0.24	0.01	0.20	0.20	802.34
Demo Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.55
Time Slice 5/11/2011-8/31/2011 Active Days: 97	5.07	41.52	22.37	0.01	8.68	2.21	10.89	1.81	2.03	3.84	4,979.20
Demolition 05/01/2011-08/31/2011	3.99	34.21	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Fugitive Dust	0.00	0.00	0.00	0.00	8.59	0.00	8.59	1.79	0.00	1.79	0.00
Demo Off Road Diesel	3.52	28.82	13.29	0.00	0.00	1.44	1.44	0.00	1.32	1.32	3,160.93
Demo On Road Diesel	0.42	5.31	2.04	0.01	0.03	0.21	0.24	0.01	0.20	0.20	802.34
Demo Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.55
Demolition 05/11/2011-08/31/2011	1.09	7.31	5.57	0.00	0.06	0.55	0.61	0.01	0.51	0.52	829.38
Fugitive Dust	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.01	0.00	0.01	0.00
Demo Off Road Diesel	1.05	7.22	4.58	0.00	0.00	0.55	0.55	0.00	0.50	0.50	700.30
Demo On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.71
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.37

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Time Slice 11/1/2011-12/31/2011 Active Days: 53	7.64	70.72	31.74	0.02	41.38	3.02	44.40	8.65	2.78	11.43	8,741.73
Mass Grading 11/01/2011-01/31/2012	7.64	70.72	31.74	0.02	41.38	3.02	44.40	8.65	2.78	11.43	8,741.73
Mass Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Mass Grading Off Road Diesel	6.48	56.59	24.40	0.00	0.00	2.45	2.45	0.00	2.25	2.25	6,373.79
Mass Grading On Road Diesel	1.10	14.01	5.39	0.02	0.07	0.56	0.63	0.02	0.52	0.54	2,119.20
Mass Grading Worker Trips	0.06	0.11	1.95	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.74
Time Slice 1/2/2012-1/31/2012 Active Days: 26	9.69	**86.50**	40.87	0.02	41.39	**3.59**	**44.98**	8.66	**3.30**	**11.95**	12,254.58
Mass Grading 11/01/2011-01/31/2012	7.24	65.04	30.03	0.02	41.38	2.71	44.09	8.65	2.49	11.14	8,741.68
Mass Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Mass Grading Off Road Diesel	6.17	52.45	23.40	0.00	0.00	2.21	2.21	0.00	2.03	2.03	6,373.79
Mass Grading On Road Diesel	1.01	12.48	4.82	0.02	0.07	0.49	0.56	0.02	0.45	0.48	2,119.20
Mass Grading Worker Trips	0.05	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.69
Trenching 01/01/2012-03/31/2012	2.45	21.46	10.83	0.00	0.01	0.88	0.88	0.00	0.81	0.81	3,512.89
Trenching Off Road Diesel	2.41	21.38	9.47	0.00	0.00	0.87	0.87	0.00	0.80	0.80	3,326.37
Trenching Worker Trips	0.04	0.08	1.36	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.52

Time Slice 2/1/2012-3/31/2012 Active Days: 52	6.31	61.80	29.16	0.04	41.45	2.55	44.01	8.68	2.35	11.02	9,379.70
Fine Grading 02/01/2012-06/30/2012	3.86	40.35	18.33	0.04	41.45	1.68	43.12	8.67	1.54	10.22	5,866.81
Fine Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Fine Grading Off Road Diesel	1.83	15.34	8.01	0.00	0.00	0.69	0.69	0.00	0.63	0.63	1,535.15
Fine Grading On Road Diesel	2.01	24.96	9.64	0.04	0.14	0.98	1.13	0.05	0.91	0.95	4,238.40
Fine Grading Worker Trips	0.02	0.04	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.26
Trenching 01/01/2012-03/31/2012	2.45	21.46	10.83	0.00	0.01	0.88	0.88	0.00	0.81	0.81	3,512.89
Trenching Off Road Diesel	2.41	21.38	9.47	0.00	0.00	0.87	0.87	0.00	0.80	0.80	3,326.37
Trenching Worker Trips	0.04	0.08	1.36	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.52
Time Slice 4/2/2012-6/30/2012 Active Days: 78	8.40	71.63	**57.10**	**0.08**	**41.63**	3.15	44.78	**8.74**	2.89	11.63	**12,977.76**
Building 04/01/2012-07/31/2013	4.54	31.28	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	26.58	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Fine Grading 02/01/2012-06/30/2012	3.86	40.35	18.33	0.04	41.45	1.68	43.12	8.67	1.54	10.22	5,866.81
Fine Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Fine Grading Off Road Diesel	1.83	15.34	8.01	0.00	0.00	0.69	0.69	0.00	0.63	0.63	1,535.15
Fine Grading On Road Diesel	2.01	24.96	9.64	0.04	0.14	0.98	1.13	0.05	0.91	0.95	4,238.40
Fine Grading Worker Trips	0.02	0.04	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.26

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Time Slice 7/2/2012-10/31/2012 Active Days: 105	4.54	31.28	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building 04/01/2012-07/31/2013	4.54	31.28	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	26.58	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Time Slice 11/1/2012-12/31/2012 Active Days: 52	6.89	50.11	48.12	0.04	0.19	2.33	2.52	0.07	2.13	2.20	9,522.40
Building 04/01/2012-07/31/2013	4.54	31.28	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	26.58	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Trenching 11/01/2012-12/31/2012	2.36	18.82	9.35	0.00	0.01	0.85	0.86	0.00	0.79	0.79	2,411.45
Trenching Off Road Diesel	2.32	18.76	8.22	0.00	0.00	0.85	0.85	0.00	0.78	0.78	2,256.02
Trenching Worker Trips	0.03	0.06	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.43
Time Slice 1/1/2013-2/28/2013 Active Days: 51	6.58	47.51	47.88	0.04	41.49	2.29	43.78	8.69	2.10	10.79	9,212.30
Building 04/01/2012-07/31/2013	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	24.72	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Fine Grading 01/01/2013-02/28/2013	2.35	18.60	11.32	0.00	41.31	0.92	42.23	8.63	0.85	9.48	2,101.70
Fine Grading Dust	0.00	0.00	0.00	0.00	41.30	0.00	41.30	8.63	0.00	8.63	0.00
Fine Grading Off Road Diesel	2.33	18.56	10.48	0.00	0.00	0.92	0.92	0.00	0.85	0.85	1,977.37
Fine 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
Fine Grading Worker Trips	0.02	0.05	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.33

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Time Slice 3/1/2013-3/30/2013 Active Days: 26	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building 04/01/2012-07/31/2013	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	24.72	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Time Slice 4/1/2013-5/31/2013 Active Days: 53	49.30	28.94	37.01	0.04	0.18	1.37	1.56	0.07	1.25	1.32	7,175.97
Building 04/01/2012-07/31/2013	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	24.72	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Coating 04/01/2013-10/31/2013	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	45.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

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Time Slice 6/1/2013-7/31/2013 Active Days: 52	**51.76**	42.61	47.01	0.05	0.20	2.50	2.70	0.07	2.29	2.36	8,699.07
Asphalt 06/01/2013-08/31/2013	2.46	13.67	10.00	0.00	0.02	1.13	1.14	0.01	1.04	1.04	1,523.09
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.10	12.84	8.03	0.00	0.00	1.09	1.09	0.00	1.00	1.00	1,131.92
Paving On Road Diesel	0.06	0.74	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	142.52
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Building 04/01/2012-07/31/2013	4.23	28.91	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	24.72	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Coating 04/01/2013-10/31/2013	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	45.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Time Slice 8/1/2013-8/31/2013 Active Days: 27	47.52	13.69	10.45	0.00	0.02	1.13	1.15	0.01	1.04	1.04	1,588.47
Asphalt 06/01/2013-08/31/2013	2.46	13.67	10.00	0.00	0.02	1.13	1.14	0.01	1.04	1.04	1,523.09
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.10	12.84	8.03	0.00	0.00	1.09	1.09	0.00	1.00	1.00	1,131.92
Paving On Road Diesel	0.06	0.74	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	142.52
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Coating 04/01/2013-10/31/2013	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	45.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

Time Slice 9/2/2013-10/31/2013 Active Days: 52	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Coating 04/01/2013-10/31/2013	45.07	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	45.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

Phase Assumptions

Phase: Demolition 5/1/2011 - 8/31/2011 - Demo Buildings

Building Volume Total (cubic feet): 932000

Building Volume Daily (cubic feet): 20444.76

On Road Truck Travel (VMT): 189.3

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

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

Phase: Demolition 5/11/2011 - 8/31/2011 - Demo Parking Lot

Building Volume Total (cubic feet): 159000

Building Volume Daily (cubic feet): 120

On Road Truck Travel (VMT): 1.11

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Fine Grading 2/1/2012 - 6/30/2012 - Fine Site Grading (Construction Zone)

Total Acres Disturbed: 13.8

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Maximum Daily Acreage Disturbed: 4.13

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 1000

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 5 hours per day

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

Phase: Fine Grading 1/1/2013 - 2/28/2013 - Fine Parking Lot Grading

Total Acres Disturbed: 2.2

Maximum Daily Acreage Disturbed: 4.13

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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

Phase: Mass Grading 11/1/2011 - 1/31/2012 - Mass Site Grading & Excavation Activity

Total Acres Disturbed: 16

Maximum Daily Acreage Disturbed: 4.13

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 500

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Generator Sets (335 hp) operating at a 0.74 load factor for 2 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/1/2012 - 3/31/2012 - Trenching (Foundation, Piles)

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 2 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Plate Compactors (50 hp) operating at a 0.43 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 2 hours per day

Phase: Trenching 11/1/2012 - 12/31/2012 - Trenching (Utilities, Pipelines)

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 5 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 5 hours per day

1 Welders (45 hp) operating at a 0.45 load factor for 4 hours per day

Phase: Paving 6/1/2013 - 8/31/2013 - Parking Lot Area Paving

Acres to be Paved: 7.4

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

Phase: Building Construction 4/1/2012 - 7/31/2013 - Construct Building (Terminal, Passenger Area)

Off-Road Equipment:

1 Air Compressors (20 hp) operating at a 0.48 load factor for 8 hours per day

1 Cranes (200 hp) operating at a 0.43 load factor for 6 hours per day

1 Crawler Tractors (200 hp) operating at a 0.64 load factor for 6 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

1 Generator Sets (335 hp) operating at a 0.74 load factor for 2 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 4 hours per day

1 Plate Compactors (50 hp) operating at a 0.43 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (100 hp) operating at a 0.55 load factor for 6 hours per day

3 Welders (50 hp) operating at a 0.45 load factor for 4 hours per day

Phase: Architectural Coating 4/1/2013 - 10/31/2013 - Architectural Coating - Building Paint

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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

Time Slice 5/2/2011-5/10/2011 Active Days: 8	3.99	28.53	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Demolition 05/01/2011-08/31/2011	3.99	28.53	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Fugitive Dust	0.00	0.00	0.00	0.00	8.59	0.00	8.59	1.79	0.00	1.79	0.00
Demo Off Road Diesel	3.52	23.14	13.29	0.00	0.00	1.44	1.44	0.00	1.32	1.32	3,160.93
Demo On Road Diesel	0.42	5.31	2.04	0.01	0.03	0.21	0.24	0.01	0.20	0.20	802.34
Demo Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.55
Time Slice 5/11/2011-8/31/2011 Active Days: 97	5.07	34.48	22.37	0.01	8.68	2.21	10.89	1.81	2.03	3.84	4,979.20
Demolition 05/01/2011-08/31/2011	3.99	28.53	16.80	0.01	8.62	1.66	10.28	1.80	1.52	3.32	4,149.82
Fugitive Dust	0.00	0.00	0.00	0.00	8.59	0.00	8.59	1.79	0.00	1.79	0.00
Demo Off Road Diesel	3.52	23.14	13.29	0.00	0.00	1.44	1.44	0.00	1.32	1.32	3,160.93
Demo On Road Diesel	0.42	5.31	2.04	0.01	0.03	0.21	0.24	0.01	0.20	0.20	802.34
Demo Worker Trips	0.05	0.08	1.46	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.55
Demolition 05/11/2011-08/31/2011	1.09	5.95	5.57	0.00	0.06	0.55	0.61	0.01	0.51	0.52	829.38
Fugitive Dust	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.01	0.00	0.01	0.00
Demo Off Road Diesel	1.05	5.86	4.58	0.00	0.00	0.55	0.55	0.00	0.50	0.50	700.30
Demo On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.71
Demo Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.37

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Time Slice 11/1/2011-12/31/2011 Active Days: 53	7.64	61.37	31.74	0.02	10.99	3.02	14.01	2.30	2.78	5.08	8,741.73
Mass Grading 11/01/2011-01/31/2012	7.64	61.37	31.74	0.02	10.99	3.02	14.01	2.30	2.78	5.08	8,741.73
Mass Grading Dust	0.00	0.00	0.00	0.00	10.90	0.00	10.90	2.28	0.00	2.28	0.00
Mass Grading Off Road Diesel	6.48	47.25	24.40	0.00	0.00	2.45	2.45	0.00	2.25	2.25	6,373.79
Mass Grading On Road Diesel	1.10	14.01	5.39	0.02	0.07	0.56	0.63	0.02	0.52	0.54	2,119.20
Mass Grading Worker Trips	0.06	0.11	1.95	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.74
Time Slice 1/2/2012-1/31/2012 Active Days: 26	9.69	73.55	40.87	0.02	11.00	**3.59**	14.58	2.31	**3.30**	5.61	12,254.58
Mass Grading 11/01/2011-01/31/2012	7.24	56.36	30.03	0.02	10.99	2.71	13.70	2.30	2.49	4.80	8,741.68
Mass Grading Dust	0.00	0.00	0.00	0.00	10.90	0.00	10.90	2.28	0.00	2.28	0.00
Mass Grading Off Road Diesel	6.17	43.78	23.40	0.00	0.00	2.21	2.21	0.00	2.03	2.03	6,373.79
Mass Grading On Road Diesel	1.01	12.48	4.82	0.02	0.07	0.49	0.56	0.02	0.45	0.48	2,119.20
Mass Grading Worker Trips	0.05	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.69
Trenching 01/01/2012-03/31/2012	2.45	17.18	10.83	0.00	0.01	0.88	0.88	0.00	0.81	0.81	3,512.89
Trenching Off Road Diesel	2.41	17.10	9.47	0.00	0.00	0.87	0.87	0.00	0.80	0.80	3,326.37
Trenching Worker Trips	0.04	0.08	1.36	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.52

