APPENDIX C
AIR QUALITY TECHNICAL REPORT

Air Quality Technical Report

for the

San Diego State University Master Plan Update

Submitted To:

Dudek & Associates
605 Third Street
Encinitas, CA 92024

Prepared By:

Scientific Resources Associated
1328 Kaimalino Lane
San Diego, CA 92109

May 29, 2007

Table of Contents

1.0 INTRODUCTION

This report presents an assessment of potential air quality impacts associated with the San Diego State University (SDSU) 2007 Campus Master Plan Update. This evaluation addresses the potential for air emissions during construction and after full buildout of the project, including an assessment of the potential for CO "hot spots" to form due to traffic associated with the implementation of the Campus Master Plan Update.

The SDSU 2007 Campus Master Plan Update involves the following elements:

- An increase in Full Time Equivalent Students (FTES) from 25,000 to 35,000, with enrollment increasing from 33,000 students to 44,000 students.
- Adobe Falls – Development of up to 370 residential dwelling units for faculty and staff housing on a 33-acre site located north of Interstate 8.
- Alvarado Campus – Multi-phase development in the northeastern portion of campus, including demolition of 128,678 gross square feet of existing space and buildout of 612,285 gross square feet for an increase of 483,607 gross square feet of new space.
- Alvarado Hotel – Development of approximately 60,000 gross-square feet into a six-story building to be owned by Aztec Shops and operated in cooperation with the SDSU School of Hotel and Tourism Management, containing up to 120 hotel rooms and studio suite located on approximately 2 acres of existing Lot C immediately north of Villa Alvarado Residence Hall.
- Student Housing – Development of new student housing resulting in a net increase of 2,976 student beds, to be developed in multiple phases including: a 10-story, 350,000 gross square feet structure to house 800 student beds; a two-story, 15,000 gross square feet administration replacement structure adjacent to H parking lot; demolition of the existing Olmeca and Maya residence halls and the existing OHAREO (Building 40) and construction of two new 10-story, 350,000 gross square feet residential structures, each housing 800 student beds; long-term development of a 10-story, 350,000 GSF, Type-1 structure to house 800 student beds, to be constructed atop the previously master-planned Parking Structure 7 in the current U parking lot location; and long-term development of

50 additional two-bedroom apartments, housing 200 student beds, in 2-3-story structures, as part of the Villa Alvarado housing complex located on C parking lot.

- Student Union – Development of a new up to 70,000 gross square feet addition, and renovation of the existing Aztec Center.
- Campus Conference Center – Development of a 70,000 gross square feet three-story conference center on approximately 0.5-acre lot located east of Cox Arena.

This Air Quality Technical Report includes an evaluation of existing conditions in the project vicinity, an assessment of potential impacts associated with project construction, and an evaluation of project operational impacts.

2.0 EXISTING CONDITIONS

The SDSU Campus is located in central San Diego, south of Interstate 8 at College Avenue. The campus is located in the San Diego Air Basin (SDAB). The climate of the SDAB is dominated by a semi-permanent high pressure cell located over the Pacific Ocean. This cell influences the direction of prevailing winds (westerly to northwesterly) and maintains clear skies for much of the year. Figure 1 provides a graphic representation of the prevailing winds in the project vicinity, as measured at the San Diego Air Pollution Control District's (APCD's) Miramar Monitoring Station (the closest meteorological monitoring station to the site). The high pressure cell also creates two types of temperature inversions that may act to degrade local air quality.

The climate of the SDSU area of San Diego is characterized by a repetitive pattern of frequent early morning cloudiness, hazy afternoon sunshine, clean daytime onshore breezes and little temperature change throughout the year. Limited rainfall occurs in the winter while summers are often completely dry. An average of 10 inches of rain falls each year from mid-November to early April. Unfortunately, the same atmospheric conditions that create a desirable living climate combine to limit the ability of the atmosphere to disperse the air pollution generated by the large population attracted by the climate. The onshore winds across the coastline diminish quickly when they reach the foothill communities east of San Diego, and the sinking air within the offshore high pressure system forms a massive temperature inversion that traps all air pollutants near the ground. The resulting horizontal and vertical stagnation, in conjunction with ample sunshine, cause a number of reactive pollutants to undergo photochemical reactions and form smog that degrades visibility and irritates tear ducts and nasal membranes. High smog levels in coastal communities occasionally occur when polluted air from the South Coast (Los Angeles) Air Basin drifts seaward and southward at night, and then blows onshore the next day. Such weather patterns are particularly frustrating because no matter what San Diego County does to achieve clean air, such interbasin transport will cause occasionally unhealthy air over much of the County despite its best air pollution control efforts.

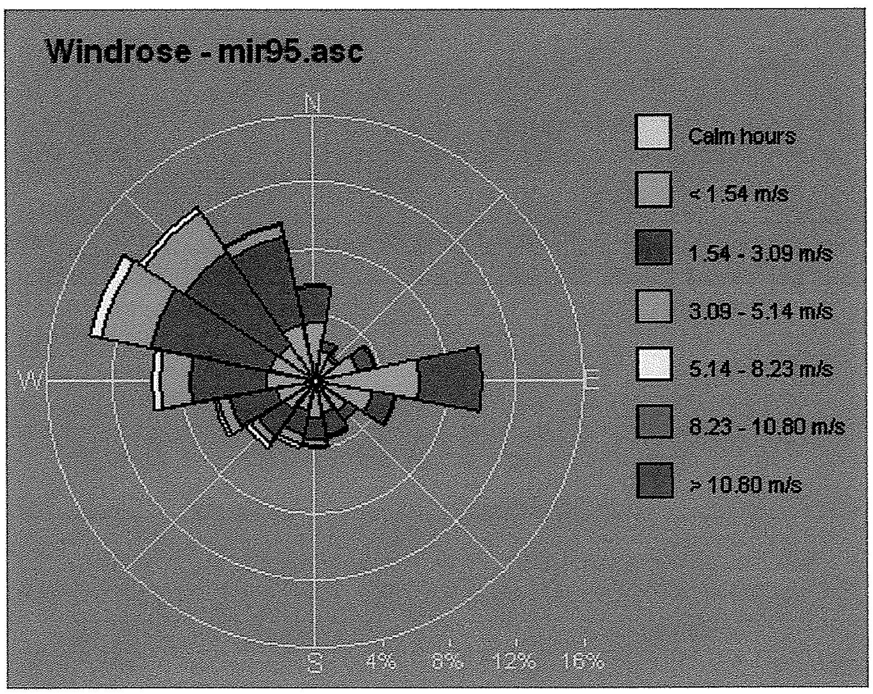

Figure 1. Wind Rose – Miramar Monitoring Station

2.1 Regulatory Setting

Air quality is defined by ambient air concentrations of specific pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. The USEPA is responsible for enforcing the Federal Clean

Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several pollutants (called "criteria" pollutants). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere.

In September 1997, the EPA promulgated 8-hour O_3 and 24-hour and annual $PM_{2.5}$ national standards (particulate matter less than 2.5 microns in diameter). However, due to a lawsuit in May 1999, the United States District Court rescinded these standards and the EPA's authority to enforce them. Subsequent to an appeal of this decision by the EPA, the United States Supreme Court upheld these standards in February 2001. As a result, this action has initiated a new planning process to monitor and evaluate emission control measures for these pollutants. The EPA is moving forward to develop policies to implement these standards.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The California Air Resources Board (ARB) has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. On April 15, 2004, the SDAB was designated a basic nonattainment area for the 8-hour NAAQS for O_3, and on December 15, 2005, the 1-hour NAAQS for O_3 was rescinded. In December 2006 the annual NAAQS for PM_{10} was also rescinded. The SDAB is in attainment for the NAAQS for all other criteria pollutants. The SDAB is currently classified as a nonattainment area under the CAAQS for O_3 and PM_{10}.

The ARB is the state regulatory agency with authority to enforce regulations to both achieve and maintain the NAAQS and CAAQS. The ARB is responsible for the development, adoption, and enforcement of the state's motor vehicle emissions program, as well as the adoption of the

CAAQS. The ARB also reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a nonattainment area to develop its own strategy for achieving the NAAQS and CAAQS. The local air district has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The APCD is the local agency responsible for the administration and enforcement of air quality regulations for San Diego County.

The APCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County Regional Air Quality Strategy (RAQS) was initially adopted in 1991, and is updated on a triennial basis. The RAQS was updated in 1995, 1998, 2001, and most recently in 2004. The RAQS outlines APCD's plans and control measures designed to attain the state air quality standards for O_3. The APCD has also developed the air basin's input to the SIP, which is required under the Federal Clean Air Act for areas that are out of attainment of air quality standards. The SIP includes the APCD's plans and control measures for attaining the O_3 NAAQS. The SIP is also updated on a triennial basis. The latest SIP update was submitted by the ARB to the EPA in 1998. The attainment schedule in the SIP called for the SDAB to attain the 1-hour NAAQS for O_3 by 1999, a goal which was met in the SDAB. The latest update to the SIP, which is under preparation, will set a new attainment date for the 8-hour NAAQS for O_3.

The RAQS relies on information from ARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. The ARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County as part of the development of the County's General Plan. As such, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project would propose development which is less dense than anticipated within the general plan, the project would likewise be consistent with the RAQS. If a project proposes development that is greater than that anticipated in the general plan and SANDAG's growth projections, the project might be in conflict with the RAQS and SIP, and might have a potentially significant impact on air quality.

The SIP relies on the same information from SANDAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The SIP also includes rules and regulations that have been adopted by the APCD to control emissions from stationary sources. These SIP-approved rules may be used as a guideline to determine whether a project's emissions would have the potential to conflict with the SIP and thereby hinder attainment of the NAAQS for O_3.

The following specific descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on EPA (2005a) and CARB (2001).

Ozone. O_3 is considered a photochemical oxidant, which is a chemical that is formed when VOCs and NOx, both byproducts of combustion, react in the presence of ultraviolet light. Ozone is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma, and increase susceptibility to respiratory infections. Children and those with existing respiratory diseases are at greatest risk from exposure to ozone.

Carbon monoxide. CO is a product of combustion, and the main source of CO in the SCAB is from motor vehicle exhaust. CO is an odorless, colorless gas. CO affects red blood cells in the body by binding to hemoglobin and reducing the amount of oxygen that can be carried to the body's organs and tissues. CO can cause health effects to those with cardiovascular disease, and can also affect mental alertness and vision.

Nitrogen dioxide. NO_2 is also a by-product of fuel combustion, and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. NO_2 is a respiratory irritant and may affect those with existing respiratory illness, including asthma. NO_2 can also increase the risk of respiratory illness.

Fine particulate matter. Particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in this size range has been determined to have the potential to lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, combustion, tire and brake wear, construction operations, and windblown dust. PM_{10} and $PM_{2.5}$ can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases such as asthma and chronic bronchitis. $PM_{2.5}$ is considered to have the potential to lodge deeper in the lungs.

Sulfur dioxide. SO_2 is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil, and by other industrial processes. Generally, the highest concentrations of SO_2 are found near large industrial sources. SO_2 is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO_2 can cause respiratory illness and aggravate existing cardiovascular disease.

Lead. Lead (Pb) in the atmosphere occurs as particulate matter. Lead has historically been emitted from vehicles combusting leaded gasoline, as well as from industrial sources. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions. Lead has the potential to cause gastrointestinal, central nervous system, kidney, and blood diseases upon prolonged exposure. Lead is also classified as a probable human carcinogen.

Sulfates. Sulfates are the fully oxidized ionic form of sulfur. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of

California due to regional meteorological features. The CARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to fact that they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide. H_2S is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation. Breathing H_2S at levels above the standard would result in exposure to a very disagreeable odor. In 1984, a CARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance.

Vinyl Chloride. Vinyl chloride, a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer, in humans.

Table 1 presents a summary of the ambient air quality standards adopted by the federal and California Clean Air Acts.

Table 1
AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS		NATIONAL STANDARDS		
		Concentration	Method	Primary	Secondary	Method
Ozone	1 hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	--	--	Ethylene Chemiluminescence
	8 hour	0.070 ppm (137 μg/m^3)		0.08 ppm (157 μg/m^3)	0.08 ppm (157 μg/m^3)	
Carbon Monoxide	8 hours	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Average[1]	--	Gas Phase Chemiluminescence	0.053 ppm (100 μg/m^3)	0.053 ppm (100 μg/m^3)	Gas Phase Chemiluminescence
	1 hour[1]	0.25 ppm (470 μg/m^3)		--	--	
Sulfur Dioxide (SO_2)	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 μg/m^3)	--	Pararosaniline
	24 hours	0.04 ppm (105 μg/m^3)		0.14 ppm (365 μg/m^3)	--	
	3 hours	--		--	0.5 ppm (1300 μg/m^3)	
	1 hour	0.25 ppm (655 μg/m^3)		--	--	
Respirable Particulate Matter (PM_{10})	24 hours	50 μg/m^3	Gravimetric or Beta Attenuation	--	--	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 μg/m^3		50 μg/m^3	50 μg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 μg/m^3	Gravimetric or Beta Attenuation	15 μg/m^3	--	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 μg/m^3	--	
Sulfates	24 hours	25 μg/m^3	Ion Chromatography	--	--	--
Lead	30-day Average	1.5 μg/m^3	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		1.5 μg/m^3	1.5 μg/m^3	
Hydrogen Sulfide	1 hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride	24 hour	0.01 ppm (26 μg/m^3)	Gas Chromatography	--	--	--

ppm= parts per million
μg/m^3 = micrograms per cubic meter
mg/m^3= milligrams per cubic meter
[1]On February 22, 2007, the ARB approved staff recommendations to adopt lower annual and 1-hour NO_2 standards. The new standards will be 0.18 ppm (1 hour) and 0.030 ppm (annual).
Source: California Air Resources Board March 2007.

2.2 Background Air Quality

The APCD operates a network of ambient air monitoring stations throughout San Diego County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The nearest ambient monitoring station to the SDSU campus that measures all pollutants is the San Diego 12th Avenue. The 12th Avenue monitoring station ceased operation in mid-2005. The other monitoring stations in the project vicinity are the San Diego Union Street monitoring station, which measures CO; the El Cajon monitoring station, which is located to the east of the campus in the El Cajon valley; and the Overland Avenue monitoring station. The El Cajon monitoring station measures O_3, PM_{10}, $PM_{2.5}$, and NO_2.. The Overland Avenue monitoring station also measures O_3, PM_{10}, $PM_{2.5}$, and NO_2. The Overland Avenue monitoring station is more representative of the San Diego State area because the El Cajon monitoring station is located farther inland is and is subject to higher ambient concentrations due to pollutants being trapped in the valley. Ambient concentrations of pollutants over the last three years for the 12th Avenue monitoring station (2004), the Overland Avenue monitoring station (2005 and 2006 for O_3, PM_{10}, $PM_{2.5}$, and NO_2), and El Cajon (CO) are presented in Table 2.

The federal 8-hour ozone standard, which was formally adopted in 2001 after legal arguments with the EPA, was exceeded at the Overland Avenue monitoring station once in 2006. The SDAB was classified as nonattainment for the 8-hour NAAQS for O_3. The 12th Avenue monitoring station measured exceedances of the state PM_{10} and $PM_{2.5}$ standards in 2004. The data from the monitoring stations indicate that air quality is in attainment of all other federal standards.

Table 2
Ambient Background Concentrations
(ppm unless otherwise indicated)

Pollutant	Averaging Time	2004	2005	2006	Most Stringent Ambient Air Quality Standard	Monitoring Station
Ozone	8 hour	0.071	0.072	0.091	0.070	12th Ave./Overland Ave.
	1 hour	0.093	0.084	0.108	0.09	12th Ave./Overland Ave.
PM_{10}	Annual	33.2	22.3	21.6	20 μg/m³	12th Ave./Overland Ave.
	24 hour	71	44	34	50 μg/m³	12th Ave./Overland Ave.
$PM_{2.5}$	Annual	13.8	10.2	11.2	12 μg/m³	12th Ave./Overland Ave.
	24 hour	42.9	29.0	26.3	35 μg/m³	12th Ave./Overland Ave.
NO_2	Annual	0.020	0.017	0.015	0.053	12th Ave./Overland Ave.
	1 hour	0.094	0.076	0.071	0.25	12th Ave./Overland Ave.
CO	8 hour	4.04	3.89	3.50	9.0	12th Ave./Union Street
	1 hour	4.9	5.3	5.0	20	12th Ave./Union Street
SO_2	Annual	0.004	0.002	N/A	0.03	12th Ave.
	24 hour	0.008	0.007	N/A	0.04	12th Ave.
	3 hour	0.020	0.019	N/A	0.5[1]	12th Ave.
	1 hour	0.042	0.040	N/A	0.25	12th Ave.

N/A = Not Available
[1]New CAAQS proposed by ARB
[2]Secondary NAAQS
Source: www.arb.ca.gov/aqd/aqd.htm (Measurements of all pollutants at Escondido-E Valley Parkway station, except SO_2,) www.epa.gov/air/data/monvals.html (1-hour and 3-hour SO_2 and 1-hour CO)

3.0 THRESHOLDS OF SIGNIFICANCE

The State of California has developed guidelines to address the significance of air quality impacts based on Appendix G of the State CEQA Guidelines which provides guidance that a project would have a significant environmental impact if it would:

1. Conflict or obstruct the implementation of the San Diego Regional Air Quality Strategy (RAQS) or applicable portions of the State Implementation Plan (SIP);
2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation;

3. Result in a cumulatively considerable net increase of PM_{10} or exceed quantitative thresholds for O_3 precursors, oxides of nitrogen (NO_X) and volatile organic compounds (VOCs);
4. Expose sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, or day-care centers) to substantial pollutant concentrations; or
5. Create objectionable odors affecting a substantial number of people.

