APPENDIX D

Air Quality Technical Report

AIR QUALITY TECHNICAL REPORT
for the
Kaiser Permanente San Diego
Central Medical Center Project
City of San Diego, California

City Project No. 274240

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SUMMARY

Kaiser Foundation Hospitals, a California nonprofit public benefit corporation (Kaiser) proposes the development of a medical center project on approximately 20 acres in the Kearny Mesa planning area within the City of San Diego, California. The project area is zoned Light-Industrial (IL-2-1) which allows for the construction and operation of a hospital with a Conditional Use Permit (CUP). Full buildout of the project site would include a total of 936,000 square feet of hospital campus uses. The proposed project would require demolition of the existing 330,000-square foot County of San Diego government office building. The project is proposed in two phases, as illustrated in Table 1, Building Summary. Phase I would include a 562,000-square foot, seven-story general acute and tertiary care hospital building (Hospital), a 75,000-square foot outpatient hospital support building (HSB) and a 36,000-square foot central utility plant (Energy Center). The Hospital would include 321 beds, an outdoor service yard, and a 1,462-stall parking structure in addition to 100 surface parking spaces. Phase II (full buildout) would include expansion of the hospital and/or the construction of new medical offices or other uses. More specifically, Phase II would include expansion of the Hospital by an additional seven-story, 158,000-square foot building to accommodate 129 beds (for a total of 450 beds), a new 105,000-square foot hospital support building and 937 surface and structured parking spaces (for a total of 2,499 parking spaces).

The air quality impact analysis evaluates the potential for significant adverse impacts to the ambient air quality due to construction and operational emissions resulting from the proposed project. Construction of the proposed project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. The analysis concludes that the daily construction emissions would exceed the City's significance thresholds for criteria pollutants. As such, mitigation has been provided; however, impacts would remain significant after mitigation is implemented. Air quality impacts resulting from construction would, therefore, be significant and unavoidable. Operational emissions were found to be significant and unavoidable for NO_x, CO, and PM_{10} and mitigation has been provided. Impacts would remain significant and unavoidable because no mitigation is available to reduce motor vehicle trips and stationary source emissions associated with project operation to a level that is less than significant, thus; criteria pollutant emissions associated with operation would remain significant and unavoidable.

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this report is to estimate and evaluate the potential air quality impacts associated with implementation of the Kaiser Permanente San Diego KP Central Medical Center Project (proposed project) relative to the City of San Diego's July 5, 2012 Scoping Letter (City of San Diego 2012) and the City's *Significance Determination Thresholds* (City of San Diego 2011).

1.2 Project Location

The overall project site is approximately 20 acres located Kearny Mesa planning area in the City of San Diego (Figures 1 and 2). The project area is zoned Light-Industrial (IL-2-1), which allows for the construction and operation of a hospital with a Conditional Use Permit (CUP). The site is currently occupied by the County of San Diego government office building and associated surface parking lot. Surrounding land uses include commercial, office and light industrial uses to the north; child welfare services, a preschool and office buildings to the east; restaurant and commercial retails uses to the west; and a preschool, office buildings, and light industrial/manufacturing uses to the south. Currently, the main entrance to the site is off Ruffin Road on the western portion of the project site.

1.3 Project Description

Buildout of the project site would include a total of 936,000 square feet of hospital campus uses. The proposed project would require demolition of the existing 330,000-square foot County of San Diego government office building. The project is proposed in two phases, as illustrated in Table 1, Building Summary. Phase I would include of a 562,000-square foot, seven-story general acute and tertiary care hospital building (Hospital), a 75,000 square foot outpatient hospital support building (HSB), a 36,000 square foot central utility plant (Energy Center). The Hospital would include 321 beds, an outdoor service yard, and a 1,462-stall parking structure. Construction of Phase I is expected to commence in Spring 2013 and to be completed between Fall 2017 and Spring 2018. Phase II (full buildout) would include expansion of the hospital and/or the construction of new medical offices or other uses. More specifically, Phase II could include expansion of the KP Central Medical Center by an additional 263,000 square feet, including a 158,000 square foot, 7-story, 129-bed expansion of the hospital, the construction of a new 105,000-square foot HSB and surface and structured parking totaling 2,499 spaces. Buildout of the proposed project will be completed between 2025 and 2030. See Figure 3 for proposed project site plan.

Table 1
Building Summary

Building Type/Use	Building Area (sf)	Building Details
Phase 1		
Hospital	562,000	7-stories, 321 beds
Outpatient HSB	75,000	6-stories
Energy Center	36,000	-
Parking Structure	-	1,462 parking spaces
Phase 2 (buildout)		
Hospital Expansion	158,000	7-stories, 129 beds
Medical Offices/Outpatient HSB	105,000	6-stories
Additional Parking	-	937 parking spaces
TOTAL	**936,000**	**450 beds, 2,499 parking spaces**

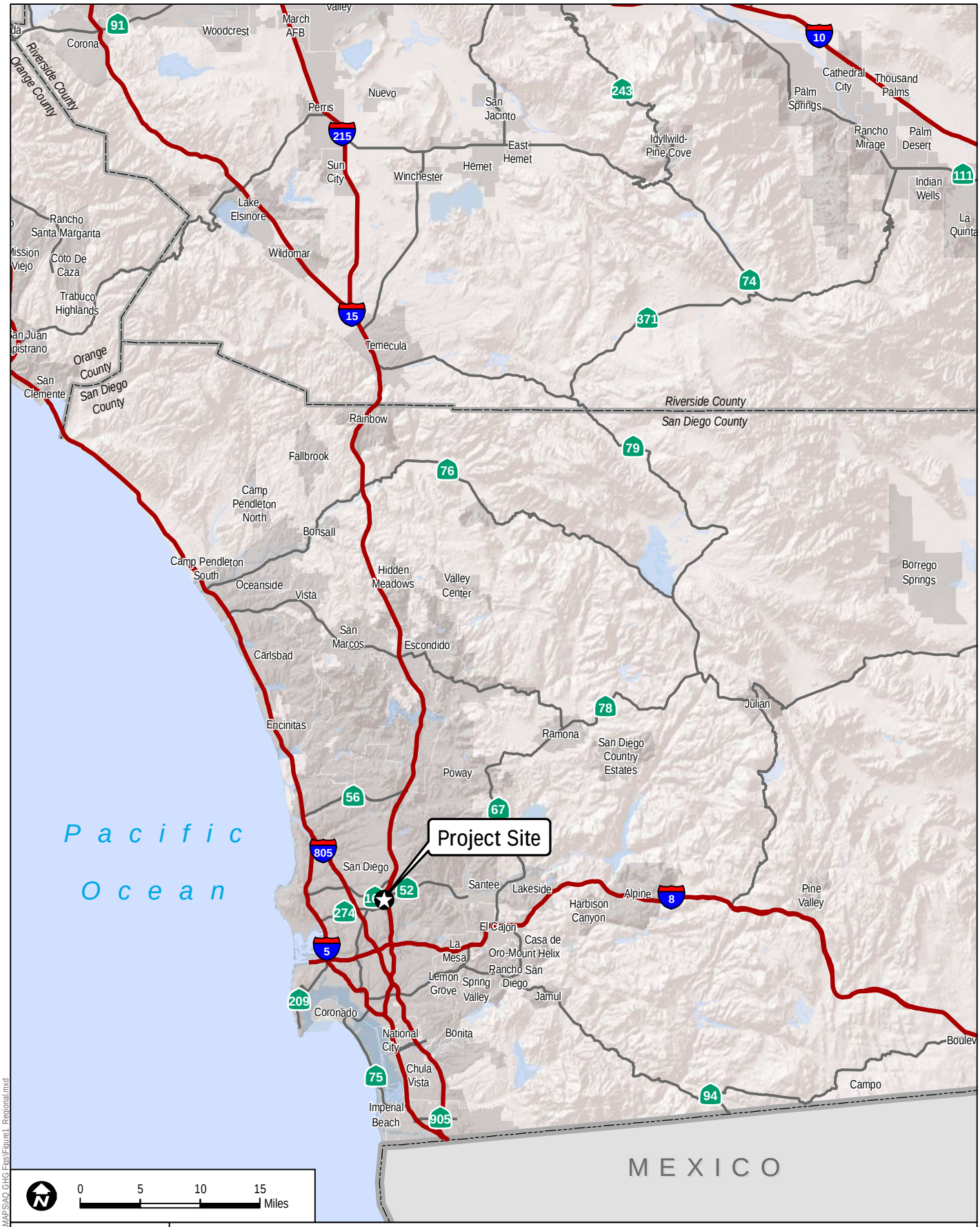

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FIGURE 1

Regional Map

Air Quality Technical Report for the to Kaiser Permanente San Diego Central Medical Center Project

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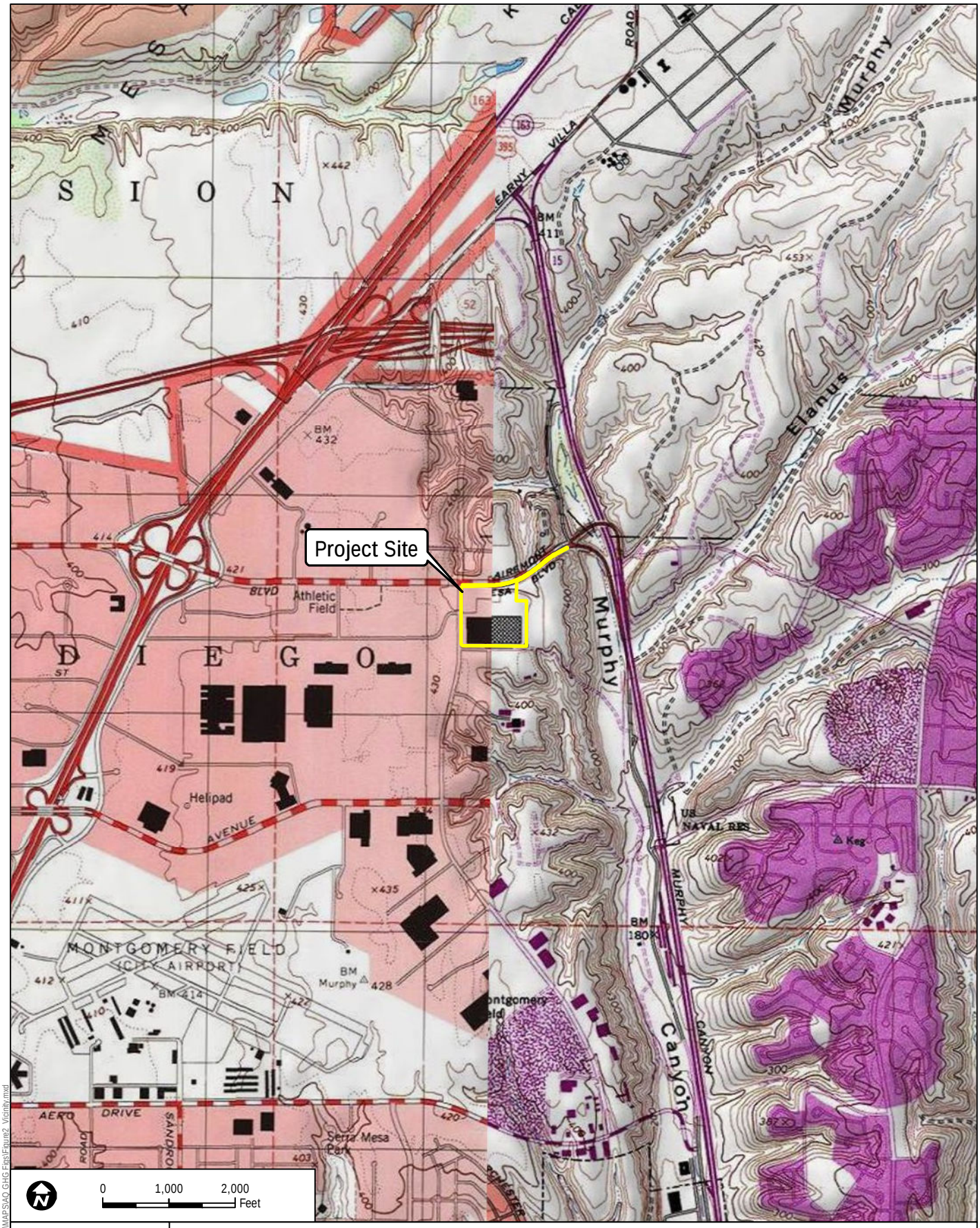

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SOURCE: USGS topo 7.5-Minute Series Quadrangle

FIGURE 2
Vicinity Map

Air Quality Technical Report for the to Kaiser Permanente San Diego Central Medical Center Project

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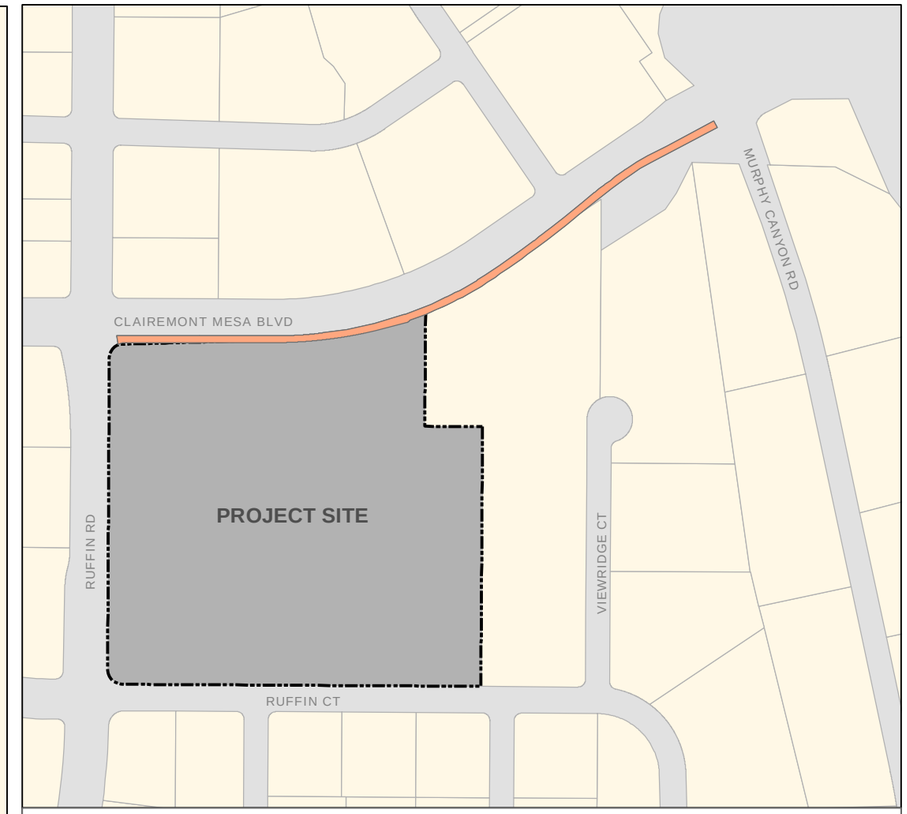

Limits of Off-Site Street Improvements

Legend

- Project Site
- Proposed Phase I Buildings/Structures
- Proposed Phase II Buildings/Structures
- Proposed Eastbound 3rd Lane Street Improvements

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SOURCE: CO ARCHITECTS 2012

FIGURE 3

Project Site Plan

Air Quality Technical Report for the to Kaiser Permanente San Diego Central Medical Center Project

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Hospital

The hospital would be a full-service general acute care hospital and would accommodate 450 beds. Phase I would comprise 562,000 square feet and 321 beds. Phase II would include 158,000 square feet accommodating an additional 129 beds, for a total of 450 beds. In addition to the inpatient nursing functions, the hospital would include ancillary services, such as medical imaging/radiology, clinical laboratory and blood bank, operating rooms and associated recovery spaces, inpatient pharmacies, and an emergency department which would have associated treatment rooms. The hospital would also include administrative offices and conference rooms, as well as general building support departments such as environmental and material services, cafeteria and inpatient food services, communication, linen, and biomedical engineering.