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Time Slice 2/1/2012-3/31/2012 Active Days: 52	6.31	54.46	29.16	0.04	23.51	2.55	26.06	4.93	2.35	7.28	9,379.70
Fine Grading 02/01/2012-06/30/2012	3.86	37.28	18.33	0.04	23.50	1.68	25.18	4.93	1.54	6.47	5,866.81
Fine Grading Dust	0.00	0.00	0.00	0.00	23.36	0.00	23.36	4.88	0.00	4.88	0.00
Fine Grading Off Road Diesel	1.83	12.27	8.01	0.00	0.00	0.69	0.69	0.00	0.63	0.63	1,535.15
Fine Grading On Road Diesel	2.01	24.96	9.64	0.04	0.14	0.98	1.13	0.05	0.91	0.95	4,238.40
Fine Grading Worker Trips	0.02	0.04	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.26
Trenching 01/01/2012-03/31/2012	2.45	17.18	10.83	0.00	0.01	0.88	0.88	0.00	0.81	0.81	3,512.89
Trenching Off Road Diesel	2.41	17.10	9.47	0.00	0.00	0.87	0.87	0.00	0.80	0.80	3,326.37
Trenching Worker Trips	0.04	0.08	1.36	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.52
Time Slice 4/2/2012-6/30/2012 Active Days: 78	8.40	64.94	**57.10**	**0.08**	23.68	3.15	26.83	4.99	2.89	7.88	**12,977.76**
Building 04/01/2012-07/31/2013	4.54	27.67	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	22.97	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Fine Grading 02/01/2012-06/30/2012	3.86	37.28	18.33	0.04	23.50	1.68	25.18	4.93	1.54	6.47	5,866.81
Fine Grading Dust	0.00	0.00	0.00	0.00	23.36	0.00	23.36	4.88	0.00	4.88	0.00
Fine Grading Off Road Diesel	1.83	12.27	8.01	0.00	0.00	0.69	0.69	0.00	0.63	0.63	1,535.15
Fine Grading On Road Diesel	2.01	24.96	9.64	0.04	0.14	0.98	1.13	0.05	0.91	0.95	4,238.40
Fine Grading Worker Trips	0.02	0.04	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.26

Time Slice 7/2/2012-10/31/2012 Active Days: 105	4.54	27.67	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building 04/01/2012-07/31/2013	4.54	27.67	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	22.97	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Time Slice 11/1/2012-12/31/2012 Active Days: 52	6.89	44.00	48.12	0.04	0.19	2.33	2.52	0.07	2.13	2.20	9,522.40
Building 04/01/2012-07/31/2013	4.54	27.67	38.77	0.04	0.18	1.47	1.65	0.06	1.35	1.41	7,110.95
Building Off Road Diesel	3.51	22.97	12.21	0.00	0.00	1.25	1.25	0.00	1.15	1.15	3,081.27
Building Vendor Trips	0.31	3.35	2.94	0.01	0.03	0.14	0.17	0.01	0.13	0.14	792.90
Building Worker Trips	0.71	1.35	23.62	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.78
Trenching 11/01/2012-12/31/2012	2.36	16.34	9.35	0.00	0.01	0.85	0.86	0.00	0.79	0.79	2,411.45
Trenching Off Road Diesel	2.32	16.27	8.22	0.00	0.00	0.85	0.85	0.00	0.78	0.78	2,256.02
Trenching Worker Trips	0.03	0.06	1.13	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.43
Time Slice 1/1/2013-2/28/2013 Active Days: 51	6.58	40.45	47.88	0.04	21.58	2.29	23.88	4.54	2.10	6.64	9,212.30
Building 04/01/2012-07/31/2013	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	21.36	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Fine Grading 01/01/2013-02/28/2013	2.35	14.89	11.32	0.00	21.40	0.92	22.33	4.47	0.85	5.32	2,101.70
Fine Grading Dust	0.00	0.00	0.00	0.00	21.40	0.00	21.40	4.47	0.00	4.47	0.00
Fine Grading Off Road Diesel	2.33	14.85	10.48	0.00	0.00	0.92	0.92	0.00	0.85	0.85	1,977.37
Fine 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
Fine Grading Worker Trips	0.02	0.05	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.33

Time Slice 3/1/2013-3/30/2013 Active Days: 26	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building 04/01/2012-07/31/2013	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	21.36	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Time Slice 4/1/2013-5/31/2013 Active Days: 53	44.80	25.58	37.01	0.04	0.18	1.37	1.56	0.07	1.25	1.32	7,175.97
Building 04/01/2012-07/31/2013	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	21.36	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Coating 04/01/2013-10/31/2013	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	40.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

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Time Slice 6/1/2013-7/31/2013 Active Days: 52	47.25	39.25	47.01	0.05	0.20	2.50	2.70	0.07	2.29	2.36	8,699.07
Asphalt 06/01/2013-08/31/2013	2.46	13.67	10.00	0.00	0.02	1.13	1.14	0.01	1.04	1.04	1,523.09
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.10	12.84	8.03	0.00	0.00	1.09	1.09	0.00	1.00	1.00	1,131.92
Paving On Road Diesel	0.06	0.74	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	142.52
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Building 04/01/2012-07/31/2013	4.23	25.56	36.56	0.04	0.18	1.37	1.55	0.06	1.25	1.32	7,110.60
Building Off Road Diesel	3.30	21.36	11.90	0.00	0.00	1.16	1.16	0.00	1.07	1.07	3,081.27
Building Vendor Trips	0.28	2.96	2.71	0.01	0.03	0.12	0.15	0.01	0.11	0.12	792.93
Building Worker Trips	0.65	1.23	21.96	0.03	0.15	0.09	0.24	0.06	0.07	0.13	3,236.39
Coating 04/01/2013-10/31/2013	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	40.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Time Slice 8/1/2013-8/31/2013 Active Days: 27	43.02	13.69	10.45	0.00	0.02	1.13	1.15	0.01	1.04	1.04	1,588.47
Asphalt 06/01/2013-08/31/2013	2.46	13.67	10.00	0.00	0.02	1.13	1.14	0.01	1.04	1.04	1,523.09
Paving Off-Gas	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.10	12.84	8.03	0.00	0.00	1.09	1.09	0.00	1.00	1.00	1,131.92
Paving On Road Diesel	0.06	0.74	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	142.52
Paving Worker Trips	0.05	0.09	1.69	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.66
Coating 04/01/2013-10/31/2013	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	40.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

Time Slice 9/2/2013-10/31/2013 Active Days: 52	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Coating 04/01/2013-10/31/2013	40.56	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38
Architectural Coating	40.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.38

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 5/1/2011 - 8/31/2011 - Demo Buildings

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Water Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Demolition 5/11/2011 - 8/31/2011 - Demo Parking Lot

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Fine Grading 2/1/2012 - 6/30/2012 - Fine Site Grading (Construction Zone)

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

PM10: 55% PM25: 55%

For Graders, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Water Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Fine Grading 1/1/2013 - 2/28/2013 - Fine Parking Lot Grading

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Water Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Mass Grading 11/1/2011 - 1/31/2012 - Mass Site Grading & Excavation Activity

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

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

PM10: 55% PM25: 55%

For Graders, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Water Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Excavators, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 15% mitigation reduces emissions by:

NOX: 15%

The following mitigation measures apply to Phase: Trenching 1/1/2012 - 3/31/2012 - Trenching (Foundation, Piles)

For Excavators, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Other General Industrial Equipment, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Plate Compactors, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Bore/Drill Rigs, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Trenching 11/1/2012 - 12/31/2012 - Trenching (Utilities, Pipelines)

For Excavators, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

The following mitigation measures apply to Phase: Building Construction 4/1/2012 - 7/31/2013 - Construct Building (Terminal, Passenger Area)

For Cranes, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Crawler Tractors, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Excavators, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

For Off Highway Trucks, the Diesel Oxidation Catalyst 20% mitigation reduces emissions by:

NOX: 20%

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The following mitigation measures apply to Phase: Architectural Coating 4/1/2013 - 10/31/2013 - Architectural Coating - Building Paint

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

APPENDIX B

Proposed Project Operational Emissions of Criteria Pollutants

B-1: Operational Emissions Summary

B-2: Combined Emissions Report – Existing Operations

B-3: Combined Emissions Report – Operations

B-1: Combined Winter Emission Report

ARTIC Operations - Pounds per Day

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2	CO2e (MT/yr)
New ARTIC Building	0.64	2.65	2.23	0.00	0.00	0.00	3,178.80	526.29
New Emergency Generator	0.93	1.54	8.02	0.57	0.22	0.17	1,624.00	38.30
New Vehicle Traffic	29.69	46.43	323.78	0.37	3.96	2.54	39,434.75	6,528.87
Total ARTIC Operational	31.26	50.62	334.03	0.94	4.18	2.71	44,237.55	7,093.46
Existing Metrolink/AMTRAK Station	5.55	8.39	74.35	0.10	0.86	0.56	9,438.29	1,562.61
Delta (New - Existing)	**25.71**	**42.23**	**259.68**	**0.84**	**3.32**	**2.15**	**34,799.26**	**5,530.84**
Significance Threshold (lb/day)	55	55	550	150	150	55	--	10,000 MT/yr

Note: CEQA interim GHG Sig Threshold is 10,000 metric tonnes per year (MT/yr) of carbon dioxide equivalent (CO2e).
CO2e calculation assumes 365 working days per year, except for emergency generator run once per week (i.e., 52 days/yr)
Total: 5,530.84 MT/yr CO2e (Operational) + 197.3 MT/yr CO2e (Construction) = 5,728.14 MT/yr CO2e. (Less than Sig Level).

Rating:	1000 kW	hours:	1 hr/test
	1400 hp		

	VOC	NOx	CO	SO2	PM10	PM2.5	CO2
EF (g/bhp-hr)	0.3	0.5	2.6		0.07		
EF (lb/hp-hr)	0.000661	0.001102	0.005732	0.000405	0.000154	0.000122	1.16
Emissions (lb/day)	0.93	1.54	8.02	0.57	0.22	0.17	1624.00

Notes:

1. Emission Factor Source for SO2, PM2.5, & CO2: AP-42 5th Ed., Chapter 3.4 Tables 3.4-1 and 3.4-2, dated October 1996
2. Based on $PM_{2.5}$ Emission Factor (AP-42 Section 3.4) = 4.78E-02 lb/MMBtu

   Large Gen PM2.5 EF (lb/hp-hr) = PM2.5 EF (lb/MMBtu) / .000393 (hp-hr/Btu) / 1,000,000 (Btu/MMBtu) = 1.22E-04 (lb/hp-hr)
3. Emission factor for SOx = 0.00809 x S, where S = sulfur content of the fuel (% by weight) = 0.05 %

   Large Gen SOx EF (lb/hp-hr) = 0.00809 * 0.05
4. Emission Factor Source for VOC (NMHC), NOx, CO, & PM10: CARB and USEPA Off-Road Compression-Ignition (Diesel) Engine Standards, Tier 4 Standards for engines >1200 hp.

B-2: Combined Winter Emission Report – Existing Operations

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\jdill\My Documents\Projects\ARTIC\June 2010 Docs\ARTIC Building_Existing Baseline_R2.urb924

Project Name: ARTIC Building

Project Location: South Coast AQMD

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

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.13	0.07	1.59	0.00	0.01	0.01	57.37

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	5.42	8.32	72.76	0.10	0.85	0.55	9,380.92

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	5.55	8.39	74.35	0.10	0.86	0.56	9,438.29

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.00	0.05	0.04	0.00	0.00	0.00	54.56
Hearth - No Summer Emissions							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	0.01						
TOTALS (lbs/day, unmitigated)	0.13	0.07	1.59	0.00	0.01	0.01	57.37

Area Source Changes to Defaults

The nonresidential percentage of surface area repainted each year changed from 10% to 2%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Metrolink/Amtrak Station	5.42	8.32	72.76	0.10	0.85	0.55	9,380.92
TOTALS (lbs/day, unmitigated)	5.42	8.32	72.76	0.10	0.85	0.55	9,380.92

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 80 Season: Summer

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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
Metrolink/Amtrak Station		148.83	1000 sq ft	6.82	1,015.02	9,107.78
					1,015.02	9,107.78

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.3	0.4	99.4	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.1	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	53.6	46.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Metrolink/Amtrak Station				2.0	1.0	97.0

B-3: Combined Winter Emission Report – Operations

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\jdill\My Documents\Projects\ARTIC\June 2010 Docs\ARTIC Building_R15_mitigation.urb924

Project Name: ARTIC Building

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (lbs/day unmitigated)	7.64	70.72	31.74	0.02	41.38	3.02	44.40	8.65	2.78	11.43	8,741.73
2011 TOTALS (lbs/day mitigated)	7.64	61.37	31.74	0.02	10.99	3.02	14.01	2.30	2.78	5.08	8,741.73
2012 TOTALS (lbs/day unmitigated)	9.69	86.50	57.10	0.08	41.63	3.59	44.98	8.74	3.30	11.95	12,977.76
2012 TOTALS (lbs/day mitigated)	9.69	73.55	57.10	0.08	23.68	3.59	26.83	4.99	3.30	7.88	12,977.76
2013 TOTALS (lbs/day unmitigated)	51.76	47.51	47.88	0.05	41.49	2.50	43.78	8.69	2.29	10.79	9,212.30
2013 TOTALS (lbs/day mitigated)	47.25	40.45	47.88	0.05	21.58	2.50	23.88	4.54	2.29	6.64	9,212.30