To determine whether a project would (a) result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation; or (b) result in a cumulatively considerable net increase of PM_{10} or exceed quantitative thresholds for O_3 precursors, oxides of nitrogen (NO_X) and volatile organic compounds (VOCs), project emissions may be evaluated based on the quantitative emission thresholds established by the San Diego APCD. As part of its air quality permitting process, the APCD has established thresholds in Rule 20.2 for the preparation of Air Quality Impact Assessments (AQIA).

For CEQA purposes, these screening criteria can be used as numeric methods to demonstrate that a project's total emissions would not result in a significant impact to air quality. Since APCD does not have AQIA thresholds for emissions of VOCs, the use of the threshold for VOCs from the City of San Diego's Significance Thresholds (City of San Diego 2004) is appropriate. The screening thresholds are included in the table below.

Table 3 SCREENING-LEVEL CRITERIA FOR AIR QUALITY IMPACTS			
Pollutant	Total Emissions		
Construction Emissions			
	Lb. per Day		
Respirable Particulate Matter (PM_{10})	100		
Fine Particulate Matter ($PM_{2.5}$)	100		
Oxides of Nitrogen (NOx)	250		
Oxides of Sulfur (SOx)	250		
Carbon Monoxide (CO)	550		
Volatile Organic Compounds (VOCs)[1]	137		
Operational Emissions			
	Lb. Per Hour	Lb. per Day	Tons per Year
Respirable Particulate Matter (PM_{10})	---	100	15
Fine Particulate Matter ($PM_{2.5}$)	---	100	15
Oxides of Nitrogen (NOx)	25	250	40
Oxides of Sulfur (SOx)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	---	3.2	0.6
Volatile Organic Compounds (VOC)[2]	---	137	15

The thresholds listed in Table 3 represent screening-level thresholds that can be used to evaluate whether project-related emissions could cause a significant impact on air quality. Emissions below the screening-level thresholds would not cause a significant impact. In the event that emissions exceed these thresholds, modeling would be required to demonstrate that the project's total air quality impacts result in ground-level concentrations that are below the State and Federal Ambient Air Quality Standards, including appropriate background levels. For nonattainment pollutants (ozone, with ozone precursors NOx and VOCs, and PM_{10}), if emissions exceed the thresholds shown in Table 3, the project could have the potential to result in a cumulatively considerable net increase in these pollutants and thus could have a significant impact on the ambient air quality.

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as toxic air contaminants (TACs) or Hazardous Air Pollutants (HAPs). In San Diego County, APCD Regulation XII establishes acceptable risk levels and emission control requirements for new and modified facilities that may emit additional TACs. Under Rule 1210, emissions of TACs that result in a cancer risk of 10 in 1 million or less and a health hazard index of one or less would not be required to notify the public of potential health risks. If a project has the potential to result in emissions of any TAC or HAP which result in a cancer risk of greater than 10 in 1 million, the project would be deemed to have a potentially significant impact.

With regard to evaluating whether a project would have a significant impact on sensitive receptors, air quality regulators typically define sensitive receptors as schools (Preschool-12th Grade), hospitals, resident care facilities, or day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. Any project which has the potential to directly impact a sensitive receptor located within 1 mile and results in a health risk greater than 10 in 1 million would be deemed to have a potentially significant impact.

APCD Rule 51 (Public Nuisance) also prohibits emission of any material which causes nuisance to a considerable number of persons or endangers the comfort, health or safety of any person. A project that proposes a use which would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of offsite receptors.

The impacts associated with construction and operation of the project were evaluated for significance based on these significance criteria.

4.0 IMPACTS

This section presents an evaluation of impacts associated with construction and operations for the SDSU Master Plan.

4.1 Construction Activity Impacts

Construction activities, including soil disturbance dust emissions and combustion pollutants from on-site construction equipment and from off-site trucks hauling dirt, cement or building materials, will create a temporary addition of pollutants to the local airshed. These emissions are quite variable in both time and space and differ considerably among various construction projects. Such emission levels can, therefore, only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts. Because of their temporary nature, construction activity impacts have often been considered as having a less-than-significant air quality impact. However, the cumulative impact from all simultaneous construction in the basin is a major contributor to the overall pollution burden, especially for particulate matter (PM_{10}). A number of current APCD strategies thus focus on dust control and on using cleaner off-road equipment to reduce the role of construction in the poor air quality of the region.

Three types of dust emissions may be associated with construction. Large particulates are generated that settle out again rapidly in close proximity to the source. A fraction of the material is small enough to remain suspended in the air semi-indefinitely. The size cut-off for these total suspended particulates (TSP) is around 30 microns in diameter. An even lesser fraction of TSP is small enough to enter deep lung tissue. The size cut-off for particulate matter that is deeply respirable is 10 microns or less and is called PM_{10}. The ambient air quality standard is for PM_{10}. The PM_{10} fraction of TSP is assumed to be around 50 percent. Fine particulate matter, which is considered particulate matter that is 2.5 microns or less, is called $PM_{2.5}$. Depending on the type of source, $PM_{2.5}$ is a fraction of the PM_{10} emissions ranging from 21 percent to 99 percent (SCAQMD 2006).

As discussed in Section 1.0, the proposed SDSU 2007 Campus Master Plan Update project involves the development or redevelopment of the SDSU campus. The proposed project will involve 6 development components on the campus, including the Adobe Falls parcel of land north of Interstate 8. This parcel will be developed with 370 townhomes and condo units.

To summarize, construction for the SDSU 2007 Campus Master Plan Update involves the construction of the following facilities:

- Adobe Falls – Development of up to 370 residential dwelling units for faculty and staff housing on a 33-acre site located north of Interstate 8.
- Alvarado Campus – Demolition of 128,678 gross square feet of existing space and buildout of 612,285 gross square feet for an increase of 483,607 gross square feet of new space.
- Alvarado Hotel – Development of approximately 60,000 gross-square feet into a six-story building to be owned by Aztec Shops and operated in cooperation with the SDSU School of Hotel and Tourism Management, containing up to 120 hotel rooms and studio suite located on approximately 2 acres of existing Lot C immediately north of Villa Alvarado Residence Hall.
- Student Housing – Development of new student housing resulting in a net increase of 2,976 student beds, to be developed in multiple phases including: a 10-story, 350,000 gross square feet structure to house 800 student beds; a two-story, 15,000 gross square feet administration replacement structure adjacent to H parking lot; demolition of the existing Olmeca and Maya residence halls and the existing OHAREO (Building 40) and construction of two new 10-story, 350,000 gross square feet residential structures, each housing 800 student beds; long-term development of a 10-story, 350,000 GSF, Type-1 structure to house 800 student beds, to be constructed atop the previously master-planned Parking Structure 7 in the current U parking lot location; and long-term development of 50 additional two-bedroom apartments, housing 200 student beds, in 2-3-story structures, as part of the Villa Alvarado housing complex located on C parking lot.
- Student Union – Development of up to 70,000 gross square feet, and renovation of the existing Aztec Center, including up to a 30,000 gross square foot expansion.
- Campus Conference Center – Development of a 70,000 gross square feet three-story conference center on approximately 0.5-acre lot located east of Cox Arena.

Based on information provided by SDSU, it is anticipated that the initial two phases of construction will involved the following project components:

- First Phase: Student Union addition, Alvarado Hotel, first component of Student Housing.
- Second Phase: second component of Student Housing Adobe Falls Upper Village

The construction schedule for the remaining elements of the Master Plan is unknown at this time. Because the phasing of the remaining elements of the Master Plan project is unknown, an analysis has been performed on each of the elements of the Master Plan to identify and address the worst-case construction impacts.

The SDSU 2007 Master Plan project involves demolition activities, which are separate from generic grading activities. Emissions from the demolition activities were thus calculated separately. Demolition of existing buildings will generate dust as walls are pulled down and concrete foundations are broken up. The PM_{10} emission factor for demolition activities is stated in the SCAQMD CEQA Air Quality Handbook (1993) to be 42 pounds per 100,000 cubic feet of demolition volume. While it is known that 120,000 square feet of building is to be demolished, the particulars as to each building volume and rate of demolition is currently unknown. It is assumed that building structure(s) have ceiling heights of twelve feet. The total volume of proposed demolished space is roughly estimated at 1,440,000 cubic feet (cf) (120,000 sf x 12 feet = 1,440,000). If demolition activities of all structures occurred in one day, it would generate approximately 604.8 pounds of PM_{10} emissions.

Realistically, demolition activities typically involve about 50,000 cubic feet of building per day, and the rate of demolition activities typically lasts numerous days. Assuming, as a worst-case scenario, a demolition volume of 50,000 cubic feet per day, PM_{10} emissions would be 21 pounds per day (50,000 cubic feet ÷ 100,000 cubic feet x 42 pounds per day = 21 pounds per day). Project-related demolition activities involving 50,000 cubic feet of building space per day would not produce significant PM_{10} dust emissions impacts.

The on-site heavy equipment operations will generate diesel exhaust emissions. The heavy equipment exhaust will be released during project construction activities from mobile sources during site preparation. Emissions will also be generated during finish construction, especially during application of paints or other coatings. On-site, diesel-powered construction equipment will create gaseous and particulate tailpipe emissions that are not regulated by smog control rules such as for on-road sources. Based on information provided by SDSU for similar construction projects, it is anticipated that surface preparation activities would not require major mass grading. In general, surface preparation activities would require backhoes and trucks. At the Student Union site, it is anticipated that up to 10,000 cubic yards of export would be required. All other sites were assumed to require no import or export, and would either balance on site or would not require major cut and fill. The construction of the Adobe Falls housing would require the following cut and fill (ultimately assumed to balance on site):

- Upper Village raw cut - 29,168 cy
- Upper Village raw fill - 29,723 cy

- Lower Village raw cut - 126,989 cy
- Lower Village raw fill - 144,059 cy

The majority of building construction activities would require forklifts to transport building materials, and hand tools. Larger buildings (i.e., the 10-story Student Housing buildings) would require a tower crane and other buildings were assumed to require one man-lift. On-site paving would be minimal.

Tables 4a through 4c present the URBEMIS2002 model results for the first phase of construction, the second phase of construction (as identified above), and each of the remaining construction projects proposed for the Master Plan. Tables 4a through 4c also present an estimate of the maximum daily construction emissions, assuming that all projects identified for that construction phase would be undergoing simultaneous construction during the building construction phase. This assumption represents a worst case as it is unlikely that each project would be undergoing maximum construction activity at the same time. It was assumed that standard dust control measures would be implemented during construction, including watering active sites a minimum of three times daily, watering unpaved roads, and reducing vehicle speeds to 15 mph or less on unpaved surfaces. Because the URBEMIS model does not provide estimates of $PM_{2.5}$, emissions of $PM_{2.5}$ were estimated based on the SCAQMD guidelines (SCAQMD 2006), assuming that fugitive dust PM_{10} is 21% $PM_{2.5}$, offroad equipment PM_{10} is 89% $PM_{2.5}$, and onroad vehicle PM_{10} is 99% $PM_{2.5}$.

Table 4a
First Phase Construction Emissions
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
			Student Union			
Grading						
Fugitive Dust	-	-	-	-	0.25	0.05
Off-Road Diesel	5.54	35.77	45.50	-	1.36	1.21
On-Road Diesel	0.56	10.75	2.05	0.02	0.28	0.28
Worker Trips	0.05	0.13	1.28	0.00	0.00	0.00
Total	**6.15**	**46.65**	**48.83**	**0.02**	**1.89**	**1.54**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	5.31	33.94	43.33	-	1.17	1.04
Building Construction Worker Trips	0.13	0.08	1.63	0.00	0.02	0.02
Architectural Coating Offgassing	14.70	-	-	-	-	-
Architectural Coatings Worker Trips	0.13	0.08	1.63	0.00	0.02	0.02
Total	**20.27**	**34.10**	**46.59**	**0.00**	**1.21**	**1.08**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
			Alvarado Hotel			
Grading						
Fugitive Dust	-	-	-	-	1.15	0.24
Off-Road Diesel	5.54	35.77	45.50	-	1.36	1.21
Worker Trips	0.05	0.13	1.28	0.00	0.00	0.00
Total	**5.59**	**35.90**	**46.78**	**0.00**	**2.51**	**1.45**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	4.52	29.38	36.64	-	1.05	0.93
Building Construction Worker Trips	0.11	0.07	1.40	0.00	0.02	0.02
Architectural Coating Offgassing	12.60	-	-	-	-	-
Architectural Coatings Worker Trips	0.11	0.07	1.40	0.00	0.02	0.02
Asphalt Offgassing	0.17	-	-	-	-	-
Asphalt Off-Road Diesel	1.37	7.96	11.66	-	0.22	0.20
Asphalt On-Road Diesel	0.03	0.66	0.12	0.00	0.01	0.01
Asphalt Worker Trips	0.01	0.00	0.07	0.00	0.00	0.00
Total	**18.92**	**38.14**	**51.29**	**0.00**	**1.32**	**1.18**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Table 4a (continued)
First Phase Construction Emissions
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Student Housing – Phase 1						
Building Construction						
Building Construction Off-Road Diesel	22.27	148.29	178.57	-	5.55	4.94
Building Construction Worker Trips	1.56	0.96	20.28	0.00	0.30	0.30
Architectural Coating Offgassing	182.70[a]	-	-	-	-	-
Architectural Coatings Worker Trips	1.56	0.96	20.28	0.00	0.30	0.30
Asphalt Offgassing	0.24	-	-	-	-	-
Asphalt Off-Road Diesel	3.78	23.45	31.28	-	0.76	0.68
Asphalt On-Road Diesel	0.05	0.94	0.18	0.00	0.02	0.02
Asphalt Worker Trips	0.03	0.02	0.36	0.00	0.00	0.00
Total	**210.63[a]**	**174.62**	**250.94**	**0.00**	**6.93**	**6.24**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**Yes**	**No**	**No**	**No**	**No**	**No**
TOTAL FIRST PHASE[b]	**249.82[a]**	**246.86**	**348.82**	**0.00**	**9.46**	**8.50**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**Yes**	**No**	**No**	**No**	**No**	**No**

[a] Exceeds threshold due to application of paints and coatings.
[b] Assuming simultaneous building construction phases.

Table 4b
Second Phase Construction Emissions
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Student Housing – Phase 2						
Demolition						
Fugitive Dust	-	-	-	-	1.26	0.26
Off-Road Diesel	3.38	21.71	27.68	-	0.79	0.70
On-Road Diesel	0.19	3.58	0.69	0.01	0.10	0.10
Worker Trips	0.04	0.12	1.17	0.00	0.00	0.00
Total	**3.61**	**25.41**	**29.54**	**0.01**	**2.05**	**1.06**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	22.27	143.19	182.20	-	5.25	4.67
Building Construction Worker Trips	1.42	0.88	18.70	0.00	0.30	0.30
Architectural Coating Offgassing	182.70[a]	-	-	-	-	-
Architectural Coatings Worker Trips	1.42	0.88	18.70	0.00	0.30	0.30
Asphalt Offgassing	0.12	-	-	-	-	-
Asphalt Off-Road Diesel	2.41	15.09	19.91	-	0.52	0.46
Asphalt On-Road Diesel	0.02	0.43	0.08	0.00	0.01	0.01
Asphalt Worker Trips	0.01	0.01	0.13	0.00	0.00	0.00
Total	**210.47[a]**	**160.48**	**239.72**	**0.00**	**6.38**	**5.74**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**Yes**	**No**	**No**	**No**	**No**	**No**
Adobe Falls – Upper Village						
Grading						
Fugitive Dust	-	-	-	-	26.20	5.50
Off-Road Diesel	13.47	83.36	113.07	-	3.00	2.67
Worker Trips	0.13	0.25	2.71	0.00	0.02	0.02
Total	**13.60**	**83.61**	**115.78**	**0.00**	**29.22**	**8.19**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	7.47	47.99	61.11	-	1.76	1.57
Building Construction Worker Trips	0.34	0.21	4.47	0.00	0.07	0.07
Architectural Coating Offgassing	44.58	-	-	-	-	-
Architectural Coatings Worker Trips	0.34	0.21	4.47	0.00	0.07	0.07
Asphalt Offgassing	0.55	-	-	-	-	-
Asphalt Off-Road Diesel	4.00	23.39	33.99	-	0.68	0.61
Asphalt On-Road Diesel	0.10	1.96	0.38	0.00	0.04	0.04
Asphalt Worker Trips	0.02	0.01	0.27	0.00	0.00	0.00
Total	**57.40**	**73.77**	**104.69**	**0.00**	**2.62**	**2.36**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
TOTAL SECOND PHASE[b]	**267.87[a]**	**234.25**	**344.41**	**0.00**	**9.00**	**8.10**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**Yes**	**No**	**No**	**No**	**No**	**No**

[a] Exceeds threshold due to application of paints and coatings.
[b] Assuming simultaneous building construction phases.