Sustainable goals are set to ensure that the hospital building would be certified LEED (Leadership in Energy and Environmental Design) Gold. The project would be developed to embrace both technology and the environment, incorporate reduced energy demand systems (solar, thermal insulation), utilization of rainwater, recycling of waste, utilize systems with energy recovery options, prefabrication elements across the project to minimize waste, and consideration of local materials for both landscape and construction.

Structured parking, with preferred parking for fuel-efficient vehicles, would eliminate the heat island effect of surface parking and encourage the use of alternative fuel vehicles. The site would be engineered to reduce runoff and improve the quality of the runoff that does enter the storm water system. The site would also be restored with native, low-water use planting and maximum open space to provide healing gardens and outdoor event space for the patients and community.

In addition, low-flow fixtures and water-efficient medical and mechanical equipment, as well as metering for measurement and verification, would be used to conserve water in the hospital.

Hospital Support Building

The HSB would be two buildings (180,000 square feet) located immediately adjacent to and connected to the hospital building. Phase I would include a 75,000-square foot building and Phase II would provide an additional 105,000 square feet. The HSB would provide outpatient clinical departments including physician offices, exam and treatment rooms, imaging/radiology, pharmacies, and additional administrative offices. The HSB would also provide member services departments including a business office, health education, and conference rooms.

Energy Center and Generator Yard

The 36,000-square foot Energy Center is included in Phase I and would serve both the hospital and HSB. The Energy Center would contain all of the major mechanical and electrical equipment for the Kaiser Permanente Central Medical Center. Major equipment would include electric-centrifugal water cooler chillers located on the first floor, open cooling towers located on the roof, hot water boilers located on the third floor, steam boilers, an absorption chiller connected to the emergency/standby power, microturbines (PureComfort™) to serve the chilled water process and produce electricity and microturbines (PureThermal™) to serve the hot water system and produce electricity located in the service yard and emergency generators.

Accessory equipment would include cold water pumps and heat and power (CHP) pumps co-located with the water cooler chillers on the first floor, fan coil units to serve the water treatment and elevator equipment rooms, variable air volume units located on all floors, constant air volume units located on the first floor, air handling units and supply/exhaust fans located on the roof, condenser water feed systems to serve the water treatment room, filters located on the roof to serve the cooling towers, hot water pumps and high-pressure water-jet propulsion system (HWPS) pumps co-located with the hot water boilers on the first floor, a feed water deaerator and shell and tube heat exchanger located in the boiler room, and gas packs co-located with microturbines located in the service yard. The Energy Center would also contain the offices and shops for the facilities services (engineering) department. The Energy Center would be operational with the opening of the HSB.

The following equipment would be housed within the Energy Center, located in the southwest corner of the project site:

Hot Water Boilers: Three dual fuel (natural gas with diesel fuel backup) Cleaver Brooks FLX-1200 hot water boilers with one future identical boiler would be located on the third floor of the Energy Center. One boiler would be a standby unit. Proposed hot water boilers would maintain an input of approximately 12.0 million British thermal units per hour (MMBtu/hr) and a minimum efficiency of 80%. Each is equipped with a 15 horsepower (hp) fan connected to emergency/standby power and exhaust would exit through a 28-inch diameter flue on the roof of the Energy Center.

Steam Boilers: Five Cleaver Brooks CFH 60 steam boilers would be installed in the Energy Center to produce steam. One boiler would be a standby unit. The steam boilers would be rated at 60 hp and produce approximately 2,070 pounds/hour of steam at 125 psig. The steam boilers would have a heat input rating of 2.04 MMBtu/hour.

Microturbines (PureComfort™): Six Carrier CAP65R-HG4-BE0U microturbines would serve the chilled water processes and would be located in the service yard north of the Energy Center. Each unit would have a natural gas input of 842 thousand Btu per hour (MBtu/hour) with an output power of 65 kilowatts (kW) with a total of 370 kW.

Microturbines (PureThermal™): Four Carrier CAP65R-HG4-DE0U microturbines would serve the hot water system and would be located in the service yard north of the Energy Center. Each unit would have natural gas input of 842 MBtu/hour with an output power of 65 kW with a total of 260 kW.

Emergency Generators: Three 2500-kW diesel-powered emergency generators, with provisions provided for a future fourth generator in Phase II, would be located in the Generator Yard southeast of the Energy Center. The generators would be powered by Caterpillar 3516C-HD TA diesel engines compliant with U.S. Environmental Protection Agency Tier 2 standards. The emergency generators would be located on grade to the southeast of the Energy Center, and would feed directly to the emergency paralleling and control gear located on the third floor, above the normal equipment room. An underground fuel storage tank would be sized and provided near the generator yard with the capacity to run all generators simultaneously at full load for 96 hours. In addition an individual day tank will be provided next to each generator to accommodate approximately 90 minutes of runtime.

Parking Facilities

A total of 2,499 parking spaces are proposed, in the form of two parking structures and surface parking. Parking in Phase I includes a six-story parking structure as well as surface parking, which would provide a total of 1,562 parking spaces. Parking for Phase II (buildout) would include an additional seven-story structure that would provide 937 additional spaces, for a total of 2,499 structured and surface parking spaces. The project would also provide secure bike racks and storage facilities on site to encourage bicycle use as an alternative means of transportation.

Access/Road Improvements

The project is located at the southeastern intersection of Ruffin Road and Clairemont Mesa Boulevard, and is bound by Ruffin Court to the south. Currently, a right-in / right-out only access is located approximately 330 feet east of Ruffin Road on Clairemont Mesa Boulevard. A 130-foot long eastbound right-turn lane is provided at this driveway. Access to the project site is also currently provided by two driveways along Ruffin Road and one driveway on Ruffin Court located at the southeastern boundary of the site.

The project proposes to close the existing access point on Clairemont Mesa Boulevard and instead provide a warranted signalized access approximately 760 feet east of Ruffin Road on Clairemont Mesa Boulevard. One outbound left-turn lane and two outbound right-turn lanes are proposed at this driveway.

For access from Ruffin Road, a driveway is proposed approximately 540 feet south of Clairemont Mesa Boulevard. This driveway would provide right-in/ right-out only access on Ruffin Road for ambulance access and access to the emergency room. Patients and ambulances accessing the Emergency Department from the north would make a U-turn at the Ruffin Court signal and approach the Ruffin Road access from the south.

Along Ruffin Court, the existing access is proposed to be maintained for full access. This access driveway is located east of the proposed parking structure. A second access driveway on Ruffin Court is proposed to provide direct access to the proposed parking structure and to continue to provide mutual access to Polinsky Center. A third access driveway on Ruffin Court is proposed west of HSB to provide access exclusively to loading docks, the SDG&E yard and the docks for use by delivery trucks only. A sign restricting access to all vehicles except delivery and other trucks only would be posted at the driveway.

In summary, a total of five access points are proposed for the project site including one full signalized access on Clairemont Mesa Boulevard, one access driveway on Ruffin Road, and three access driveways on Ruffin Court (one emergency only, one delivery only and one for public access).

Off-site Road Improvements

The project would include off-site road improvements. In order to provide the full signalized access on Clairemont Mesa Boulevard, as described above, widening along the south side of Clairemont Mesa Boulevard is proposed.

In addition, a storm drain located to the east of the project site, just south of Clairemont Mesa Boulevard, requires modifications. The existing off-site brow ditch and type F inlet would be removed and replaced with a reinforced concrete pipe and manhole/cleanout structure to accommodate the road widening of Clairemont Mesa Boulevard.

Construction Schedule

Construction of the project is anticipated to commence in Spring 2013, with Phase 1 to be completed by between fall 2017 and Spring 2018. Buildout is expected to be completed between 2025 and 2030. The project includes the following distinct components.

Phase I - Hospital, HSB, Energy Center, and Parking

Construction would likely commence in the Spring 2013. Initial site work would include demolition of the existing County government building and surface parking lot, the construction of additional entrances to the site with associated street and signal improvements, modifications to the current site improvements (including modifications to the current storm drainage system and potential soils remediation of unidentified fill), major excavation and grading for the hospital site, and completion of the site improvements to meet the requirements of the City of San Diego, Office of Statewide Health Planning and Delivery and Caltrans, and coordinated with the requirements of the Federal Highway Administration, as applicable.

The HSB is expected to be completed as a part of Phase 1 along the same timeframe. The Energy Center would be operational with the opening of the HSB.

Phase II - Build-out

Future development capacity for additional integrated nursing wings, additional diagnostic and treatment space, medical specialty buildings, ancillary commercial/retail and, if needed, additional parking structures would be included under full buildout of the KP Central Medical Center Project.

The precise timing, order and rate of development would be at Kaiser's discretion and these decisions may depend upon factors not within the control of Kaiser, such as changes in health care delivery requirements, member needs, market orientation and demand, interest rates, competition and other similar factors.

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2.0 EXISTING CONDITIONS

2.1 Climate and Topography

The weather of the San Diego region, as in most of Southern California, is influenced by the Pacific Ocean and its semi-permanent high-pressure systems that result in dry, warm summers and mild, occasionally wet winters. The average temperature ranges (in degrees Fahrenheit (°F)) from the mid-40s to the high 90s. Most of the region's precipitation falls from November to April, with infrequent (approximately 10%) precipitation during the summer. The average seasonal precipitation along the coast is approximately 10 inches; the amount increases with elevation as moist air is lifted over the mountains.

The topography in the San Diego region varies greatly, from beaches on the west to mountains and desert on the east; along with local meteorology, it influences the dispersal and movement of pollutants in the basin. The mountains to the east prohibit dispersal of pollutants in that direction and help trap them in inversion layers.

The interaction of ocean, land, and the Pacific High Pressure Zone maintains clear skies for much of the year and influences the direction of prevailing winds (westerly to northwesterly). Local terrain is often the dominant factor inland, and winds in inland mountainous areas tend to blow through the valleys during the day and down the hills and valleys at night.

2.2 Air Pollution Climatology

The project site is located within the San Diego Air Basin (SDAB or basin) and is subject to the San Diego Air Pollution Control District (SDAPCD) guidelines and regulations. The SDAB is one of 15 air basins that geographically divide the State of California. The SDAB is currently classified as a federal nonattainment area for ozone (O_3) and a state nonattainment area for particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and O_3.

The SDAB lies in the southwest corner of California and comprises the entire San Diego region, covering 4,260 square miles, and is an area of high air pollution potential. The basin experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

The SDAB experiences frequent temperature inversions. Subsidence inversions occur during the warmer months as descending air associated with the Pacific High Pressure Zone meets cool marine air. The boundary between the two layers of air creates a temperature inversion that traps pollutants.

The other type of inversion, a radiation inversion, develops on winter nights when air near the ground cools by heat radiation and air aloft remains warm. The shallow inversion layer formed between these two air masses also can trap pollutants. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce O_3, commonly known as smog.

Light daytime winds, predominately from the west, further aggravate the condition by driving air pollutants inland, toward the mountains. During the fall and winter, air quality problems are created due to carbon monoxide (CO) and oxides of nitrogen (NO_x) emissions. CO concentrations are generally higher in the morning and late evening. In the morning, CO levels are elevated due to cold temperatures and the large number of motor vehicles traveling. Higher CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO is produced almost entirely from automobiles, the highest CO concentrations in the basin are associated with heavy traffic. Nitrogen dioxide (NO_2) levels are also generally higher during fall and winter days.

Under certain conditions, atmospheric oscillation results in the offshore transport of air from the Los Angeles region to San Diego County. This often produces high O_3 concentrations, as measured at air pollutant monitoring stations within the County. The transport of air pollutants from Los Angeles to San Diego has also occurred within the stable layer of the elevated subsidence inversion, where high levels of O_3 are transported.

2.3 Air Quality Characteristics

Air quality varies as a direct function of the amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Air quality problems arise when the rate of pollutant emissions exceeds the rate of dispersion. Reduced visibility, eye irritation, and adverse health impacts upon those persons termed sensitive receptors are the most serious hazards of existing air quality conditions in the area. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution, as identified by the California Air Resources Board (CARB), include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

3.0 POLLUTANTS AND EFFECTS

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include: O_3, NO_2, CO, sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead (Pb). These pollutants are discussed below.[1] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a colorless gas that is formed in the atmosphere when volatile organic compounds (VOCs), sometimes referred to as reactive organic gases (ROGs), and NO_x react in the presence of ultraviolet sunlight. O_3 is not a primary pollutant; it is a secondary pollutant formed by complex interactions of two pollutants directly emitted into the atmosphere. The primary sources of VOCs and NO_x, the precursors of O_3, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation and ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. Short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

Nitrogen Dioxide. Most NO_2, like O_3, is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_x and are major contributors to O_3 formation. High concentrations of NO_2 can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis and some increase in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million by volume (ppm).

Carbon Monoxide. CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the project location, automobile exhaust accounts for the majority of CO emissions. CO is a non-reactive air pollutant

[1] The following descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on the Environmental Protection Agency (EPA) Six Common Air Pollutants (EPA 2012) and the CARB Glossary of Air Pollutant Terms (CARB 2012a) published information.

that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions; primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. The highest levels of CO typically occur during the colder months of the year when inversion conditions are more frequent. In terms of health, CO competes with oxygen, often replacing it in the blood, thus reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can be dizziness, fatigue, and impairment of central nervous system functions.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Fine particulate matter, or $PM_{2.5}$, is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOC. Inhalable or coarse particulate matter, or PM_{10}, is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as Pb, sulfates, and nitrates, can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport absorbed gases, such as chlorides or ammonium,

into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline, the manufacturing of batteries, paint, ink, ceramics, and ammunition and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emission sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance including intelligence quotient performance, psychomotor performance, reaction time, and growth.

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a toxic air contaminant (TAC). Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles; and area sources such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced either on short-term (acute) or long-term (chronic) exposure to a given TAC.

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4.0 REGULATORY SETTING

4.1 Federal

The federal Clean Air Act (CAA), passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The Environmental Protection Agency (EPA) is responsible for implementing most aspects of the CAA, including the setting of National Ambient Air Quality Standards (NAAQS) for major air pollutants, hazardous air pollutant standards, approval of state attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric O_3 protection, and enforcement provisions. NAAQS are established for "criteria pollutants" under the CAA, which are O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and Pb.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The CAA requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a State Implementation Plan that demonstrates how those areas will attain the standards within mandated time frames.

4.2 State

The federal CAA delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts (AQMDs) and air pollution control districts (APCDs) at the regional and county levels. CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the California Clean Air Act (CCAA) of 1988, responding to the federal CAA, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are more restrictive than the NAAQS, consistent with the CAA, which requires state regulations to be at least as restrictive as the federal requirements. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 2, Ambient Air Quality Standards.