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.64	2.65	2.23	0.00	0.00	0.00	3,178.80

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	29.69	46.43	323.78	0.37	3.96	2.54	39,434.75

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	30.33	49.08	326.01	0.37	3.96	2.54	42,613.55

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
City park	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Fast food rest. w/o drive thru	0.05	0.00	0.01	0.00	0.00	0.00	1.49
Convenience market (24 hour)	0.01	0.00	0.00	0.00	0.00	0.00	0.41
ARTIC Terminal Building	29.50	46.43	323.74	0.37	3.96	2.54	39,429.28
Platforms	0.13	0.00	0.03	0.00	0.00	0.00	3.51
TOTALS (lbs/day, unmitigated)	29.69	46.43	323.78	0.37	3.96	2.54	39,434.75

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 60 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
City park		0.01	acres	0.69	0.01	0.06
Fast food rest. w/o drive thru		0.01	1000 sq ft	18.00	0.18	1.60
Convenience market (24 hour)		0.01	1000 sq ft	5.00	0.05	0.44
ARTIC Terminal Building		14.64	1000 sq ft	322.00	4,714.08	42,299.44

7/8/2010 10:19:47 AM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Platforms		0.01	1000 sq ft	42.00	0.42	3.77
					4,714.74	42,305.31

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.3	0.4	99.4	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.1	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	53.6	46.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
City park				0.0	0.0	100.0
Fast food rest. w/o drive thru				0.0	0.0	100.0
Convenience market (24 hour)				0.0	0.0	100.0
ARTIC Terminal Building				2.0	1.0	97.0
Platforms				2.0	1.0	97.0

Operational Changes to Defaults

APPENDIX C

CAL3QHC Model Input and Output
CO Hot Spots

C-1: EMFAC Input and Output Files
C-2: CAL3QHC Input Detail and Summary Results
C-3: CAL3QHC Input and Output Files (Available on CD)

C-1: EMFAC Input and Output Files

ARTIC_Emfac07_OC_2009-2013-2035_Emfact Mode_All Speeds

```
Emfac2007-Header
    Version 2 30 3 501
    Scenario-Count 1
End-Header
Begin-Scenario 1
    Title ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
    Program-Mode Emfac
    Area-Method One-County
    Area-Type County
    Area-Number 30 [Orange County]
    HC-Mode ROG
    PM-Mode PM10
    CYr 2009 2013 2035
    MYr All
    Vehicles All
    Season Annual
    Emfac-Reports RTS RTL
    Emfac-Speed 0 1. 2. 3. 4. 5. 10. 15. 20. 25. 30. 35. 40. 45. 50. 55. 60. 65.
    Emfac-RH 65.
    Emfac-Temp 73.
End-Scenario
```

ARTIC_Emfac07_OC_2009-2013-2035_Emfact Mode_All Speeds.rts
Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Orange
****
*****

Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 1: Running Exhaust Emissions (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.364	8.058	0.000	0.000	0.698
1	0.452	0.506	0.798	5.213	4.102	4.862	0.685
2	0.452	0.506	0.798	5.213	4.102	4.862	0.685
3	0.431	0.483	0.771	5.213	4.102	4.862	0.663
4	0.392	0.440	0.721	5.213	4.102	4.862	0.622
5	0.358	0.401	0.676	5.213	4.102	4.862	0.587
10	0.234	0.263	0.443	3.070	2.794	3.766	0.378
15	0.161	0.182	0.305	1.676	1.982	3.060	0.251
20	0.117	0.132	0.221	1.015	1.464	2.608	0.179
25	0.090	0.101	0.167	0.798	1.126	2.332	0.140
30	0.073	0.082	0.133	0.640	0.901	2.189	0.114
35	0.062	0.070	0.111	0.528	0.751	2.157	0.098
40	0.056	0.062	0.098	0.455	0.650	2.231	0.089
45	0.053	0.059	0.090	0.414	0.586	2.422	0.086
50	0.053	0.058	0.087	0.405	0.549	2.758	0.087
55	0.055	0.061	0.089	0.424	0.535	3.292	0.093
60	0.061	0.067	0.096	0.471	0.542	4.119	0.105
65	0.071	0.077	0.109	0.547	0.571	5.396	0.125

Pollutant Name: Carbon Monoxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	20.685	42.021	0.000	0.000	4.076
1	4.972	6.050	8.093	23.332	34.412	32.077	6.480
2	4.972	6.050	8.093	23.332	34.412	32.077	6.480
3	4.890	5.953	7.985	23.332	34.412	32.077	6.392
4	4.733	5.768	7.780	23.332	34.412	32.077	6.225
5	4.585	5.593	7.589	23.332	34.412	32.077	6.068
10	3.965	4.851	6.089	16.078	22.565	26.545	5.052
15	3.493	4.279	5.080	11.482	15.662	23.054	4.328
20	3.123	3.827	4.372	8.608	11.504	20.996	3.798
25	2.827	3.463	3.858	6.918	8.942	20.049	3.403
30	2.588	3.168	3.477	5.768	7.353	20.082	3.100
35	2.394	2.927	3.195	4.996	6.398	21.118	2.869
40	2.239	2.734	2.990	4.511	5.888	23.343	2.700

45	2.120	2.582	2.854	4.268	5.732	27.159	2.589
50	2.036	2.472	2.786	4.253	5.902	33.296	2.539
55	1.991	2.404	2.793	4.480	6.427	43.052	2.562
60	1.992	2.389	2.894	4.992	7.403	58.737	2.683
65	2.057	2.440	3.128	5.882	9.019	84.565	2.950

Pollutant Name: Oxides of Nitrogen Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.696	69.981	0.000	0.000	2.499
1	0.318	0.555	1.003	18.772	26.433	0.879	1.053
2	0.318	0.555	1.003	18.772	26.433	0.879	1.053
3	0.313	0.546	0.993	18.772	26.433	0.879	1.046
4	0.303	0.528	0.972	18.772	26.433	0.879	1.033
5	0.295	0.512	0.953	18.772	26.433	0.879	1.021
10	0.257	0.440	0.824	13.840	20.494	0.893	0.813
15	0.229	0.388	0.732	10.763	16.727	0.911	0.676
20	0.208	0.349	0.668	9.442	14.353	0.933	0.604
25	0.193	0.321	0.625	8.967	12.928	0.960	0.566
30	0.182	0.301	0.599	8.668	12.203	0.989	0.541
35	0.175	0.288	0.586	8.530	12.055	1.021	0.527
40	0.171	0.281	0.586	8.550	12.455	1.056	0.525
45	0.170	0.280	0.600	8.736	13.457	1.093	0.533
50	0.172	0.284	0.627	9.111	15.214	1.133	0.552
55	0.177	0.294	0.671	9.715	18.020	1.175	0.585
60	0.186	0.311	0.736	10.614	22.395	1.221	0.636
65	0.198	0.336	0.829	11.914	29.251	1.269	0.711

Pollutant Name: Carbon Dioxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	840.088	4509.884	0.000	0.000	245.001
1	1179.570	1460.693	2004.852	2493.054	2560.202	237.713	1417.830
2	1179.570	1460.693	2004.852	2493.054	2560.202	237.713	1417.830
3	1144.351	1417.075	1955.877	2493.054	2560.202	237.713	1379.278
4	1078.313	1335.288	1864.044	2493.054	2560.202	237.713	1306.989
5	1017.689	1260.207	1779.740	2493.054	2560.202	237.713	1240.627
10	764.213	946.911	1313.372	2092.561	2406.322	201.492	935.677
15	597.584	740.864	1014.360	1800.119	2315.451	174.358	735.405
20	486.034	602.884	818.244	1600.060	2260.121	153.999	601.759
25	410.900	509.925	688.273	1514.381	2225.734	138.837	513.416
30	360.926	448.081	602.890	1450.701	2204.311	127.801	454.607
35	329.269	408.892	549.298	1404.008	2191.420	120.188	417.236
40	311.855	387.323	520.036	1371.555	2184.635	115.576	396.512
45	306.481	380.650	511.156	1351.994	2182.761	113.786	389.859
50	312.346	387.886	521.313	1344.963	2185.481	114.878	396.361
55	329.887	409.579	551.465	1350.988	2193.258	119.183	416.564
60	360.875	447.929	605.107	1371.631	2207.475	127.392	452.604
65	408.798	507.263	689.117	1409.968	2230.848	140.715	508.682

Pollutant Name: Sulfur Dioxide Temperature: 73F Relative Humidity:

65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.008	0.043	0.000	0.000	0.002
1	0.011	0.014	0.019	0.024	0.025	0.003	0.014
2	0.011	0.014	0.019	0.024	0.025	0.003	0.014
3	0.011	0.014	0.019	0.024	0.025	0.003	0.013
4	0.010	0.013	0.018	0.024	0.025	0.003	0.013
5	0.010	0.012	0.017	0.024	0.025	0.003	0.012
10	0.007	0.009	0.013	0.020	0.023	0.002	0.009
15	0.006	0.007	0.010	0.017	0.022	0.002	0.007
20	0.005	0.006	0.008	0.015	0.022	0.002	0.006
25	0.004	0.005	0.007	0.015	0.021	0.002	0.005
30	0.004	0.004	0.006	0.014	0.021	0.002	0.004
35	0.003	0.004	0.005	0.013	0.021	0.002	0.004
40	0.003	0.004	0.005	0.013	0.021	0.002	0.004
45	0.003	0.004	0.005	0.013	0.021	0.002	0.004
50	0.003	0.004	0.005	0.013	0.021	0.002	0.004
55	0.003	0.004	0.005	0.013	0.021	0.002	0.004
60	0.003	0.004	0.006	0.013	0.021	0.002	0.004
65	0.004	0.005	0.007	0.014	0.021	0.003	0.005

Pollutant Name: PM10 Temperature: 73F Relative Humidity:
65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.039	1.067	0.000	0.000	0.036
1	0.062	0.122	0.121	1.245	0.733	0.056	0.124
2	0.062	0.122	0.121	1.245	0.733	0.056	0.124
3	0.059	0.117	0.116	1.245	0.733	0.056	0.120
4	0.054	0.106	0.107	1.245	0.733	0.056	0.113
5	0.049	0.097	0.098	1.245	0.733	0.056	0.106
10	0.032	0.064	0.065	0.878	0.531	0.044	0.072
15	0.022	0.044	0.045	0.612	0.398	0.037	0.050
20	0.016	0.032	0.033	0.451	0.309	0.032	0.036
25	0.012	0.024	0.026	0.378	0.249	0.029	0.029
30	0.010	0.020	0.021	0.323	0.207	0.027	0.024
35	0.008	0.017	0.018	0.286	0.179	0.027	0.021
40	0.007	0.015	0.016	0.263	0.160	0.028	0.019
45	0.007	0.014	0.015	0.256	0.148	0.030	0.018
50	0.007	0.014	0.014	0.262	0.142	0.034	0.018
55	0.007	0.014	0.015	0.282	0.141	0.041	0.019
60	0.008	0.016	0.016	0.315	0.145	0.050	0.021
65	0.009	0.018	0.018	0.361	0.155	0.066	0.024

Pollutant Name: PM10 - Tire Wear Temperature: 73F Relative Humidity:
65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	0.008	0.008	0.009	0.020	0.009	0.004	0.008
2	0.008	0.008	0.009	0.020	0.009	0.004	0.008
3	0.008	0.008	0.009	0.020	0.009	0.004	0.008

4	0.008	0.008	0.009	0.020	0.009	0.004	0.008
5	0.008	0.008	0.009	0.020	0.009	0.004	0.008
10	0.008	0.008	0.009	0.020	0.009	0.004	0.008
15	0.008	0.008	0.009	0.020	0.009	0.004	0.008
20	0.008	0.008	0.009	0.020	0.009	0.004	0.008
25	0.008	0.008	0.009	0.020	0.009	0.004	0.008
30	0.008	0.008	0.009	0.020	0.009	0.004	0.008
35	0.008	0.008	0.009	0.020	0.009	0.004	0.008
40	0.008	0.008	0.009	0.020	0.009	0.004	0.008
45	0.008	0.008	0.009	0.020	0.009	0.004	0.008
50	0.008	0.008	0.009	0.020	0.009	0.004	0.008
55	0.008	0.008	0.009	0.020	0.009	0.004	0.008
60	0.008	0.008	0.009	0.020	0.009	0.004	0.008
65	0.008	0.008	0.009	0.020	0.009	0.004	0.008

Pollutant Name: PM10 - Brake Wear Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	0.013	0.013	0.013	0.018	0.013	0.006	0.013
2	0.013	0.013	0.013	0.018	0.013	0.006	0.013
3	0.013	0.013	0.013	0.018	0.013	0.006	0.013
4	0.013	0.013	0.013	0.018	0.013	0.006	0.013
5	0.013	0.013	0.013	0.018	0.013	0.006	0.013
10	0.013	0.013	0.013	0.018	0.013	0.006	0.013
15	0.013	0.013	0.013	0.018	0.013	0.006	0.013
20	0.013	0.013	0.013	0.018	0.013	0.006	0.013
25	0.013	0.013	0.013	0.018	0.013	0.006	0.013
30	0.013	0.013	0.013	0.018	0.013	0.006	0.013
35	0.013	0.013	0.013	0.018	0.013	0.006	0.013
40	0.013	0.013	0.013	0.018	0.013	0.006	0.013
45	0.013	0.013	0.013	0.018	0.013	0.006	0.013
50	0.013	0.013	0.013	0.018	0.013	0.006	0.013
55	0.013	0.013	0.013	0.018	0.013	0.006	0.013
60	0.013	0.013	0.013	0.018	0.013	0.006	0.013
65	0.013	0.013	0.013	0.018	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	7.451	5.989	4.253	3.373	3.207	29.173	6.644
2	7.451	5.989	4.253	3.373	3.207	29.173	6.644
3	7.680	6.173	4.369	3.373	3.207	29.173	6.840
4	8.150	6.551	4.606	3.373	3.207	29.173	7.241
5	8.634	6.941	4.850	3.373	3.207	29.173	7.656
10	11.489	9.235	6.541	5.070	4.821	34.698	10.177
15	14.683	11.801	8.468	7.214	6.862	40.183	12.998
20	18.042	14.500	10.533	9.715	9.245	45.325	15.970
25	21.333	17.145	12.589	12.385	11.791	49.785	18.883
30	24.283	19.517	14.455	14.944	14.235	53.202	21.495
35	26.620	21.397	15.948	17.067	16.268	55.223	23.563
40	28.115	22.600	16.905	18.450	17.597	55.537	24.880