Table 4c
Remaining Projects - Construction Emissions
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Alvarado Campus						
Demolition						
Fugitive Dust	-	-	-	-	80.97	17.00
Off-Road Diesel	4.85	30.56	40.28	-	1.12	1.00
On-Road Diesel	10.97	202.27	40.65	0.50	5.64	5.58
Worker Trips	0.04	0.11	1.07	0.00	0.00	0.00
Total	**15.86**	**232.94**	**82.00**	**0.50**	**87.73**	**23.58**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Grading						
Fugitive Dust	-	-	-	-	11.55	2.43
Off-Road Diesel	9.83	59.51	82.83	-	0.21	0.21
Worker Trips	0.04	0.02	0.49	0.00	0.01	0.01
Total	**9.87**	**59.53**	**83.32**	**0.00**	**11.77**	**2.65**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	18.67	115.98	155.70	-	4.07	3.62
Building Construction Worker Trips	0.90	0.57	12.11	0.00	0.21	0.21
Architectural Coating Offgassing	128.58	-	-	-	-	-
Architectural Coatings Worker Trips	0.90	0.57	12.11	0.00	0.21	0.21
Asphalt Offgassing	0.83	-	-	-	-	-
Asphalt Off-Road Diesel	10.36	60.85	87.80	-	1.76	1.57
Asphalt On-Road Diesel	0.14	2.62	0.53	0.01	0.06	0.01
Asphalt Worker Trips	0.04	0.03	0.56	0.00	0.01	0.01
Total	**160.42**[a]	**180.62**	**256.70**	**0.01**	**6.32**	**5.63**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**Yes**	**No**	**No**	**No**	**No**	**No**

[a] Exceeds threshold due to application of paints and coatings.

Table 4c (continued)
Remaining Projects - Construction Emissions
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Adobe Falls – Lower Village						
Grading						
Fugitive Dust	-	-	-	-	119.99	25.20
Off-Road Diesel	13.47	81.28	113.77	-	2.71	2.41
Worker Trips	0.11	0.22	2.48	0.00	0.02	0.02
Total	**13.58**	**81.50**	**116.25**	**0.00**	**122.72**	**27.63**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**Yes**	**No**
Building Construction						
Building Construction Off-Road Diesel	7.47	46.39	62.28	-	1.63	1.45
Building Construction Worker Trips	0.31	0.19	4.12	0.00	0.07	0.07
Architectural Coating Offgassing	44.58	-	-	-	-	-
Architectural Coatings Worker Trips	0.31	0.19	4.12	0.00	0.07	0.07
Asphalt Offgassing	0.55	-	-	-	-	-
Asphalt Off-Road Diesel	4.00	23.19	33.99	-	0.64	0.57
Asphalt On-Road Diesel	0.09	1.72	0.35	0.00	0.04	0.04
Asphalt Worker Trips	0.02	0.01	0.25	0.00	0.00	0.00
Total	**57.33**	**71.69**	**105.11**	**0.00**	**2.45**	**2.20**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Student Housing – Phases 3 and 4						
Building Construction						
Building Construction Off-Road Diesel	22.27	138.39	185.70	-	4.86	4.33
Building Construction Worker Trips	3.50	6.88	76.69	0.05	0.44	0.44
Architectural Coating Offgassing	182.70[a]	-	-	-	-	-
Architectural Coatings Worker Trips	1.29	0.81	17.21	0.00	0.30	0.30
Asphalt Offgassing	0.12	-	-	-	-	-
Asphalt Off-Road Diesel	2.41	14.71	20.19	-	0.49	0.44
Asphalt On-Road Diesel	0.02	0.37	0.08	0.00	0.01	0.01
Asphalt Worker Trips	0.01	0.01	0.12	0.00	0.00	0.00
Total	**212.32[a]**	**161.17**	**299.99**	**0.05**	**6.10**	**5.52**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**Yes**	**No**	**No**	**No**	**No**	**No**
Conference Center						
Building Construction						
Building Construction Off-Road Diesel	5.31	32.32	44.51	-	1.07	0.06
Building Construction Worker Trips	0.28	0.55	6.17	0.00	0.03	0.03
Architectural Coating Offgassing	14.70	-	-	-	-	-
Architectural Coatings Worker Trips	0.28	0.55	6.17	0.00	0.03	0.03
Total	**20.57**	**33.42**	**56.85**	**0.00**	**1.13**	**0.12**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

[a] Exceeds threshold due to application of paints and coatings.

As shown in the table, emissions of ROG would exceed the significance thresholds during the building construction phase for the first phase of construction (due to architectural coatings use at the Student Housing development), for the second phase of construction (also due to architectural coatings use at the Student Housing development), and during subsequent construction phases including construction of the Alvarado Campus and Student Housing projects. Emissions of PM_{10} would also exceed the threshold for the grading phase for the Adobe Falls Lower Village due to the amount of cut and fill required.

The estimate of ROG emissions due to architectural coatings use from the URBEMIS2002 computer model presumes development completion within two work months. The actual project build-out will be phased over a much longer period. Nevertheless, use of available emissions reduction measures are recommended to reduce ROG emissions. Emissions minimization can be accomplished as follows:

- Use pre-coated building materials.
- Use electrostatic spray, or hand paint applicators.
- Use lower volatility paint not exceeding 100 grams of ROG per liter.

Based on information in the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993), use of architectural coatings with a ROG content of 100 grams/liter or less, applied by hand (with brushes or rollers) or with electrostatic spray guns, would reduce emissions from 4.62 lbs/1000 square feet to 2.13 lbs/1000 square feet, a decrease in emissions of 54 percent. Assuming that pre-coated building materials could be used for approximately 10 percent of surfaces, and using the above mitigation measures for paint and coatings application, maximum daily emissions (predicted for the second phase of construction) would be reduced as shown in Tables 4d through 4f. Maximum daily emissions would therefore be reduced from 267.87 pounds per day to approximately 134.52 pounds per day, which would be less than the significance threshold of 137 pounds per day.

Table 4d
First Phase Construction Emissions with Mitigation
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Student Union						
Grading						
Fugitive Dust	-	-	-	-	0.25	0.05
Off-Road Diesel	5.54	35.77	45.50	-	1.36	1.21
On-Road Diesel	0.56	10.75	2.05	0.02	0.28	0.28
Worker Trips	0.05	0.13	1.28	0.00	0.00	0.00
Total	**6.15**	**46.65**	**48.83**	**0.02**	**1.89**	**1.54**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	5.31	33.94	43.33	-	1.17	1.04
Building Construction Worker Trips	0.13	0.08	1.63	0.00	0.02	0.02
Architectural Coating Offgassing	6.09	-	-	-	-	-
Architectural Coatings Worker Trips	0.13	0.08	1.63	0.00	0.02	0.02
Total	**11.66**	**34.10**	**46.59**	**0.00**	**1.21**	**1.08**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Alvarado Hotel						
Grading						
Fugitive Dust	-	-	-	-	1.15	0.24
Off-Road Diesel	5.54	35.77	45.50	-	1.36	1.21
Worker Trips	0.05	0.13	1.28	0.00	0.00	0.00
Total	**5.59**	**35.90**	**46.78**	**0.00**	**2.51**	**1.45**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	4.52	29.38	36.64	-	1.05	0.93
Building Construction Worker Trips	0.11	0.07	1.40	0.00	0.02	0.02
Architectural Coating Offgassing	5.22	-	-	-	-	-
Architectural Coatings Worker Trips	0.11	0.07	1.40	0.00	0.02	0.02
Asphalt Offgassing	0.17	-	-	-	-	-
Asphalt Off-Road Diesel	1.37	7.96	11.66	-	0.22	0.20
Asphalt On-Road Diesel	0.03	0.66	0.12	0.00	0.01	0.01
Asphalt Worker Trips	0.01	0.00	0.07	0.00	0.00	0.00
Total	**11.54**	**38.14**	**51.29**	**0.00**	**1.32**	**1.18**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Table 4d (continued)
First Phase Construction Emissions with Mitigation
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Student Housing – Phase 1						
Building Construction						
Building Construction Off-Road Diesel	22.27	148.29	178.57	-	5.55	4.94
Building Construction Worker Trips	1.56	0.96	20.28	0.00	0.30	0.30
Architectural Coating Offgassing	75.64	-	-	-	-	-
Architectural Coatings Worker Trips	1.56	0.96	20.28	0.00	0.30	0.30
Asphalt Offgassing	0.24	-	-	-	-	-
Asphalt Off-Road Diesel	3.78	23.45	31.28	-	0.76	0.68
Asphalt On-Road Diesel	0.05	0.94	0.18	0.00	0.02	0.02
Asphalt Worker Trips	0.03	0.02	0.36	0.00	0.00	0.00
Total	**105.13**	**174.62**	**250.94**	**0.00**	**6.93**	**6.24**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
TOTAL FIRST PHASE[a]	**128.33**	**246.86**	**348.82**	**0.00**	**9.46**	**8.50**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**Yes**	**No**	**No**	**No**	**No**	**No**

[a] Assuming simultaneous building construction phases.

Table 4e
Second Phase Construction Emissions with Mitigation
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Student Housing – Phase 2						
Demolition						
Fugitive Dust	-	-	-	-	1.26	0.26
Off-Road Diesel	3.38	21.71	27.68	-	0.79	0.70
On-Road Diesel	0.19	3.58	0.69	0.01	0.10	0.10
Worker Trips	0.04	0.12	1.17	0.00	0.00	0.00
Total	**3.61**	**25.41**	**29.54**	**0.01**	**2.05**	**1.06**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	22.27	143.19	182.20	-	5.25	4.67
Building Construction Worker Trips	1.42	0.88	18.70	0.00	0.30	0.30
Architectural Coating Offgassing	75.64	-	-	-	-	-
Architectural Coatings Worker Trips	1.42	0.88	18.70	0.00	0.30	0.30
Asphalt Offgassing	0.12	-	-	-	-	-
Asphalt Off-Road Diesel	2.41	15.09	19.91	-	0.52	0.46
Asphalt On-Road Diesel	0.02	0.43	0.08	0.00	0.01	0.01
Asphalt Worker Trips	0.01	0.01	0.13	0.00	0.00	0.00
Total	**103.24**	**160.48**	**239.72**	**0.00**	**6.38**	**5.74**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Adobe Falls – Upper Village						
Grading						
Fugitive Dust	-	-	-	-	26.20	5.50
Off-Road Diesel	13.47	83.36	113.07	-	3.00	2.67
Worker Trips	0.13	0.25	2.71	0.00	0.02	0.02
Total	**13.60**	**83.61**	**115.78**	**0.00**	**29.22**	**8.19**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	7.47	47.99	61.11	-	1.76	1.57
Building Construction Worker Trips	0.34	0.21	4.47	0.00	0.07	0.07
Architectural Coating Offgassing	18.46	-	-	-	-	-
Architectural Coatings Worker Trips	0.34	0.21	4.47	0.00	0.07	0.07
Asphalt Offgassing	0.55	-	-	-	-	-
Asphalt Off-Road Diesel	4.00	23.39	33.99	-	0.68	0.61
Asphalt On-Road Diesel	0.10	1.96	0.38	0.00	0.04	0.04
Asphalt Worker Trips	0.02	0.01	0.27	0.00	0.00	0.00
Total	**31.28**	**73.77**	**104.69**	**0.00**	**2.62**	**2.36**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
TOTAL SECOND PHASE[a]	**134.52**	**234.25**	**344.41**	**0.00**	**9.00**	**8.10**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

[a] Assuming simultaneous building construction phases.

Table 4f
Remaining Projects - Construction Emissions with Mitigation
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Alvarado Campus						
Demolition						
Fugitive Dust	-	-	-	-	80.97	17.00
Off-Road Diesel	4.85	30.56	40.28	-	1.12	1.00
On-Road Diesel	10.97	202.27	40.65	0.50	5.64	5.58
Worker Trips	0.04	0.11	1.07	0.00	0.00	0.00
Total	**15.86**	**232.94**	**82.00**	**0.50**	**87.73**	**23.58**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Grading						
Fugitive Dust	-	-	-	-	11.55	2.43
Off-Road Diesel	9.83	59.51	82.83	-	0.21	0.21
Worker Trips	0.04	0.02	0.49	0.00	0.01	0.01
Total	**9.87**	**59.53**	**83.32**	**0.00**	**11.77**	**2.65**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Building Construction						
Building Construction Off-Road Diesel	18.67	115.98	155.70	-	4.07	3.62
Building Construction Worker Trips	0.90	0.57	12.11	0.00	0.21	0.21
Architectural Coating Offgassing	53.23	-	-	-	-	-
Architectural Coatings Worker Trips	0.90	0.57	12.11	0.00	0.21	0.21
Asphalt Offgassing	0.83	-	-	-	-	-
Asphalt Off-Road Diesel	10.36	60.85	87.80	-	1.76	1.57
Asphalt On-Road Diesel	0.14	2.62	0.53	0.01	0.06	0.01
Asphalt Worker Trips	0.04	0.03	0.56	0.00	0.01	0.01
Total	**85.07**	**180.62**	**256.70**	**0.01**	**6.32**	**5.63**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Table 4f (continued)
Remaining Projects - Construction Emissions with Mitigation
SDSU Master Plan

Construction Project/Phase	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Adobe Falls – Lower Village						
Grading						
Fugitive Dust	-	-	-	-	119.99	25.20
Off-Road Diesel	13.47	81.28	113.77	-	2.71	2.41
Worker Trips	0.11	0.22	2.48	0.00	0.02	0.02
Total	**13.58**	**81.50**	**116.25**	**0.00**	**122.72**	**27.63**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**Yes**	**No**
Building Construction						
Building Construction Off-Road Diesel	7.47	46.39	62.28	-	1.63	1.45
Building Construction Worker Trips	0.31	0.19	4.12	0.00	0.07	0.07
Architectural Coating Offgassing	18.46	-	-	-	-	-
Architectural Coatings Worker Trips	0.31	0.19	4.12	0.00	0.07	0.07
Asphalt Offgassing	0.55	-	-	-	-	-
Asphalt Off-Road Diesel	4.00	23.19	33.99	-	0.64	0.57
Asphalt On-Road Diesel	0.09	1.72	0.35	0.00	0.04	0.04
Asphalt Worker Trips	0.02	0.01	0.25	0.00	0.00	0.00
Total	**31.21**	**71.69**	**105.11**	**0.00**	**2.45**	**2.20**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Student Housing – Phases 3 and 4						
Building Construction						
Building Construction Off-Road Diesel	22.27	138.39	185.70	-	4.86	4.33
Building Construction Worker Trips	3.50	6.88	76.69	0.05	0.44	0.44
Architectural Coating Offgassing	75.64	-	-	-	-	-
Architectural Coatings Worker Trips	1.29	0.81	17.21	0.00	0.30	0.30
Asphalt Offgassing	0.12	-	-	-	-	-
Asphalt Off-Road Diesel	2.41	14.71	20.19	-	0.49	0.44
Asphalt On-Road Diesel	0.02	0.37	0.08	0.00	0.01	0.01
Asphalt Worker Trips	0.01	0.01	0.12	0.00	0.00	0.00
Total	**105.26**	**161.17**	**299.99**	**0.05**	**6.10**	**5.52**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Conference Center						
Building Construction						
Building Construction Off-Road Diesel	5.31	32.32	44.51	-	1.07	0.06
Building Construction Worker Trips	0.28	0.55	6.17	0.00	0.03	0.03
Architectural Coating Offgassing	6.09	-	-	-	-	-
Architectural Coatings Worker Trips	0.28	0.55	6.17	0.00	0.03	0.03
Total	**11.96**	**33.42**	**56.85**	**0.00**	**1.13**	**0.12**
Significance Threshold	137	250	550	250	100	100
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Emissions from cut and fill during the grading phase for the Adobe Falls Lower Village construction were assumed to occur over a two-month period. Emissions could be lower should the duration of grading be longer than two months. Standard emission control measures to reduce fugitive dust would be employed, including watering active grading sites a minimum of three times daily, reducing speeds on unpaved surfaces to 15 mph or less, and reducing track-out of dirt onto paved surfaces. These measures would reduce emissions of fugitive dust, and were taken into account in the URBEMIS model to reduce emissions of fugitive dust. Emissions would still have the potential to be above the significance threshold of 100 lbs/day, however. Impacts associated with fugitive dust during construction would be temporary.

4.2 Operational Impacts

This section addresses potential operational impacts resulting from criteria air pollutant emissions for implementation of the SDSU Campus Master Plan. Operational impacts associated with the Master Plan would result from incremental increases in emissions of criteria air pollutants (CO, VOCs, NOx, SOx, PM_{10}, and $PM_{2.5}$) resulting from three main source categories: area sources, stationary sources, and mobile sources. The following subsections describe the source categories and emission estimation methodologies used to estimate emissions for each category.

4.2.1 Area Sources

Area sources of air pollutant emissions associated with implementation of the SDSU Campus Master Plan include:

- Fuel combustion emissions from energy use, including space and water heating
- Fuel combustion emissions from landscape maintenance equipment
- Consumer product VOC emissions

The URBEMIS2002 model, Version 8.7.0, was used to estimate incremental air pollutant emissions from the identified types of area sources. Land use data associated with the SDSU Campus Master Plan were used in the model to estimate square footage based on land uses proposed under the Master Plan. The data used in the URBEMIS2002 model analysis are presented in Table 5.

Table 5
SDSU Campus Master Plan Project Components

Project	Development Amount
Adobe Falls Faculty/Staff Housing	370 townhomes and condominiums
Alvarado Campus	612,285 gross square feet
Alvarado Hotel	120 rooms/studio suites
Student Housing Phase 1	800 beds
Student Housing Phase 2	1,600 beds
Student Housing Phase 3	800 beds
Student Housing Phase 4	50 apartments, 200 beds total
Student Union	Renovation and up to 70,000 gross square feet additional
Conference Center	70,000 gross square feet

The modeling analysis for the area sources used model default emission factors contained within the URBEMIS model. Table 6 presents the estimated emissions for the area sources proposed for the projects analyzed for the SDSU Campus Master Plan. URBEMIS output files are provided in Appendix A of this report.