Table 2
Ambient Air Quality Standards

Pollutant	Average Time	California Standards[1]	National Standards[2]	
		Concentration[3]	*Primary[3,4]*	*Secondary[3,5]*
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as Primary Standard
	8 hour	0.070 ppm (137 μg/m³)	0.075 ppm (147 μg/m³)	
CO	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	None
	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	
NO_2	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	Same as Primary Standard
	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	
SO_2	1 hour	0.25 ppm (655 μg/m³)	0.75 ppm (196 μg/m³)	—
	3 hours	—	—	0.5 ppm (1300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[7]	—
	Annual	—	0.030 ppm (for certain areas)[7]	—
PM_{10}	24 hours	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m³	—	
$PM_{2.5}$	24 hours	No Separate State Standard	35 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m³	15.0 μg/m³	
Lead[6]	30-day Average	1.5 μg/m³	—	—
	Calendar Quarter	—	1.5 μg/m³ (for certain areas)[7]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 μg/m³	
Hydrogen sulfide	1-hour	0.03 ppm	—	—
Vinyl chloride[6]	24-hour	0.01 ppm	—	—
Sulfates	24-hour	25 μg/m3	—	—
Visibility reducing particles	8-hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%	—	—

ppm= parts per million by volume μg/m³ = micrograms per cubic meter mg/m³= milligrams per cubic meter

Source: CARB 2012b

1 California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For NO_2 and SO_2, the standard is attained when the 3-year average of the 98th and 99th percentile, respectively, of the daily maximum 1-hour average at each monitor within an area does not exceed the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m³ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr.
Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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

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

[6] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[7] The 1971 SO_2 national standards (24-hour and annual) and 1978 lead national standard (quarterly) remain in effect until one year after an area is designated for the 2010 and 2008 standards, respectively.

As part of its diesel risk reduction program, CARB adopted an Airborne Toxic Control Measure (ATCM) that applies to new and in-use stationary compression-ignition (i.e., diesel) engines. The ATCM was adopted in 2004 and revised in November 2010 with an effective date of May 19, 2011. After December 31, 2008, the ATCM requires that new emergency standby engines must comply with EPA emission standards applicable to a 2007-model-year off-road engine of the same horsepower rating. The ATCM further limits the particulate matter (PM) emissions from an emergency standby engine operated less than 50 hours per year for maintenance and testing to 0.15 gram per brake-horsepower-hour.

4.3 Local

San Diego Air Pollution Control District

While CARB is responsible for the regulation of mobile emission sources within the state, local AQMDs and APCDs are responsible for enforcing standards and regulating stationary sources. The project is located within the SDAB and is subject to SDAPCD guidelines and regulations. In San Diego County, O_3 and particulate matter are the pollutants of main concern, since exceedances of state ambient air quality standards for those pollutants are experienced here in most years. For this reason, the SDAB has been designated as a nonattainment area for the state PM_{10}, $PM_{2.5}$, and O_3 (1-hour and 8-hour) standards. The SDAB is also a federal O_3 moderate nonattainment area for the 1997 8-hour NAAQS and as a marginal nonattainment area for the 2008 8-hour NAAQS for O_3 and a CO maintenance area.

The SDAPCD 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 County *Regional Air Quality Strategy* (RAQS) was initially adopted in 1991, and is updated on a triennial basis (most recently in 2009). The RAQS outlines SDAPCD's plans and control measures designed to attain the state air quality standards for O_3. The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in San Diego County and the cities in the county, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source

emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by San Diego County and the cities in the county as part of the development of their general plans.

The *Eight-Hour Ozone Attainment Plan for San Diego County* indicates that local controls and state programs would allow the region to reach attainment of the federal 8-hour O_3 standard by 2009 (SDAPCD 2007). In this plan, SDAPCD relies on the RAQS to demonstrate how the region will comply with the federal O_3 standard. The RAQS details how the region will manage and reduce O_3 precursors (NO_x and VOCs) by identifying measures and regulations intended to reduce these contaminants. The control measures identified in the RAQS generally focus on stationary sources; however, the emissions inventories and projections in the RAQS address all potential sources, including those under the authority of CARB and the EPA. Incentive programs for reduction of emissions from heavy-duty diesel vehicles, off-road equipment, and school buses are also established in the RAQS.

In December 2005, SDAPCD prepared a report titled "Measures to Reduce Particulate Matter in San Diego County" to address implementation of Senate Bill (SB) 656 in San Diego County (SB 656 required additional controls to reduce ambient concentrations of PM_{10} and $PM_{2.5}$) (SDAPCD 2005). In the report, SDAPCD evaluates the implementation of source-control measures that would reduce particulate matter emissions associated with residential wood combustion.

As stated above, the SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations would apply construction of the proposed project and some of the proposed stationary sources:

- **SDAPCD Regulation II: Permits; Rule 10: Permits Required.** Requires that any person building, erecting, altering, or replacing any article, machine, equipment or other contrivance, the use of which may cause the issuance of air contaminants, shall receive written authorization (Authority to Construction) and a Permit to Operate from the SDAPCD (SDAPCD 2000a).
- **SDAPCD Regulation II: Permits; Rule 20.1: New Source Review – General Provisions.** Establishes the general provisions, including exemptions, definitions, and emission calculations, that apply to any new or modified emission unit, any replacement emission unit, any relocated emission unit or any portable emission unit for which an Authority to Construct or Permit to Operate is required (SDAPCD 1998a).
- **SDAPCD Regulation II: Permits; Rule 20.2: New Source Review – Non-Major Sources.** Applies to any new or modified stationary source, to any new or modified emission unit and to any relocated emission unit that is not considered a major stationary

source. As applied to new or modified sources, the rule requires (1) the use of Best Available Control Technology (BACT) where the emissions of PM_{10}, NO_x, VOC, or SO_x would increase by 10 pounds per day or more; (2) an air quality impact analysis if the emissions of PM_{10}, NO_x, VOC, SO_x, or lead exceed designated trigger levels; and (3) establishes public noticing requirements prior to issuance of a permit (SDAPCD 1998b).

- **SDAPCD Regulation IV: Prohibitions; Rule 50: Visible Emissions.** Prohibits any activity causing air contaminant emissions darker than 20% opacity for more than an aggregate of 3 minutes in any consecutive 60-minute time period. In addition, Rule 50 prohibits any diesel pile-driving hammer activity causing air contaminant emissions for a period or periods aggregating more than 4 minutes during the driving of a single pile (SDAPCD 1997).
- **SDAPCD Regulation IV: Prohibitions; Rule 51: Nuisance.** Prohibits the discharge, from any source, of such quantities of air contaminants or other materials that cause or have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property (SDAPCD 1969).
- **SDAPCD Regulation IV: Prohibitions; Rule 55: Fugitive Dust.** Regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project site (SDAPCD 2009).
- **SDAPCD Regulation IV: Prohibitions; Rule 67.0: Architectural Coatings.** Requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories (SDAPCD 2001).
- **SDAPCD Regulation IV: Prohibitions; Rule 69.2: Industrial and Commercial Boilers, Process Heaters and Steam Generators.** Prescribes NO_x and CO emission limits for existing and new boilers, process heaters, and steam generators rated at 5 million British thermal units (Btu) per hour or more. The rule also includes recordkeeping and source testing requirements. (SDAPCD 1994).
- **SDAPCD Regulation IV: Prohibitions; Rules 69.3 and 69.3.1: Stationary Gas Turbine Engines.** Prescribes NO_x emission limits for stationary gas turbine engines, corresponding to Reasonably Available Control Technology and Best Available Retrofit Technology, respectively, as well as monitoring and recordkeeping requirements. The rules apply to gas turbine engines rated at greater than 0.3 megawatts (300 kW) (SDAPCD 1998c, SDAPCD 2010a).

- **SDAPCD Regulation IV: Prohibitions; Rule 69.4.1: Stationary Reciprocating Internal Combustion Engines.** Prescribes NO_x, VOC, and CO emission limits for existing and new internal combustion engines as well as monitoring and recordkeeping requirements. The requirements are limited for new emergency standby engines that operate less than 52 hours per year for non-emergency purposes (SDAPCD 2000b).

- **SDAPCD Regulation XII: Prohibitions; Rule 1200: Toxic Air Contaminants – New Source Review.** (SDAPCD 1996a). Applies to any new, relocated, or modified emission unit which may increase emissions of one or more TACs that requires an Authority to Construct or Permit to Operate. The rule establishes acceptable risk levels and emission control requirements for new and modified facilities that may emit additional TACs. Under Rule 1200, permits to operate may not be issued when emissions of TACs result in an incremental cancer risk greater than 1 in 1 million without application of Toxics-BACT (T-BACT), or an incremental cancer risk greater than 10 in 1 million with application of T-BACT, or a health hazard index (chronic and acute) greater than one.

- **SDAPCD Regulation XI: National Emission Standards for Hazardous Air Pollutants; Subpart M, Rule 361.145: Standard for Demolition and Renovation.** Requires owners and operators of a demolition or renovation activity to provide written notification of planned asbestos stripping or removal to the Control Officer no less than 10 days prior to demolition and/or asbestos removal. A Notification of Demolition and Renovation Form and fee is required with written notification. Procedures for asbestos emission control are provided under Rule 361.145 and must be followed in accordance with this regulation (SDAPCD 1995b).

5.0 LOCAL AIR QUALITY

5.1 SDAB Attainment Designation

An area is designated in attainment when it is in compliance with the NAAQS and/or CAAQS. These standards are set by the EPA or CARB for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare.

The criteria pollutants of primary concern that are considered in this air quality assessment include O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$. Although there are no ambient standards for VOCs or NO_x, they are important as precursors to O_3.

The SDAB is designated by EPA as a moderate nonattainment area for the 1997 8-hour NAAQS for O_3 and as a marginal nonattainment area for the 2008 8-hour NAAQS for O_3. The SDAB was designated in attainment for all other criteria pollutants under the NAAQS with the exception of PM_{10}, which was determined to be unclassifiable. The SDAB is currently designated nonattainment for O_3, both 1-hour and 8-hour, and PM_{10} and $PM_{2.5}$ under the CAAQS. It is designated attainment for CO, NO_2, SO_2, lead, and sulfates.

Table 3, SDAB Attainment Classification, summarizes SDAB's federal and state attainment designations for each of the criteria pollutants.

Table 3
SDAB Attainment Classification

Pollutant	Federal Designation[a]	State Designation[b]
O_3 (1 hour)	Attainment*	Nonattainment
O_3 (8-hour – 1997) (8-hour – 2008)	Nonattainment (Moderate) Nonattainment (Marginal)	Nonattainment
CO	Attainment (Maintenance Area)	Attainment
PM_{10}	Unclassifiable**	Nonattainment
$PM_{2.5}$	Attainment	Nonattainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Pb	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen Sulfide	(no federal standard)	Unclassified
Visibility	(no federal standard)	Unclassified

Source: [a]EPA 2012a; [b]CARB 2011.
* The federal 1-hour standard of 0.12 ppm was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in State Implementation Plans.
** At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

5.2 Air Quality Monitoring Data

The SDAPCD operates a network of ambient air monitoring stations throughout San Diego County, which measure ambient concentrations of pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The SDAPCD monitors air quality conditions at 10 locations throughout the basin. Due to its proximity to the site and location in an area that is less congested than downtown San Diego, the Overland Avenue monitoring station concentrations for all pollutants, except CO and SO_2, are considered most representative of the project site. The downtown San Diego monitoring stations are the nearest locations to the project site where CO and SO_2 concentrations are monitored. Ambient concentrations of pollutants from 2009 through 2011 are presented in Table 4. The number of days exceeding the AAQS is shown in Table 5. The state 8-hour and 1-hour O_3 standards were exceeded in 2009, 2010, and 2011, while the federal 8-hour O_3 standard was exceeded in 2009 and 2011. Air quality within the project region was in compliance with both CAAQS and NAAQS for NO_2, CO, PM_{10}, $PM_{2.5}$, and SO_2 during this monitoring period.

Table 4
Ambient Air Quality Data
(ppm unless otherwise indicated)

Pollutant	Averaging Time	2009	2010	2011	Most Stringent Ambient Air Quality Standard	Monitoring Station
O_3	8-hour	0.082	0.074	0.087	0.070	Overland Avenue
	1-hour	0.105	0.100	0.097	0.090	
PM_{10}	Annual	24.9 µg/m³	18.7 µg/m³	20.3 µg/m³	20 µg/m³	Overland Avenue
	24-hour	50.0 µg/m³	32.0 µg/m³	47.0 µg/m³	50 µg/m³	
$PM_{2.5}$	Annual*	10.5 µg/m³	8.7 µg/m³	8.9 µg/m³	12 µg/m³	Overland Avenue
	24-hour	25.1 µg/m³	18.7 µg/m³	29.9 µg/m³	35 µg/m³	
NO_2	Annual	0.014	0.013	0.012	0.030	Overland Avenue
	1-hour	0.060	0.073	0.073	0.180	
CO	8-hour	2.77	2.17	2.44	9.0	Beardsley Street
	1-hour*	4.0	2.8	2.8	20	
SO_2	Annual	0.001	0.000	--	0.030	Beardsley Street
	24-hour	0.006	0.002	0.003	0.040	

Source: CARB 2012c; EPA 2012b
Data represent maximum values
Notes: A new 1-hour NAAQS for NO_2 became effective in April 2010. Data reflect compliance with the 1-hour CAAQS
* Data were taken from EPA 2012c

Table 5
Frequency of Air Quality Standard Violations

Monitoring Site	Year	Number of Days Exceeding Standard		
		State 1-Hour O_3	*State 8-Hour O_3*	*National 8-Hour O_3*
Overland Avenue	2009	2	3	1
	2010	2	3	0
	2011	1	3	1

Source: CARB 2012b.

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6.0 THRESHOLDS OF SIGNIFICANCE

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

1. Conflict with or obstruct the implementation of the applicable air quality plan;
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O_3 precursors);
4. Expose sensitive receptors to substantial pollutant concentrations; or
5. Create objectionable odors affecting a substantial number of people.

SDAPCD

As part of its air quality permitting process, the SDAPCD has established thresholds in Rule 20.2 requiring the preparation of Air Quality Impact Assessments (AQIA) for permitted stationary sources. The SDAPCD sets forth quantitative emission thresholds below which a stationary source would not have a significant impact on ambient air quality. Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 6, San Diego Air Pollution Control District Air Quality Significance Thresholds, are exceeded.

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.

Table 6
San Diego Air Pollution Control District Air Quality Significance Thresholds

Construction Emissions	
Pollutant	*Total Emissions (Pounds per Day)*
Respirable Particulate Matter (PM_{10})	100
Fine Particulate Matter ($PM_{2.5}$)	55
Oxides of Nitrogen (NO_x)	250
Oxides of Sulfur (SO_x)	250
Carbon Monoxide (CO)	550
Volatile Organic Compounds (VOC)	137*

Table 6
San Diego Air Pollution Control District Air Quality Significance Thresholds

Operational Emissions			
Pollutant	*Total Emissions*		
	Pounds per Hour	*Pounds per Day*	*Pounds per Year*
Respirable Particulate Matter (PM_{10})	—	100	15
Fine Particulate Matter ($PM_{2.5}$)	—	55	10
Oxides of Nitrogen (NO_x)	25	250	40
Sulfur Oxides (SO_x)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	—	3.2	0.6
Volatile Organic Compounds (VOC)	—	137*	13.7

Source: City of San Diego 2011; SDAPCD Rules 1501 (SDAPCD 1995a) and 20.2(d)(2) (SDAPCD 1998)
* VOC threshold based on the significance thresholds recommended by the Monterey Bay Unified Air Pollution Control District for the North Central Coast Air Basin, which has similar federal and state attainment status as the SDAB for O_3.

The thresholds listed in Table 6 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 CAAQS and NAAQS, including appropriate background levels. For nonattainment pollutants, if emissions exceed the thresholds shown in Table 6, 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.

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

City of San Diego

In order to determine the significance of the proposed project's emissions, the City of San Diego's Scoping Letter for the proposed project (City of San Diego 2012) as well as the City's *Significance Determination Thresholds* (City of San Diego 2011) were utilized. With respect to air quality, the Scoping Letter recommends the use of the thresholds established in Appendix G of the CEQA Guidelines (indicated above), as well as one additional threshold:

- Would the project's construction activities exceed 100 pounds per day of Particulate Matter (dust)?

This threshold, in addition to those in Appendix G of the CEQA Guidelines, will be used to address the significance of the proposed project's air quality impacts.