45	28.623	23.010	17.223	18.877	18.017	53.930	25.316
50	28.104	22.594	16.870	18.280	17.460	50.337	24.834
55	26.630	21.408	15.897	16.755	16.014	44.912	23.497
60	24.361	19.583	14.421	14.535	13.901	38.070	21.454
65	21.520	17.297	12.601	11.934	11.421	30.472	18.907

Pollutant Name: Diesel - mi/gal Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	27.922	29.024	19.715	4.986	3.921	0.000	10.177
2	27.922	29.024	19.715	4.986	3.921	0.000	10.177
3	27.922	29.024	19.715	4.986	3.921	0.000	10.177
4	27.922	29.024	19.715	4.986	3.921	0.000	10.177
5	27.922	29.024	19.715	4.986	3.921	0.000	10.177
10	27.922	29.024	19.715	5.222	3.921	0.000	10.335
15	27.922	29.024	19.715	5.516	3.921	0.000	10.531
20	27.922	29.024	19.715	5.824	3.921	0.000	10.736
25	27.922	29.024	19.715	5.957	3.921	0.000	10.825
30	27.922	29.024	19.715	6.085	3.921	0.000	10.911
35	27.922	29.024	19.715	6.201	3.921	0.000	10.988
40	27.922	29.024	19.715	6.299	3.921	0.000	11.054
45	27.922	29.024	19.715	6.373	3.921	0.000	11.103
50	27.922	29.024	19.715	6.419	3.921	0.000	11.133
55	27.922	29.024	19.715	6.431	3.921	0.000	11.142
60	27.922	29.024	19.715	6.411	3.921	0.000	11.128
65	27.922	29.024	19.715	6.358	3.921	0.000	11.093

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Orange
****
*****

Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.071	0.065	0.140	0.400	0.271	1.110	0.105

10	0.115	0.110	0.251	0.568	0.411	1.165	0.168
20	0.199	0.195	0.460	0.882	0.671	1.293	0.286
30	0.276	0.273	0.647	1.168	0.906	1.444	0.393
40	0.345	0.343	0.815	1.425	1.115	1.619	0.489
50	0.406	0.406	0.962	1.654	1.298	1.817	0.575
60	0.458	0.459	1.086	1.832	1.442	1.931	0.647
120	0.602	0.622	1.401	2.116	1.678	2.098	0.833
180	0.623	0.645	1.471	2.254	1.785	2.253	0.870
240	0.660	0.684	1.558	2.388	1.889	2.418	0.922
300	0.697	0.722	1.642	2.518	1.990	2.581	0.973
360	0.732	0.759	1.724	2.645	2.089	2.744	1.023
420	0.767	0.795	1.804	2.769	2.184	2.905	1.071
480	0.801	0.831	1.882	2.889	2.276	3.065	1.119
540	0.834	0.866	1.959	3.005	2.366	3.223	1.165
600	0.867	0.900	2.033	3.118	2.452	3.381	1.210
660	0.898	0.934	2.105	3.227	2.536	3.537	1.254
720	0.929	0.966	2.175	3.333	2.617	3.691	1.297

Pollutant Name: Carbon Monoxide Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.657	0.677	1.506	5.031	3.113	5.052	1.057
10	1.084	1.178	2.703	7.150	5.024	4.878	1.717
20	1.898	2.130	4.963	11.150	8.614	4.610	2.969
30	2.654	3.017	7.044	14.833	11.898	4.449	4.128
40	3.355	3.839	8.947	18.198	14.874	4.395	5.197
50	4.000	4.597	10.670	21.247	17.544	4.448	6.174
60	4.588	5.289	12.214	23.979	19.906	4.609	7.059
120	6.712	7.777	16.710	31.511	25.865	7.574	9.969
180	6.848	7.963	17.242	33.335	26.981	9.322	10.283
240	7.289	8.483	18.099	35.088	28.080	11.032	10.892
300	7.692	8.957	18.907	36.768	29.164	12.559	11.457
360	8.059	9.385	19.667	38.376	30.232	13.903	11.977
420	8.389	9.767	20.380	39.912	31.284	15.065	12.454
480	8.682	10.104	21.044	41.377	32.320	16.044	12.886
540	8.938	10.395	21.661	42.769	33.341	16.840	13.274
600	9.158	10.639	22.229	44.089	34.345	17.453	13.619
660	9.341	10.838	22.750	45.337	35.334	17.883	13.919
720	9.487	10.991	23.223	46.513	36.308	18.131	14.174

Pollutant Name: Oxides of Nitrogen Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.219	0.366	0.801	0.662	0.710	0.208	0.384
10	0.253	0.410	0.971	0.983	1.064	0.234	0.459
20	0.313	0.489	1.270	1.548	1.686	0.282	0.590
30	0.363	0.555	1.517	2.008	2.192	0.322	0.699
40	0.402	0.608	1.710	2.364	2.584	0.355	0.784
50	0.432	0.647	1.851	2.616	2.861	0.381	0.847
60	0.450	0.673	1.938	2.764	3.023	0.400	0.886
120	0.471	0.712	2.008	2.778	3.038	0.402	0.920
180	0.470	0.711	2.002	2.766	3.026	0.394	0.917
240	0.467	0.706	1.989	2.749	3.008	0.383	0.911

300	0.462	0.698	1.970	2.726	2.985	0.370	0.902
360	0.455	0.687	1.944	2.698	2.955	0.355	0.889
420	0.446	0.673	1.912	2.664	2.919	0.337	0.874
480	0.436	0.657	1.874	2.624	2.877	0.316	0.855
540	0.423	0.637	1.829	2.578	2.829	0.292	0.834
600	0.410	0.615	1.779	2.527	2.776	0.266	0.809
660	0.394	0.590	1.722	2.470	2.716	0.238	0.781
720	0.377	0.563	1.659	2.407	2.650	0.207	0.751

Pollutant Name: Carbon Dioxide Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.166	13.946	17.429	7.899	4.000	25.430	13.003
10	13.495	16.566	22.209	11.455	5.807	28.048	15.907
20	18.506	22.285	32.267	18.491	9.382	33.149	22.103
30	23.985	28.644	42.991	25.425	12.906	38.071	28.817
40	29.933	35.643	54.380	32.257	16.377	42.815	36.050
50	36.349	43.281	66.435	38.988	19.797	47.381	43.801
60	43.234	51.559	79.155	45.616	23.166	51.768	52.070
120	90.820	111.134	160.493	74.554	37.870	72.062	107.831
180	103.840	126.911	184.706	85.948	43.664	73.895	123.424
240	116.603	142.443	208.248	96.671	49.116	75.622	138.672
300	129.111	157.729	231.120	106.721	54.227	77.244	153.575
360	141.364	172.769	253.321	116.100	58.996	78.761	168.133
420	153.360	187.563	274.851	124.806	63.423	80.173	182.346
480	165.101	202.111	295.710	132.841	67.509	81.479	196.214
540	176.587	216.413	315.899	140.203	71.252	82.680	209.738
600	187.817	230.469	335.416	146.894	74.655	83.776	222.916
660	198.791	244.279	354.263	152.913	77.715	84.766	235.750
720	209.509	257.843	372.439	158.259	80.434	85.651	248.238

Pollutant Name: Sulfur Dioxide Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.001	0.001	0.000	0.000	0.000
40	0.000	0.000	0.001	0.001	0.000	0.001	0.000
50	0.000	0.000	0.001	0.001	0.000	0.001	0.001
60	0.000	0.001	0.001	0.001	0.001	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.002	0.002	0.002	0.001	0.001	0.002
300	0.001	0.002	0.003	0.002	0.001	0.001	0.002
360	0.002	0.002	0.003	0.002	0.001	0.001	0.002
420	0.002	0.002	0.003	0.002	0.001	0.001	0.002
480	0.002	0.002	0.003	0.002	0.001	0.001	0.002
540	0.002	0.002	0.003	0.002	0.001	0.001	0.002
600	0.002	0.002	0.004	0.002	0.001	0.001	0.002
660	0.002	0.003	0.004	0.002	0.001	0.001	0.003
720	0.002	0.003	0.004	0.002	0.001	0.001	0.003

Pollutant Name: PM10 Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.001	0.000	0.014	0.001
10	0.001	0.002	0.002	0.001	0.001	0.013	0.002
20	0.002	0.004	0.004	0.002	0.001	0.010	0.003
30	0.003	0.006	0.006	0.002	0.001	0.008	0.005
40	0.004	0.008	0.007	0.003	0.002	0.006	0.006
50	0.005	0.010	0.009	0.003	0.002	0.005	0.007
60	0.006	0.011	0.010	0.004	0.002	0.004	0.008
120	0.009	0.017	0.015	0.005	0.003	0.010	0.012
180	0.009	0.018	0.016	0.006	0.003	0.015	0.013
240	0.010	0.019	0.016	0.006	0.004	0.020	0.014
300	0.011	0.020	0.017	0.006	0.004	0.024	0.014
360	0.011	0.021	0.018	0.006	0.004	0.028	0.015
420	0.011	0.022	0.019	0.007	0.004	0.031	0.016
480	0.012	0.023	0.019	0.007	0.004	0.033	0.016
540	0.012	0.024	0.020	0.007	0.004	0.035	0.017
600	0.012	0.024	0.020	0.007	0.004	0.036	0.017
660	0.013	0.025	0.021	0.008	0.004	0.037	0.017
720	0.013	0.025	0.021	0.008	0.005	0.038	0.018

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Orange
****
*****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.061	0.050	0.035	0.012	0.067	0.146	0.052
10	0.114	0.093	0.064	0.023	0.123	0.271	0.096
20	0.195	0.160	0.112	0.039	0.210	0.468	0.165
30	0.252	0.208	0.146	0.051	0.270	0.610	0.215
40	0.274	0.227	0.159	0.056	0.292	0.666	0.233

Hot soak results are scaled to reflect zero emissions for trip lengths of less than

5 minutes (about 25% of in-use trips).

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Orange
****
*****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.136	0.112	0.086	0.010	0.004	0.338	0.126

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Orange
****
*****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.011	0.009	0.007	0.000	0.001	0.029	0.010

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Orange
****
*****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.055	0.048	0.038	0.005	0.002	0.119	0.051

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Orange
****
*****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.004	0.004	0.003	0.000	0.000	0.010	0.004

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Orange
****
*****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.506	0.319	0.140	0.028	0.001	0.006	1.000
%TRIP	0.489	0.278	0.177	0.048	0.000	0.008	1.000
%VEH	0.530	0.300	0.122	0.020	0.000	0.028	1.000

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Orange
****
*****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.021	0.307	0.280	0.197	0.464	0.080	0.155

2	0.025	0.159	0.146	0.107	0.251	0.116	0.088
3	0.029	0.112	0.103	0.078	0.180	0.135	0.068
4	0.032	0.090	0.083	0.063	0.145	0.145	0.059
5	0.035	0.076	0.071	0.054	0.124	0.153	0.054
10	0.039	0.053	0.049	0.038	0.082	0.170	0.046
15	0.041	0.047	0.044	0.032	0.068	0.177	0.044
20	0.042	0.046	0.043	0.030	0.062	0.182	0.044
25	0.043	0.047	0.044	0.029	0.058	0.186	0.045
30	0.042	0.047	0.043	0.029	0.058	0.184	0.044
35	0.042	0.046	0.043	0.028	0.057	0.182	0.044
40	0.042	0.045	0.042	0.028	0.057	0.181	0.043
45	0.041	0.045	0.042	0.028	0.057	0.179	0.043
50	0.040	0.044	0.041	0.028	0.056	0.175	0.042
55	0.039	0.044	0.041	0.028	0.056	0.171	0.042
60	0.039	0.044	0.041	0.027	0.055	0.167	0.041

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange

****

Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 1: Running Exhaust Emissions (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.321	7.350	0.000	0.000	0.679
1	0.260	0.357	0.602	3.798	3.831	4.732	0.477
2	0.260	0.357	0.602	3.798	3.831	4.732	0.477
3	0.247	0.340	0.580	3.798	3.831	4.732	0.462
4	0.224	0.309	0.540	3.798	3.831	4.732	0.435
5	0.204	0.281	0.505	3.798	3.831	4.732	0.411
10	0.131	0.181	0.329	2.216	2.608	3.605	0.262
15	0.089	0.124	0.226	1.199	1.850	2.885	0.172
20	0.064	0.089	0.163	0.733	1.367	2.427	0.122
25	0.049	0.068	0.124	0.584	1.051	2.147	0.096
30	0.039	0.055	0.098	0.474	0.841	1.997	0.079
35	0.033	0.046	0.082	0.394	0.701	1.953	0.068
40	0.029	0.041	0.072	0.340	0.607	2.010	0.062
45	0.028	0.039	0.066	0.308	0.547	2.173	0.059
50	0.027	0.038	0.064	0.298	0.513	2.470	0.060
55	0.029	0.040	0.066	0.306	0.499	2.948	0.065
60	0.032	0.044	0.071	0.334	0.506	3.691	0.074
65	0.037	0.050	0.080	0.381	0.533	4.847	0.088