Table 6
Summary of Estimated Operational Area Source Emissions
SDSU Campus Master Plan

	Maximum Daily Emissions (lbs/day)					
Emission Source	**ROG**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$[1]**
Fuel Combustion	1.23	16.50	10.68	0.00	0.03	0.03
Landscaping	0.45	0.05	3.15	0.00	0.01	0.01
Consumer Products Use	69.77	-	-	-	-	-
Total	**71.45**	**16.55**	**13.83**	**0.00**	**0.04**	**0.04**
Significance Threshold (lbs/day)	***137***	***250***	***550***	***250***	***100***	***100***
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
	Annual Emissions (tons/year)					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$[1]**
Fuel Combustion	0.23	3.01	1.95	0.00	0.01	0.01
Landscaping	0.04	0.00	0.28	0.00	0.00	0.00
Consumer Products Use	12.73	-	-	-	-	-
Total	**13.00**	**3.01**	**2.23**	**0.00**	**0.01**	**0.01**
Significance Threshold (tons/year)	***15***	***40***	***100***	***40***	***15***	***15***
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

[1]Based on SCAQMD guidelines, $PM_{2.5}$ is 99% of PM_{10} for combustion sources.

4.2.2 Stationary Sources

Stationary air pollutant emission sources at the SDSU Campus include the following sources:

- Central utilities cogeneration facility and steam plant boilers
- Academic laboratory uses
- Diesel-fueled emergency engines
- Maintenance operations (paint booth, gasoline service site, solvent use, etc.)

Criteria air pollutants generated from these sources include CO, VOCs, NOx, SOx, PM_{10}, and $PM_{2.5}$. Air pollutant emissions were estimated based on information provided by SDSU on the ratings of the boilers, and the usage of chemicals in laboratories on campus. Emissions associated with operation of the diesel emergency generators would be negligible as the engines would only be operated for testing purposes, and therefore emissions would not be expected to increase with increases in enrollment. Emissions from maintenance would also be anticipated to remain the same regardless of enrollment.

The San Diego Air Pollution Control District's 2005 Emissions Inventory Report (San Diego Air Pollution Control District 2005) provides estimates of emissions for the SDSU Campus based on estimated operations on campus. The main emission source for the campus would be emissions from combustion of natural gas in the cogeneration facility. As discussed in the Energy Section in the Environmental Impact Report, it was assumed that a gradual increase in energy use, and therefore emissions, would occur over the buildout of the master plan. To account for increases in emissions from stationary sources that would be associated with implementation of the SDSU Campus Master Plan, it was assumed that emissions would increase in proportion to the total square footage of increased building space over 2005 emissions. In 2005, the total developed square footage for the campus, including all indoor space, is 4,388,522 gross square feet. The SDSU Campus Master Plan proposes to increase developed indoor space by a net amount of 2,067,207 gross square feet, an increase of 47.6 percent. This increase was assumed to increase emissions by 47.6 percent. Campus-wide stationary source emissions were therefore assumed to increase by 47.6 percent.

Emissions from use of laboratory chemicals in science classrooms were not quantified and were not included in the APCD's 2005 Emissions Inventory Report. Emissions associated with laboratory chemical usage would be anticipated to be negligible and enrollment increases would not be expected to increase emissions from laboratory functions to a substantial level.

Criteria pollutant emissions from stationary sources are summarized in Table 7.

Table 7
Summary of Estimated Operational Stationary Source Emissions

Emission Source	Daily Emissions (lbs/day)[1]					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Existing Stationary Source Emissions	9.86	96.44	13.15	1.64	16.44	1.10
Buildout Stationary Source Emissions	14.55	142.35	19.41	2.42	24.27	1.62
Net Emissions Increase	4.69	45.91	6.26	0.78	7.83	0.52
Significance Threshold (lbs/day)	***137***	***250***	***550***	***250***	***100***	***100***
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
	Annual Emissions (tons/year)					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Existing Stationary Source Emissions	1.8	17.3	2.4	0.3	3.0	0.2
Buildout Stationary Source Emissions	2.66	25.54	3.54	0.44	4.43	0.30
Net Emissions Increase	0.86	8.24	1.14	0.14	1.43	0.10
Significance Threshold (tons/year)	***15***	***40***	***100***	***40***	***15***	***15***
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

[1]Based on 2005 Emissions Inventory Report, assuming annual emissions divided by 365 days per year, times a growth factor of 39.74 percent.

4.2.3 Vehicular Emissions

Implementation of the SDSU Campus Master Plan will result in increases in traffic due to increased enrollment at SDSU. Traffic increases are projected in the Traffic Impact Analysis – San Diego State University (Linscott, Law & Greenspan 2007). According to the Traffic Impact Analysis, implementation of the Master Plan is anticipated to result in 12,484 additional average daily trips (ADTs).

Emissions associated with vehicular traffic were estimated using the URBEMIS2002 model. Inputs to the URBEMIS2002 model include incremental vehicle trips based on the Traffic Impact Analysis, vehicle fleet percentage, winter and summer temperatures, trip characteristics, variable start information, emission factors, environmental factors, trip distances, and modeling year (2030). The ambient temperatures selected for winter and summer modeling runs were 60 °F and 85 °F, respectively. It was assumed that road dust silt loading would be 0.035 grams per square meter, based on ARB's value for major roadways, upon which vehicles would travel to and from the SDSU Campus. Other inputs to the model were assumed to be defaults.

Because the Traffic Impact Analysis accounted for trip reductions for use of the trolley and other mass transit options, no additional credit was taken in the mitigation measures in the URBEMIS2002 model.

Table 8 presents a summary of vehicular emissions associated with implementation of the SDSU Campus Master Plan.

Table 8
Summary of Estimated Operational Vehicular Emissions

Emission Source	**Maximum Daily Emissions (lbs/day)**[1]					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**[2]
Vehicular Emissions	59.04	30.22	272.54	0.80	74.74	21.26
Significance Threshold (lbs/day)	*137*	*250*	*550*	*250*	*100*	*100*
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
	Annual Emissions (tons/year)					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**[2]
Vehicular Emissions	9.15	4.78	48.02	0.12	13.64	3.88
Significance Threshold (tons/year)	*15*	*40*	*100*	*40*	*15*	*15*
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

[1]Maximum daily emissions reported as the maximum of summer and winter day emissions from the URBEMIS model.
[2]Based on SCAQMD guidelines, $PM_{2.5}$ is 99% of PM_{10} for combustion sources and 21% for road dust.

4.2.4 Summary

Table 9 presents a summary of the total estimated incremental operational air emissions associated with implementation of the SDSU Campus Master Plan, in comparison with the significance thresholds identified in Section 3.0. To provide perspective regarding the significance of operational emissions, Table 9 also compares the estimated emissions of pollutants with the ARB projections for the SDAB. Emissions for the Master Plan were compared with 2020 emission projections from the ARB's Almanac. The ARB's Almanac does not provide projections for years after 2020.

As shown in Table 9, maximum daily and annual emissions associated with implementation of the SDSU Campus Master Plan would be below the daily and annual significance thresholds for all pollutants except ROG. The main sources of pollutants include vehicular traffic and increased consumer products use generated by increased student enrollment at SDSU.

As discussed in the following section (Section 5.0), air dispersion modeling was conducted to further evaluate the potential for significant impacts due to emissions of CO. In general, exceedances of the CO standard are associated with traffic congestion. Provided traffic at congested locations (i.e., intersections operating at LOS E or F) does not result in an exceedance of the CO standards, significant impacts would not result.

Emissions of ROG can contribute to elevated levels of ozone in the ambient air, because ROG react in the atmosphere to form ozone. To develop its SIP and demonstrate that the air basin will attain and maintain the ozone standards, the SDAPCD utilizes growth projections and traffic projections developed by SANDAG and local municipalities. Projects that are consistent with the SANDAG projections and with local General Plans would be accounted for in the SDAPCD's attainment demonstration, and would not constribute to a violation of the ozone standard. Should a project's projected growth in traffic exceed traffic projections developed by SANDAG and accounted for in the SIP and the attainment demonstration, the project may contribute elevated levels of ozone and may conflict with existing air quality plans.

The SDSU Campus Master Plan is consistent with the San Diego Association of Governments' (SANDAG's) growth projections for the county. Thus the operational emissions associated with implementation of the SDSU Campus Master Plan would not be anticipated to adversely affect the air basin's ability to demonstrate continuing reductions and progress toward attainment of the ambient air quality standards.

As discussed in Section 2.0, the SDAPCD is in the process of preparing a new attainment plan to develop plans and programs to attain and maintain the newly adopted 8-hour NAAQS for O_3.

That process will include development of new emissions projections for future years. It is not anticipated that the emissions associated with implementation of the SDSU Campus Master Plan would substantially contribute to the overall emissions in the SDAB, and given that implementation of the Master Plan is consistent with growth projections for the County, the emissions from the project will be accounted for in the attainment demonstrations contained in the updated SIP.

Table 9
Summary of Total Estimated Operational Emissions

Emission Source	Maximum Daily Emissions (lbs/day)					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	71.45	16.55	13.83	0.00	0.04	0.04
Stationary Sources Emissions Increase	4.69	45.91	6.26	0.78	7.83	0.52
Vehicular Emissions	59.04	30.22	272.54	0.80	68.30	19.90
Total	**135.18**	**92.68**	**292.63**	**1.58**	**76.17**	**20.46**
Significance Threshold (lbs/day)	*137*	***250***	***550***	***250***	***100***	***100***
Above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
	Annual Emissions (tons/year)					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	13.00	3.01	2.23	0.00	0.01	0.01
Stationary Sources Emissions Increase	0.86	8.24	1.14	0.14	1.43	0.10
Vehicular Emissions	9.15	4.78	48.02	0.12	12.46	3.63
Total	**23.01**	**16.03**	**51.39**	**0.26**	**13.89**	**3.74**
Significance Threshold (tons/year)	*15*	***40***	***100***	***40***	*15*	*15*
Above Threshold?	**Yes**	**No**	**No**	**No**	**No**	**No**
Total (tons/day)	**0.068**	**0.046**	**0.146**	**0.00079**	**0.038**	**0.010**
Projected 2020 County Emissions (tons/day)	**543.77**	**171.25**	**159.37**	**31.59**	**135.77**	**47.89**

4.3 Cumulative Impacts

The potential for cumulative impacts exists during both construction and following implementation of the SDSU Campus Master Plan. During construction, the cumulative effect of construction of simultaneous projects under Phase 1 and Phase 2 of the Master Plan were considered to address the potential for exceedances of the significance thresholds.

Other off-campus projects could be under construction at the same time as construction is occurring at the SDSU campus. It is unlikely that additional major projects that would be constructed in the vicinity of the SDSU campus would contribute to localized impacts to air quality from fugitive dust emissions. Because emissions of PM_{10} would be above the threshold for the grading phase of construction of the Adobe Falls Lower Village project, however, both direct and cumulative impacts from emissions of fugitive dust during construction would result in a significant, but temporary, impact on the ambient air quality.

Construction emissions of ozone precursors (NOx and ROG) can be mitigated to below a level of significance. Because emissions are short-term and temporary, and because emissions are a small percentage of the emissions of ozone precursors in the SDAB, construction emissions of ozone precursors would not be anticipated to result in a cumulatively considerable impact on the ambient air quality.

Operational emissions were evaluated in terms of the potential for impacts based on quantitative emission thresholds established for the City of San Diego. As discussed in Section 4.2, emissions of ROG would be above the quantitative significance thresholds. To address whether the implementation of the Master Plan would have a cumulative impact on air quality, the project's consistency with SANDAG growth projections was evaluated. SANDAG's growth projections provide the basis for emissions estimates that are developed for the attainment demonstration and SIP requirements adopted by the SDAPCD. Provided a project is consistent with overall growth projections for the County, the project would fit within the emissions estimates used to demonstrate that the SDAB will attain and maintain the ozone standard. As discussed above, the SDSU Campus Master Plan would not be anticipated to adversely affect the air basin's ability to demonstrate continuing reductions and progress toward attainment of the ambient air quality standards. Furthermore, the SDSU Campus Master Plan's emissions represent a small percentage of the projected 2020 emissions budget for the SDAB. Implementation of the Master Plan would therefore not be anticipated to result in a cumulatively considerable impact.

5.0 LOCALIZED CO IMPACTS

5.1 Impacts

Projects involving increases in traffic and/or traffic congestion may result in localized increases in CO concentrations. To further evaluate whether the project would result in a significant impact, additional modeling to assess whether the increases in traffic attributable to implementation of the SDSU Campus Master Plan would result in localized CO impacts.

Projects involving traffic impacts may result in the formation of locally high concentrations of CO, known as CO "hot spots." To verify that the project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO "hot spots" was conducted. The Traffic Impact Analysis evaluated whether or not there would be a decrease in the level of service at the roadways and/or intersections affected by the Project. The potential for CO "hot spots" was evaluated based on the results of the Traffic Impact Analysis. The Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1998) should be followed to determine whether a CO "hot spot" is likely to form due to Project-generated traffic. In accordance with the Protocol, CO "hot spots" are typically evaluated when (a) the level of service (LOS) of an intersection or roadway decreases to a LOS E or worse; (b) signalization and/or channelization is added to an intersection; and (c) sensitive receptors such as residences, commercial developments, schools, hospitals, etc. are located in the vicinity of the affected intersection or roadway segment.

The Traffic Impact Analysis evaluated 17 intersections in the project vicinity to assess the Existing, Existing plus Project, Near Term, and Horizon Year conditions and LOS. Based on the Traffic Impact Analysis, the following intersections were projected to experience a degradation in LOS or a significant increase in delay. These intersections were identified in the Traffic Impact Analysis as intersections for which the impact would be significant.

Near Term:

- College Avenue and Del Cerro Blvd., am peak hour
- College Avenue and I-8 Eastbound Ramps, am peak hour
- College Avenue and Canyon Crest Drive, am and pm peak hours
- College Avenue and Montezuma Road, am and pm peak hours
- I-8 Westbound Ramps and Parkway Drive, pm peak hours

Horizon Year

- Fairmount Avenue and I-8 Westbound Ramp, am peak hour
- 55th Street and Montezuma Road, am and pm peak hours
- Campanile Drive and Montezuma Road, am and pm peak hours
- College Avenue and Del Cerro Blvd., am and pm peak hours
- College Avenue and I-8 Westbound Ramps, pm peak hour
- College Avenue and I-8 Eastbound Ramps, am and pm peak hours
- College Avenue and Canyon Crest Drive, am and pm peak hours
- College Avenue and Zura Way, pm peak hour
- College Avenue and Montezuma Road, am and pm peak hours
- Alvarado Court and Alvarado Road, am and pm peak hours
- Reservoir Drive and Alvarado Road, pm peak hour
- Lake Murray Blvd. and Parkway Drive, am and pm peak hours
- 70th Street and Alvarado Road, am and pm peak hours
- I-8 Westbound Ramps and Parkway Drive, am and pm peak hours
- I-8 Eastbound Ramps and Alvarado Road, pm peak hour

To evaluate the potential for CO "hot spots," the procedures in the Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1998) were used. As recommended in the Protocol, CALINE4 modeling was conducted for the intersections identified above for the scenario without Project traffic, and the Project scenarios. Modeling was conducted based on the guidance in Appendix B of the Protocol to calculate maximum predicted 1-hour CO concentrations. Predicted 1-hour CO concentrations were then scaled to evaluate maximum predicted 8-hour CO concentrations using the recommended scaling factor of 0.7 for urban locations.

Inputs to the CALINE4 model were obtained from the Traffic Impact Analysis for the San Diego State 2007 Campus Master Plan Update (Linscott, Law, & Greenspan 2007). As recommended in the Protocol, receptors were located at locations that were approximately 3 meters from the mixing zone, and at a height of 1.8 meters. Average approach and departure speeds were conservatively assumed to be 1 mph, and emission factors for that speed were estimated from the EMFAC2007 emissions model (ARB 2007) for 2010 for Near Term conditions, and 2030 for Horizon Year conditions.

In accordance with the Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol, it is also necessary to estimate future background CO concentrations in the project vicinity to determine the potential impact plus background and evaluate the potential for CO "hot spots" due to the project. As a conservative estimate of background CO concentrations, the existing maximum 1-hour background concentration of CO that was measured at the downtown San Diego monitoring station for the period 2004 to 2006 of 5.3 ppm was used to represent future maximum background 1-hour CO concentrations. The existing maximum 8-hour background concentration of CO that was measured at the downtown San Diego monitoring station during the period from 2004 to 2006 of 4.04 ppm was also used to provide a conservative estimate of the maximum 8-hour background concentrations in the project vicinity. CO concentrations in the future may be lower as inspection and maintenance programs and more stringent emission controls are placed on vehicles.

The CALINE4 model outputs are provided in Appendix A of this report. Tables 10 and 11 present a summary of the predicted CO concentrations (impact plus background) for the intersections evaluated for Near Term and Horizon Year conditions. As shown in Tables 10 and 11, the predicted CO concentrations would be substantially below the 1-hour and 8-hour NAAQS and CAAQS for CO shown in Table 1 of this report. Therefore, no exceedances of the CO standard are predicted, and the project would not cause or contribute to a violation of this air quality standard.