The City of San Diego Development Services Department updated its CEQA *Significance Determination Thresholds* guidance in January 2011 (City of San Diego 2011). This document provides guidance for City of San Diego staff, project proponents, and the public for determining whether, based on substantial evidence, a project may have a significant effect on the environment under Section 21082.2 of CEQA. With respect to air quality, this guidance recommends the use of the thresholds shown in Table 6 to determine significance.

The air quality section of the *Significance Determination Thresholds* guidance recognizes attainment status designations for the SDAB and its nonattainment status for both ozone and particulate matter. As such, the document recognizes that all new projects should include measures, pursuant to CEQA, to reduce project-related ozone and particulate matter emissions to ensure new development does not contribute to San Diego's nonattainment status for these pollutants.

The document also included significance threshold "f" in addition to thresholds identified in Appendix G of the CEQA Guidelines. Threshold "f" requires CEQA to analyze whether a project would "release substantial quantities of air contaminants beyond the boundaries of the premises upon which the stationary source emitting the contaminants is located." This threshold is based on San Diego Municipal Code, Chapter 14, Article 2, Division 7, Off-Site Development Impact Regulations, paragraph 142.0710, Air Contaminant Regulations, which states:

> *Air contaminants including smoke, charred paper, dust, soot, grime, carbon, noxious acids, toxic fumes, gases, odors, and particulate matter, or any emissions that endanger human health, cause damage to vegetation or property, or cause soiling shall not be permitted to emanate beyond the boundaries of the premises upon which the use emitting the contaminants is located.*

In addition to threshold determination protocol for air quality (and protocol for all environmental resource areas analyzed under CEQA), the determination guidance includes a discussion of CO "hotspot" screening for consideration of CO during environmental review of proposed projects.

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7.0 IMPACTS

7.1 Consistency with Air Quality Plans

As mentioned in Section 4.3, The SDAPCD and 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 RAQS was initially adopted in 1991, and is updated on a triennial basis (most recently in 2009). The RAQS outlines SDAPCD's plans and control measures designed to attain the state air quality standards for O_3. The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in San Diego County and the cities in county, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by San Diego County and the cities in the county as part of the development of their general plans.

If a project proposes development that is greater than that anticipated in the local plan and SANDAG's growth projections, the project might be in conflict with the RAQS and may contribute to a potentially significant cumulative impact on air quality. The project area is zoned Light-Industrial (IL-2-1), which allows for the construction and operation of a hospital with a Conditional Use Permit (CUP). The existing County of San Diego government office building currently occupies the site as a commercial facility; however, because the proposed project site is not zoned hospital uses, and a medical facility use would be considered a more intense land use than the existing County of San Diego government office building and what the current site zoning allows, it is reasonable to assume vehicle trip generation and planned development for the site has not been anticipated in the RAQS. Because the increase in land use intensity and associated increase in vehicle trips has not been anticipated in local air quality plans, the proposed project would be considered inconsistent at a regional level with the underlying growth forecasts in the RAQS. Impacts would be **significant and unavoidable**.

7.2 Construction Impacts

Construction of the proposed project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions. Therefore, such emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts. Fugitive dust (PM_{10} and $PM_{2.5}$) emissions would primarily result from grading and site preparation activities. NO_x and CO emissions would primarily result from the use of construction equipment and motor vehicles.

Emissions from the construction phase of the project were estimated using the URBEMIS 2007, Version 9.2.4, land use and air emissions model (Jones & Stokes 2007). For the purposes of modeling, it was assumed that the construction of the proposed project would commence in March 2013. Construction would occur intermittently over an approximately 12-year period, consisting of two primary phases and eight subphases per primary phase following demolition activities as follows:

Phase I (March 2013 – July 2016):

- Demolition of existing County Annex Building and asphalt removal (5 months)
- Mass grading (2 months)
- Site utilities (5 months)
- Foundation work (7 months)
- Structural steel erection (7.5 months)
- Slab on grade/slab on deck (8.5 months)
- Exterior skin (7 months)
- Architectural Coatings (3 months)
- Site work/paving/landscaping (6 months)

Phase II (May 2023 – May 2024)

- Asphalt removal (1 month)
- Mass grading (3 weeks)
- Site utilities (2 weeks)
- Foundation work (2 months)
- Structural steel erection (6 months)
- Slab on grade/slab on deck (6 months)
- Exterior skin (3.5 months)
- Site work/paving/landscaping (1 month)
- Architectural Coatings (2 months)

A detailed depiction of the construction schedule—including information regarding subphases, demolition, and equipment utilized during each subphase—is included in Appendix A of this report. The information contained in Appendix A was utilized as URBEMIS model inputs.

Construction equipment specifications were provided by the applicant and equipment mix is meant to represent a reasonably conservative estimate of construction activity. For the analysis, it was generally assumed that heavy construction equipment would be operating at the site for approximately 8 hours per day, 5 days per week (22 days per month), during project construction. Additionally, URBEMIS model assumptions were used for worker trips and vendor trips during building construction subphases.

The proposed project is subject to SDAPCD Rule 55 – Fugitive Dust Control. This rule requires that the project take steps to restrict visible emissions of fugitive dust beyond the property line. Compliance with Rule 55 would limit fugitive dust (PM_{10} and $PM_{2.5}$) that may be generated during grading and construction activities. To account for dust control measures in the calculations, it was assumed that the active sites would be watered at least two times daily, resulting in an approximately 55% reduction of particulate matter. The proposed project is also subject to SDAPCD Rule 67.0 – Architectural Coatings. This rule requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories. Because URBEMIS 2007 does not properly estimate VOC emissions from application of architectural coating for a project with multiple building construction phases, VOC emissions generated from architectural coatings were estimated separately based on the square footage of commercial space for each phase, the calculation method in URBEMIS 2007, VOC content of typical architectural coatings per SDAPCD Rule 67.0, and the estimated number of days of application during the coating period to determine the daily emission rate in pounds per day (see Appendix B, Part II, "Emissions of Architectural Coatings"). As shown in Table 7, Estimated Maximum Daily Construction Emissions, VOC emissions estimated from architectural coatings and those from all other sources were then combined to determine the total daily VOC emissions for the year 2014, during which architectural coatings would be applied. The year 2013 would not include the application of architectural coatings; therefore, VOC emissions generated from construction occurring in 2013 were estimated using URBEMIS 2007 alone.

Table 7 shows the estimated maximum daily construction emissions associated with the construction phases of the proposed project. Complete details of the emissions calculations are provided in Appendix B, Part I of this document.

Table 7
Estimated Maximum Daily Construction Emissions (pounds/day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2013	43.11	362.66	219.02	0.21	95.84	31.17
2014	121.01	99.56	162.58	0.21	6.48	5.41
2016	3.71	25.42	17.28	0.00	1.52	1.39
Phase I Maximum Daily Emissions	121.01	362.66	219.02	0.21	95.84	31.17
2023	7.81	50.04	67.52	0.08	36.55	9.25
2024	69.62	44.62	67.52	0.08	2.63	2.20
Phase II Maximum Daily Emissions	69.62	50.04	67.52	0.08	36.55	9.25
Maximum Daily Emissions	121.01	362.66	219.02	0.21	95.84	31.17
Emission Threshold	*137*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	**No**	**Yes**	**No**	**No**	**No**	**No**

Source: URBEMIS 2007 Version 9.2.4. See Appendix B, Part I for complete results.

As shown, daily construction emissions would not exceed the City's significance thresholds for VOC, CO, SO_x, PM_{10} or $PM_{2.5}$. However, the NO_x emissions associated with project construction would exceed the City's emission thresholds. Although PM_{10} emissions would be below City significance thresholds Mitigation Measure AQ-1 would further reduce construction-related PM_{10}. Additionally, Mitigation Measure AQ-2 would reduce construction-related NO_x emissions; however, even with incorporation of these mitigation measures, NO_x emissions are anticipated to be above the threshold. This impacts is therefore considered **significant and unavoidable**.

MM AQ-1: To ensure construction of the proposed project would not result in a significant impact relative to fugitive dust (PM_{10}), the following requirements shall be implemented:

- All active construction areas, unpaved access roads, parking areas and staging areas shall be watered at least three times per day and/or stabilized with nontoxic soil stabilizers as needed to control fugitive dust;
- Exposed stockpiles (e.g. dirt, sand, etc.) shall be covered and/or watered or stabilized with nontoxic soil binders as needed to control emissions.
- Traffic speeds on unpaved roads shall be limited to 15 miles per hour.

MM AQ-2: Prior to approval of any grading permits, the following requirements shall be placed on all grading plans, and shall be implemented during grading of each phase of the project to minimize NO_x emissions:

- Minimize simultaneous operation of multiple construction equipment units. During construction, vehicles in loading and unloading queues shall turn their engines off when not in use to reduce vehicle emissions;
- All construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications;
- All diesel-fueled on-road construction vehicles shall meet the emission standards applicable to the most current year to the greatest extent possible. To achieve this standard, new vehicles shall be used, or older vehicles shall use post-combustion controls that reduce pollutant emissions to the greatest extent feasible;
- The effectiveness of the latest diesel emission controls is highly dependent on the sulfur content of the fuel. Therefore, diesel fuel used by on- and off-road construction equipment shall be low sulfur (less than 15 ppm) or other alternative, low-polluting diesel fuel formulation.

7.3 Operational Emissions

Following the completion of construction activities, the proposed project would generate VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile and stationary sources including vehicular traffic, area sources (space heating, water heating, landscaping), diesel generators, hot water boilers, steam boilers, comfort microturbines and thermal microturbines. For the purposes of this analysis, the proposed project at full buildout (2025) is compared to the baseline scenario (existing conditions) in order to determine the net operational emissions associated with the proposed project.

Vehicular Traffic

The proposed project would impact air quality through the vehicular traffic generated by the proposed project. According to the proposed project's traffic report (LLG 2012), the baseline traffic scenario consists of 3,527 trips, while the proposed project would result in a total of 12,600 trips at Kaiser Central Hospital. The net change in trips that can be attributed to the proposed project is 9,073 trips. See Appendix C for detailed trip generation information.

The URBEMIS 2007 model was utilized to estimate daily emissions from proposed vehicular sources (refer to Appendix B, Part I). URBEMIS 2007 default data, including temperature, trip characteristics, variable start information, emissions factors, and trip distances, were conservatively used for the model inputs.

Project-related traffic was assumed to be comprised of a mixture of vehicles in accordance with the model outputs for traffic. Emission factors representing the vehicle mix and emissions for 2012 were used to estimate emissions associated with the baseline scenario, while 2025 emission factors (full buildout) were used to estimate emissions associated with the proposed project.

Area Sources

In addition to estimating mobile source emissions, the URBEMIS 2007 model was also used to estimate emissions from the project's area sources, which include other natural gas combustion, landscaping (which would not produce winter emissions), and architectural coatings for maintenance. Refer to Appendix B, Part I for additional information.

Stationary Sources

Diesel Generators

Operational emissions under the proposed project would result from intermittent use of four 2500-kW diesel-powered emergency generators for maintenance and testing purposes. Each generator would be run for testing and maintenance approximately 30 minutes each week with a 4-hour, full load test once per 3 years for a total of 30 hours per year, assuming the triennial test is run in a given year. Generator engines would meet the EPA standards for Tier 2 engines and 0.15 gram PM per horsepower-hour as required by the CARB ATCM for new and in-use stationary diesel engines. The engines would also be required to use ultra-low-sulfur diesel fuel with a maximum sulfur content of 15 parts per million (ppm) by weight. The estimated emissions from the emergency generator engines, which are based on compliance with the Tier 2 engine standards and use of ultra-low-sulfur diesel fuel, are shown in Table 8, Estimated Daily Maximum Stationary Source Emissions. The worst-case daily emissions assume that all four engines would be tested for 4 hours on a given day. The normal daily emissions assume all four engines would be tested for 30 minutes on a given day. Worst-case and normal emissions from emergency generators are provided in Table 8. Refer to Appendix D for additional information and detailed emission calculations. Under the baseline scenario, it is assumed that no emergency generators would operate on-site.

Boilers

Hot Water Boilers

Three natural gas-fired hot water boilers and one standby boiler would be proposed as part of the project's Energy Center components. These boilers would have an input of approximately 12.0 MMBtu/hr at 287 hp and operate a minimum efficiency of 80%. The hot water boilers would be operated as required to provide the needs of the hospital. Maximum daily fuel usage for the hot water boilers would be approximately 112.8 MMBtu per day at 39% maximum daily load per unit; the estimated load was provided by the project engineers, Arup. . According to the equipment specifications, the hot water boilers would be equipped with low-NOx burners with exhaust concentrations of 9 ppm by volume NO_x and 100 ppm by volume CO, corrected to 3% oxygen. It is assumed that these levels will be considered BACT by the SDAPCD. These concentrations were converted to emission factors, expressed in units of pounds per MMBtu of natural gas combusted. The emission factors for other pollutants were obtained from Section 1.4 (Natural Gas Combustion) of EPA's *Compilation of Air Pollutant Emission Factors* (EPA 1998).

Steam Boilers

Under the proposed project, four Cleaver Brooks CFH 60 steam boilers and one standby boiler would be installed in the Energy Center to produce steam. The steam boilers would be rated at 60 hp and produce approximately 2,070 pounds of steam per hour at 125 psig. Steam boilers would have a heat input rating of 2.04 MMBtu/hour. The steam boilers would be operated as required to provide the needs of the hospital. Maximum daily fuel usage would be approximately 15.8 MMBtu per day at 32% load per unit; the estimated load was provided by the project engineers, Arup. According to the equipment specifications, the exhaust concentrations for the steam boilers would be 20 ppm by volume NO_x and 50 ppm by volume CO, corrected to 3% oxygen. These concentrations were converted to emission factors, expressed in units of pounds per MMBtu of natural gas combusted. The emission factors for other pollutants were obtained from Section 1.4 (Natural Gas Combustion) of EPA's *Compilation of Air Pollutant Emission Factors* (EPA 1998).

The estimated emissions from the hot water and steam boilers are shown in Table 8. Refer to Appendix D for additional information and detailed emission calculations. Under the baseline scenario, no boilers are assumed to operate on-site. Refer to Appendix D for additional information.

Microturbines

PureComfort™ Microturbines

As part of the proposed project, 6 PureComfort™ microturbines would operate at full load with a natural gas input of 0.842 MMBtu per hour and an output of 65 kW per unit. The microturbines would be operated continuously. Daily fuel usage would be approximately 20.2 MMBtu per unit. According to the equipment specifications, the exhaust concentrations for the PureComfort™ microturbines would be 5 ppm by volume NO_x, 9 ppm by volume VOC, and 15 ppm by volume CO, corrected to 15% oxygen. These concentrations were converted to emission factors, expressed in units of pounds per MMBtu of natural gas combusted. The emission factors for other pollutants were obtained from Section 3.1 (Stationary Gas Turbines) of EPA's *Compilation of Air Pollutant Emission Factors* (EPA 2000).

PureThermal™ Microturbines

In addition to PureComfort™ microturbines, 4 PureThermal™ microturbines would operate at full load with a natural gas input of 0.842 MMBtu per hour and an output of 65 kW per unit. The microturbines would be operated continuously. Daily fuel usage would be approximately 20.2 MMBtu per unit. According to the equipment specifications, the exhaust concentrations for the PureThermal™ microturbines would be 9 ppm by volume NO_x, corrected to 15% oxygen. This concentrations was converted to an emission factor, expressed in units of pounds per MMBtu of natural gas combusted. The VOC and CO emission estimates are based on the 2007 Fossil Fuel Emission Standards in the Distributed Generation Certification Regulation (Sections 94200 et seq. Article 3, Subchapter 8, Chapter 1, Division 3 of Title 17, California Code of Regulations). The emission factors for other pollutants were obtained from Section 3.1 (Stationary Gas Turbines) of EPA's *Compilation of Air Pollutant Emission Factors* (EPA 2000).