Pollutant Name: Carbon Monoxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	20.580	40.855	0.000	0.000	4.069
1	3.193	4.546	6.195	16.132	31.116	26.383	4.609
2	3.193	4.546	6.195	16.132	31.116	26.383	4.609
3	3.149	4.481	6.118	16.132	31.116	26.383	4.556
4	3.063	4.357	5.970	16.132	31.116	26.383	4.453
5	2.982	4.240	5.832	16.132	31.116	26.383	4.355
10	2.631	3.729	4.769	10.978	20.395	22.144	3.672
15	2.351	3.322	4.038	7.718	14.150	19.394	3.177
20	2.122	2.991	3.513	5.746	10.390	17.697	2.808
25	1.931	2.719	3.123	4.647	8.073	16.819	2.529
30	1.772	2.491	2.825	3.904	6.637	16.663	2.310
35	1.638	2.301	2.598	3.411	5.773	17.242	2.138
40	1.526	2.143	2.425	3.108	5.312	18.689	2.007
45	1.433	2.014	2.302	2.965	5.170	21.288	1.914
50	1.359	1.911	2.226	2.971	5.323	25.560	1.860
55	1.304	1.836	2.201	3.135	5.797	32.431	1.854
60	1.271	1.791	2.240	3.484	6.677	43.552	1.911
65	1.265	1.785	2.366	4.076	8.134	61.934	2.060

Pollutant Name: Oxides of Nitrogen Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.734	74.300	0.000	0.000	2.721
1	0.207	0.405	0.758	13.071	24.387	0.932	0.768
2	0.207	0.405	0.758	13.071	24.387	0.932	0.768
3	0.204	0.398	0.750	13.071	24.387	0.932	0.763
4	0.198	0.386	0.734	13.071	24.387	0.932	0.754
5	0.192	0.374	0.720	13.071	24.387	0.932	0.745
10	0.167	0.322	0.622	9.727	18.911	0.915	0.595
15	0.148	0.283	0.553	7.596	15.437	0.909	0.495
20	0.134	0.255	0.504	6.615	13.248	0.910	0.440
25	0.124	0.234	0.471	6.234	11.935	0.918	0.410
30	0.116	0.219	0.451	5.983	11.267	0.933	0.391
35	0.111	0.209	0.441	5.850	11.131	0.953	0.380
40	0.108	0.203	0.441	5.833	11.501	0.978	0.376
45	0.107	0.202	0.450	5.938	12.425	1.009	0.381
50	0.108	0.204	0.470	6.181	14.046	1.045	0.395
55	0.111	0.211	0.503	6.591	16.634	1.087	0.420
60	0.116	0.223	0.551	7.212	20.669	1.135	0.457
65	0.123	0.240	0.622	8.120	26.992	1.191	0.513

Pollutant Name: Carbon Dioxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

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0	0.000	0.000	862.969	4616.954	0.000	0.000	256.718
1	1169.635	1463.615	2005.392	2541.044	2542.069	253.168	1415.424
2	1169.635	1463.615	2005.392	2541.044	2542.069	253.168	1415.424
3	1134.718	1419.892	1956.715	2541.044	2542.069	253.168	1377.125
4	1069.248	1337.909	1865.441	2541.044	2542.069	253.168	1305.311
5	1009.146	1262.648	1781.650	2541.044	2542.069	253.168	1239.384
10	757.674	948.539	1313.927	2134.453	2365.562	212.610	934.951
15	592.382	741.963	1014.247	1833.929	2261.329	183.224	734.903
20	481.738	603.631	817.804	1627.189	2197.863	161.987	601.389
25	407.219	510.437	687.677	1540.453	2158.420	146.929	513.317
30	357.660	448.438	602.222	1475.290	2133.847	136.787	454.669
35	326.268	409.152	548.597	1427.033	2119.060	130.808	417.383
40	309.004	387.530	519.321	1393.127	2111.277	128.636	396.691
45	303.680	380.841	510.439	1372.315	2109.128	130.279	390.032
50	309.501	388.095	520.602	1364.262	2112.248	136.130	396.493
55	326.898	409.842	550.780	1369.456	2121.169	147.060	416.623
60	357.626	448.285	604.485	1389.353	2137.476	164.617	452.552
65	405.139	507.761	688.631	1426.814	2164.285	191.376	508.470

Pollutant Name: Sulfur Dioxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.009	0.044	0.000	0.000	0.003
1	0.011	0.014	0.019	0.024	0.025	0.003	0.014
2	0.011	0.014	0.019	0.024	0.025	0.003	0.014
3	0.011	0.014	0.019	0.024	0.025	0.003	0.013
4	0.010	0.013	0.018	0.024	0.025	0.003	0.013
5	0.010	0.012	0.017	0.024	0.025	0.003	0.012
10	0.007	0.009	0.013	0.020	0.023	0.002	0.009
15	0.006	0.007	0.010	0.018	0.022	0.002	0.007
20	0.005	0.006	0.008	0.016	0.021	0.002	0.006
25	0.004	0.005	0.007	0.015	0.021	0.002	0.005
30	0.003	0.004	0.006	0.014	0.020	0.002	0.004
35	0.003	0.004	0.005	0.014	0.020	0.002	0.004
40	0.003	0.004	0.005	0.013	0.020	0.002	0.004
45	0.003	0.004	0.005	0.013	0.020	0.002	0.004
50	0.003	0.004	0.005	0.013	0.020	0.002	0.004
55	0.003	0.004	0.005	0.013	0.020	0.002	0.004
60	0.003	0.004	0.006	0.013	0.020	0.002	0.004
65	0.004	0.005	0.007	0.014	0.021	0.003	0.005

Pollutant Name: PM10 Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.038	0.839	0.000	0.000	0.030
1	0.065	0.140	0.142	0.818	0.681	0.042	0.122
2	0.065	0.140	0.142	0.818	0.681	0.042	0.122
3	0.062	0.133	0.136	0.818	0.681	0.042	0.118
4	0.056	0.121	0.125	0.818	0.681	0.042	0.110
5	0.051	0.111	0.115	0.818	0.681	0.042	0.103
10	0.033	0.072	0.075	0.586	0.493	0.033	0.069
15	0.023	0.050	0.052	0.417	0.369	0.027	0.048
20	0.017	0.036	0.038	0.314	0.287	0.024	0.035

25	0.013	0.027	0.029	0.265	0.231	0.021	0.027
30	0.010	0.022	0.024	0.229	0.192	0.020	0.023
35	0.009	0.019	0.020	0.205	0.166	0.020	0.019
40	0.008	0.017	0.018	0.193	0.149	0.021	0.018
45	0.007	0.016	0.017	0.190	0.138	0.022	0.017
50	0.007	0.015	0.016	0.197	0.132	0.025	0.017
55	0.007	0.016	0.017	0.213	0.131	0.030	0.018
60	0.008	0.018	0.018	0.238	0.135	0.038	0.020
65	0.009	0.020	0.021	0.272	0.144	0.049	0.023

Pollutant Name: PM10 - Tire Wear Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	0.008	0.008	0.009	0.021	0.009	0.004	0.008
2	0.008	0.008	0.009	0.021	0.009	0.004	0.008
3	0.008	0.008	0.009	0.021	0.009	0.004	0.008
4	0.008	0.008	0.009	0.021	0.009	0.004	0.008
5	0.008	0.008	0.009	0.021	0.009	0.004	0.008
10	0.008	0.008	0.009	0.021	0.009	0.004	0.008
15	0.008	0.008	0.009	0.021	0.009	0.004	0.008
20	0.008	0.008	0.009	0.021	0.009	0.004	0.008
25	0.008	0.008	0.009	0.021	0.009	0.004	0.008
30	0.008	0.008	0.009	0.021	0.009	0.004	0.008
35	0.008	0.008	0.009	0.021	0.009	0.004	0.008
40	0.008	0.008	0.009	0.021	0.009	0.004	0.008
45	0.008	0.008	0.009	0.021	0.009	0.004	0.008
50	0.008	0.008	0.009	0.021	0.009	0.004	0.008
55	0.008	0.008	0.009	0.021	0.009	0.004	0.008
60	0.008	0.008	0.009	0.021	0.009	0.004	0.008
65	0.008	0.008	0.009	0.021	0.009	0.004	0.008

Pollutant Name: PM10 - Brake Wear Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	0.013	0.013	0.013	0.018	0.013	0.006	0.013
2	0.013	0.013	0.013	0.018	0.013	0.006	0.013
3	0.013	0.013	0.013	0.018	0.013	0.006	0.013
4	0.013	0.013	0.013	0.018	0.013	0.006	0.013
5	0.013	0.013	0.013	0.018	0.013	0.006	0.013
10	0.013	0.013	0.013	0.018	0.013	0.006	0.013
15	0.013	0.013	0.013	0.018	0.013	0.006	0.013
20	0.013	0.013	0.013	0.018	0.013	0.006	0.013
25	0.013	0.013	0.013	0.018	0.013	0.006	0.013
30	0.013	0.013	0.013	0.018	0.013	0.006	0.013
35	0.013	0.013	0.013	0.018	0.013	0.006	0.013
40	0.013	0.013	0.013	0.018	0.013	0.006	0.013
45	0.013	0.013	0.013	0.018	0.013	0.006	0.013
50	0.013	0.013	0.013	0.018	0.013	0.006	0.013
55	0.013	0.013	0.013	0.018	0.013	0.006	0.013
60	0.013	0.013	0.013	0.018	0.013	0.006	0.013
65	0.013	0.013	0.013	0.018	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	7.535	5.998	4.260	3.423	3.270	28.605	6.700
2	7.535	5.998	4.260	3.423	3.270	28.605	6.700
3	7.766	6.183	4.375	3.423	3.270	28.605	6.897
4	8.241	6.561	4.611	3.423	3.270	28.605	7.302
5	8.731	6.952	4.855	3.423	3.270	28.605	7.719
10	11.622	9.251	6.550	5.146	4.916	34.204	10.265
15	14.856	11.823	8.485	7.321	6.997	39.719	13.114
20	18.259	14.529	10.559	9.860	9.426	44.810	16.115
25	21.593	17.182	12.624	12.568	12.020	49.114	19.056
30	24.581	19.560	14.500	15.163	14.510	52.266	21.692
35	26.947	21.444	16.001	17.315	16.579	53.942	23.777
40	28.459	22.649	16.964	18.716	17.931	53.893	25.103
45	28.969	23.058	17.282	19.147	18.355	51.985	25.538
50	28.439	22.639	16.927	18.539	17.785	48.245	25.046
55	26.942	21.448	15.947	16.991	16.309	42.892	23.694
60	24.642	19.617	14.463	14.738	14.155	36.352	21.631
65	21.765	17.326	12.633	12.099	11.627	29.230	19.061

Pollutant Name: Diesel - mi/gal Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	28.106	29.038	19.670	4.882	3.953	0.000	9.245
2	28.106	29.038	19.670	4.882	3.953	0.000	9.245
3	28.106	29.038	19.670	4.882	3.953	0.000	9.245
4	28.106	29.038	19.670	4.882	3.953	0.000	9.245
5	28.106	29.038	19.670	4.882	3.953	0.000	9.245
10	28.106	29.038	19.670	5.132	3.953	0.000	9.422
15	28.106	29.038	19.670	5.444	3.953	0.000	9.641
20	28.106	29.038	19.670	5.771	3.953	0.000	9.872
25	28.106	29.038	19.670	5.912	3.953	0.000	9.972
30	28.106	29.038	19.670	6.047	3.953	0.000	10.067
35	28.106	29.038	19.670	6.171	3.953	0.000	10.154
40	28.106	29.038	19.670	6.275	3.953	0.000	10.227
45	28.106	29.038	19.670	6.354	3.953	0.000	10.283
50	28.106	29.038	19.670	6.402	3.953	0.000	10.317
55	28.106	29.038	19.670	6.415	3.953	0.000	10.326
60	28.106	29.038	19.670	6.393	3.953	0.000	10.311
65	28.106	29.038	19.670	6.337	3.953	0.000	10.271

ARTIC_Emfac07_OC_2009-2013-2035_Emfact Mode_All Speeds.rts
Run Date : 2010/04/07 16:10:26
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange
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Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.037	0.042	0.103	0.251	0.242	0.874	0.067
10	0.065	0.075	0.190	0.389	0.378	0.967	0.114
20	0.119	0.137	0.354	0.647	0.629	1.156	0.200
30	0.168	0.195	0.502	0.878	0.855	1.352	0.280
40	0.212	0.247	0.636	1.083	1.056	1.554	0.351
50	0.251	0.293	0.754	1.263	1.230	1.762	0.415
60	0.285	0.334	0.856	1.405	1.369	1.898	0.469
120	0.391	0.470	1.150	1.635	1.596	2.124	0.624
180	0.404	0.486	1.206	1.739	1.697	2.253	0.651
240	0.429	0.516	1.277	1.839	1.795	2.408	0.690
300	0.452	0.544	1.347	1.937	1.891	2.561	0.728
360	0.475	0.573	1.416	2.032	1.984	2.712	0.765
420	0.498	0.600	1.483	2.125	2.073	2.860	0.802
480	0.521	0.628	1.549	2.214	2.160	3.007	0.838
540	0.543	0.655	1.613	2.300	2.245	3.151	0.873
600	0.564	0.681	1.676	2.384	2.326	3.294	0.907
660	0.585	0.707	1.737	2.464	2.404	3.434	0.940
720	0.605	0.732	1.797	2.542	2.480	3.573	0.973

Pollutant Name: Carbon Monoxide Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.379	0.473	1.086	3.195	2.829	4.087	0.699
10	0.683	0.868	2.004	5.029	4.676	4.214	1.211
20	1.263	1.620	3.743	8.480	8.145	4.497	2.184
30	1.805	2.323	5.352	11.639	11.315	4.816	3.087
40	2.307	2.977	6.831	14.506	14.185	5.173	3.920
50	2.772	3.582	8.180	17.082	16.755	5.566	4.684
60	3.197	4.138	9.399	19.365	19.027	5.997	5.379
120	4.765	6.192	13.201	25.169	24.672	9.161	7.702
180	4.868	6.352	13.642	26.315	25.682	10.368	7.941
240	5.196	6.790	14.405	27.439	26.683	11.757	8.425
300	5.493	7.185	15.112	28.540	27.676	13.011	8.870
360	5.760	7.539	15.763	29.619	28.659	14.131	9.276
420	5.996	7.850	16.358	30.676	29.634	15.115	9.643
480	6.201	8.120	16.898	31.711	30.599	15.965	9.972
540	6.377	8.347	17.381	32.724	31.555	16.679	10.262