Table 10
CO "Hot Spots" Evaluation
Near Term Conditions
Predicted CO Concentrations, ppm

Intersection	**Near Term**	
Maximum 1-hour Concentration Plus Background, ppm CAAQS = 20 ppm; NAAQS = 35 ppm; Background 5.3 ppm		
	am	*pm*
College Avenue and Del Cerro Blvd.	6.7	N/A
College Avenue and I-8 Eastbound Ramps	6.9	N/A
College Avenue and Canyon Crest Drive	7.1	6.9
College Avenue and Montezuma Road	6.8	7.1
I-8 Westbound Ramps and Parkway Drive	N/A	5.8
Maximum 8-hour Concentration Plus Background, ppm CAAQS = 9.0 ppm; NAAQS = 9 ppm; Background 4.04 ppm		
College Avenue and Del Cerro Blvd.	5.02	
College Avenue and I-8 Eastbound Ramps	5.16	
College Avenue and Canyon Crest Drive	5.30	
College Avenue and Montezuma Road	5.30	
I-8 Westbound Ramps and Parkway Drive	4.39	

Table 11
CO "Hot Spots" Evaluation
Horizon Year Conditions
Predicted CO Concentrations, ppm

Intersection	Horizon Year	
Maximum 1-hour Concentration Plus Background, ppm CAAQS = 20 ppm; NAAQS = 35 ppm; Background 5.3 ppm		
	am	*pm*
Fairmount Avenue and I-8 Westbound Ramp	5.9	N/A
55th Street and Montezuma Road	5.7	5.7
Campanile Drive and Montezuma Road	5.6	5.7
College Avenue and Del Cerro Blvd.	5.8	5.8
College Avenue and I-8 Westbound Ramps	N/A	5.8
College Avenue and I-8 Eastbound Ramps	6.0	6.0
College Avenue and Zura Way	N/A	6.0
College Avenue and Montezuma Road	5.8	5.9
Alvarado Court and Alvarado Road	5.5	5.6
Reservoir Drive and Alvarado Road	N/A	5.5
Lake Murray Blvd. and Parkway Drive	5.7	5.7
70th Street and Alvarado Road	5.9	6.0
I-8 Westbound Ramps and Parkway Drive	5.4	5.5
I-8 Eastbound Ramps and Alvarado Road	5.6	5.8
Maximum 8-hour Concentration Plus Background, ppm CAAQS = 9.0 ppm; NAAQS = 9 ppm; Background 4.04 ppm		
Fairmount Avenue and I-8 Westbound Ramp	4.46	
55th Street and Montezuma Road	4.32	
Campanile Drive and Montezuma Road	4.32	
College Avenue and Del Cerro Blvd.	4.39	
College Avenue and I-8 Westbound Ramps	4.39	
College Avenue and I-8 Eastbound Ramps	4.53	
College Avenue and Zura Way	4.53	
College Avenue and Montezuma Road	4.46	
Alvarado Court and Alvarado Road	4.25	
Reservoir Drive and Alvarado Road	4.18	
Lake Murray Blvd. and Parkway Drive	4.32	
70th Street and Alvarado Road	4.53	
I-8 Westbound Ramps and Parkway Drive	4.18	
I-8 Eastbound Ramps and Alvarado Road	4.39	

5.2 Cumulative Impacts

The potential for localized CO "hot spots" was evaluated based on the cumulative traffic movements for the Near Term and Horizon conditions as provided in the Traffic Impact Analysis. These traffic projections include not only project-specific traffic associated with the SDSU Campus Master Plan, but also traffic associated with baseline conditions and cumulative projects. Accordingly, the evaluation of the potential for CO "hot spots" is based on a cumulative analysis and indicates that the SDSU Campus Master Plan would not result in cumulatively significant CO "hot spots" impacts.

6.0 TOXIC AIR CONTAMINANT IMPACTS

As discussed in Section 4.0, operations at SDSU include combustion of natural gas in the campus cogeneration facility and campus boilers. Laboratory chemical use was not anticipated to be significant. This section of the analysis evaluates emissions of toxic air contaminants (TACs) from implementation of the SDSU Campus Master Plan. Implementation of the Master Plan will require additional natural gas usage with increased enrollment. These operations have the potential to increase emissions of TACs.

6.1 Toxic Air Contaminant Emission Estimates

As discussed in Section 5.0, emissions of both criteria pollutants and TACs were mainly attributable to energy use on campus, with minor emissions attributable to maintenance and other support operations. For the SDSU Campus Master Plan, emissions of TACs were estimated based on the assumption that increases in emissions would be proportional to increases in building space. As discussed in Section 5.0, indoor developed space would increase by 47.6 percent with the Master Plan. Emissions of TACs for the 2005/2006 school year were obtained from the San Diego Air Pollution Control District's 2005 Emissions Inventory Report, which provides estimates of campus-wide toxic air contaminant emissions. Emissions of diesel particulate from emergency generators were assumed to remain constant because generators are would run only for testing purposes and would not increase usage.

Table 12 presents a summary of the TAC emissions estimates for the academic year 2005/2006, with projections for increases in TAC emissions based on the enrollment increases for the SDSU Campus Master Plan.

Table 12
Estimated TAC Emission Increases

TAC	Annual Emissions, lbs/year	
	2005	Incremental Emissions – Master Plan
1,3-Butadiene	1.10	0.52
2,2,4-Trimethylpentane	1.38	0.66
Acetaldehyde	36.66	17.45
Acrolein	5.52	2.63
Benzene	11.79	5.61
Copper	0.01	0.005
Dichlorobenzene	0.01	0.005
Ethanol	22.85	10.88
Ethylbenzene	27.72	13.19
Formaldehyde	608.73	289.76
Hexane	18.73	8.92
Hydrogen Chloride	0.64	0.30
Lead	0.03	0.14
Manganese	0.01	0.005
Methanol	0.09	0.43
Methylene Chloride	16.47	7.84
Naphthalene	1.16	0.55
Nickel	0.01	0.005
PAHs	1.96	0.93
Perchloroethylene	40.23	19.15
Propylene	1.60	0.76
Toluene	114.61	54.55
Xylenes	55.73	26.53
Zinc	0.06	0.03

6.2 Health Risk Analysis

The HotSpots Analysis and Reporting Program (HARP) (OEHHA 2003b) was used to estimate the incremental excess cancer risks associated with exposure to TACs from the SDSU facilities. The high-end excess cancer risk was calculated based on guidance from the Office of Environmental Health Hazard Assessment (OEHHA 2003a), using the 80th percentile exposure assumptions for inhalation risks (ARB 2003). Three categories of receptors were identified for the risk analysis. The first category of receptor would be off-site residential receptors located outside the SDSU campus in residential areas surrounding the campus. For residential receptors, the risks were calculated based on 70 years of exposure for excess cancer risks and chronic noncancer hazards in accordance with OEHHA guidelines. The second category of receptors would be on-site residential receptors (i.e., student or faculty housing on campus). These receptors were assumed to inhabit the housing on a temporary basis; accordingly, the OEHHA 9-year adult residential scenario was used to calculate a worst-case excess cancer risk for on-site residential receptors. Finally, receptors were placed in areas on campus to calculate risks based on an on-site worker exposure. In accordance with OEHHA guidelines, risks were based on 40 years of exposure for 8 hours per day, 250 days per year.

As contained in the HARP software, the ISCST3 model was run to estimate ground-level concentrations of TACs. Surface and upper air meteorological data from the MCAS Miramar meteorological monitoring station (the nearest station to the project site) were used in the ISCST3 model.

Emissions were based on emissions estimated for implementation of the SDSU Campus Master Plan. This approach provides a conservative estimate of emissions of TACs, and therefore risks. The HARP model provides estimates of health risks at receptors based on their exposure due to inhalation of TACs. The maximum risks for each of the three categories of receptors are summarized in Table 13.

Table 13
Summary of Health Risk Analysis Results

Receptor Category	Excess Cancer Risk	Chronic Hazard	Acute Hazard
Off-site Resident	0.0441 in a million	0.00106	0.261
On-site Student Resident	0.0171 in a million	0.000277	0.0662
On-site Worker	0.0254 in a million	0.000277	0.0662
Significance Thresholds	*10 in a million*	*1.0*	*1.0*

As shown in the table, the excess cancer risks and hazards are below the significance thresholds. Risks due to exposure of TAC emissions would therefore be less than significant.

According to the ARB's *Air Quality and Land Use Handbook: A Community Perspective* (ARB 2005a), sensitive land uses should not be sited within 500 feet of a freeway, urban roads with

100,000 vehicles/day, or rural roads with 50,000 vehicles/day. The Handbook guidelines, which are advisory only, are general recommendations and do not take into account site-specific factors, such as topography, wind direction and dispersion parameters, and traffic breakdowns on specific roadways. Based on a study of children living within 500 meters of a freeway (Gauderman et al. 2007), those children living within 500 meters of a freeway exhibited reduced lung-function development. The study identified several pollutants with elevated concentrations near freeways, including elemental carbon (an indicator for diesel particulate matter) and ultrafine particulate matter (also attributable to diesel exhaust). Diesel particulate matter has been identified by the ARB as a toxic air contaminant, and has been identified in the ARB's *California Almanac of Emissions and Air Quality* (ARB 2005b) as a risk-driving chemical in the San Diego Air Basin, contributing 69.2 percent of the basin-wide background excess cancer risk predicted by the ARB.

Diesel particulate emissions on freeways are associated mainly with diesel truck traffic. According to the South Coast Air Quality Management District's *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis* (SCAQMD 2003), major sources of diesel particulate that would warrant a health risk assessment to address potential risks from diesel truck traffic and idling would include transit centers, distribution centers and warehouses, and truck stops. San Diego State University would not be a major source of diesel particulate as it would neither generate nor attract a disproportionate amount of diesel truck trips. Thus the implementation of the SDSU Campus Master Plan would not contribute substantially to health effects to sensitive receptors within 500 feet of the freeway. Diesel particulate emissions have not been addressed in this health risk assessment because implementation of the Campus Master Plan would not attract substantial diesel truck trips.

6.3 Uncertainty Evaluation

Uncertainties in HRAs essentially arise from the limitations of methodologies used in estimating health risks. They are also the product of many factors affecting each component of the risk assessment process, including prediction of emission rates, air dispersion modeling uncertainties, exposure assessment, and toxicity assessment. These factors generally include, at a minimum, measurement errors, conservative exposure and modeling assumptions, and uncertainty and variability of the toxicity values used in the assessment. The compounding effects of these uncertainties can be at least two orders of magnitude or more. This section presents a qualitative discussion of the uncertainties, assumptions, and limitations in the HRA.

6.3.1 Emission Rates and Prediction of Ground-Level Concentrations

Uncertainty arises in the prediction of emission rates through the use of emission factors and other data or methodologies used to predict emissions. Emission calculations were based on the most recent data available from the SDSU chemical usage database. These estimates of chemical use were used to estimate overall TAC emission rates, which may overestimate the actual emissions that would emanate from the laboratories and buildings.

Dispersion models such as the ISCST3 model represent a methodology for predicting ground-level impacts but do not provide estimates of true ground-level concentrations. The ISCST3 model represents current state of the art in modeling methodology and is the recommended model for use in risk assessments as set forth in the California Office of Environmental Health Hazards Assessment risk assessment guidelines for use in the HARP modeling system. Results provided offer the best estimates available to predict ambient concentrations of TACs. Some uncertainties are, however, inherent in dispersion modeling approaches. Model results are highly sensitive to assumptions regarding emission source parameters and meteorological data. For example, in accordance with EPA guidelines, buildings such as laboratory/classrooms are represented as area or volume sources within the model; these representations may result in higher impacts near the sources due to the source configurations themselves.

Meteorological data from the MCAS Miramar meteorological station were used in the dispersion models to predict ground-level impacts because Miramar is the closest meteorological monitoring location to the project site. These data should provide the most accurate representation of impacts for the project. However, in general, dispersion models are more reliable for predicting long-term concentrations than for estimating short-term concentrations at specific locations. Meteorological data sets assume that wind direction, speed, and atmospheric stability are constant for a one-hour period. This assumption may lead to overestimation of one-hour impacts in the vicinity of the modeled sources. Finally, because dispersion models utilize meteorological data that have been collected and processed, they do not predict actual future concentrations at a given time and location; rather, they are appropriate for predicting the magnitude of the maximum impact without respect to a specific time of day or location.

6.3.2 Exposure Assessment Uncertainties

Exposure and toxicity assessment have been recognized by EPA as the largest sources of uncertainties in the risk assessment process (EPA 1992, 1997). The methodology used in this HRA follows the OEHHA and SDAPCD guidelines for the preparation of HRAs. These guidelines require the use of extremely conservative exposure assumptions; namely, that an individual adult resident would remain in the same location for 70 years, 24 hours per day, 7 days per week, for 365 days per year without leaving the site. In contrast, the EPA typically recommends the use of exposure assumptions that are far lower, especially considering exposure duration (an average duration of 9 years and an upper-bound duration of 30 years in a residential setting).

Another source of uncertainty in calculating exposures is the assumption that individuals within a particular receptor population (or subpopulation) will receive the same intake doses. Variability in parameters such as absorption rates, breathing rates, body weight, skin surface area, and frequency of exposure will exist even in a narrowly defined age group or sensitive receptor subpopulation. This range of uncertainty and variability is difficult to assess. In this HRA, OEHHA standard default factors representing the upper limit of these exposure parameters will generally overestimate risks. Thus the risks reported in this HRA represent an upper bound of estimated risk.

6.3.3 Toxicity Assessment Uncertainties

Uncertainties in this HRA are also related to the use of OEHHA-recommended toxicity values. For chemical risk drivers, animal data serve as the principal basis of toxicity values for the substances evaluated in this HRA. Extrapolation from animals exposed to high doses to humans potentially exposed to much lower doses is a major source of uncertainty influencing chemical toxicity and, consequently, the evaluation of risks. As discussed above, uncertainties in the acrolein toxicity factor likely lead to overestimates of risks to individual receptors on campus.

6.4 Cumulative Impacts

Based on the ARB's *California Almanac of Emissions and Air Quality* (ARB 2005b), background excess cancer risks in the SDAB were estimated at 607 in a million in the year 2000. No estimate of background chronic hazards or acute hazards were provided in the Almanac. The main contributors to background excess cancer risks were identified as diesel particulate, benzene, 1,3-butadiene, and carbon tetrachloride. The background risks are above the significance threshold of 10 in a million for excess cancer risks. The contribution to the overall excess cancer risk from SDSU emissions would be 0.0441 in a million, or 0.0073 percent of the background risk. Thus SDSU's contribution to the overall excess cancer risk in the SDAB would not be cumulatively considerable. As discussed in Section 6.2, SDSU would not be a major source of diesel particulate emissions as it would not attract a disproportionate number of truck trips.

7.0 GLOBAL CLIMATE CHANGE

Global climate change refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere.

Global climate change attributable to anthropogenic emissions of greenhouse gases (mainly CO_2, CH_4, and N_2O) is currently one of the most important and widely debated scientific, economic, and political issues in the United States. Historical records indicate that global climate changes have occurred in the past due to natural phenomena (such as during previous ice ages). Some data indicate that the current global conditions differ from past climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change constructed several emission trajectories of greenhouse gases needed to stabilize global temperatures and climate change impacts. The Panel concluded that a stabilization of greenhouse gases at 400-450 ppm CO_2-equivalent concentration is required to keep global mean warming below 2° Celsius, which is assumed to be necessary to avoid dangerous climate change (AEP 2007).

7.1 Greenhouse Gases

Gases that trap heat in the atmosphere are often called greenhouse gases, analogous to a greenhouse. Greenhouse gases are emitted by both natural processes and human activities. The accumulative of greenhouse gases in the atmosphere regulates the Earth's temperature. Without these natural greenhouse gases, the Earth's temperature would be about 61°F cooler. Emissions from human activities such as electricity production and vehicles have elevated the concentration of these gases in the atmosphere.

Greenhouse gases have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (EPA 2006). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main greenhouse gases that have been attributed to human activity include CH_4, which has a GWP of 21, and N_2O, which has a GWP of 310.

Anthropogenic sources of CO_2 include combustion of fossil fuels (coal, oil, natural gas, gasoline, and wood). Concentrations of CO_2 have increased in the atmosphere since the industrial revolution (from approximately 1750 onward) from approximately 280 parts per million to approximately 383 parts per million in 2007, an increase of 103 parts per million. Data from ice cores indicates that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. Data from Mauna Loa Observatory on Hawaii indicate that CO_2 concentrations in the atmosphere have increased from 315 parts per million in 1960 to 383 parts per million in 2007 (ESRL 2007).

CH_4 is the main component of natural gas, and also arises naturally from anaerobic decay of organic matter. Anthropogenic sources of natural gas include landfills, fermentation of manure, and cattle farming. N_2O is a colorless greenhouse gas. Anthropogenic sources of N_2O include combustion of fossil fuels and industrial processes such as nylon production and production of nitric acid.

Other greenhouse gases are present in trace amounts in the atmosphere, and include chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and ozone.

7.2 Greenhouse Gas Inventory

In 2004, total greenhouse gas emissions worldwide were estimated at 20,135 metric tons of CO_2 equivalents (UNFCCC 2006). The United States contributed the largest portion of greenhouse gas emissions at 35 percent of global emissions. In California, according to the California Energy Commission (CEC 2006), CO_2 accounts for approximately 84 percent of statewide greenhouse gas emissions, with CH_4 accounting for approximately 5.7 percent of greenhouse gas emissions and N_2O accounting for another 6.8 percent of greenhouse gas emissions. Other pollutants account for approximately 2.9 percent of greenhouse gas emissions in California. The transportation sector is the single largest category of California's greenhouse gas emissions, accounting for 41 percent of emissions statewide. In 2004, California produced 492 million metric tons of total CO_2-equivalent emissions.

7.3 Regulatory Background

In the fall of 2006, Governor Schwartzenegger signed California Assembly Bill 32, the global warming bill, into law. AB 32 requires the ARB to adopt regulations by January 1, 2008, to require reporting and verification of statewide greenhouse gas emissions and to monitor and enforce compliance with that program. AB 32 requires a statewide reduction in greenhouse gas emissions to 1990 levels by the year 2020. The regulation also requires adoption of rules and regulations to achieve maximum technologically feasible and cost-effective greenhouse gas emission reductions.