The estimated emissions from the microturbines are shown in Table 8. Refer to Appendix D for additional information and detailed emission calculations. Under the baseline scenario, no microturbines would operate on-site. Refer to Appendix D for additional information.

Table 8
Estimated Daily Maximum Stationary Source Emissions (pounds/day)

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Proposed Project						
Emergency Generators (normal)	3.85	73.06	41.66	0.08	2.40	2.35
Emergency Generators (worst case)	30.76	584.52	333.28	0.64	19.23	18.77

Table 8
Estimated Daily Maximum Stationary Source Emissions (pounds/day)

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Hot Water Boilers	1.86	3.70	25.01	0.20	0.26	0.26
Steam Boilers	0.35	1.54	2.34	0.04	0.05	0.05
Comfort Microturbines	1.40	2.23	4.08	0.41	0.80	0.80
Thermal Microturbines	0.12	2.68	0.62	0.27	0.53	0.53
Total	**34.49**	**594.67**	**365.33**	**1.56**	**20.87**	**20.41**

Source: See Appendix D for complete results.
Note: Total emissions do not include "normal" emergency generator emissions. Worst-case emissions resulting from emergency generator testing would occur on one day every 3 years. During all other time periods emissions associated with emergency generator testing would reflect "normal" testing emissions.

Summary

Table 9, Estimated Daily Maximum Operational Emissions, presents the maximum daily emissions associated with the operation of the proposed project after all phases of construction have been completed. The values shown for motor vehicles and area sources are the maximum summer or winter daily emissions results from URBEMIS 2007. Complete details of the emissions calculations are provided in Appendices B and C of this document.

Table 9
Estimated Daily Maximum Operational Emissions (pounds/day)

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Baseline Scenario						
Motor Vehicles	24.14	37.03	273.02	0.33	54.68	10.63
Area Sources	2.27	2.29	3.45	0.00	0.01	0.01
Stationary Sources	0.00	0.00	0.00	0.00	0.00	0.00
Total	**26.41**	**39.32**	**276.47**	**0.33**	**54.69**	**10.64**
Proposed Project						
Motor Vehicles	45.96	56.83	486.49	1.28	209.30	40.60
Area Sources	3.74	3.71	6.17	0.00	0.02	0.02
Stationary Sources	34.50	594.67	365.33	1.57	20.87	20.41
Total	**84.20**	**655.20**	**857.99**	**2.85**	**230.19**	**61.03**
Net Change						
Total	**57.79**	**615.88**	**581.52**	**2.52**	**175.5**	**50.39**
EmissionThreshold	*137*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	**No**	**Yes**	**Yes**	**No**	**Yes**	**No**

Source: See Appendices B and C for complete results.
Emissions represent maximum of summer and winter. "Summer" emissions are representative of the conditions that may occur during the ozone season (May 1 to October 31) and "winter" emissions are representative of the conditions that may occur during the balance of the year (November 1 to April 30).

As shown, the net change in daily operational emissions would not exceed the City's significance threshold for VOC, SO_x or $PM_{2.5}$. Operational emissions would exceed the City's significance thresholds for NO_x, CO, and PM_{10} primarily due to motor vehicle emissions and stationary source emissions, specifically operation of the emergency generators during testing. All four emergency generators would be tested at full load for a 4-hour period one day every three years to verify optimal function and performance of the engines; all other testing periods would be approximately 30 minutes in duration. During normal testing periods, NO_x impacts would be less than significant. Additionally, "worst-case" emissions conservatively assume diesel generator engines would meet the Tier 2 engine standards for NO_x. The actual NO_x emissions may be better than the standards; thus, using the Tier 2 standards as the basis would produce higher estimated emissions than what would likely occur when emergency generators are operating.

In San Diego County, the "smog season" generally runs from May to October (SDAPCD 2010b). To reduce potential ozone impacts during triennial emergency generator testing periods, Mitigation Measure AQ-3 is provided. Mitigation Measure AQ-3 would require the triennial 4-hour emergency generator testing period to occur outside of the "smog" season to ensure the contribution to ozone formation due to diesel engine NO_x emissions generation is minimized. Following implementation of Mitigation Measure AQ-3, however, impacts would remain **significant and unavoidable** because NO_x emissions would remain above the City's threshold of significance. No additional feasible mitigation is available to reduce anticipated vehicle trips and stationary source emissions during project operations; therefore, impacts would be **significant and unavoidable**.

MM AQ-3: To ensure contribution to ozone formation during emergency generator testing is minimized, if a triennial 4-hour emergency generator testing is conducted, the testing period shall be between November and April.

7.4 Cumulative Impacts

The proposed project, combined with known and reasonably foreseeable growth in the area, could result in cumulatively considerable emissions of nonattainment criteria air pollutants.

In analyzing cumulative impacts from the proposed project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SDAB is designated as nonattainment for the CAAQS and NAAQS. If the proposed project does not exceed thresholds and is determined to have less-than-significant project-specific impacts, it may still contribute to a significant cumulative impact on air quality if the emissions from the project, in combination with the emissions from other proposed or reasonably foreseeable future projects,

are in excess of established thresholds. However, the project would only be considered to have a significant cumulative impact if the project's contribution accounts for a significant proportion of the cumulative total emissions (i.e., it represents a "cumulatively considerable contribution" to the cumulative air quality impact).

The SDAB has been designated as a federal nonattainment area for O_3 and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. PM_{10} and $PM_{2.5}$ emissions associated with construction generally result in near-field impacts. The nonattainment status is the result of cumulative emissions from all sources of these air pollutants and their precursors within the SDAB. As discussed in Section 7.2, the emissions of all criteria pollutants, with the exception of NO_x during construction, would be below the significance levels. Construction would be short-term and temporary in nature. Additionally, construction activities required for the implementation of the proposed project would be considered typical of a health care facility. NO_x emissions generated during project construction would, however, exceed significance thresholds. Therefore, impacts resulting from these criteria pollutants would result in **significant cumulative impacts** to air quality. Once construction is completed, construction-related emissions would cease. Operational emissions generated by the proposed project would result in a significant impact regarding NO_x, CO, and PM_{10} due to motor vehicles and stationary source emissions. As such, the proposed project would result in **significant cumulative impacts** to air quality relative to operational emissions.

As stated in Section 7.1, the RAQS relies on SANDAG growth projections based on population, vehicle trends, and land use plans developed by the cities and by the county as part of the development of their general plans. As such, projects that propose development that is consistent with the growth anticipated by local plans would be consistent with the RAQS. A Conditional Use Permit would allow for hospital use within the Light–Industrial IL-2-1 zone and a Planned Development Permit would enable the project to exceed the maximum 0.50 Floor Area Ratio allowed within the Kearny Mesa Community Plan; however, the proposed project is currently not compatible with existing zoning and general plan designations for the site. Thus, the proposed project would be not consistent at a regional level with the underlying growth forecasts in the RAQS. As a result, the proposed project would result in a cumulatively considerable contribution to regional O_3 concentrations.

7.5 Toxic Air Contaminants

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as TACs or hazardous air pollutants (HAPs). State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program, and is aimed at HAPs that are a problem in California. The state has formally identified more than 200

substances as TACs, including the federal HAPs, and is adopting appropriate control measures for sources of these TACs. As examples, TACs include acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter. Some of the TACs are groups of compounds that contain many individual substances (for example, copper compounds and polycyclic organic matter).

The greatest potential for TAC emissions during construction would be diesel particulate emissions from heavy equipment operations and heavy-duty trucks and the associated health impacts to sensitive receptors. The closest sensitive receptor is the Polinsky Children's Center, located approximately 50 feet from the project site. The next closest sensitive receptor is The Chinese Bilingual Preschool, located approximately 125 feet from the project site.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. SDAPCD Rule 1210 (SDAPCD 1996b) indicates that an incremental cancer risk threshold of 10 in 1 million or greater warrants public notification. "Incremental Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 70-year lifetime will contract cancer quantified using standard risk-assessment methodology. Construction would total approximately 5 years spread out over a 12-year period. Off-road diesel construction equipment and heavy-duty diesel trucks (e.g., concrete trucks, building materials delivery trucks), which are sources of diesel exhaust particulate matter, are regulated under three ATCMs adopted by CARB. The ATCM for diesel construction equipment specifies particulate matter emission standards for equipment fleets, which become increasingly stringent over time. Furthermore, most newly-purchased construction equipment introduced into construction fleets after 2013–2015, depending on the engine horsepower rating, will be equipped with high-efficiency diesel particulate filters. One of ATCMs for heavy-duty diesel trucks specifies that commercial trucks with a gross vehicle weight rating over 10,000 pounds are prohibited from idling for more than 5 minutes unless the engines are idling while queuing or involved in operational activities. In addition, starting in model year 2008, new heavy-duty trucks must be equipped with an automatic shutoff device to prevent excessive idling or meet stringent NO_x requirements. Lastly, fleets of diesel trucks with a gross vehicle weight rating greater than 14,000 pounds are subject to another ATCM. This ATCM requires truck fleet operators to replace older vehicles and/or equip them with diesel particulate filters, depending on the age of the truck. Thus, over the life of the project, the diesel exhaust particulate matter emissions from off-road construction equipment and trucks will be controlled substantially. Accordingly construction of the proposed project is not anticipated to result in a long-term exposure of sensitive receptors to substantial concentration of TACs.

Following construction activities, stationary sources (boilers, diesel generators and microturbines) would result in TAC emissions. In San Diego County, SDAPCD Rule 1200 establishes acceptable risk levels and emission control requirements for new and modified stationary sources that may emit additional TACs, such as the proposed hot water boilers and diesel-powered emergency generators. The steam boilers and microturbines would not require permits from the SDAPCD and Rule 1200 would not apply to them. Under Rule 1200, permits to operate may not be issued when emissions of TACs result in an incremental cancer risk greater than 1 in 1 million without application of T-BACT, or an incremental cancer risk greater than 10 in 1 million with application of T-BACT, or a health hazard index (chronic and acute) greater than 1. The human health risk analysis is based on the time, duration, and exposures expected. T-BACT will be determined on a case-by-case basis; however, examples of T-BACT include diesel particulate filters, catalytic converters, and selective catalytic reduction technology. In accordance with SDAPCD Rule 20, the SDAPCD cannot issue a permit if compliance with Rule 1200 (Toxic Air Contaminants – New Source Review) and all other applicable air quality rules and regulations is not demonstrated. Accordingly, the cancer risk at nearby sensitive receptors will be at acceptable levels, and the impact to sensitive receptors would result in an impact that is less than significant.

With regard to demolition activities and the potential release of asbestos, SDAPCD's Regulation XI, Subpart M, Rule 361.145 requires that the SDAPCD be notified in writing at least 10 days before the start of any demolition or renovation activities involving the presence of asbestos-containing material. Considering the age of the County Administration Building, the potential exists for the presence of regulated asbestos-containing material. Subpart M requires that all regulated asbestos-containing material be removed prior to demolition activities. Kaiser Permanente would comply with this regulation by notifying the SDAPCD in writing at least 10 days before the start of the demolition of any buildings. Compliance with Rule 361.145 would reduce asbestos-related impacts to a level that is less than significant. Due to the presence of nearby sensitive receptors, Kaiser would also notify the operators of The Chinese Bilingual Preschool and the Polinsky Center prior to the start of demolition.

CO Hotspots

Mobile-source impacts occur basically on two scales of motion. Regionally, project-related travel will add to regional trip generation and increase the vehicle miles traveled within the local airshed and the SDAB. Locally, project traffic will be added to the roadway system in the vicinity of the proposed project. If such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles "cold-started" and operating at pollution-inefficient speeds, and is operating on roadways already crowded with non-project traffic, there is a potential for the formation of microscale CO "hotspots" in the area immediately around points of congested traffic. Because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SDAB is steadily decreasing.

Carbon monoxide transport is extremely limited and disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors such as residents, school children, hospital patients, and the elderly. Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable level of service (LOS). Projects contributing to adverse traffic impacts may result in the formation of CO hotspots. The project's traffic impact analysis (LLG 2012) evaluated whether there would be a decrease in the LOS (e.g., congestion) at the intersections affected by the project. As indicated in the City of San Diego's *Significance Determination Thresholds* (City of San Diego 2011), a site-specific CO hotspot analysis should be performed if a proposed development would cause a four- or six-lane road to deteriorate to LOS E or worse.

The project's traffic report evaluated 25 intersections in the project vicinity to assess potential impacts resulting from the proposed project. The results of the existing conditions (2012) show that all study intersections are currently operating at acceptable levels of service (LOS D or better) based on the Highway Capacity Manual methodology. Existing, Near-Term, and Long-Term (2035) conditions were evaluated without and with the proposed project. Based on the City of San Diego significance criteria, no direct significant impacts were determined in the Existing + Project scenario. The results of the traffic analysis, however, show that the following intersections are forecast to be significantly impacted by the addition of project trips during the a.m. and/or p.m. peak hours under the near-term and/or long-term scenarios:

- Clairemont Mesa Boulevard / Ruffin Road (Near-Term Direct Impact [Existing + Cumulative Projects + Project]; Long-Term Cumulative Impact [Year 2035 + Entire Project])
- Clairemont Mesa Boulevard / Murphy Canyon Road (Long-Term Cumulative Impact [Year 2035 + Entire Project])
- Balboa Avenue / Ruffin Road (Near-Term Direct Impact [Existing + Cumulative Projects + Project]; Long-Term Cumulative Impact [Year 2035 + Entire Project])
- Balboa Avenue / Viewridge Avenue (Long-Term Cumulative Impact [Year 2035 + Entire Project])

Mitigation measures are recommended for all four intersections to reduce potential direct and cumulative traffic impacts as a result of proposed project implementation.

The Clairemont Mesa Boulevard / Ruffin Road intersection currently operates at LOS C during the a.m. peak hour and LOS D during the p.m. peak hour. In the near-term, p.m. peak hour LOS conditions would deteriorate to LOS E under Existing + Cumulative Projects + Total Project implementation. To mitigate direct and cumulative impacts at the Clairemont Mesa Boulevard /

Ruffin Road intersection, an exclusive east-bound right-turn lane would be provided. With mitigation, near term intersection operation would improve to LOS D in the p.m. peak hour. Prior to mitigation, this intersection would operate at LOS E during the p.m. peak hour under the long-term scenario with or without the project; however, intersection delay would be greater with project traffic. Although implementation of the exclusive east-bound right-turn lane would not improve intersection operation to LOS D or better, it would reduce intersection delay below the without-project conditions. Accordingly, the project would not be the cause for the intersection deterioration, and no quantitative CO hotspot analysis would be required per the City of San Diego screening thresholds.

The Clairemont Mesa Boulevard / Murphy Canyon Road intersection currently operates at an acceptable LOS and would continue to operate at LOS D or better with or without project implementation in the near-term. Under long-term conditions, this intersection would operate at LOS C during the a.m. peak hour and LOS D during the p.m. peak hour without project-generated traffic. With implementation of the proposed project, intersection operation would be LOS B in the a.m. peak hour and LOS E during the p.m. peak hour, resulting in a cumulative p.m. peak hour impact. To reduce traffic impacts at the Clairemont Mesa Boulevard / Murphy Canyon Road intersection, a third east-bound through-lane on Clairemont Mesa Boulevard between Ruffin Road and Murphy Canyon Road would become a shared through / right lane at Murphy Canyon Road. With the addition of the east-bound through-lane, intersection operation would improve to LOS C during the p.m. peak hour. Although project traffic would cause this intersection to deteriorate to LOS E, project mitigation would result in reduced delay and improved intersection operation compared to the without project long-term scenario. As such, a quantitative CO hotspot analysis is not required.