600	6.521	8.531	17.808	33.714	32.503	17.259	10.513
660	6.635	8.674	18.180	34.682	33.441	17.703	10.725
720	6.719	8.775	18.495	35.628	34.370	18.013	10.899

Pollutant Name: Oxides of Nitrogen Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.165	0.301	0.781	0.539	0.693	0.183	0.332
10	0.185	0.331	0.907	0.805	1.040	0.214	0.386
20	0.221	0.386	1.129	1.274	1.649	0.270	0.482
30	0.251	0.431	1.313	1.656	2.145	0.317	0.561
40	0.275	0.468	1.459	1.951	2.529	0.355	0.624
50	0.293	0.496	1.566	2.160	2.800	0.383	0.670
60	0.305	0.515	1.635	2.282	2.958	0.403	0.700
120	0.323	0.549	1.712	2.293	2.973	0.404	0.732
180	0.322	0.548	1.708	2.284	2.961	0.398	0.730
240	0.320	0.544	1.696	2.271	2.944	0.390	0.725
300	0.316	0.538	1.679	2.253	2.921	0.379	0.718
360	0.311	0.529	1.655	2.230	2.892	0.366	0.707
420	0.305	0.518	1.625	2.203	2.857	0.351	0.695
480	0.298	0.505	1.590	2.171	2.817	0.333	0.679
540	0.289	0.490	1.548	2.135	2.770	0.314	0.661
600	0.279	0.472	1.501	2.093	2.718	0.292	0.641
660	0.268	0.452	1.447	2.048	2.659	0.268	0.618
720	0.256	0.430	1.387	1.998	2.595	0.242	0.592

Pollutant Name: Carbon Dioxide Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.398	14.326	18.749	5.448	3.818	20.233	13.324
10	13.335	16.671	22.861	8.720	5.867	22.676	15.835
20	17.626	21.896	31.711	15.202	9.923	27.451	21.317
30	22.476	27.835	41.398	21.599	13.924	32.078	27.414
40	27.882	34.486	51.922	27.912	17.870	36.556	34.125
50	33.847	41.851	63.283	34.141	21.761	40.887	41.451
60	40.369	49.929	75.481	40.286	25.598	45.070	49.391
120	88.967	110.833	159.762	67.007	42.305	64.190	106.551
180	101.472	126.344	183.123	78.101	49.113	67.071	121.702
240	113.828	141.689	206.015	88.539	55.520	69.784	136.617
300	126.034	156.868	228.437	98.324	61.525	72.329	151.295
360	138.090	171.880	250.390	107.453	67.128	74.706	165.737
420	149.996	186.727	271.873	115.929	72.330	76.916	179.943
480	161.752	201.407	292.887	123.750	77.130	78.958	193.912
540	173.359	215.920	313.431	130.916	81.529	80.832	207.645
600	184.815	230.268	333.506	137.428	85.526	82.538	221.141
660	196.122	244.450	353.111	143.285	89.121	84.077	234.401
720	207.279	258.465	372.246	148.488	92.315	85.447	247.424

Pollutant Name: Sulfur Dioxide Temperature: 73F Relative Humidity: ALL

ARTIC_Emfac07_OC_2009-2013-2035_Emfact Mode_All Speeds.rts

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.001	0.000	0.000	0.000
50	0.000	0.000	0.001	0.001	0.000	0.001	0.000
60	0.000	0.001	0.001	0.001	0.001	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.002
360	0.001	0.002	0.003	0.002	0.001	0.001	0.002
420	0.002	0.002	0.003	0.002	0.001	0.001	0.002
480	0.002	0.002	0.003	0.002	0.001	0.001	0.002
540	0.002	0.002	0.003	0.002	0.001	0.001	0.002
600	0.002	0.002	0.004	0.002	0.001	0.001	0.002
660	0.002	0.002	0.004	0.002	0.001	0.001	0.002
720	0.002	0.003	0.004	0.002	0.001	0.001	0.003

Pollutant Name: PM10 Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.001	0.000	0.011	0.001
10	0.001	0.002	0.002	0.001	0.001	0.010	0.002
20	0.002	0.005	0.004	0.002	0.001	0.008	0.003
30	0.003	0.007	0.006	0.002	0.002	0.006	0.005
40	0.004	0.009	0.008	0.003	0.002	0.005	0.006
50	0.005	0.011	0.010	0.003	0.002	0.004	0.007
60	0.006	0.013	0.011	0.004	0.003	0.003	0.009
120	0.009	0.020	0.017	0.005	0.004	0.008	0.013
180	0.010	0.022	0.018	0.006	0.004	0.012	0.014
240	0.011	0.023	0.019	0.006	0.004	0.016	0.016
300	0.011	0.025	0.020	0.006	0.004	0.019	0.016
360	0.012	0.026	0.021	0.006	0.004	0.022	0.017
420	0.012	0.027	0.022	0.006	0.004	0.024	0.018
480	0.013	0.028	0.023	0.007	0.004	0.026	0.019
540	0.013	0.029	0.024	0.007	0.005	0.028	0.019
600	0.013	0.029	0.024	0.007	0.005	0.029	0.020
660	0.014	0.030	0.025	0.007	0.005	0.029	0.020
720	0.014	0.030	0.025	0.007	0.005	0.030	0.020

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange
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Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.053	0.052	0.036	0.008	0.056	0.119	0.048
10	0.099	0.097	0.067	0.016	0.104	0.221	0.090
20	0.169	0.166	0.115	0.027	0.178	0.383	0.154
30	0.218	0.215	0.149	0.035	0.228	0.501	0.198
40	0.237	0.233	0.162	0.038	0.247	0.547	0.215

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange

****

Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.099	0.098	0.080	0.007	0.004	0.323	0.101

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2010/04/07 16:10:26
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange
****
*****
Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.008	0.008	0.006	0.000	0.001	0.029	0.008

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange
****
*****
Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.044	0.047	0.040	0.003	0.002	0.113	0.045

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26

Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange
****
*****
Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.004	0.004	0.003	0.000	0.000	0.011	0.004

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange
****
*****
Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.508	0.316	0.139	0.030	0.001	0.006	1.000
%TRIP	0.485	0.278	0.180	0.048	0.000	0.008	1.000
%VEH	0.526	0.301	0.124	0.020	0.000	0.028	1.000

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006

ARTIC_Emfac07_OC_2009-2013-2035_Emfact Mode_All Speeds.rts
Run Date : 2010/04/07 16:10:26
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange
****
*****
Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.014	0.319	0.301	0.200	0.551	0.028	0.157
2	0.016	0.164	0.156	0.105	0.290	0.065	0.085
3	0.019	0.114	0.109	0.074	0.203	0.084	0.064
4	0.022	0.091	0.087	0.059	0.160	0.095	0.055
5	0.024	0.077	0.074	0.050	0.134	0.102	0.049
10	0.028	0.052	0.050	0.032	0.083	0.117	0.039
15	0.030	0.045	0.044	0.026	0.066	0.122	0.037
20	0.030	0.043	0.042	0.024	0.058	0.124	0.036
25	0.031	0.043	0.041	0.022	0.053	0.126	0.037
30	0.031	0.042	0.041	0.022	0.053	0.124	0.036
35	0.030	0.042	0.040	0.022	0.053	0.123	0.036
40	0.030	0.042	0.040	0.022	0.052	0.121	0.035
45	0.030	0.041	0.040	0.022	0.052	0.120	0.035
50	0.029	0.041	0.039	0.022	0.052	0.118	0.035
55	0.029	0.040	0.039	0.021	0.051	0.116	0.034
60	0.028	0.040	0.039	0.021	0.051	0.114	0.034

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 1: Running Exhaust Emissions (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.197	6.082	0.000	0.000	0.719
1	0.051	0.103	0.144	1.189	1.243	4.650	0.148
2	0.051	0.103	0.144	1.189	1.243	4.650	0.148
3	0.049	0.098	0.137	1.189	1.243	4.650	0.144
4	0.044	0.087	0.124	1.189	1.243	4.650	0.136
5	0.039	0.078	0.113	1.189	1.243	4.650	0.130
10	0.024	0.047	0.070	0.681	0.867	3.485	0.080
15	0.016	0.032	0.048	0.362	0.630	2.749	0.052
20	0.012	0.023	0.035	0.232	0.476	2.283	0.038
25	0.009	0.017	0.026	0.199	0.373	1.996	0.031
30	0.007	0.014	0.021	0.171	0.304	1.839	0.026
35	0.006	0.011	0.018	0.149	0.258	1.785	0.023
40	0.005	0.010	0.016	0.131	0.227	1.825	0.021
45	0.005	0.010	0.015	0.118	0.207	1.966	0.021
50	0.005	0.009	0.014	0.107	0.196	2.229	0.021
55	0.005	0.010	0.015	0.101	0.193	2.659	0.023
60	0.006	0.011	0.016	0.097	0.197	3.333	0.027
65	0.007	0.013	0.018	0.097	0.209	4.389	0.033

Pollutant Name: Carbon Monoxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	20.070	37.299	0.000	0.000	4.477
1	0.907	1.597	2.145	4.761	9.542	21.596	1.575
2	0.907	1.597	2.145	4.761	9.542	21.596	1.575
3	0.898	1.581	2.126	4.761	9.542	21.596	1.563
4	0.881	1.551	2.090	4.761	9.542	21.596	1.539
5	0.865	1.522	2.055	4.761	9.542	21.596	1.516
10	0.788	1.385	1.814	3.080	6.213	18.470	1.314
15	0.720	1.265	1.623	2.032	4.284	16.355	1.160
20	0.660	1.159	1.467	1.487	3.129	14.962	1.043
25	0.606	1.064	1.336	1.251	2.420	14.132	0.953
30	0.559	0.981	1.224	1.099	1.982	13.801	0.878
35	0.516	0.906	1.128	1.006	1.718	13.973	0.816
40	0.479	0.840	1.045	0.957	1.576	14.731	0.764
45	0.445	0.781	0.973	0.945	1.531	16.259	0.724
50	0.415	0.728	0.911	0.965	1.573	18.895	0.694
55	0.388	0.681	0.858	1.019	1.711	23.240	0.678
60	0.363	0.638	0.813	1.111	1.970	30.368	0.680
65	0.342	0.601	0.778	1.250	2.400	42.241	0.708

Pollutant Name: Oxides of Nitrogen Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.674	81.434	0.000	0.000	3.734
1	0.053	0.102	0.189	3.617	11.362	0.990	0.253
2	0.053	0.102	0.189	3.617	11.362	0.990	0.253
3	0.052	0.101	0.187	3.617	11.362	0.990	0.251
4	0.050	0.098	0.184	3.617	11.362	0.990	0.249

5	0.049	0.095	0.181	3.617	11.362	0.990	0.247
10	0.043	0.083	0.157	2.793	8.802	0.946	0.200
15	0.038	0.073	0.140	2.210	7.178	0.916	0.166
20	0.034	0.066	0.127	1.860	6.154	0.898	0.145
25	0.032	0.061	0.119	1.693	5.539	0.890	0.133
30	0.030	0.057	0.113	1.566	5.225	0.891	0.124
35	0.028	0.054	0.110	1.477	5.161	0.900	0.118
40	0.027	0.052	0.110	1.426	5.332	0.917	0.115
45	0.027	0.051	0.112	1.414	5.762	0.942	0.116
50	0.026	0.051	0.116	1.445	6.517	0.975	0.119
55	0.027	0.052	0.124	1.525	7.725	1.016	0.126
60	0.028	0.053	0.135	1.665	9.608	1.067	0.137
65	0.029	0.056	0.152	1.881	12.561	1.130	0.155

Pollutant Name: Carbon Dioxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	887.050	4741.404	0.000	0.000	318.696
1	1144.346	1466.838	2010.604	2737.865	2390.960	266.372	1442.721
2	1144.346	1466.838	2010.604	2737.865	2390.960	266.372	1442.721
3	1110.189	1423.003	1962.200	2737.865	2390.960	266.372	1404.738
4	1046.144	1340.807	1871.440	2737.865	2390.960	266.372	1333.516
5	987.350	1265.352	1788.121	2737.865	2390.960	266.372	1268.134
10	741.173	950.081	1317.173	2274.614	2100.173	222.040	957.437
15	579.381	742.784	1015.739	1926.435	1928.454	190.713	752.743
20	471.092	603.992	818.316	1685.098	1823.896	168.741	616.064
25	398.166	510.500	687.631	1586.668	1758.915	153.810	526.866
30	349.669	448.310	601.857	1511.606	1718.432	144.488	467.345
35	318.954	408.910	548.058	1455.267	1694.072	139.978	429.387
40	302.065	387.231	518.702	1415.109	1681.249	139.987	408.197
45	296.860	380.532	509.807	1389.881	1677.709	144.686	401.202
50	302.560	387.818	520.021	1379.249	1682.849	154.765	407.488
55	319.587	409.635	550.320	1383.699	1697.545	171.576	427.610
60	349.652	448.190	604.243	1404.680	1724.410	197.426	463.711
65	396.133	507.827	688.759	1445.038	1768.578	236.098	520.016

Pollutant Name: Sulfur Dioxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.009	0.045	0.000	0.000	0.003
1	0.011	0.014	0.019	0.026	0.023	0.003	0.014
2	0.011	0.014	0.019	0.026	0.023	0.003	0.014
3	0.011	0.014	0.019	0.026	0.023	0.003	0.014
4	0.010	0.013	0.018	0.026	0.023	0.003	0.013
5	0.009	0.012	0.017	0.026	0.023	0.003	0.012
10	0.007	0.009	0.013	0.022	0.020	0.003	0.009
15	0.006	0.007	0.010	0.018	0.018	0.002	0.007
20	0.005	0.006	0.008	0.016	0.017	0.002	0.006
25	0.004	0.005	0.007	0.015	0.017	0.002	0.005
30	0.003	0.004	0.006	0.014	0.016	0.002	0.004
35	0.003	0.004	0.005	0.014	0.016	0.002	0.004
40	0.003	0.004	0.005	0.014	0.016	0.002	0.004
45	0.003	0.004	0.005	0.013	0.016	0.002	0.004