In March 2007 the U.S. Supreme Court ruled that the U.S. EPA should be required to regulate carbon dioxide and other greenhouse gases as pollutants under the Clean Air Act. The U.S. EPA has not developed a regulatory program for greenhouse gas at this time.

7.4 Existing Greenhouse Gas Emissions

Current sources of greenhouse gas emissions at SDSU are mainly attributable to combustion of fossil fuels, including emissions from stationary sources such as the cogeneration plan and boilers, emergency generators, and emissions from motor vehicles. Living vegetation on campus stores carbon; thus carbon sinks would include vegetation used in landscaping. It is not possible to determine specific emissions of greenhouse gases or carbon sinks for the SDSU Campus.

7.5 Guidelines for the Determination of Significance

Guidelines for the determination of significance are not currently provided for climate change in CEQA and the Environmental Checklist Form in Appendix G of the CEQA Guidelines does not address this topic. As noted in Section 7.3, AB 32 requires that by January 1, 2008, the state will complete a statewide greenhouse gas emissions inventory and approve a greenhouse gas emissions limit. This work may provide direction to establish CEQA guidelines for determination of significance for this topic, but that information is not available at the present time.

At this time, AB 32 includes the following goals for reduction of greenhouse gas emissions:

- 2000 levels by 2010 (11% below business as usual)
- 1990 levels by 2020 (25% below business as usual)
- 80% below 1990 levels by 2050

The baseline for this guideline as identified in AB 32 is considered to be "business as usual". For the purposes of the SDSU Campus Master Plan "business as usual" would be development according to the energy efficiency standards established in Title 24. The guideline for development at the campus would therefore establish a 25% reduction over Title 24 by the year 2020.

A consideration in the analysis of greenhouse gas emissions is those emissions under the operational control of the Project Applicant. The concept of operational control is embodied in the Greenhouse Gas Protocol, the most widely used international accounting tool for government and business leaders to understand, quantify, and manage greenhouse emissions. The Greenhouse Gas Protocol Initiative, a decade-long partnership between the World Resources Institute and the World Business Council for Sustainable Development is working with businesses, governments and environmental groups around the world to build a new generation of credible and effective programs for tackling climate change. The Greenhouse Gas Protocol provides the accounting framework for nearly every greenhouse gas standard in the world.

The protocol divides greenhouse gas emissions into three scopes, ranging from greenhouse gases produced directly by the project, to more indirect sources of greenhouse gas emissions, such as employee travel and commuting. For the purpose of this analysis, the direct and indirect emissions are separated into three broad scopes:

- Scope 1: All direct greenhouse gas emissions
- Scope 2: Indirect greenhouse gas emissions from consumption of purchase electricity, heat, or steam.
- Scope 3: Other indirect emissions, including emissions from the extraction and production of purchased materials and fuels, transportation-related activities in vehicles not owned or controlled by the project, electricity-related activities (for example, transmission and distribution losses) not covered in Scope 2, and outsourced activities such as waste disposal, etc.

For the purpose of this analysis, greenhouse gas emissions under the operational control of SDSU associated with the SDSU Campus Master Plan have been identified and quantified. These include emissions associated with increased fossil fuel combustion at the SDSU cogeneration facility to provide power for expanded campus installations. In addition, indirect emissions associated with increases in campus enrollment have been quantified.

7.6 Project Effects

Greenhouse gas emissions associated with the SDSU Campus Master Plan were estimated separately for four categories of emissions: (1) increases in emissions from Campus stationary source fossil fuel combustion to provide power; (2) residential development; (3) water consumption; and (4) transportation.

7.6.1 Stationary Source Greenhouse Gas Emissions

The main emission source for the campus would be emissions from combustion of natural gas in the cogeneration facility. The San Diego Air Pollution Control District's 2005 Emissions Inventory Report (San Diego Air Pollution Control District 2005) does not provide estimates of greenhouse gas emissions for the SDSU Campus; however, SDSU provided information indicating that for 2005-2006, the amount of natural gas combusted at the campus was 8,783,813 therms (878,381 MMBTU). To account for increases in emissions from stationary sources that would be associated with increases in enrollment, it was assumed that energy use would increase in proportion to the total full-time equivalent (FTE) student enrollment from 2005 levels. Thus a 10,000 FTE increase from the existing 2005/2006 enrollment of 25,163 FTE would increase emissions by 39.74 percent. Fuel usage was thus estimated to increase to 1,227,450 MMBTU with implementation of the SDSU Campus Master Plan, for an increase of 349,069 MMBTU of natural gas usage.

Emissions of greenhouse gases were calculated based on emission factors in the EPA's *Compilation of Air Pollutant Emission Factors*, Section 3.1, Stationary Gas Turbines (EPA 2000), which provide emission factors of 110 lbs/MMBTU for CO_2, 0.003 lbs/MMBTU for N_2O, and 0.0086 lbs/MMBTU for CH_4. Emissions of greenhouse gases associated with stationary source natural gas usage increases are summarized in Table 14. As discussed in Section 7.1, emissions of N_2O and CH_4 were evaluated based on their relative GWP by multiplying the GWP by the emissions to determine the CO_2-equivalent emissions. The total CO_2-equivalent emissions for stationary sources is then the sum of the CO_2-equivalent emissions for each of the greenhouse gases evaluated, and the total is shown in the table.

Table 14
Summary of Estimated Operational Stationary Source Greenhouse Gas Emissions

	Annual Emissions (tons/year)		
Emission Source	**CO_2**	**N_2O**	**CH_4**
SDSU Stationary Sources	19,199	0.523	1.50
Global Warming Potential Factor	1	310	21
CO_2 Equivalent Emissions	19,199	162	31.5
Total CO_2 Equivalent Emissions	19,393		

Thus stationary source emission increases associated with the SDSU Campus Master Plan would total approximately 19,393 tons of CO_2-equivalent greenhouse gases.

7.6.2 Residential Greenhouse Gas Emissions

The SDSU Campus Master Plan includes 370 condominium/townhouse units in the Adobe Falls faculty and staff housing development. Residences were assumed to use purchased electricity for cooling, appliance, and plug-loads and natural gas for cooking and water heating. Baseline energy use was calculated as a function of kWh per square foot based on average performance for Southern California residences compliant with Title 24 (2005) standards. According to the California Energy Commission (CEC 2004), the average annual residential energy usage rate, in kilowatt-hours (kWh), would be 5,914 kWh per residential unit. According to EPA, the national average emission factor for CO_2 from electricity use is 1.37 pounds CO_2 per kWh. Emissions of CO_2 are therefore estimated to be approximately 8,102 pounds per year or 4.05 tons per year per household. For the SDSU Campus Master Plan, with 370 dwelling units, the emissions are estimated at 1,499 tons per year of CO_2. Emissions of nitrous oxide and methane from energy use would be much lower.

7.6.3 Water Consumption

Water use and energy use are often closely linked. The provision of potable water to commercial and residential consumers requires large amounts of energy associated with five stages: source and conveyance, treatment, distribution, end use, and wastewater treatment.

Based on information in the Public Utilities and Services Section of the EIR, it is estimated that the increased campus population would result in increases in water usage of 161 acre-feet annually, the increased population at Adobe Falls would result in water usage of 146 acre-feet annually, and the hotel would result in water usage of 40 acre-feet annually, for a total increase in water usage of approximately 350 acre-feet annually. This is equivalent to 114.0 million gallons of water usage annually. It is estimated that delivered water will have an embodied energy of 0.0085 kWh/gallon. CO_2 emissions were calculated on the basis of 114.0 million gallons of water usage annually times 0.0085 kWh/gallon times 1.37 pounds CO_2 per kWh for a total of 664 tons per year of CO_2 emissions associated with water consumption.

7.6.4 Vehicle Greenhouse Gas Emissions

Mobile source greenhouse gas emissions were estimated based on the projected ADTs from the Traffic Impact Analysis (Linscott, Law & Greenspan 2007). Average trip lengths were estimated based on the URBEMIS2002 model outputs, which indicated that the average trip length associated with the SDSU Campus Master Plan would be 7.475 miles. The total miles traveled was multiplied by average fleet fuel economy (assumed to be 21 miles per gallon for 2007), and the estimated CO_2 emissions per gallon of gasoline, assumed to be 19.4 lbs CO_2 per gallon (EPA 2007). Assuming ADTs would occur over a 250-day period (to account for periods when classes are not in session, weekends, and holidays), the total CO2 emissions from vehicles were estimated to be 10,776 tons per year.

7.6.5 Summary

The SDSU Campus Master Plan would generate greenhouse gas emissions associated with combustion of fossil fuels, purchased electricity, water usage, and vehicular emissions. Greenhouse gas emission estimates associated with stationary sources, residential energy use, water use, and vehicles associated with the implementation of the SDSU Campus Master Plan were estimated based on standard methodologies. A forecast for greenhouse gas emissions in the SDAB or in California is not currently available. SDSU will be required to be in compliance with the provisions of AB 32, which provides statewide guidance for reductions below "business as usual." No conclusions can be made at this time regarding the significance of impacts associated with greenhouse gas emissions from the SDSU Campus Master Plan.

Table 15
Summary of Estimated Operational Stationary Source Greenhouse Gas Emissions

Emission Source	Annual Emissions (tons/year)		
	CO_2	**N_2O**	**CH_4**
Stationary Source CO_2 Equivalent Emissions	19,199	162	31.5
Residential CO_2 Emissions	1,499		
Water Usage CO_2 Emissions	664		
Vehicular CO_2 Emissions	10,776		
TOTAL CO_2 Equivalent Emissions	**32,677**		

8.0 MITIGATION MEASURES

Short-term construction activities during grading activities may exceed recommended PM-10 significance thresholds, depending upon disturbance acreage and amount of equipment operating onsite. Daily emissions of ROG may exceed the daily threshold during the application of paints and coatings if the entire project is painted in a brief period of time. Mitigation is recommended to reduce the potential for any short-term construction activity impacts. The following mitigation measures are recommended for construction activities:

1. During grading activities, any exposed soil areas shall be watered twice per day. On windy days or when fugitive dust can be observed leaving the project site, additional applications of water shall be applied to maintain a minimum 12 percent moisture content. Under windy conditions where velocities are forecast to exceed 25 miles per hour, all ground disturbing activities shall be halted until winds that are forecast to abate below this threshold.

2. The project shall implement dust suppression techniques to prevent fugitive dust from creating a nuisance offsite. These dust suppression techniques are summarized as follows:

   a. Portions of the construction site to remain inactive longer than a period of three months shall be seeded and watered until grass cover is grown or otherwise stabilized in a manner acceptable to the City.

   b. All on-site access points shall be paved as soon as feasible or watered periodically or chemically stabilized.

   c. All material transported offsite shall be either sufficiently watered or securely covered to prevent excessive amounts of dust.

   d. The area disturbed by clearing, grading, earthmoving, or excavation operations shall be minimized at all times. A maximum daily grading disturbance area shall be maintained at 8.7 acres or less, if possible and practical.

3. All vehicles on the construction site shall travel at speeds less than 15 miles per hour.

4. All material stockpiles subject to wind erosion during construction activities, that will not be utilized within three days, shall be covered with plastic, an alternative cover deemed equivalent to plastic, or sprayed with a nontoxic chemical stabilizer.

5. Where vehicles leave the construction site and enter adjacent public streets, the streets shall be swept daily or washed down at the end of the work day to remove soil tracked onto the paved surface. Any visible track-out extending for more than fifty (50) feet from the access point shall be swept or washed within thirty (30) minutes of deposition.

6. All diesel-powered vehicles and equipment shall be properly operated and maintained.

7. All diesel-powered vehicles and gasoline-powered equipment shall be turned off when not in use for more than five (5) minutes.

8. The construction contractor shall utilize electric or natural gas-powered equipment in lieu of gasoline or diesel-powered engines, where feasible.

9. As much as possible, the construction contractor shall time the construction activities so as not to interfere with peak hour traffic. In order to minimize obstruction of through traffic lanes adjacent to the site, a flagperson shall be retained to maintain safety adjacent to existing roadways, if necessary.

10. The construction contractor shall support and encourage ridesharing and transit incentives for the construction crew.

11. The construction contractor shall utilize as much as possible pre-coated/natural colored building materials. Water-based or low VOC coatings with a ROG content of 100 grams per liter or less shall be used. Spray equipment with high transfer efficiency, such as the electrostatic spray gun method, or manual coatings application such as paint brush hand roller, trowel, spatula, dauber, rag, or sponge, shall be used to reduce VOC emissions, where practical.

12. If construction equipment powered by alternative fuel sources (LPG/CNG) is available at comparable cost, the developer shall specify that such equipment be used during all construction activities on the project site.

13. The developer shall require the use of particulate filters on diesel construction equipment if use of such filters is demonstrated to be cost-competitive for use on this project.

14. During demolition activities, utilize safety measures as required by City/State for removal of toxic or hazardous materials.

15. Maintain rubble piles in damp state to minimize dust generation.

Operational emissions will exceed significance thresholds for ROG. Emissions cannot be reduced to sub-threshold levels by available mitigation. Use of all available transportation control measures (TCMs) is recommended. Such measures include:

- Provide preferential parking spaces for employee carpools and vanpools.
- Provide on-street bus shelters and well-lighted, safe paths between site uses.
- Schedule truck deliveries and pickups for off-peak hours where feasible.

- Work with the City of San Diego in order to implement or contribute to public outreach programs which promote alternative methods of transportation.
- Delivery trucks shall turn off their engines if the anticipated duration of idling exceeds three (3) minutes.

These TCMs as potential impact mitigation have a range of emission reduction effectiveness depending upon how successfully they are implemented. Attainment of the high end of this range requires a number of favorable factors such as larger employers, with fixed work schedules and low-paid jobs, mixed site uses, and existing transit access which allow for attainment of enhanced efficiencies. These factors do not necessarily apply to the proposed project, and reductions of project-related impacts could thus be limited in scope. Nevertheless, the above measures should be adopted to make development as "pollution-friendly" as is reasonably possible.

9.0 REFERENCES

Association of Environmental Professionals. 2007. *Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents*. March 5.

California Air Resources Board. 2005a. *Air Quality and Land Use Handbook: A Community Health Perspective*. April.

California Air Resources Board. 2005b. *California Almanac of Emissions and Air Quality – 2005 Edition.*

California Energy Commission. 2004. *California Statewide Residential Appliance Saturation Study*. 400-04-009. June.

California Energy Commission. 2006. *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004.*

Earth Science Research Laboratory, National Oceanic and Atmospheric Administration. www.esrl.noaa.gov/gmd/ccgg/trends/. 2007.

Gauderman, W.J., H. Vora, R. McConnell, K. Berhane, F. Gilliland, D. Thomas, F. Lurmann, N. Kunzli, M. Jerrett, and J. Peters. 2007. "Effect of Exposure to Traffic on Lung Development from 10 to 18 Years of Age: A Cohort Study." www.thelancet.com, January 26.

Linscott, Law & Greenspan. 2007. Traffic Impact Analysis – *San Diego State University 2007 Campus Master Plan Update*. May.

South Coast Air Quality Management District. 1993. *CEQA Air Quality Handbook.*

Torcellini, P., N. Long, and R. Judkoff. 2003. *Consumptive Water Use for Power Production.* NREL/CP-550-35190. Golden, Colorado: National Renewable Energy Laboratory. November.

United Nations Framework Convention on Climate Change. 2006. *Greenhouse Gas Emissions Data, Predefined Queries, Annex I Parties – GHG total without LULUCF (land-use, land-use change and forestry)*. http://unfccc.int/ghg_emissions_data/predefined_queries/items/3841.php.

U.S. EPA. 2000. *Compilation of Air Pollutant Emission Factors*, Section 3.1, Stationary Gas Turbines.

U.S. EPA. 2005a. http://www.epa.gov/air/urbanair/6poll.html

U.S. EPA. 2006. *The U.S. Inventory of Greenhouse Gas Emissions and Sinks: Fast Facts.* www.epa.gov/climatechange/emissions/downloads06/06FastFacts.pdf.

U.S. EPA. 2007. http://www.epa.gov/otaq/climate/420f05001.htm.