The Balboa Avenue / Ruffin Road intersection currently operates at LOS D during the a.m. and p.m. peak hours. This intersection is estimated to operate at LOS E during both peak hours under the Existing + Cumulative Projects and Existing + Cumulative Projects + Total Project near-term scenarios. Project traffic would contribute to the delay and would exacerbate the poor operating conditions, with greater delay occurring in the p.m. peak hour. A south-bound right-turn overlap phasing would be provided at this intersection to mitigate direct traffic impacts. Service operation would remain LOS E with mitigation; however, delay would be reduced compared to the without project scenario. In the long-term, project traffic would contribute to the cumulative impact at the Balboa Avenue / Ruffin Road intersection prior to mitigation. With the addition of the south-bound right-turn overlap phasing, intersection operation would be better with the project plus mitigation than without the project. Per the City of San Diego's guidance, no quantitative CO hotspot assessment is required.

Intersection operation at Balboa Avenue / Viewridge Avenue would operate at LOS D or better during the near-term scenario with or without project implementation. Under the long-term scenario, intersection operation to deteriorate to LOS E during the p.m. peak hour with the addition of project traffic. To reduce the project's cumulative contribution to impacts, the project applicant would contribute a fair share (9%) towards restriping the southbound approach of the Balboa Avenue / Viewridge Avenue intersection to provide a second southbound left-turn lane. This mitigation would improve intersection operation to LOS D and would result in a reduced delay compared to the without project scenario; thus, mitigating cumulative project impacts at this intersection. No further quantitative CO hotspot analysis is required.

Although the project would generate traffic that would potentially contribute to poor operating conditions at intersections impacted by cumulative projects, the project would implement mitigation measures that would reduce the project's direct and cumulative impacts. Per the City's CO hotspot screening thresholds, a quantitative CO hotspot analysis would not be required for potentially impacted intersections examined in the project traffic impact analysis as the project with incorporation of required mitigation measures would not cause a four- or six-lane road to deteriorate to LOS E or worse.

7.6 Odors

Odors would be generated from vehicles and/or equipment exhaust emissions during construction of the proposed project. Odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment and architectural coatings. Such odors are temporary and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be considered less than significant.

Land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project entails a hospital construction and would not result in the creation of a land use that is commonly associated with odors. Therefore, project operations would result in an odor impact that is less than significant impact.

8.0 SUMMARY AND CONCLUSIONS

The air quality impact analysis evaluates the potential for significant adverse impacts to the ambient air quality due to construction and operational emissions resulting from the proposed project. Construction of the proposed project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. The analysis concludes that the daily construction emissions would exceed the City's significance thresholds for criteria pollutants. As such, mitigation has been provided; however, impacts would remain significant after mitigation is implemented. Air quality impacts resulting from construction would, therefore, be significant and unmitigable. Operational emissions were found to be significant and unavoidable for NO_x, CO, and PM_{10}. No mitigation is available to reduce motor vehicle trips and stationary source emissions associated with project operation, thus; criteria pollutant emissions associated with operation would remain significant and unavoidable.

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APPENDIX A

Construction Schedule and Equipment

Kaiser Permanente
Construction Schedule

Phase	Size of Building to be Demo'd (LxWxH)	Maximum Daily Acres Graded	Soil Export	Start	Completion	Equipment 1 Number	Equipment 1 Type	Equipment 2 Number	Equipment 2 Type	Equipment 3 Number	Equipment 3 Type	Equipment 4 Number	Equipment 4 Type	Equipment 5 Number	Equipment 5 Type	Equipment 6 Number	Equipment 6 Type
Demolition - Existing Building	330,000 SF (400X840X21)			1-Mar-13	28-Jul-12	4	Excavator	2	Rubber Tire Loader	1	Tractor Loader Backhoe	1	Water Truck	4	Semi-Tractor Trailer	1	Skid Steer
- Ashpalt	130,000SF			1-Mar-13	28-Jul-12	2	Rubber Tire Loader	1	Water Truck								
Eathwork		9		1-Jul-13	1-Sep-13	12	Scrapers	4	Rubber Tire Loader	2	Compactor (CAT 825)	2	CAT D8 Dozers	3	Water Truck	1	Motor Grader (CAT 140)
Site Utilities				1-Jul-13	1-Dec-13	2	Backhoe	1	Excavator								
Foundations				1-Jul-13	1-Feb-14	2	Backhoe	1	Water Truck	20	Concrete Truck	2	Concrete Boom Pump	1	Rubber Tire Loader	2	Rough Terrian Fork Lift
Structural Steel Erection				1-Dec-13	18-Jul-14	2	Crane	25	Welders	1	Semi Tractor Truck	4	Rough Terrian Fork Lift	10	Aerial Lifts	5	Air Compressors
Slab on grade/slab on deck				20-Dec-13	8-Aug-14	10	Concrete Surfacing Machines (15HP)	20	Concrete Truck	2	Concrete Boom Pump	1	Rubber Tire Loader	1	Rough Terrian Fork Lift		
Exterior Skin				5-Mar-14	29-Sep-14	1	Crane	10	Aerial Lifts	1	Rough Terrian Fork Lift						
Site work/Paving/Landscape				2-Jan-16	4-Jul-16	1	Paver Equipment	1	Rubber Tire Loader	1	Motor Grader	2	Semi-Tractor Trailer	1	Paving Roller	1	Backhoe

Kaiser Permanente
Construction Schedule - Phase II

Phase	Size of Building to be Demo'd (LxWxH)	Maximum Daily Acres Graded	Soil Export	Start	Completion	Equipment 1 Number	Equipment 1 Type	Equipment 2 Number	Equipment 2 Type	Equipment 3 Number	Equipment 3 Type	Equipment 4 Number	Equipment 4 Type	Equipment 5 Number	Equipment 5 Type	Equipment 6 Number	Equipment 6 Type
Demolition - Existing Landscape, Asphalt	63,090 SF			1-May-23	2-Jun-23	1	Excavator	1	Rubber Tire Loader	1	Tractor Loader Backhoe	1	Water Truck	1	Semi-Tractor Trailer	1	Skid Steer
Earthwork		1		5-Jun-23	23-Jun-23	1	Scraper	1	Rubber Tire Loader	1	Compactor (CAT 825)	1	CAT D8 Dozer	1	Water Truck	1	Motor Grader (CAT 140)
Site Utilities				5-Jun-23	16-Jun-23	1	Backhoe	1	Excavator								
Foundations				5-Jun-23	28-Jul-23	2	Backhoe	1	Water Truck	10	Concrete Truck	1	Concrete Boom Pump	1	Rubber Tire Loader	2	Rough Terrain Fork Lift
Structural Steel Erection				31-Jul-23	24-Jan-24	1	Crane	10	Welders	1	Semi Tractor Truck	2	Rough Terrain Fork Lift	5	Aerial Lifts	3	Air Compressors
Slab on grade/slab on deck				21-Aug-23	5-Feb-24	5	Concrete Surfacing Machines (15HP)	10	Concrete Truck	1	Concrete Boom Pump	1	Rubber Tire Loader	1	Rough Terrain Fork Lift		
Exterior Skin				27-Nov-23	11-Mar-24	1	Crane	5	Aerial Lifts	1	Rough Terrain Fork Lift						
Site work/Paving/Landscape				6-May-24	31-May-24	1	Paver Equipment	1	Rubber Tire Loader	1	Motor Grader	1	Semi-Tractor Trailer	1	Paving Roller	1	Backhoe

APPENDIX B – PART I

URBEMIS 2007 Version 9.2.4 Modeling and Estimated Emissions

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Hospital Construction.urb924

Project Name: Kaiser Hospital - Construction Phase I

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2013 TOTALS (lbs/day unmitigated)	43.11	362.66	219.02	0.21	135.19	15.65	150.84	28.28	14.38	42.66
2013 TOTALS (lbs/day mitigated)	43.11	362.66	219.02	0.21	80.19	15.65	95.84	16.79	14.38	31.17
2014 TOTALS (lbs/day unmitigated)	218.49	99.56	162.58	0.21	0.91	5.57	6.48	0.32	5.09	5.41
2014 TOTALS (lbs/day mitigated)	14.74	99.56	162.58	0.21	0.91	5.57	6.48	0.32	5.09	5.41
2016 TOTALS (lbs/day unmitigated)	3.71	25.42	17.28	0.00	0.01	1.51	1.52	0.00	1.39	1.39
2016 TOTALS (lbs/day mitigated)	3.71	25.42	17.28	0.00	0.01	1.51	1.52	0.00	1.39	1.39

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

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	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 3/1/2013-6/28/2013 Active Days: 86	5.59	50.71	28.09	0.05	34.85	2.41	37.26	7.27	2.22	9.49
Demolition 03/01/2013-07/28/2013	5.59	50.71	28.09	0.05	34.85	2.41	37.26	7.27	2.22	9.49
Fugitive Dust	0.00	0.00	0.00	0.00	34.67	0.00	34.67	7.21	0.00	7.21
Demo Off Road Diesel	3.46	25.38	16.82	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Demo On Road Diesel	2.09	25.25	9.79	0.05	0.16	0.97	1.14	0.05	0.90	0.95
Demo Worker Trips	0.04	0.08	1.48	0.00	0.01	0.01	0.02	0.00	0.00	0.01

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Time Slice 7/1/2013-7/26/2013 Active Days: 20	43.11	**362.66**	**219.02**	0.13	135.19	**15.65**	150.84	28.28	**14.38**	42.66
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Demolition 03/01/2013-07/28/2013	5.59	50.71	28.09	0.05	34.85	2.41	37.26	7.27	2.22	9.49
Fugitive Dust	0.00	0.00	0.00	0.00	34.67	0.00	34.67	7.21	0.00	7.21
Demo Off Road Diesel	3.46	25.38	16.82	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Demo On Road Diesel	2.09	25.25	9.79	0.05	0.16	0.97	1.14	0.05	0.90	0.95
Demo Worker Trips	0.04	0.08	1.48	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Mass Grading 07/01/2013-09/01/2013	31.60	271.07	129.80	0.01	100.04	10.92	110.95	20.90	10.04	30.94
Mass Grading Dust	0.00	0.00	0.00	0.00	100.00	0.00	100.00	20.88	0.00	20.88
Mass Grading Off Road Diesel	31.44	270.77	124.53	0.00	0.00	10.89	10.89	0.00	10.02	10.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.16	0.30	5.27	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Trenching 07/01/2013-12/01/2013	0.61	4.39	3.89	0.00	0.00	0.26	0.26	0.00	0.24	0.24
Trenching Off Road Diesel	0.59	4.35	3.26	0.00	0.00	0.25	0.25	0.00	0.23	0.23
Trenching Worker Trips	0.02	0.04	0.63	0.00	0.00	0.00	0.01	0.00	0.00	0.00

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Time Slice 7/29/2013-8/30/2013 Active Days: 25	37.51	311.94	190.93	0.08	100.34	13.24	113.58	21.01	12.16	33.17
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Mass Grading 07/01/2013-09/01/2013	31.60	271.07	129.80	0.01	100.04	10.92	110.95	20.90	10.04	30.94
Mass Grading Dust	0.00	0.00	0.00	0.00	100.00	0.00	100.00	20.88	0.00	20.88
Mass Grading Off Road Diesel	31.44	270.77	124.53	0.00	0.00	10.89	10.89	0.00	10.02	10.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.16	0.30	5.27	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Trenching 07/01/2013-12/01/2013	0.61	4.39	3.89	0.00	0.00	0.26	0.26	0.00	0.24	0.24
Trenching Off Road Diesel	0.59	4.35	3.26	0.00	0.00	0.25	0.25	0.00	0.23	0.23
Trenching Worker Trips	0.02	0.04	0.63	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 9/2/2013-11/29/2013 Active Days: 65	5.92	40.87	61.14	0.07	0.31	2.32	2.63	0.11	2.12	2.23
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Trenching 07/01/2013-12/01/2013	0.61	4.39	3.89	0.00	0.00	0.26	0.26	0.00	0.24	0.24
Trenching Off Road Diesel	0.59	4.35	3.26	0.00	0.00	0.25	0.25	0.00	0.23	0.23
Trenching Worker Trips	0.02	0.04	0.63	0.00	0.00	0.00	0.01	0.00	0.00	0.00

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Time Slice 12/2/2013-12/19/2013 Active Days: 14	10.61	72.97	114.49	0.14	0.60	4.13	4.74	0.22	3.78	3.99
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Building 12/01/2013-07/18/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Time Slice 12/20/2013-12/31/2013 Active Days: 8	15.92	109.45	171.74	**0.21**	0.91	6.20	7.11	0.32	5.67	5.99
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Building 12/01/2013-07/18/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Building 12/20/2013-08/08/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21

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Time Slice 1/1/2014-1/31/2014 Active Days: 23	14.74	99.56	162.58	**0.21**	0.91	5.57	6.48	0.32	5.09	5.41
Building 07/01/2013-02/01/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/01/2013-07/18/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/20/2013-08/08/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Time Slice 2/3/2014-3/4/2014 Active Days: 22	9.83	66.38	108.39	0.14	0.60	3.72	4.32	0.22	3.39	3.61
Building 12/01/2013-07/18/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/20/2013-08/08/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23

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Time Slice 3/5/2014-7/18/2014 Active Days: 98	14.74	99.56	162.58	**0.21**	0.91	5.57	6.48	0.32	5.09	5.41
Building 03/05/2014-09/29/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/01/2013-07/18/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/20/2013-08/08/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Time Slice 7/21/2014-8/8/2014 Active Days: 15	9.83	66.38	108.39	0.14	0.60	3.72	4.32	0.22	3.39	3.61
Building 03/05/2014-09/29/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/20/2013-08/08/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23

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Time Slice 8/11/2014-9/29/2014 Active Days: 36	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building 03/05/2014-09/29/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Time Slice 10/1/2014-12/31/2014 Active Days: 66	**218.49**	0.11	2.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01
Coating 10/01/2014-12/31/2014	218.49	0.11	2.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01
Architectural Coating	218.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.06	0.11	2.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01
Time Slice 1/4/2016-7/4/2016 Active Days: 131	3.71	25.42	17.28	0.00	0.01	1.51	1.52	0.00	1.39	1.39
Asphalt 01/02/2016-07/04/2016	3.71	25.42	17.28	0.00	0.01	1.51	1.52	0.00	1.39	1.39
Paving Off-Gas	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	3.56	25.15	16.01	0.00	0.00	1.49	1.49	0.00	1.37	1.37
Paving On Road Diesel	0.02	0.20	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01
Paving Worker Trips	0.03	0.06	1.20	0.00	0.01	0.01	0.02	0.00	0.01	0.01

Phase Assumptions

Phase: Demolition 3/1/2013 - 7/28/2013 - Phase I - Demo of exist building + asphalt

Building Volume Total (cubic feet): 9083955

Building Volume Daily (cubic feet): 82557.09

On Road Truck Travel (VMT): 1146.63

Off-Road Equipment:

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

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 8 hours per day

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

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

Phase: Mass Grading 7/1/2013 - 9/1/2013 - Phase I - Earthwork

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

4 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

4 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

13 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

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

Phase: Trenching 7/1/2013 - 12/1/2013 - Phase I - Site Utilities

Off-Road Equipment:

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

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 1/2/2016 - 7/4/2016 - Phase I - Site work/paving/landscaping

Acres to be Paved: 5

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

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

1 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

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1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Building Construction 7/1/2013 - 2/1/2014 - Phase I - Foundations

Off-Road Equipment:

2 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

2 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

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

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

Phase: Building Construction 12/1/2013 - 7/18/2014 - Phase I - Structural Steel Erection

Off-Road Equipment:

2 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

2 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

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

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

Phase: Building Construction 12/20/2013 - 8/8/2014 - Phase I - Slab on grade/deck

Off-Road Equipment:

2 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

2 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

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

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

Phase: Building Construction 3/5/2014 - 9/29/2014 - Phase I - Exterior Skin

Off-Road Equipment:

2 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

2 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

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1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

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

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

Phase: Architectural Coating 10/1/2014 - 12/31/2014 - Phase I - Arch Coatings

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

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

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

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

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

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

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 3/1/2013-6/28/2013 Active Days: 86	5.59	50.71	28.09	0.05	34.85	2.41	37.26	7.27	2.22	9.49
Demolition 03/01/2013-07/28/2013	5.59	50.71	28.09	0.05	34.85	2.41	37.26	7.27	2.22	9.49
Fugitive Dust	0.00	0.00	0.00	0.00	34.67	0.00	34.67	7.21	0.00	7.21
Demo Off Road Diesel	3.46	25.38	16.82	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Demo On Road Diesel	2.09	25.25	9.79	0.05	0.16	0.97	1.14	0.05	0.90	0.95
Demo Worker Trips	0.04	0.08	1.48	0.00	0.01	0.01	0.02	0.00	0.00	0.01

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Time Slice 7/1/2013-7/26/2013 Active Days: 20	43.11	**362.66**	**219.02**	0.13	80.19	**15.65**	95.84	16.79	**14.38**	31.17
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Demolition 03/01/2013-07/28/2013	5.59	50.71	28.09	0.05	34.85	2.41	37.26	7.27	2.22	9.49
Fugitive Dust	0.00	0.00	0.00	0.00	34.67	0.00	34.67	7.21	0.00	7.21
Demo Off Road Diesel	3.46	25.38	16.82	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Demo On Road Diesel	2.09	25.25	9.79	0.05	0.16	0.97	1.14	0.05	0.90	0.95
Demo Worker Trips	0.04	0.08	1.48	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Mass Grading 07/01/2013-09/01/2013	31.60	271.07	129.80	0.01	45.04	10.92	55.95	9.41	10.04	19.45
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40
Mass Grading Off Road Diesel	31.44	270.77	124.53	0.00	0.00	10.89	10.89	0.00	10.02	10.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.16	0.30	5.27	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Trenching 07/01/2013-12/01/2013	0.61	4.39	3.89	0.00	0.00	0.26	0.26	0.00	0.24	0.24
Trenching Off Road Diesel	0.59	4.35	3.26	0.00	0.00	0.25	0.25	0.00	0.23	0.23
Trenching Worker Trips	0.02	0.04	0.63	0.00	0.00	0.00	0.01	0.00	0.00	0.00

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Time Slice 7/29/2013-8/30/2013 Active Days: 25	37.51	311.94	190.93	0.08	45.34	13.24	58.58	9.52	12.16	21.69
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Mass Grading 07/01/2013-09/01/2013	31.60	271.07	129.80	0.01	45.04	10.92	55.95	9.41	10.04	19.45
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40
Mass Grading Off Road Diesel	31.44	270.77	124.53	0.00	0.00	10.89	10.89	0.00	10.02	10.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.16	0.30	5.27	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Trenching 07/01/2013-12/01/2013	0.61	4.39	3.89	0.00	0.00	0.26	0.26	0.00	0.24	0.24
Trenching Off Road Diesel	0.59	4.35	3.26	0.00	0.00	0.25	0.25	0.00	0.23	0.23
Trenching Worker Trips	0.02	0.04	0.63	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 9/2/2013-11/29/2013 Active Days: 65	5.92	40.87	61.14	0.07	0.31	2.32	2.63	0.11	2.12	2.23
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Trenching 07/01/2013-12/01/2013	0.61	4.39	3.89	0.00	0.00	0.26	0.26	0.00	0.24	0.24
Trenching Off Road Diesel	0.59	4.35	3.26	0.00	0.00	0.25	0.25	0.00	0.23	0.23
Trenching Worker Trips	0.02	0.04	0.63	0.00	0.00	0.00	0.01	0.00	0.00	0.00

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Time Slice 12/2/2013-12/19/2013 Active Days: 14	10.61	72.97	114.49	0.14	0.60	4.13	4.74	0.22	3.78	3.99
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Building 12/01/2013-07/18/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Time Slice 12/20/2013-12/31/2013 Active Days: 8	15.92	109.45	171.74	**0.21**	0.91	6.20	7.11	0.32	5.67	5.99
Building 07/01/2013-02/01/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Building 12/01/2013-07/18/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21
Building 12/20/2013-08/08/2014	5.31	36.48	57.25	0.07	0.30	2.07	2.37	0.11	1.89	2.00
Building Off Road Diesel	3.74	29.29	16.20	0.00	0.00	1.71	1.71	0.00	1.57	1.57
Building Vendor Trips	0.49	5.15	4.71	0.01	0.05	0.21	0.26	0.02	0.19	0.21
Building Worker Trips	1.07	2.04	36.33	0.06	0.25	0.15	0.40	0.09	0.12	0.21

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Time Slice 1/1/2014-1/31/2014 Active Days: 23	14.74	99.56	162.58	**0.21**	0.91	5.57	6.48	0.32	5.09	5.41
Building 07/01/2013-02/01/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/01/2013-07/18/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/20/2013-08/08/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Time Slice 2/3/2014-3/4/2014 Active Days: 22	9.83	66.38	108.39	0.14	0.60	3.72	4.32	0.22	3.39	3.61
Building 12/01/2013-07/18/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/20/2013-08/08/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23

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Time Slice 3/5/2014-7/18/2014 Active Days: 98	14.74	99.56	162.58	**0.21**	0.91	5.57	6.48	0.32	5.09	5.41
Building 03/05/2014-09/29/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/01/2013-07/18/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/20/2013-08/08/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Time Slice 7/21/2014-8/8/2014 Active Days: 15	9.83	66.38	108.39	0.14	0.60	3.72	4.32	0.22	3.39	3.61
Building 03/05/2014-09/29/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Building 12/20/2013-08/08/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23

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Time Slice 8/11/2014-9/29/2014 Active Days: 36	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building 03/05/2014-09/29/2014	4.91	33.19	54.19	0.07	0.30	1.86	2.16	0.11	1.70	1.80
Building Off Road Diesel	3.49	26.79	16.01	0.00	0.00	1.51	1.51	0.00	1.39	1.39
Building Vendor Trips	0.44	4.53	4.35	0.01	0.05	0.18	0.23	0.02	0.17	0.19
Building Worker Trips	0.98	1.87	33.84	0.06	0.25	0.16	0.41	0.09	0.13	0.23
Time Slice 10/1/2014-12/31/2014 Active Days: 66	0.06	0.11	2.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01
Coating 10/01/2014-12/31/2014	0.06	0.11	2.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.06	0.11	2.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01
Time Slice 1/4/2016-7/4/2016 Active Days: 131	3.71	25.42	17.28	0.00	0.01	1.51	1.52	0.00	1.39	1.39
Asphalt 01/02/2016-07/04/2016	3.71	25.42	17.28	0.00	0.01	1.51	1.52	0.00	1.39	1.39
Paving Off-Gas	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	3.56	25.15	16.01	0.00	0.00	1.49	1.49	0.00	1.37	1.37
Paving On Road Diesel	0.02	0.20	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01
Paving Worker Trips	0.03	0.06	1.20	0.00	0.01	0.01	0.02	0.00	0.01	0.01

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 7/1/2013 - 9/1/2013 - Phase I - Earthwork

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

PM10: 55% PM25: 55%

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

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Architectural Coating 10/1/2014 - 12/31/2014 - Phase I - Arch Coatings

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

ROG: 100%

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

ROG: 100%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Phase II Construction.urb924

Project Name: Kaiser Hospital - Construction Phase II

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2023 TOTALS (lbs/day unmitigated)	7.81	50.04	67.52	0.08	60.54	2.27	62.79	12.66	2.07	14.73
2023 TOTALS (lbs/day mitigated)	7.81	50.04	67.52	0.08	34.29	2.27	36.55	7.18	2.07	9.25
2024 TOTALS (lbs/day unmitigated)	125.21	44.62	67.52	0.08	0.35	2.27	2.63	0.13	2.07	2.20
2024 TOTALS (lbs/day mitigated)	7.33	44.62	67.52	0.08	0.35	2.27	2.63	0.13	2.07	2.20

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

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

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Time Slice 5/1/2023-6/2/2023 Active Days: 25	0.94	5.58	7.41	0.00	0.01	0.24	0.24	0.00	0.22	0.22
Demolition 05/01/2023-07/02/2023	0.94	5.58	7.41	0.00	0.01	0.24	0.24	0.00	0.22	0.22
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.93	5.56	7.04	0.00	0.00	0.24	0.24	0.00	0.22	0.22
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.01	0.02	0.37	0.00	0.01	0.00	0.01	0.00	0.00	0.01

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Time Slice 6/5/2023-6/16/2023 Active Days: 10	7.81	**50.04**	54.89	0.03	34.29	2.26	36.55	7.18	2.07	9.25
Building 06/05/2023-07/28/2023	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Demolition 05/01/2023-07/02/2023	0.94	5.58	7.41	0.00	0.01	0.24	0.24	0.00	0.22	0.22
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.93	5.56	7.04	0.00	0.00	0.24	0.24	0.00	0.22	0.22
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.01	0.02	0.37	0.00	0.01	0.00	0.01	0.00	0.00	0.01
Mass Grading 06/05/2023-06/23/2023	4.09	27.70	21.55	0.00	34.17	1.16	35.32	7.14	1.07	8.20
Mass Grading Dust	0.00	0.00	0.00	0.00	34.16	0.00	34.16	7.13	0.00	7.13
Mass Grading Off Road Diesel	4.07	27.66	20.90	0.00	0.00	1.15	1.15	0.00	1.06	1.06
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.03	0.65	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Trenching 06/05/2023-06/16/2023	0.34	1.90	3.43	0.00	0.00	0.10	0.11	0.00	0.09	0.10
Trenching Off Road Diesel	0.34	1.89	3.24	0.00	0.00	0.10	0.10	0.00	0.09	0.09
Trenching Worker Trips	0.00	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Time Slice 6/19/2023-6/23/2023 Active Days: 5	7.47	48.14	51.47	0.03	34.29	2.15	36.44	7.18	1.98	9.16
Building 06/05/2023-07/28/2023	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Demolition 05/01/2023-07/02/2023	0.94	5.58	7.41	0.00	0.01	0.24	0.24	0.00	0.22	0.22
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.93	5.56	7.04	0.00	0.00	0.24	0.24	0.00	0.22	0.22
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.01	0.02	0.37	0.00	0.01	0.00	0.01	0.00	0.00	0.01
Mass Grading 06/05/2023-06/23/2023	4.09	27.70	21.55	0.00	34.17	1.16	35.32	7.14	1.07	8.20
Mass Grading Dust	0.00	0.00	0.00	0.00	34.16	0.00	34.16	7.13	0.00	7.13
Mass Grading Off Road Diesel	4.07	27.66	20.90	0.00	0.00	1.15	1.15	0.00	1.06	1.06
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.03	0.65	0.00	0.01	0.01	0.02	0.00	0.01	0.01

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Time Slice 6/26/2023-6/30/2023 Active Days: 5	3.38	20.45	29.92	0.03	0.12	1.00	1.12	0.04	0.91	0.96
Building 06/05/2023-07/28/2023	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Demolition 05/01/2023-07/02/2023	0.94	5.58	7.41	0.00	0.01	0.24	0.24	0.00	0.22	0.22
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.93	5.56	7.04	0.00	0.00	0.24	0.24	0.00	0.22	0.22
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.01	0.02	0.37	0.00	0.01	0.00	0.01	0.00	0.00	0.01
Time Slice 7/3/2023-7/28/2023 Active Days: 20	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building 06/05/2023-07/28/2023	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Time Slice 7/31/2023-8/18/2023 Active Days: 15	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building 07/31/2023-01/24/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09

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Time Slice 8/21/2023-11/24/2023 Active Days: 70	4.88	29.75	45.01	0.05	0.24	1.51	1.75	0.08	1.38	1.47
Building 07/31/2023-01/24/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Building 08/21/2023-02/05/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Time Slice 11/27/2023-12/29/2023 Active Days: 25	7.33	44.62	**67.52**	**0.08**	0.35	**2.27**	2.63	0.13	**2.07**	2.20
Building 07/31/2023-01/24/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Building 08/21/2023-02/05/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Building 11/27/2023-03/11/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09

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Time Slice 1/1/2024-1/24/2024 Active Days: 18	7.33	44.62	**67.52**	**0.08**	0.35	**2.27**	2.63	0.13	**2.07**	2.20
Building 07/31/2023-01/24/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Building 08/21/2023-02/05/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Building 11/27/2023-03/11/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Time Slice 1/25/2024-2/5/2024 Active Days: 8	4.88	29.75	45.01	0.05	0.24	1.51	1.75	0.08	1.38	1.47
Building 08/21/2023-02/05/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Building 11/27/2023-03/11/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09

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Time Slice 2/6/2024-3/11/2024 Active Days: 25	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building 11/27/2023-03/11/2024	2.44	14.87	22.51	0.03	0.12	0.76	0.88	0.04	0.69	0.73
Building Off Road Diesel	2.22	13.94	15.40	0.00	0.00	0.67	0.67	0.00	0.61	0.61
Building Vendor Trips	0.08	0.63	0.86	0.01	0.02	0.03	0.05	0.01	0.02	0.03
Building Worker Trips	0.15	0.31	6.25	0.02	0.10	0.06	0.16	0.04	0.05	0.09
Time Slice 5/6/2024-5/31/2024 Active Days: 20	2.28	12.01	14.67	0.00	0.02	0.72	0.73	0.01	0.66	0.67
Asphalt 05/06/2024-05/31/2024	2.28	12.01	14.67	0.00	0.02	0.72	0.73	0.01	0.66	0.67
Paving Off-Gas	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.83	11.62	13.96	0.00	0.00	0.70	0.70	0.00	0.65	0.65
Paving On Road Diesel	0.04	0.36	0.15	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Paving Worker Trips	0.01	0.03	0.56	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Time Slice 6/3/2024-8/1/2024 Active Days: 44	0.01	0.03	0.54	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Coating 06/01/2024-08/01/2024	0.01	0.03	0.54	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.54	0.00	0.01	0.01	0.01	0.00	0.00	0.01

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 6/5/2023 - 6/23/2023 - Phase II - Earthwork

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

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Architectural Coating 6/1/2024 - 8/1/2024 - Phase II - Arch Coatings

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

ROG: 100%

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

ROG: 100%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Hospital - Operational Baseline.urb924

Project Name: Kaiser Hospital - Operational Baseline

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	2.27	2.29	3.45	0.00	0.01	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	22.33	30.77	273.02	0.33	54.68	10.63

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	24.60	33.06	276.47	0.33	54.69	10.64

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.16	2.27	1.90	0.00	0.00	0.00
Hearth						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	1.99					
TOTALS (lbs/day, unmitigated)	2.27	2.29	3.45	0.00	0.01	0.01

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Existing County Admin Building	22.33	30.77	273.02	0.33	54.68	10.63
TOTALS (lbs/day, unmitigated)	22.33	30.77	273.02	0.33	54.68	10.63

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

10/17/2012 6:26:37 AM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Existing County Admin Building		10.38	1000 sq ft	339.96	3,528.78	31,663.78
					3,528.78	31,663.78

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.5	0.6	99.2	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	60.7	39.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

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

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Existing County Admin Building				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Hospital - Operational Baseline.urb924

Project Name: Kaiser Hospital - Operational Baseline

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	2.15	2.27	1.90	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	24.14	37.03	262.32	0.28	54.68	10.63

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	26.29	39.30	264.22	0.28	54.68	10.63

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.16	2.27	1.90	0.00	0.00	0.00
Hearth						
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	1.99					
TOTALS (lbs/day, unmitigated)	2.15	2.27	1.90	0.00	0.00	0.00