50	0.003	0.004	0.005	0.013	0.016	0.002	0.004
55	0.003	0.004	0.005	0.013	0.016	0.002	0.004
60	0.003	0.004	0.006	0.013	0.016	0.002	0.004
65	0.004	0.005	0.007	0.014	0.017	0.003	0.005

Pollutant Name: PM10 Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.037	0.337	0.000	0.000	0.019
1	0.070	0.160	0.168	0.182	0.386	0.030	0.119
2	0.070	0.160	0.168	0.182	0.386	0.030	0.119
3	0.067	0.152	0.160	0.182	0.386	0.030	0.114
4	0.061	0.138	0.146	0.182	0.386	0.030	0.105
5	0.056	0.126	0.134	0.182	0.386	0.030	0.096
10	0.036	0.081	0.087	0.147	0.278	0.024	0.063
15	0.024	0.055	0.060	0.121	0.207	0.019	0.044
20	0.018	0.040	0.043	0.102	0.161	0.017	0.032
25	0.013	0.030	0.033	0.089	0.129	0.015	0.025
30	0.011	0.024	0.026	0.081	0.107	0.014	0.020
35	0.009	0.020	0.022	0.076	0.092	0.014	0.018
40	0.008	0.018	0.020	0.074	0.082	0.014	0.016
45	0.008	0.017	0.018	0.074	0.076	0.016	0.015
50	0.007	0.017	0.018	0.077	0.073	0.018	0.015
55	0.008	0.018	0.019	0.082	0.072	0.021	0.016
60	0.009	0.020	0.021	0.089	0.074	0.026	0.017
65	0.010	0.023	0.024	0.097	0.079	0.034	0.020

Pollutant Name: PM10 - Tire Wear Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	0.008	0.008	0.009	0.023	0.009	0.004	0.009
2	0.008	0.008	0.009	0.023	0.009	0.004	0.009
3	0.008	0.008	0.009	0.023	0.009	0.004	0.009
4	0.008	0.008	0.009	0.023	0.009	0.004	0.009
5	0.008	0.008	0.009	0.023	0.009	0.004	0.009
10	0.008	0.008	0.009	0.023	0.009	0.004	0.009
15	0.008	0.008	0.009	0.023	0.009	0.004	0.009
20	0.008	0.008	0.009	0.023	0.009	0.004	0.009
25	0.008	0.008	0.009	0.023	0.009	0.004	0.009
30	0.008	0.008	0.009	0.023	0.009	0.004	0.009
35	0.008	0.008	0.009	0.023	0.009	0.004	0.009
40	0.008	0.008	0.009	0.023	0.009	0.004	0.009
45	0.008	0.008	0.009	0.023	0.009	0.004	0.009
50	0.008	0.008	0.009	0.023	0.009	0.004	0.009
55	0.008	0.008	0.009	0.023	0.009	0.004	0.009
60	0.008	0.008	0.009	0.023	0.009	0.004	0.009
65	0.008	0.008	0.009	0.023	0.009	0.004	0.009

Pollutant Name: PM10 - Brake Wear Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	0.013	0.013	0.013	0.020	0.013	0.006	0.013
2	0.013	0.013	0.013	0.020	0.013	0.006	0.013
3	0.013	0.013	0.013	0.020	0.013	0.006	0.013
4	0.013	0.013	0.013	0.020	0.013	0.006	0.013
5	0.013	0.013	0.013	0.020	0.013	0.006	0.013
10	0.013	0.013	0.013	0.020	0.013	0.006	0.013
15	0.013	0.013	0.013	0.020	0.013	0.006	0.013
20	0.013	0.013	0.013	0.020	0.013	0.006	0.013
25	0.013	0.013	0.013	0.020	0.013	0.006	0.013
30	0.013	0.013	0.013	0.020	0.013	0.006	0.013
35	0.013	0.013	0.013	0.020	0.013	0.006	0.013
40	0.013	0.013	0.013	0.020	0.013	0.006	0.013
45	0.013	0.013	0.013	0.020	0.013	0.006	0.013
50	0.013	0.013	0.013	0.020	0.013	0.006	0.013
55	0.013	0.013	0.013	0.020	0.013	0.006	0.013
60	0.013	0.013	0.013	0.020	0.013	0.006	0.013
65	0.013	0.013	0.013	0.020	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	7.732	6.028	4.274	3.515	3.483	28.114	6.678
2	7.732	6.028	4.274	3.515	3.483	28.114	6.678
3	7.970	6.214	4.389	3.515	3.483	28.114	6.877
4	8.457	6.594	4.624	3.515	3.483	28.114	7.283
5	8.961	6.987	4.868	3.515	3.483	28.114	7.703
10	11.934	9.303	6.573	5.283	5.235	33.777	10.260
15	15.262	11.895	8.521	7.516	7.448	39.317	13.128
20	18.766	14.624	10.611	10.121	10.030	44.362	16.152
25	22.200	17.299	12.694	12.899	12.783	48.527	19.118
30	25.276	19.696	14.587	15.559	15.421	51.448	21.778
35	27.709	21.593	16.101	17.764	17.608	52.825	23.882
40	29.260	22.804	17.071	19.195	19.029	52.460	25.219
45	29.778	23.210	17.390	19.633	19.465	50.295	25.656
50	29.222	22.781	17.027	19.005	18.845	46.429	25.158
55	27.672	21.574	16.036	17.413	17.268	41.137	23.794
60	25.300	19.725	14.536	15.101	14.976	34.856	21.716
65	22.337	17.415	12.690	12.395	12.293	28.144	19.132

Pollutant Name: Diesel - mi/gal Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	29.156	29.156	19.452	4.458	4.333	0.000	7.144
2	29.156	29.156	19.452	4.458	4.333	0.000	7.144
3	29.156	29.156	19.452	4.458	4.333	0.000	7.144
4	29.156	29.156	19.452	4.458	4.333	0.000	7.144

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5	29.156	29.156	19.452	4.458	4.333	0.000	7.144
10	29.156	29.156	19.452	4.767	4.333	0.000	7.390
15	29.156	29.156	19.452	5.151	4.333	0.000	7.694
20	29.156	29.156	19.452	5.554	4.333	0.000	8.015
25	29.156	29.156	19.452	5.729	4.333	0.000	8.153
30	29.156	29.156	19.452	5.896	4.333	0.000	8.286
35	29.156	29.156	19.452	6.048	4.333	0.000	8.406
40	29.156	29.156	19.452	6.176	4.333	0.000	8.508
45	29.156	29.156	19.452	6.273	4.333	0.000	8.585
50	29.156	29.156	19.452	6.333	4.333	0.000	8.632
55	29.156	29.156	19.452	6.349	4.333	0.000	8.645
60	29.156	29.156	19.452	6.322	4.333	0.000	8.624
65	29.156	29.156	19.452	6.253	4.333	0.000	8.569

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Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.003	0.006	0.026	0.043	0.110	0.595	0.014
10	0.006	0.013	0.052	0.083	0.214	0.738	0.026
20	0.012	0.025	0.101	0.157	0.406	1.014	0.047
30	0.018	0.037	0.148	0.223	0.576	1.273	0.068
40	0.024	0.048	0.194	0.280	0.723	1.517	0.087
50	0.029	0.059	0.237	0.328	0.848	1.744	0.105
60	0.034	0.070	0.278	0.368	0.951	1.911	0.122
120	0.056	0.120	0.474	0.435	1.124	2.223	0.191
180	0.058	0.124	0.492	0.461	1.192	2.324	0.199
240	0.062	0.132	0.523	0.487	1.259	2.470	0.211
300	0.066	0.140	0.554	0.512	1.323	2.613	0.224
360	0.069	0.147	0.586	0.536	1.385	2.753	0.236
420	0.073	0.155	0.616	0.559	1.445	2.890	0.248
480	0.076	0.163	0.647	0.581	1.503	3.024	0.260
540	0.080	0.171	0.678	0.603	1.558	3.155	0.272
600	0.084	0.179	0.709	0.623	1.612	3.283	0.284
660	0.087	0.186	0.739	0.643	1.663	3.408	0.295
720	0.091	0.194	0.769	0.662	1.712	3.529	0.307

Pollutant Name: Carbon Monoxide Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.058	0.110	0.349	0.620	1.160	2.868	0.177
10	0.114	0.217	0.690	1.214	2.273	3.404	0.337
20	0.223	0.425	1.349	2.327	4.357	4.433	0.643
30	0.327	0.624	1.978	3.339	6.253	5.407	0.933
40	0.426	0.812	2.575	4.251	7.960	6.323	1.206
50	0.520	0.992	3.143	5.062	9.479	7.183	1.462
60	0.608	1.161	3.679	5.773	10.809	7.986	1.701
120	0.987	1.887	5.943	7.423	13.898	11.499	2.644
180	1.030	1.971	6.228	7.640	14.305	11.989	2.759
240	1.122	2.150	6.787	7.864	14.724	12.975	2.982
300	1.204	2.306	7.278	8.095	15.157	13.887	3.180
360	1.274	2.441	7.702	8.334	15.604	14.726	3.353
420	1.332	2.554	8.057	8.579	16.064	15.491	3.501
480	1.380	2.646	8.345	8.832	16.537	16.184	3.624
540	1.416	2.715	8.564	9.092	17.024	16.803	3.722
600	1.441	2.763	8.716	9.359	17.524	17.349	3.795
660	1.455	2.789	8.801	9.633	18.037	17.821	3.843
720	1.458	2.793	8.817	9.914	18.564	18.221	3.866

Pollutant Name: Oxides of Nitrogen Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.030	0.074	0.565	0.168	0.525	0.150	0.158
10	0.031	0.077	0.589	0.254	0.791	0.189	0.169
20	0.034	0.082	0.633	0.403	1.258	0.257	0.189
30	0.036	0.087	0.671	0.525	1.639	0.314	0.206
40	0.038	0.091	0.705	0.620	1.933	0.359	0.220
50	0.039	0.095	0.732	0.686	2.141	0.391	0.231
60	0.041	0.097	0.754	0.725	2.262	0.412	0.239
120	0.044	0.107	0.825	0.729	2.273	0.414	0.258
180	0.044	0.107	0.824	0.726	2.265	0.409	0.257
240	0.044	0.106	0.818	0.722	2.252	0.403	0.255
300	0.044	0.104	0.807	0.716	2.235	0.395	0.252
360	0.043	0.102	0.792	0.710	2.213	0.386	0.248
420	0.042	0.100	0.773	0.701	2.187	0.375	0.242
480	0.040	0.097	0.750	0.691	2.157	0.362	0.236
540	0.039	0.093	0.723	0.680	2.122	0.347	0.228
600	0.037	0.089	0.691	0.668	2.083	0.331	0.219
660	0.035	0.085	0.656	0.654	2.039	0.313	0.209
720	0.033	0.079	0.616	0.638	1.991	0.294	0.197

Pollutant Name: Carbon Dioxide Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.036	15.428	22.026	2.817	3.300	13.097	14.540
10	13.464	17.268	24.761	5.619	6.581	15.288	16.426

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20	16.815	21.582	31.130	11.175	13.089	19.590	20.783
30	20.829	26.744	38.699	16.669	19.524	23.785	25.920
40	25.503	32.752	47.468	22.101	25.886	27.875	31.839
50	30.840	39.609	57.437	27.470	32.175	31.858	38.538
60	36.838	47.312	68.607	32.777	38.390	35.736	46.017
120	86.247	110.691	159.590	55.749	65.296	53.141	106.221
180	97.847	125.588	181.184	65.863	77.142	57.411	120.658
240	109.441	140.475	202.736	75.380	88.289	61.430	135.048
300	121.027	155.350	224.245	84.301	98.737	65.198	149.389
360	132.606	170.214	245.712	92.624	108.485	68.716	163.682
420	144.178	185.067	267.137	100.350	117.535	71.983	177.928
480	155.743	199.909	288.520	107.480	125.885	75.000	192.125
540	167.301	214.739	309.860	114.012	133.536	77.766	206.275
600	178.852	229.558	331.158	119.948	140.488	80.281	220.376
660	190.396	244.365	352.414	125.286	146.741	82.546	234.430
720	201.933	259.162	373.628	130.028	152.294	84.560	248.436

Pollutant Name: Sulfur Dioxide Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.000	0.000
50	0.000	0.000	0.001	0.000	0.000	0.000	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.001
360	0.001	0.002	0.002	0.001	0.001	0.001	0.002
420	0.001	0.002	0.003	0.001	0.001	0.001	0.002
480	0.002	0.002	0.003	0.001	0.002	0.001	0.002
540	0.002	0.002	0.003	0.001	0.002	0.001	0.002
600	0.002	0.002	0.003	0.001	0.002	0.001	0.002
660	0.002	0.002	0.004	0.001	0.002	0.001	0.002
720	0.002	0.003	0.004	0.001	0.002	0.001	0.002

Pollutant Name: PM10 Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.001	0.007	0.001
10	0.001	0.002	0.002	0.001	0.001	0.006	0.002
20	0.002	0.005	0.004	0.001	0.002	0.005	0.003
30	0.003	0.007	0.006	0.002	0.003	0.004	0.005
40	0.004	0.009	0.008	0.003	0.004	0.003	0.006
50	0.005	0.011	0.009	0.003	0.004	0.003	0.007
60	0.006	0.013	0.011	0.004	0.005	0.003	0.009
120	0.009	0.021	0.018	0.005	0.007	0.006	0.014
180	0.011	0.023	0.020	0.005	0.007	0.008	0.016
240	0.012	0.026	0.022	0.005	0.007	0.010	0.017
300	0.013	0.027	0.024	0.005	0.007	0.012	0.019

360	0.013	0.029	0.025	0.005	0.007	0.014	0.020
420	0.014	0.031	0.026	0.006	0.008	0.015	0.021
480	0.014	0.032	0.027	0.006	0.008	0.017	0.021
540	0.015	0.032	0.028	0.006	0.008	0.018	0.022
600	0.015	0.033	0.028	0.006	0.008	0.018	0.022
660	0.015	0.033	0.029	0.006	0.009	0.019	0.023
720	0.015	0.033	0.029	0.006	0.009	0.019	0.023