APPENDIX A

URBEMIS2002 Computer Model Outputs
CALINE4 Model Outputs
HARP Model Outputs

URBEMIS Model Outputs – Construction Emissions

Student Union

Page: 1
05/16/2007 11:10 AM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Union.urb
Project Name: San Diego State University Student Union
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2008 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	20.26	46.65	48.83	0.02	12.64	1.59	11.05
TOTALS (lbs/day, mitigated)	20.26	46.65	48.83	0.02	1.89	1.59	0.30

Page: 2
05/16/2007 11:10 AM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Union.urb
Project Name: San Diego State University Student Union
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2008
Construction Duration: 12
Total Land Use Area to be Developed: 4.6 acres
Maximum Acreage Disturbed Per Day: 1.1 acres
Single Family Units: 0 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 70000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00

On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	11.00	-	11.00
Off-Road Diesel	5.54	35.77	45.50	-	1.36	1.36	0.00
On-Road Diesel	0.56	10.75	2.05	0.02	0.28	0.23	0.05
Worker Trips	0.05	0.13	1.28	0.00	0.00	0.00	0.00
Maximum lbs/day	6.15	46.65	48.83	0.02	12.64	1.59	11.05
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	5.31	33.94	43.33	-	1.17	1.17	0.00
Bldg Const Worker Trips	0.13	0.08	1.63	0.00	0.02	0.00	0.02
Arch Coatings Off-Gas	14.70	-	-	-	-	-	-
Arch Coatings Worker Trips	0.13	0.08	1.63	0.00	0.02	0.00	0.02
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	20.26	34.10	46.59	0.00	1.21	1.17	0.04
Max lbs/day all phases	20.26	46.65	48.83	0.02	12.64	1.59	11.05

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '08
Phase 2 Duration: 1 months
On-Road Truck Travel (VMT): 454
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
3	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Feb '08
Phase 3 Duration: 11 months
Start Month/Year for SubPhase Building: Feb '08
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Concrete/Industrial saws	84	0.730	8.0
4	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '08
SubPhase Architectural Coatings Duration: 2 months
SubPhase Asphalt Turned OFF

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

PM10 Source DUST	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST
*** 2008***						
Phase 1 - Demolition Emissions						

Page: 3
05/16/2007 11:10 AM

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.25	-	0.25
Off-Road Diesel	5.54	35.77	45.50	-	1.36	1.36	0.00
On-Road Diesel	0.56	10.75	2.05	0.02	0.28	0.23	0.05
Worker Trips	0.05	0.13	1.28	0.00	0.00	0.00	0.00
Maximum lbs/day	6.15	46.65	48.83	0.02	1.89	1.59	0.30
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	5.31	33.94	43.33	-	1.17	1.17	0.00
Bldg Const Worker Trips	0.13	0.08	1.63	0.00	0.02	0.00	0.02
Arch Coatings Off-Gas	14.70	-	-	-	-	-	-
Arch Coatings Worker Trips	0.13	0.08	1.63	0.00	0.02	0.00	0.02
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	20.26	34.10	46.59	0.00	1.21	1.17	0.04
Max lbs/day all phases	20.26	46.65	48.83	0.02	1.89	1.59	0.30

Construction-Related Mitigation Measures

Phase 2: Soil Disturbance: Water exposed surfaces - 3x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 50.0%)
Phase 2: Unpaved Roads: Pave all haul roads
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 92.5%)
Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '08
Phase 2 Duration: 1 months
On-Road Truck Travel (VMT): 454
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
3	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Feb '08
Phase 3 Duration: 11 months
Start Month/Year for SubPhase Building: Feb '08
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Concrete/Industrial saws	84	0.730	8.0
4	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '08
SubPhase Architectural Coatings Duration: 2 months
SubPhase Asphalt Turned OFF

Page: 4
05/16/2007 11:10 AM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00462
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.00462
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Pave all haul roads
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.

Adobe Falls Lower Village

Page: 1
05/10/2007 4:32 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Adobe Falls Construction.urb
Project Name: San Diego State University Adobe Falls Lower Village
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2010 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	57.33	81.50	116.25	0.00	729.93	2.72	727.21
TOTALS (lbs/day, mitigated)	57.33	81.50	116.25	0.00	122.72	2.72	120.00

Page: 2
05/10/2007 4:32 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Adobe Falls Construction.urb
Project Name: San Diego State University Adobe Falls Lower Village
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2010
Construction Duration: 12
Total Land Use Area to be Developed: 11.56 acres
Maximum Acreage Disturbed Per Day: 2.9 acres
Single Family Units: 0 Multi-Family Units: 185
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2010***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	727.20	-	727.20
Off-Road Diesel	13.47	81.28	113.77	-	2.71	2.71	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.11	0.22	2.48	0.00	0.02	0.01	0.01
Maximum lbs/day	13.58	81.50	116.25	0.00	729.93	2.72	727.21
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	7.47	46.39	62.28	-	1.63	1.63	0.00
Bldg Const Worker Trips	0.31	0.19	4.12	0.00	0.07	0.00	0.07
Arch Coatings Off-Gas	44.58	-	-	-	-	-	-
Arch Coatings Worker Trips	0.31	0.19	4.12	0.00	0.07	0.00	0.07
Asphalt Off-Gas	0.55	-	-	-	-	-	-
Asphalt Off-Road Diesel	4.00	23.19	33.99	-	0.64	0.64	0.00
Asphalt On-Road Diesel	0.09	1.72	0.35	0.00	0.04	0.04	0.00
Asphalt Worker Trips	0.02	0.01	0.25	0.00	0.00	0.00	0.00
Maximum lbs/day	57.33	71.70	105.11	0.00	2.46	2.31	0.15
Max lbs/day all phases	57.33	81.50	116.25	0.00	729.93	2.72	727.21

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '10
Phase 2 Duration: 2 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
2	Scrapers	313	0.660	8.0
4	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Mar '10
Phase 3 Duration: 10 months
Start Month/Year for SubPhase Building: Mar '10
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
4	Concrete/Industrial saws	84	0.730	8.0
4	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '10
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '10
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 2.3
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0

Page: 3
05/10/2007 4:32 PM

1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2010***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	119.99	-	119.99
Off-Road Diesel	13.47	81.28	113.77	-	2.71	2.71	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.11	0.22	2.48	0.00	0.02	0.01	0.01
Maximum lbs/day	13.58	81.50	116.25	0.00	122.72	2.72	120.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	7.47	46.39	62.28	-	1.63	1.63	0.00
Bldg Const Worker Trips	0.31	0.19	4.12	0.00	0.07	0.00	0.07
Arch Coatings Off-Gas	44.58	-	-	-	-	-	-
Arch Coatings Worker Trips	0.31	0.19	4.12	0.00	0.07	0.00	0.07
Asphalt Off-Gas	0.55	-	-	-	-	-	-
Asphalt Off-Road Diesel	4.00	23.19	33.99	-	0.64	0.64	0.00
Asphalt On-Road Diesel	0.09	1.72	0.35	0.00	0.04	0.04	0.00
Asphalt Worker Trips	0.02	0.01	0.25	0.00	0.00	0.00	0.00
Maximum lbs/day	57.33	71.70	105.11	0.00	2.46	2.31	0.15
Max lbs/day all phases	57.33	81.50	116.25	0.00	122.72	2.72	120.00

Construction-Related Mitigation Measures

Phase 2: Soil Disturbance: Water exposed surfaces - 3x daily

Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 50.0%)
Phase 2: Unpaved Roads: Water all haul roads 3x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 45.0%)
Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '10
Phase 2 Duration: 2 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
2	Scrapers	313	0.660	8.0
4	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Mar '10
Phase 3 Duration: 10 months
Start Month/Year for SubPhase Building: Mar '10
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
4	Concrete/Industrial saws	84	0.730	8.0
4	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '10
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '10
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 2.3
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0

Page: 4
05/10/2007 4:32 PM

Page: 5
05/10/2007 4:32 PM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Site Grading Fugitive Dust Option changed from Level 1 to Level 2
Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00462
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.00462
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Water all haul roads 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.

Adobe Falls Upper Village

Page: 1
05/10/2007 3:42 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Adobe Falls Construction.urb
Project Name: San Diego State University Adobe Falls Upper Village
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2009 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	57.40	83.61	115.78	0.00	161.22	3.01	158.21
TOTALS (lbs/day, mitigated)	57.40	83.61	115.78	0.00	29.12	3.01	26.11

Page: 2
05/10/2007 3:42 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Adobe Falls Construction.urb
Project Name: San Diego State University Adobe Falls Upper Village
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2009
Construction Duration: 12
Total Land Use Area to be Developed: 11.56 acres
Maximum Acreage Disturbed Per Day: 2.9 acres
Single Family Units: 0 Multi-Family Units: 185
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2009***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	158.20	-	158.20
Off-Road Diesel	13.47	83.36	113.07	-	3.00	3.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.13	0.25	2.71	0.00	0.02	0.01	0.01
Maximum lbs/day	13.60	83.61	115.78	0.00	161.22	3.01	158.21
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	7.47	47.99	61.11	-	1.76	1.76	0.00
Bldg Const Worker Trips	0.34	0.21	4.47	0.00	0.07	0.00	0.07
Arch Coatings Off-Gas	44.58	-	-	-	-	-	-
Arch Coatings Worker Trips	0.34	0.21	4.47	0.00	0.07	0.00	0.07
Asphalt Off-Gas	0.55	-	-	-	-	-	-
Asphalt Off-Road Diesel	4.00	23.39	33.99	-	0.68	0.68	0.00
Asphalt On-Road Diesel	0.10	1.96	0.38	0.00	0.04	0.04	0.00
Asphalt Worker Trips	0.02	0.01	0.27	0.00	0.00	0.00	0.00
Maximum lbs/day	57.40	73.77	104.70	0.00	2.63	2.48	0.15
Max lbs/day all phases	57.40	83.61	115.78	0.00	161.22	3.01	158.21

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '09
Phase 2 Duration: 2 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
2	Scrapers	313	0.660	8.0
4	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Mar '09
Phase 3 Duration: 10 months
Start Month/Year for SubPhase Building: Mar '09
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
4	Concrete/Industrial saws	84	0.730	8.0
4	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '09
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '09
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 2.3
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0

1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2009***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	26.10	-	26.10
Off-Road Diesel	13.47	83.36	113.07	-	3.00	3.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.13	0.25	2.71	0.00	0.02	0.01	0.01
Maximum lbs/day	13.60	83.61	115.78	0.00	29.12	3.01	26.11
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	7.47	47.99	61.11	-	1.76	1.76	0.00
Bldg Const Worker Trips	0.34	0.21	4.47	0.00	0.07	0.00	0.07
Arch Coatings Off-Gas	44.58	-	-	-	-	-	-
Arch Coatings Worker Trips	0.34	0.21	4.47	0.00	0.07	0.00	0.07
Asphalt Off-Gas	0.55	-	-	-	-	-	-
Asphalt Off-Road Diesel	4.00	23.39	33.99	-	0.68	0.68	0.00
Asphalt On-Road Diesel	0.10	1.96	0.38	0.00	0.04	0.04	0.00
Asphalt Worker Trips	0.02	0.01	0.27	0.00	0.00	0.00	0.00
Maximum lbs/day	57.40	73.77	104.70	0.00	2.63	2.48	0.15
Max lbs/day all phases	57.40	83.61	115.78	0.00	29.12	3.01	26.11

Construction-Related Mitigation Measures

Phase 2: Soil Disturbance: Water exposed surfaces - 3x daily
  Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 50.0%)
Phase 2: Unpaved Roads: Water all haul roads 3x daily
  Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 45.0%)

Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '09
Phase 2 Duration: 2 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
2	Scrapers	313	0.660	8.0
4	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Mar '09
Phase 3 Duration: 10 months
Start Month/Year for SubPhase Building: Mar '09
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
4	Concrete/Industrial saws	84	0.730	8.0
4	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '09
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '09
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 2.3
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0

Page: 4
05/10/2007 3:42 PM

Page: 5
05/10/2007 3:42 PM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Site Grading Fugitive Dust Option changed from Level 1 to Level 2
Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00462
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.00462
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Water all haul roads 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.

Alvarado Campus

Page: 1
05/10/2007 5:02 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Alvarado Campus Construction.urb
Project Name: San Diego State Alvarado Campus
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2010 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	160.44	232.94	268.81	0.50	88.01	5.91	82.10
TOTALS (lbs/day, mitigated)	160.44	232.94	268.81	0.50	88.01	5.91	82.10

Page: 2
05/10/2007 5:02 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Alvarado Campus Construction.urb
Project Name: San Diego State Alvarado Campus
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2010
Construction Duration: 12
Total Land Use Area to be Developed: 28.1 acres
Maximum Acreage Disturbed Per Day: 7 acres
Single Family Units: 0 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 612285

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2010***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	80.97	-	80.97
Off-Road Diesel	4.85	30.56	40.28	-	1.12	1.12	0.00
On-Road Diesel	10.97	202.27	40.65	0.50	5.64	4.51	1.13
Worker Trips	0.04	0.11	1.07	0.00	0.00	0.00	0.00

Maximum lbs/day	15.86	232.94	82.00	0.50	87.73	5.63	82.10
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	70.00	-	70.00
Off-Road Diesel	9.83	59.51	82.83	-	1.98	1.98	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.04	0.02	0.49	0.00	0.01	0.00	0.01
Maximum lbs/day	9.87	59.53	83.32	0.00	71.99	1.98	70.01
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	18.67	115.98	155.70	-	4.07	4.07	0.00
Bldg Const Worker Trips	0.90	0.57	12.11	0.00	0.21	0.01	0.20
Arch Coatings Off-Gas	128.58	-	-	-	-	-	-
Arch Coatings Worker Trips	0.90	0.57	12.11	0.00	0.21	0.01	0.20
Asphalt Off-Gas	0.83	-	-	-	-	-	-
Asphalt Off-Road Diesel	10.36	60.85	87.80	-	1.76	1.76	0.00
Asphalt On-Road Diesel	0.14	2.62	0.53	0.01	0.06	0.06	0.00
Asphalt Worker Trips	0.04	0.03	0.56	0.00	0.01	0.00	0.01
Maximum lbs/day	160.44	180.60	268.81	0.01	6.32	5.91	0.41
Max lbs/day all phases	160.44	232.94	268.81	0.50	88.01	5.91	82.10

Phase 1 - Demolition Assumptions
Start Month/Year for Phase 1: Jan '10
Phase 1 Duration: 1 months
Building Volume Total (cubic feet): 1933215
Building Volume Daily (cubic feet): 192783
On-Road Truck Travel (VMT): 10710
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Cranes	190	0.430	8.0
1	Crushing/Processing Equip	154	0.780	8.0
2	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Feb '10
Phase 2 Duration: 1 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
1	Scrapers	313	0.660	8.0
4	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Mar '10
Phase 3 Duration: 10 months
Start Month/Year for SubPhase Building: Mar '10
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day

No.	Type	Horsepower	Load Factor	Hours/Day
10	Concrete/Industrial saws	84	0.730	8.0
10	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '10
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '10
SubPhase Asphalt Duration: 1 months
Acres to be Paved: 7
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Pavers	132	0.590	8.0
1	Paving Equipment	111	0.530	8.0
3	Rollers	114	0.430	8.0

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2010***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	80.97	-	80.97
Off-Road Diesel	4.85	30.56	40.28	-	1.12	1.12	0.00
On-Road Diesel	10.97	202.27	40.65	0.50	5.64	4.51	1.13
Worker Trips	0.04	0.11	1.07	0.00	0.00	0.00	0.00
Maximum lbs/day	15.86	232.94	82.00	0.50	87.73	5.63	82.10
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	11.55	-	11.55
Off-Road Diesel	9.83	59.51	82.83	-	1.98	1.98	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.04	0.02	0.49	0.00	0.01	0.00	0.01
Maximum lbs/day	9.87	59.53	83.32	0.00	13.54	1.98	11.56
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	18.67	115.98	155.70	-	4.07	4.07	0.00
Bldg Const Worker Trips	0.90	0.57	12.11	0.00	0.21	0.01	0.20
Arch Coatings Off-Gas	128.58	-	-	-	-	-	-
Arch Coatings Worker Trips	0.90	0.57	12.11	0.00	0.21	0.01	0.20
Asphalt Off-Gas	0.83	-	-	-	-	-	-
Asphalt Off-Road Diesel	10.36	60.85	87.80	-	1.76	1.76	0.00
Asphalt On-Road Diesel	0.14	2.62	0.53	0.01	0.06	0.06	0.00
Asphalt Worker Trips	0.04	0.03	0.56	0.00	0.01	0.00	0.01
Maximum lbs/day	160.44	180.60	268.81	0.01	6.32	5.91	0.41

Max lbs/day all phases 160.44 232.94 268.81 0.50 88.01 5.91 82.10

Construction-Related Mitigation Measures

Phase 2: Soil Disturbance: Water exposed surfaces - 3x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 50.0%)
Phase 2: Unpaved Roads: Water all haul roads 3x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 45.0%)
Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
Phase 1 - Demolition Assumptions
Start Month/Year for Phase 1: Jan '10
Phase 1 Duration: 1 months
Building Volume Total (cubic feet): 1933215
Building Volume Daily (cubic feet): 192783
On-Road Truck Travel (VMT): 10710
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Cranes	190	0.430	8.0
1	Crushing/Processing Equip	154	0.780	8.0
2	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Feb '10
Phase 2 Duration: 1 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
1	Scrapers	313	0.660	8.0
4	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Mar '10
Phase 3 Duration: 10 months
Start Month/Year for SubPhase Building: Mar '10
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
10	Concrete/Industrial saws	84	0.730	8.0
10	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '10
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '10
SubPhase Asphalt Duration: 1 months
Acres to be Paved: 7
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Pavers	132	0.590	8.0
1	Paving Equipment	111	0.530	8.0
3	Rollers	114	0.430	8.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00462
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.00462
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Water all haul roads 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.