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.022	0.037	0.029	0.003	0.018	0.126	0.027
10	0.041	0.068	0.053	0.006	0.033	0.234	0.051
20	0.070	0.117	0.090	0.009	0.056	0.403	0.087
30	0.091	0.150	0.116	0.012	0.071	0.525	0.111
40	0.098	0.162	0.126	0.013	0.077	0.572	0.120

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.021	0.057	0.059	0.002	0.001	0.350	0.044

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.002	0.004	0.004	0.000	0.000	0.033	0.003

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County

Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.013	0.041	0.043	0.001	0.001	0.127	0.028

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
73	0.001	0.003	0.003	0.000	0.000	0.013	0.002

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.472	0.333	0.150	0.039	0.002	0.004	1.000
%TRIP	0.452	0.289	0.200	0.052	0.000	0.006	1.000
%VEH	0.494	0.322	0.137	0.027	0.001	0.020	1.000

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/04/07 16:10:26
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 73F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.010	0.188	0.207	0.049	0.268	0.005	0.101
2	0.008	0.096	0.106	0.025	0.135	0.037	0.053
3	0.009	0.068	0.075	0.018	0.091	0.054	0.039
4	0.010	0.056	0.061	0.014	0.070	0.064	0.033
5	0.012	0.048	0.052	0.012	0.058	0.070	0.030
10	0.014	0.034	0.036	0.008	0.034	0.082	0.024
15	0.015	0.030	0.032	0.007	0.027	0.085	0.023
20	0.015	0.029	0.030	0.007	0.025	0.086	0.022
25	0.015	0.028	0.029	0.007	0.024	0.086	0.022
30	0.015	0.028	0.029	0.007	0.024	0.085	0.021
35	0.015	0.028	0.029	0.007	0.023	0.083	0.021
40	0.015	0.027	0.029	0.007	0.023	0.082	0.021
45	0.015	0.027	0.028	0.007	0.023	0.081	0.021
50	0.015	0.027	0.028	0.007	0.022	0.080	0.021
55	0.015	0.027	0.028	0.007	0.022	0.079	0.021
60	0.014	0.026	0.028	0.007	0.022	0.078	0.020

ARTIC_Emfac07_OC_2009-2013-2035_Emfact Mode_All Speeds.rts

C-2: CAL3QHC Input Detail and Summary Results

Table C-2a-1: TRAFFIC VOLUMES (AM and PM) FOR ALL VEHICLES at KATELLA-DOUGLASS INTERSECTION

CASE: 2013 No Project

PEAK DURATION	Eastbound			Westbound			Northbound			Southbound			Total Intersection Volume	HCM V/C	ICU	LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
AM	**409**	**980**	**58**	**20**	**989**	**100**	**36**	**17**	**7**	**108**	**12**	**57**	**2793**	**0.5**	**0.493**	**A**
PM	**122**	**1022**	**44**	**31**	**1248**	**162**	**166**	**25**	**15**	**151**	**5**	**418**	**3409**	**0.59**	**0.57**	**A**

Notes

1. Total vehicle volumes and HCM V/C ratios reported in Appendix J1 *(Signalized Intersection Worksheets – 2013 No Project)* of Comprehensive Traffic Study (ARTIC Phase 1 - ACE Comprehensive Traffic Study), prepared by Cordoba Corp. September 4, 2009

2. ICU and LOS values are sourced from Table 14 of Comprehensive Traffic Study (ARTIC Phase 1 - ACE Comprehensive Traffic Study), prepared by Cordoba Corp. September 4, 2009

CASE: 2013 with ARTIC Phase 1

PEAK DURATION	Eastbound			Westbound			Northbound			Southbound			Total Intersection Volume	HCM V/C	ICU	LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
AM	**409**	**980**	**685**	**151**	**989**	**100**	**169**	**45**	**58**	**108**	**103**	**57**	**3854**	**0.57**	**0.673**	**B**
PM	**122**	**1022**	**179**	**67**	**1224**	**159**	**650**	**109**	**129**	**151**	**20**	**418**	**4250**	**0.95**	**0.674**	**B**

Notes

1. Total vehicle volumes and HCM V/C ratios reported in Appendix J2 *(Signalized Intersection Worksheets – 2013 with ARTIC Phase 1)* of Comprehensive Traffic Study (ARTIC Phase 1 - ACE Comprehensive Traffic Study), prepared by Cordoba Corp. September 4, 2009

2. ICU and LOS values are sourced from Table 16 of Comprehensive Traffic Study (ARTIC Phase 1 - ACE Comprehensive Traffic Study), prepared by Cordoba Corp. September 4, 2009

Table C-2a-2: TRAFFIC VOLUMES (AM and PM) FOR ALL VEHICLES at KATELLA-DOUGLASS INTERSECTION

CASE: 2035 No Project

PEAK DURATION	Eastbound			Westbound			Northbound			Southbound			Total Intersection Volume	HCM V/C	ICU	LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
AM	**430**	**2000**	**1628**	**663**	**1270**	**320**	**420**	**135**	**229**	**900**	**512**	**130**	**8637**	**1.16**	**1.146**	**F**
PM	**260**	**1540**	**423**	**350**	**2190**	**850**	**1595**	**439**	**561**	**530**	**233**	**400**	**9371**	**1.31**	**1.385**	**F**

Notes

1. Total vehicle volumes and HCM V/C ratios reported in Appendix J3 *(Signalized Intersection Worksheets – 2035 No Project)* of Comprehensive Traffic Study (ARTIC Phase 1 - ACE Comprehensive Traffic Study), prepared by Cordoba Corp. September 4, 2009

2. ICU and LOS values are sourced from Table 21 of Comprehensive Traffic Study (ARTIC Phase 1 - ACE Comprehensive Traffic Study), prepared by Cordoba Corp. September 4, 2009

CASE: 2035 with Buildout of ARTIC and Mixed Use Development

PEAK DURATION	Eastbound			Westbound			Northbound			Southbound			Total Intersection Volume	HCM V/C	ICU	LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
AM	**470**	**2050**	**2018**	**953**	**1270**	**320**	**650**	**267**	**449**	**900**	**762**	**130**	**10239**	**2.1**	**1.939**	**F**
PM	**270**	**1540**	**803**	**670**	**2230**	**850**	**2245**	**789**	**931**	**530**	**343**	**400**	**11601**	**2.57**	**1.601**	**F**

Notes

1. Total vehicle volumes reported **on Figure 33**; HCM V/C ratio reported in Appendix J4 (Signalized Intersection Worksheets – 2035 With ARTIC Buildout) of Comprehensive Traffic Study (ARTIC Phase 1 - ACE Comprehensive Traffic Study), prepared by Cordoba Corp. September 4, 2009

2. ICU and LOS values are sourced from Table 29 of Comprehensive Traffic Study (ARTIC Phase 1 - ACE Comprehensive Traffic Study), prepared by Cordoba Corp. September 4, 2009

TABLE C-2b: QUEUING TRAFFIC SIGNALIZATION DATA

INTERSECTION: Katella Ave and Douglass Rd

2013 With Artic Phase I - Peak PM Traffic

Queue Link	Signal Cycle Length (sec)	Green/Cycle	Green Time Length (sec)	Red Time Length (sec)	Clearance Lost Time (sec)
EBLQ	110	0.05	6	105	4
EBTQ	110	0.27	30	80	4
EBRQ	110	1	110	0	4
WBLQ	110	0.04	4	106	4
WBTQ	110	0.26	29	81	4
WBRQ	110	0.26	29	81	4
NBLQ	110	0.4	44	66	4
NBTQ	110	0.38	42	68	4
NBRQ	110	0.38	42	68	4
SBLQ	110	0.16	18	92	4
SBTQ	110	0.15	17	94	4
SBRQ	110	0.15	17	94	4

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/03/29 17:09:49
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : Orange
****

Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 1: Running Exhaust Emissions (grams/mile; grams/idle-hour)

Pollutant Name: Carbon Monoxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	20.580	40.855	0.000	0.000	4.256
1	3.193	4.546	6.195	16.132	31.116	26.383	4.609
2	3.458	4.619	6.195	16.132	31.116	26.383	**4.821***
3	3.149	4.481	6.118	16.132	31.116	26.383	4.556
4	3.063	4.357	5.970	16.132	31.116	26.383	4.453
5	3.230	4.308	5.832	16.132	31.116	26.383	4.555
10	2.850	3.789	4.769	10.978	20.395	22.144	3.841
15	2.546	3.376	4.038	7.718	14.150	19.394	3.322
20	2.298	3.040	3.513	5.746	10.390	17.697	2.937
25	2.092	2.762	3.123	4.647	8.073	16.819	**2.645**
30	1.919	2.531	2.825	3.904	6.637	16.663	2.416
35	1.774	2.338	2.598	3.411	5.773	17.242	2.236
40	1.652	2.178	2.425	3.108	5.312	18.689	**2.099**
45	1.552	2.046	2.302	2.965	5.170	21.288	2.002
50	1.471	1.942	2.226	2.971	5.323	25.560	1.946
55	1.412	1.865	2.201	3.135	5.797	32.431	1.940
60	1.376	1.820	2.240	3.484	6.677	43.552	1.999
65	1.370	1.814	2.366	4.076	8.134	61.934	2.154

* Chosen for Idle Emission Factor since not all vehicle classes have factors at 0 mph and this is the highest value from 0 and 3 mph.

Title : ARTIC_Emfac2007_Orange County_2009-2013-2035_EMAC Mode_CO
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/03/29 17:09:49
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Orange
****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Orange County Average

Table 1: Running Exhaust Emissions (grams/mile; grams/idle-hour)

Pollutant Name: Carbon Monoxide Temperature: 73F Relative Humidity: 65%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	20.070	37.299	0.000	0.000	4.642
1	0.907	1.597	2.145	4.761	9.542	21.596	1.575
2	0.970	1.621	2.145	4.761	9.542	21.596	**1.633***
3	0.898	1.581	2.126	4.761	9.542	21.596	1.563
4	0.881	1.551	2.090	4.761	9.542	21.596	1.539
5	0.925	1.545	2.055	4.761	9.542	21.596	1.572
10	0.842	1.406	1.814	3.080	6.213	18.470	1.362
15	0.770	1.284	1.623	2.032	4.284	16.355	1.203
20	0.705	1.176	1.467	1.487	3.129	14.962	1.082
25	0.648	1.080	1.336	1.251	2.420	14.132	**0.988**
30	0.597	0.995	1.224	1.099	1.982	13.801	0.911
35	0.552	0.920	1.128	1.006	1.718	13.973	0.846
40	0.512	0.853	1.045	0.957	1.576	14.731	**0.792**
45	0.476	0.793	0.973	0.945	1.531	16.259	0.750
50	0.443	0.739	0.911	0.965	1.573	18.895	0.720
55	0.414	0.691	0.858	1.019	1.711	23.240	0.703
60	0.388	0.648	0.813	1.111	1.970	30.368	0.705
65	0.365	0.610	0.778	1.250	2.400	42.241	0.734

*Chosen for Idle Emission Factor since not all vehicle classes have factors at 0 mph and this is the highest value from 0 and 3 mph.

Table C-2d: CAL3QHC Summary Results

Units as ug/m^3

Scenario	Highest Direct Model CO Output (ug/m^3)	1-hr Background (ug/m^3) **(1)**	Highest 1-Hour CO Concentrations (ug/m^3) **(2)**	1-Hour CAAQS (ug/m^3) **(3)**	8-hour CO from 1-hr model output (ug/m^3)	8-hr Background (ug/m^3) **(4)**	Highest 8-Hour CO Concentrations (ug/m^3) **(5)**	8-Hour CAAQS (ug/m^3) **(3)**
Scen 1 Year **2009** - Existing Conditions			0.0	23,000				10,000
Scen 4 Year **2013** - No project	342.90	6670	7013	23,000	240.03	4485	4725	10,000
Scen 5 Year **2013** - with ARTIC Phase 1	685.70	6670	7356	23,000	479.99	4485	4965	10,000
Scen 6 Year **2035** - No project	342.90	6670	7013	23,000	240.03	4485	4725	10,000
Scen 8 Year **2035** - with ARTIC Buildout and Mixed Use	228.60	6670	6899	23,000	160.02	4485	4645	10,000

Units as ppm

Scenario	Highest 1-hr Model CO Output (ppm)	1-hr Background (ppm) **(1)**	Highest 1-Hour CO Concentrations (ppm) **(2)**	1-Hour CAAQS (ppm) **(3)**	8-hour CO from 1-hr model output (ppm)	8-hr Background (ppm) **(4)**	Highest 8-Hour CO Concentrations (ppm) **(5)**	8-Hour CAAQS (ppm) **(3)**
Year **2009** - Existing Conditions		5.80	5.8	20		3.9		9.0
Year **2013** - No project	0.30	5.8	6.1	20	0.21	3.9	4.1	9.0
Year **2013** - with ARTIC Phase 1	0.60	5.8	6.4	20	0.42	3.9	4.3	9.0
Year **2035** - No project	0.30	5.8	6.1	20	0.21	3.9	4.1	9.0
Year **2035** - with ARTIC Buildout and Mixed Use	0.20	5.8	6.0	20	0.14	3.9	4.0	9.0

(1) **1-Hour Background =** **6670** **ug/m^3** (5.8 ppm)
(2) Highest 1-Hour CO Concentration = Highest Direct Model Output +**1-Hour Background**
(3) CAAQS = California Ambient Air Quality Standards
(4) **8-Hour Background =** **4485** **ug/m^3** (3.9 ppm)
(5) Highest 8- Hour CO Concentration = (Highest 1-Hour Modeled CO Concentration x 0.7) +**(8- Hour Background)**
where, 0.7 = SCAQMD Recommended Persistence Factor for CO Non-Attainment Areas.

C-3: CAL3QHC Input and Output Files
(see folder Appendix C-3)