Alvarado Hotel

Page: 1
05/10/2007 9:59 AM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Alvarado Hotel Construction.urb
Project Name: San Diego State University Alvarado Hotel
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2008 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	17.34	35.90	46.78	0.00	8.36	1.36	7.00
TOTALS (lbs/day, mitigated)	17.34	35.90	46.78	0.00	2.52	1.36	1.16

Page: 2
05/10/2007 9:59 AM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Alvarado Hotel Construction.urb
Project Name: San Diego State University Alvarado Hotel
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2008
Construction Duration: 12
Total Land Use Area to be Developed: 2.8 acres
Maximum Acreage Disturbed Per Day: 0.7 acres
Single Family Units: 0 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 60000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	7.00	-	7.00
Off-Road Diesel	5.54	35.77	45.50	-	1.36	1.36	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.05	0.13	1.28	0.00	0.00	0.00	0.00
Maximum lbs/day	5.59	35.90	46.78	0.00	8.36	1.36	7.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	4.52	29.38	36.64	-	1.05	1.05	0.00
Bldg Const Worker Trips	0.11	0.07	1.40	0.00	0.02	0.00	0.02
Arch Coatings Off-Gas	12.60	-	-	-	-	-	-
Arch Coatings Worker Trips	0.11	0.07	1.40	0.00	0.02	0.00	0.02
Asphalt Off-Gas	0.17	-	-	-	-	-	-
Asphalt Off-Road Diesel	1.37	7.96	11.66	-	0.22	0.22	0.00
Asphalt On-Road Diesel	0.03	0.66	0.12	0.00	0.01	0.01	0.00
Asphalt Worker Trips	0.01	0.00	0.07	0.00	0.00	0.00	0.00
Maximum lbs/day	17.34	29.52	39.44	0.00	1.09	1.05	0.04
Max lbs/day all phases	17.34	35.90	46.78	0.00	8.36	1.36	7.00

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '08
Phase 2 Duration: 1 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
3	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Feb '08
Phase 3 Duration: 11 months
Start Month/Year for SubPhase Building: Feb '08
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Concrete/Industrial saws	84	0.730	8.0
3	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '08
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '08
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 0.7
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Pavers	132	0.590	8.0

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	1.15	-	1.15
Off-Road Diesel	5.54	35.77	45.50	-	1.36	1.36	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.05	0.13	1.28	0.00	0.00	0.00	0.00
Maximum lbs/day	5.59	35.90	46.78	0.00	2.52	1.36	1.16
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	4.52	29.38	36.64	-	1.05	1.05	0.00
Bldg Const Worker Trips	0.11	0.07	1.40	0.00	0.02	0.00	0.02
Arch Coatings Off-Gas	12.60	-	-	-	-	-	-
Arch Coatings Worker Trips	0.11	0.07	1.40	0.00	0.02	0.00	0.02
Asphalt Off-Gas	0.17	-	-	-	-	-	-
Asphalt Off-Road Diesel	1.37	7.96	11.66	-	0.22	0.22	0.00
Asphalt On-Road Diesel	0.03	0.66	0.12	0.00	0.01	0.01	0.00
Asphalt Worker Trips	0.01	0.00	0.07	0.00	0.00	0.00	0.00
Maximum lbs/day	17.34	29.52	39.44	0.00	1.09	1.05	0.04
Max lbs/day all phases	17.34	35.90	46.78	0.00	2.52	1.36	1.16

Construction-Related Mitigation Measures

Phase 2: Soil Disturbance: Water exposed surfaces - 3x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 50.0%)
Phase 2: Unpaved Roads: Water all haul roads 3x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 45.0%)
Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '08
Phase 2 Duration: 1 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
3	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Feb '08
Phase 3 Duration: 11 months
Start Month/Year for SubPhase Building: Feb '08
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Concrete/Industrial saws	84	0.730	8.0
3	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '08
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '08
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 0.7
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Pavers	132	0.590	8.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00462
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.00462
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Water all haul roads 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.

Conference Center

Page: 1
05/10/2007 6:09 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Union.urb
Project Name: San Diego State University Conference Center
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2010 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	20.57	33.43	56.86	0.00	1.13	1.09	0.04

Page: 2
05/10/2007 6:09 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Union.urb
Project Name: San Diego State University Conference Center
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2010
Construction Duration: 12
Total Land Use Area to be Developed: 4.6 acres
Maximum Acreage Disturbed Per Day: 1.1 acres
Single Family Units: 0 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 70000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2010***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	5.31	32.32	44.51	-	1.07	1.07	0.00
Bldg Const Worker Trips	0.28	0.55	6.17	0.00	0.03	0.01	0.02
Arch Coatings Off-Gas	14.70	-	-	-	-	-	-
Arch Coatings Worker Trips	0.28	0.55	6.17	0.00	0.03	0.01	0.02
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	20.57	33.43	56.86	0.00	1.13	1.09	0.04
Max lbs/day all phases	20.57	33.43	56.86	0.00	1.13	1.09	0.04

Phase 2 - Site Grading Assumptions: Phase Turned OFF

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jan '10
Phase 3 Duration: 12 months
Start Month/Year for SubPhase Building: Jan '10
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Concrete/Industrial saws	84	0.730	8.0
4	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Jan '10
SubPhase Architectural Coatings Duration: 2 months
SubPhase Asphalt Turned OFF

Page: 3
05/10/2007 6:09 PM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00462
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.00462

Student Housing Phase 1

Page: 1
05/10/2007 10:47 AM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Housing.urb
Project Name: San Diego State University Student Housing
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2008 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	212.18	174.61	250.88	0.00	6.94	6.37	0.57

Page: 2
05/10/2007 10:47 AM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Housing.urb
Project Name: San Diego State University Student Housing
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2008
Construction Duration: 12
Total Land Use Area to be Developed: 39.9 acres
Maximum Acreage Disturbed Per Day: 10 acres
Single Family Units: 0 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 870000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	22.27	148.29	178.57	-	5.55	5.55	0.00
Bldg Const Worker Trips	1.56	0.96	20.28	0.00	0.30	0.02	0.28
Arch Coatings Off-Gas	182.70	-	-	-	-	-	-
Arch Coatings Worker Trips	1.56	0.96	20.28	0.00	0.30	0.02	0.28
Asphalt Off-Gas	0.24	-	-	-	-	-	-
Asphalt Off-Road Diesel	3.78	23.45	31.28	-	0.76	0.76	0.00
Asphalt On-Road Diesel	0.05	0.94	0.18	0.00	0.02	0.02	0.00
Asphalt Worker Trips	0.02	0.01	0.29	0.00	0.00	0.00	0.00
Maximum lbs/day	212.18	174.61	250.88	0.00	6.94	6.37	0.57
Max lbs/day all phases	212.18	174.61	250.88	0.00	6.94	6.37	0.57

Phase 2 - Site Grading Assumptions: Phase Turned OFF

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jan '08
Phase 3 Duration: 12 months
Start Month/Year for SubPhase Building: Feb '08
SubPhase Building Duration: 11 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
12	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
10	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '08
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '08
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 1
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Pavers	132	0.590	8.0
1	Paving Equipment	111	0.530	8.0

Changes made to the default values for Land Use Trip Percentages

```
Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00462
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.00462
```

Student Housing Phase 2

Page: 1
05/10/2007 10:54 AM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Housing Phase 2.urb
Project Name: San Diego State University Student Housing Phase Two
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2009 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	207.81	144.95	219.60	0.01	6.57	5.29	1.28

Page: 2
05/10/2007 10:54 AM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Housing Phase 2.urb
Project Name: San Diego State University Student Housing Phase Two
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2009
Construction Duration: 12
Total Land Use Area to be Developed: 39.9 acres
Maximum Acreage Disturbed Per Day: 10 acres
Single Family Units: 0 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 870000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2009***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	1.26	-	1.26
Off-Road Diesel	3.38	21.71	27.68	-	0.79	0.79	0.00
On-Road Diesel	0.19	3.58	0.69	0.01	0.10	0.08	0.02
Worker Trips	0.04	0.12	1.17	0.00	0.00	0.00	0.00

Maximum lbs/day	3.61	25.41	29.54	0.01	2.15	0.87	1.28
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	22.27	143.19	182.20	-	5.25	5.25	0.00
Bldg Const Worker Trips	1.42	0.88	18.70	0.00	0.30	0.02	0.28
Arch Coatings Off-Gas	182.70	-	-	-	-	-	-
Arch Coatings Worker Trips	1.42	0.88	18.70	0.00	0.30	0.02	0.28
Asphalt Off-Gas	0.12	-	-	-	-	-	-
Asphalt Off-Road Diesel	2.41	15.09	19.91	-	0.52	0.52	0.00
Asphalt On-Road Diesel	0.02	0.43	0.08	0.00	0.01	0.01	0.00
Asphalt Worker Trips	0.01	0.01	0.13	0.00	0.00	0.00	0.00
Maximum lbs/day	207.81	144.95	219.60	0.00	5.85	5.29	0.56
Max lbs/day all phases	207.81	144.95	219.60	0.01	6.57	5.29	1.28

Phase 2 - Site Grading Assumptions: Phase Turned OFF
Start Month/Year for Phase 1: Jan '09
Phase 1 Duration: 1 months
Building Volume Total (cubic feet): 300000
Building Volume Daily (cubic feet): 3000
On-Road Truck Travel (VMT): 168
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Cranes	190	0.430	8.0
3	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Feb '09
Phase 3 Duration: 11 months
Start Month/Year for SubPhase Building: Feb '09
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
12	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
10	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '09
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '09
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 0.5
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day

Page: 3
05/10/2007 10:54 AM

1	Pavers	132	0.590	8.0
1	Paving Equipment	111	0.530	8.0

Page: 4
05/10/2007 10:54 AM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00462
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.00462

Student Housing Phases 3 and 4

Page: 1
05/10/2007 5:08 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Housing Phase 2.urb
Project Name: San Diego State University Student Housing Phases 3 and 4
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2010 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	186.55	145.27	262.39	0.05	5.30	5.02	0.28

Page: 2
05/10/2007 5:08 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Student Housing Phase 2.urb
Project Name: San Diego State University Student Housing Phases 3 and 4
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2010
Construction Duration: 12
Total Land Use Area to be Developed: 39.9 acres
Maximum Acreage Disturbed Per Day: 10 acres
Single Family Units: 0 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 870000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2010***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	22.27	138.39	185.70	-	4.86	4.86	0.00
Bldg Const Worker Trips	3.50	6.88	76.69	0.05	0.44	0.16	0.28
Arch Coatings Off-Gas	182.70	-	-	-	-	-	-
Arch Coatings Worker Trips	1.29	0.81	17.21	0.00	0.30	0.02	0.28
Asphalt Off-Gas	0.12	-	-	-	-	-	-
Asphalt Off-Road Diesel	2.41	14.71	20.19	-	0.49	0.49	0.00
Asphalt On-Road Diesel	0.02	0.37	0.08	0.00	0.01	0.01	0.00
Asphalt Worker Trips	0.01	0.01	0.12	0.00	0.00	0.00	0.00
Maximum lbs/day	186.55	145.27	262.39	0.05	5.30	5.02	0.28
Max lbs/day all phases	186.55	145.27	262.39	0.05	5.30	5.02	0.28

Phase 2 - Site Grading Assumptions: Phase Turned OFF

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jan '10
Phase 3 Duration: 12 months
Start Month/Year for SubPhase Building: Jan '10
SubPhase Building Duration: 10 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
12	Concrete/Industrial saws	84	0.730	8.0
1	Cranes	190	0.430	8.0
10	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '10
SubPhase Architectural Coatings Duration: 2 months
Start Month/Year for SubPhase Asphalt: Dec '10
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 0.5
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Pavers	132	0.590	8.0
1	Paving Equipment	111	0.530	8.0

Page: 3
05/10/2007 5:08 PM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00462
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.00462

URBEMIS2002 Model Outputs – Area Sources

Page: 1
05/10/2007 7:16 PM

URBEMIS 2002 For Windows 8.7.0

File Name: <Not Saved>
Project Name: San Diego State Campus Master Plan Area Sources
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	71.45	16.55	13.83	0.00	0.04

Page: 2
05/10/2007 7:16 PM

URBEMIS 2002 For Windows 8.7.0

File Name: <Not Saved>
Project Name: San Diego State Campus Master Plan Area Sources
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	13.00	3.02	2.23	0.00	0.01

Page: 3
05/10/2007 7:16 PM

URBEMIS 2002 For Windows 8.7.0

File Name: <Not Saved>
Project Name: San Diego State Campus Master Plan Area Sources
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	1.23	16.50	10.68	0	0.03
Hearth - No summer emissions					
Landscaping	0.45	0.05	3.15	0.00	0.01
Consumer Prdcts	69.77	-	-	-	-
Architectural Coatings	0.00	-	-	-	-
TOTALS(lbs/day,unmitigated)	71.45	16.55	13.83	0.00	0.04

Page: 4
05/10/2007 7:16 PM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Area

The hearth option switch changed from on to off.
The arch. coatings option switch changed from on to off.
The landscape year changed from 2005 to 2010.
The consumer product persons per residential unit changed from 2.861 to 4.
The residential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00462.
The nonresidential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00462.

Page: 5
05/10/2007 7:16 PM

URBEMIS 2002 For Windows 8.7.0

File Name: <Not Saved>
Project Name: San Diego State Campus Master Plan Area Sources
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.23	3.01	1.95	0.00	0.01
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping	0.04	0.00	0.28	0.00	0.00
Consumer Prdcts	12.73	-	-	-	-
Architectural Coatings	0.00	-	-	-	-
TOTALS (tpy, unmitigated)	13.00	3.02	2.23	0.00	0.01

Page: 6
05/10/2007 7:16 PM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Area

The hearth option switch changed from on to off.
The arch. coatings option switch changed from on to off.
The landscape year changed from 2005 to 2010.
The consumer product persons per residential unit changed from 2.861 to 4.
The residential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00462.
The nonresidential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00462.

URBEMIS2002 Model Outputs – Vehicles Sources

Page: 1
05/11/2007 2:13 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Master Plan Operations 2030.urb
Project Name: San Diego State Master Plan Update
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	59.04	24.15	272.54	0.80	68.30

Page: 2
05/11/2007 2:13 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Master Plan Operations 2030.urb
Project Name: San Diego State Master Plan Update
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Winter)

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	32.38	30.22	244.34	0.79	68.30

Page: 3
05/11/2007 2:13 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Master Plan Operations 2030.urb
Project Name: San Diego State Master Plan Update
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	9.15	4.78	48.02	0.15	12.46

Page: 4
05/11/2007 2:13 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Master Plan Operations 2030.urb
Project Name: San Diego State Master Plan Update
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Winter)

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
University/college (4 yrs	32.38	30.22	244.34	0.79	68.30
TOTAL EMISSIONS (lbs/day)	32.38	30.22	244.34	0.79	68.30

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2030 Temperature (F): 60 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
University/college (4 yrs		1.25 trips/students	10,000.00	12,484.00

Sum of Total Trips	12,484.00
Total Vehicle Miles Traveled	93,317.90

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	52.50	0.00	100.00	0.00
Light Truck < 3,750 lbs	15.90	0.00	100.00	0.00
Light Truck 3,751- 5,750	16.70	0.00	100.00	0.00
Med Truck 5,751- 8,500	7.60	0.00	100.00	0.00
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	0.90	0.00	22.20	77.80
Heavy-Heavy 33,001-60,000	0.70	0.00	0.00	100.00
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.50	33.30	66.70	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	2.60	0.00	92.30	7.70

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
University/college (4 yrs)				5.0	2.5	92.5

Page: 5
05/11/2007 2:13 PM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2030.
The operational winter temperature changed from 40 to 60.
The operational winter selection item changed from 2 to 3.
The operational summer selection item changed from 7 to 6.
The paved road silt loading factor changed from 0.1 to 0.03.

Page: 6
05/11/2007 2:13 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Master Plan Operations 2030.urb
Project Name: San Diego State Master Plan Update
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
University/college (4 yrs	59.04	24.15	272.54	0.80	68.30
TOTAL EMISSIONS (lbs/day)	59.04	24.15	272.54	0.80	68.30

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2030 Temperature (F): 85 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
University/college (4 yrs		1.25 trips/students	10,000.00	12,484.00

Sum of Total Trips 12,484.00
Total Vehicle Miles Traveled 93,317.90

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	52.50	0.00	100.00	0.00
Light Truck < 3,750 lbs	15.90	0.00	100.00	0.00
Light Truck 3,751- 5,750	16.70	0.00	100.00	0.00
Med Truck 5,751- 8,500	7.60	0.00	100.00	0.00
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00

Lite-Heavy	10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy	14,001-33,000	0.90	0.00	22.20	77.80
Heavy-Heavy	33,001-60,000	0.70	0.00	0.00	100.00
Line Haul > 60,000	lbs	0.00	0.00	0.00	100.00
Urban Bus		0.20	0.00	50.00	50.00
Motorcycle		1.50	33.30	66.70	0.00
School Bus		0.10	0.00	0.00	100.00
Motor Home		2.60	0.00	92.30	7.70

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
University/college (4 yrs)				5.0	2.5	92.5

Page: 7
05/11/2007 2:13 PM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2030.
The operational winter temperature changed from 40 to 60.
The operational winter selection item changed from 2 to 3.
The operational summer selection item changed from 7 to 6.
The paved road silt loading factor changed from 0.1 to 0.03.

Page: 8
05/11/2007 2:13 PM

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002\Projects2k2\SDSU Master Plan Operations 2030.urb
Project Name: San Diego State Master Plan Update
Project Location: San Diego County
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
University/college (4 yrs	9.15	4.78	48.02	0.15	12.46
TOTAL EMISSIONS (tons/yr)	9.15	4.78	48.02	0.15	12.46

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2030 Season: Annual

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
University/college (4 yrs		1.25 trips/students	10,000.00	12,484.00

Sum of Total Trips	12,484.00
Total Vehicle Miles Traveled	93,317.90

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	52.50	0.00	100.00	0.00
Light Truck < 3,750 lbs	15.90	0.00	100.00	0.00
Light Truck 3,751- 5,750	16.70	0.00	100.00	0.00
Med Truck 5,751- 8,500	7.60	0.00	100.00	0.00
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	0.90	0.00	22.20	77.80
Heavy-Heavy 33,001-60,000	0.70	0.00	0.00	100.00
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.50	33.30	66.70	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	2.60	0.00	92.30	7.70

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
University/college (4 yrs)				5.0	2.5	92.5

Page: 9
05/11/2007 2:13 PM

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2030.
The operational winter temperature changed from 40 to 60.
The operational winter selection item changed from 2 to 3.
The operational summer selection item changed from 7 to 6.
The paved road silt loading factor changed from 0.1 to 0.03.

CALINE4 Model Outputs
HARP Model Outputs
Available for review at
SDSU Office of Facilities Planning, Design and Construction
during regular business hours