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Existing County Admin Building	24.14	37.03	262.32	0.28	54.68	10.63
TOTALS (lbs/day, unmitigated)	24.14	37.03	262.32	0.28	54.68	10.63

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

10/17/2012 6:27:05 AM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Existing County Admin Building		10.38	1000 sq ft	339.96	3,528.78	31,663.78
					3,528.78	31,663.78

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.5	0.6	99.2	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	60.7	39.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

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

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Existing County Admin Building				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Hospital - Operational Proposed Project.urb924

Project Name: Kaiser Hospital - Operational Proposed Project

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	3.74	3.71	6.17	0.00	0.02	0.02

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	41.70	47.38	486.49	1.28	209.30	40.60

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	45.44	51.09	492.66	1.28	209.32	40.62

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.27	3.67	3.08	0.00	0.01	0.01
Hearth - No Summer Emissions						
Landscape	0.25	0.04	3.09	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	3.22					
TOTALS (lbs/day, unmitigated)	3.74	3.71	6.17	0.00	0.02	0.02

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Medical office building	11.38	12.92	131.20	0.35	56.88	11.03
Hospital	30.32	34.46	355.29	0.93	152.42	29.57
TOTALS (lbs/day, unmitigated)	41.70	47.38	486.49	1.28	209.30	40.60

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2025 Temperature (F): 80 Season: Summer

10/16/2012 2:14:29 PM

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Medical office building		20.00	1000 sq ft	180.00	3,600.00	32,959.80
Hospital		20.00	beds	450.00	9,000.00	88,312.50
					12,600.00	121,272.30

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.0	0.0	100.0	0.0
Light Truck < 3750 lbs	7.2	0.0	98.6	1.4
Light Truck 3751-5750 lbs	23.6	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.2	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	83.3	16.7
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	35.7	64.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Medical office building				7.0	3.5	89.5
Hospital				25.0	12.5	62.5

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Hospital - Operational Proposed Project.urb924

Project Name: Kaiser Hospital - Operational Proposed Project

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	3.49	3.67	3.08	0.00	0.01	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	45.96	56.83	456.53	1.07	209.30	40.60

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	49.45	60.50	459.61	1.07	209.31	40.61

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.27	3.67	3.08	0.00	0.01	0.01
Hearth	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	3.22					
TOTALS (lbs/day, unmitigated)	3.49	3.67	3.08	0.00	0.01	0.01

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Medical office building	12.52	15.49	123.52	0.29	56.88	11.03
Hospital	33.44	41.34	333.01	0.78	152.42	29.57
TOTALS (lbs/day, unmitigated)	45.96	56.83	456.53	1.07	209.30	40.60

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2025 Temperature (F): 60 Season: Winter

10/16/2012 2:14:49 PM

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Medical office building		20.00	1000 sq ft	180.00	3,600.00	32,959.80
Hospital		20.00	beds	450.00	9,000.00	88,312.50
					12,600.00	121,272.30

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.0	0.0	100.0	0.0
Light Truck < 3750 lbs	7.2	0.0	98.6	1.4
Light Truck 3751-5750 lbs	23.6	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.2	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	83.3	16.7
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	35.7	64.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Medical office building				7.0	3.5	89.5
Hospital				25.0	12.5	62.5

APPENDIX B – PART II

Emissions of Architectural Coatings

Kaiser Permanente San Diego KP Central Medical Center Project
Emissions of Architectural Coatings
(Construction - Unmitigated)

Commercial		
Floor Area	sq ft	673,000
Conversion Factor		2.0
Painted Area	sq ft	1,346,000
		Non-Residential
Interior (75%)	sq ft	1,009,500
VOC Content	g/l	100
Emission Factor	lb/sq ft	0.0046
Total Emissions	lbs	4,676
Days of Application	days	66
Daily Emission Rate	lbs/day	70.84
Exterior (25%)	sq ft	336,500
VOC Content	g/l	150
Emission Factor	lb/sq ft	0.0069
Total Emissions	lbs	2,338
Days of Application	days	66
Daily Emission Rate	lbs/day	35.42
Total Emission Rate	**total lbs**	**7,014**
	lbs/day	**106.27**

Kaiser Permanente San Diego KP Central Medical Center Project
Emissions of Architectural Coatings
(Construction - Unmitigated)

Commercial		
Floor Area	sq ft	263,000
Conversion Factor		2.0
Painted Area	sq ft	526,000
		Non-Residential
Interior (75%)	sq ft	394,500
VOC Content	g/l	100
Emission Factor	lb/sq ft	0.0046
Total Emissions	lbs	1,827
Days of Application	days	44
Daily Emission Rate	lbs/day	41.53
Exterior (25%)	sq ft	131,500
VOC Content	g/l	150
Emission Factor	lb/sq ft	0.0069
Total Emissions	lbs	914
Days of Application	days	44
Daily Emission Rate	lbs/day	20.76
Total Emission Rate	**total lbs**	**2,741**
	lbs/day	**62.29**

Kaiser Permanente San Diego KP Central Medical Center Project
Emissions of Architectural Coatings
(Operation - Unmitigated)

Retail		
Floor Area	sq ft	936,000
Annual Repainting		10%
Conversion Factor		2.0
Painted Area	sq ft	187,200
		Non-Residential
Interior (75%)	sq ft	140,400
VOC Content	g/l	100
Emission Factor	lb/sq ft	0.0046
Total Emissions	lbs	650
Days of Application	days	365
Daily Emission Rate	lbs/day	1.78
Exterior (25%)	sq ft	46,800
VOC Content	g/l	150
Emission Factor	lb/sq ft	0.0069
Total Emissions	lbs	325
Days of Application	days	365
Daily Emission Rate	lbs/day	0.89
Total Emission Rate	**total lbs**	**975**
	lbs/day	**2.67**

APPENDIX C

Trip Generation Data

Table 7-1

Trip Generation

Land Use	Quantity	Daily Trip Ends (ADT)		AM Peak Hour					PM Peak Hour				
				% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume[b]		
		Rate [a]	Volume			In	Out	Total			In	Out	Total
Kaiser Permanente Hospital - Phase I													
Hospital	321 Beds	20 /Bed	6,420	9%	70 : 30	405	173	578	10%	30 : 70	193	449	642
Medical Offices													
Driveway Trips	75 KSF	50 /KSF	3,750	6%	80 : 20	180	45	225	10%	30 : 70	113	262	375
With Passby / Diverted Trips [c]	75 KSF	20 /KSF	1,500	6%	80 : 20	72	18	90	10%	30 : 70	45	105	150
Project Phase I													
Driveway Trips			**10,170**			**585**	**218**	**803**			**306**	**711**	**1,017**
With Passby / Diverted Trips (New Trips) [c]			**7,920**			**477**	**191**	**668**			**238**	**554**	**792**
(Less) Existing Site Trip Generation (June 2011)			(3,527)			(335)	(64)	(399)			(68)	(276)	(344)
Increase in Net Trips - Project Phase I			**4,393**			**142**	**127**	**269**			**170**	**278**	**448**
Kaiser Permanente Hospital - Phase II													
Hospital	129 Beds	20 /Bed	2,580	9%	70 : 30	162	70	232	10%	30 : 70	77	181	258
Medical Offices													
Driveway Trips	105 KSF	50 /KSF	5,250	6%	80 : 20	252	63	315	10%	30 : 70	158	367	525
With Passby / Diverted Trips [c]	105 KSF	20 /KSF	2,100	6%	80 : 20	101	25	126	10%	30 : 70	63	147	210
Phase II													
Driveway Trips			**7,830**			**414**	**133**	**547**			**235**	**548**	**783**
With Passby / Diverted Trips (New Trips) [c]			**4,680**			**263**	**95**	**358**			**140**	**328**	**468**
Entire Project													
Driveway Trips			**18,000**			**999**	**351**	**1,350**			**541**	**1,259**	**1,800**
With Passby / Diverted Trips (New Trips) [c]			**12,600**			**740**	**286**	**1,026**			**378**	**882**	**1,260**
(Less) Existing Site Trip Generation (June 2011)			(3,527)			(335)	(64)	(399)			(68)	(276)	(344)
Increase in Net Trips - Entire Project			**9,073**			**405**	**222**	**627**			**310**	**606**	**916**

Footnotes:

a. Trip rates from *Trip Generation Manual* , City of San Diego, May 2003.

b. KSF - 1,000 Square Feet.

c. Daily cumulative trip rate is 20 per KSF for MOB of less than 100 KSF and 16 per KSF for MOB of 100 KSF or more.

c. City of San Diego terms trip rates with Pass-by / diverted trips as "Cumulative Trips".

APPENDIX D

Emission Calculation Spreadsheets
(Generators, Boilers, Microturbines)

Kaiser Permanente San Diego KP Central Medical Center
Energy Plant
Summary

	pounds/day					
Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Emergency Generators (normal)	3.85	73.06	41.66	0.08	2.40	2.35
Emergency Generators (worst-case)	30.76	584.52	333.28	0.64	19.23	18.77
PureComfort Microturbines	1.40	2.23	4.08	0.41	0.80	0.80
PureThermal Microturbines	0.12	2.68	0.62	0.27	0.53	0.53
Hot Water Boilers	1.86	3.70	25.01	0.20	0.26	0.26
Steam Boilers	0.35	1.54	2.34	0.04	0.05	0.05
Total	34.50	594.66	365.33	1.57	20.87	20.41

	tons/year						metric tons/year
Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2
Emergency Generators	0.12	2.19	1.25	0.00	0.07	0.07	229
PureComfort Microturbines	0.26	0.41	0.74	0.08	0.15	0.15	2,208
PureThermal Microturbines	0.02	0.49	0.11	0.05	0.10	0.10	1,472
Hot Water Boilers	0.18	0.36	2.41	0.02	0.02	0.02	3,553
Steam Boilers	0.04	0.18	0.28	0.00	0.01	0.01	817
Total	0.61	3.63	4.80	0.15	0.35	0.34	8,280

Kaiser Permanente San Diego KP Central Medical Center
Diesel Engine-Generator Emissions
Energy Plant

No. of Units	4		
Engine Rating	2,500	kW	(proposed rating)
	3,634	HP	(per spec sheet)
Operating Schedule	0.5	hr/week	
(per unit)	4.0	hr/day (4 hr annual loaded test every 3 years)	
	30.0	hr/year (30 min per week + annual test)	

	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2
gm/BHP-hr	0.24	4.56	2.60	0.005	0.15	0.15	526.18
Data Source	1,2	1,2	1	3	1	1,4	5
Pounds/hour	7.69	146.13	83.32	0.16	4.81	4.69	16,862
Pounds/day (normal)[a]	3.85	73.06	41.66	0.08	2.40	2.35	8,431
Pounds/day (worst-case)[b]	30.76	584.52	333.28	0.64	19.23	18.77	67,447
Pounds/year	230.73	4,383.87	2,499.58	4.81	144.21	140.75	505,853
Metric tons/year							229.5

Notes:
[a] All units would be tested for 30 minutes each week, all on one day.
[b] All units would be tested at full load for 4 hours once every 3 years, all on one day.
Operating parameters per Bob Crowl, Kaiser Permanente, October 3, 2012.
Sources:
1. Current ARB and USEPA engine standards for Tier 2 equipment, except SOx and CO2.
2. Fraction of NOx and ROG based on Table B-26 in California Air Resources Board. 2008. The Carl Moyer Program Guidelines, Part IV of IV (Appendices). April. http://www.arb.ca.gov/msprog/moyer/guidelines/cmp_guidelines_part4.pdf
3. Based on 15 ppm (0.0015%) sulfur by weight.
4. PM2.5 fraction = 97.6% of PM10 (http://www.arb.ca.gov/ei/speciate/pmsize_07242008.xls for "stationary IC engine - diesel")
5. AP-42, Section 3.4, Table 3.4-1.

Stack Characterics		
Exhaust Flow	19,582	acfm
Exhaust Temperature	915	^{o}F
Stack Diameter	see drawing of generator and enclosure	
Stack Height	see drawing of generator and enclosure	

Kaiser Permanente San Diego KP Central Medical Center
PureComfort Microturbine Emissions
Energy Plant

No. of Units	6	microturbines
Microturbine Rating	65	kW
	0.842	MMBtu/hr
Fuel Usage (per unit)	20.2	MMBtu/day (at 100% load)
	7,376	MMBtu/yr (at 100% capacity factor)
Net Electrical Production	370	kW
	3,241	MWh
	3,241,200	kWh/yr

	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2
Exhaust Concentration (ppmv @ 15% O2)	9	5	15				
Emission Factor (lb/MMBtu)	0.012	0.018	0.034	0.0034	0.0066	0.0066	110
Data Source	1	1	1	2	2	2	2
Pounds/hour	0.05	0.08	0.14	0.01	0.03	0.03	463.10
Pounds/day	1.40	2.23	4.08	0.41	0.80	0.80	13,337
Pounds/year	510.32	815.10	1,488.44	150.47	292.09	292.09	4,868,107
Metric tons/year							2,208

Sources:
1. Equipment specifications.
2. AP-42, Section 3.1, Table 3.1-2a.

Heat Content of Gas	1,000	MMBtu/scf
Proposed		
Daily Load	100%	
Annual Load	100%	

Stack Characterics (All 6 units through 1 stack)

Exhaust Flow	4,374	acfm
Exhaust Temperature	340	^{o}F
Stack Diameter	20	inches
Stack Height	14	feet above ground

Exhaust Flow Rate Estimate

heat input	given	0.842	MMBtu/hr
no. of units	given	6	microturbines
heat input	calc	5.052	MMBtu/hr
F-Factor	given	8,710	dscf/MMBtu
exhaust flow rate	calc	733	dscfm @ 0% O2
exhaust flow rate	calc	2,598	dscfm @ 15% O2
actual temp	given	340	deg F
Ref. temp	given	68	deg F
exhaust flow rate	calc	3,936	dacfm
moisture	assumed	10%	%
exhaust flow rate	calc	4,374	acfm

Kaiser Permanente San Diego KP Central Medical Center
PureThermal Microturbine Emissions
Energy Plant

No. of Units	4	microturbines
Microturbine Rating	65	kW
	0.842	MMBtu/hr
Fuel Usage (per unit)	20.2	MMBtu/day (at 100% load)
	7,376	MMBtu/yr (at 100% capacity factor)
Net Electrical Production	260	kW
	2,278	MWh
	2,277,600	kWh/yr

	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2
Exhaust Concentration (ppmv @ 15% O2)		9					
Emission Factor (lb/MMBtu)		0.033		0.0034	0.0066	0.0066	110
Emission Factor (lb/MW-hr)	0.02		0.10				
Data Source	1	2	1	3	3	3	3
Pounds/hour	0.005	0.11	0.026	0.01	0.02	0.02	370.48
Pounds/day	0.12	2.68	0.62	0.27	0.53	0.53	8,892
Pounds/year	45.55	978.12	227.76	100.31	194.72	194.72	3,245,405
Metric tons/year							1,472

Sources:
1. CARB distributed generation limits
2. Equipment specifications.
3. AP-42, Section 3.1, Table 3.1-2a.

Heat Content of Gas	1,000	MMBtu/scf
Proposed		
Daily Load	100%	
Annual Load	100%	

Stack Characterics (each unit)		
Exhaust Flow	1,021	acfm
Exhaust Temperature	661	^{o}F
Stack Diameter	10	inches
Stack Height	16	feet above ground

Exhaust Flow Rate Estimate			
heat input	given	0.842	MMBtu/hr
no. of units	given	1	microturbines
heat input	calc	0.842	MMBtu/hr
F-Factor	given	8,710	dscf/MMBtu
exhaust flow rate	calc	122	dscfm @ 0% O2
exhaust flow rate	calc	433	dscfm @ 15% O2
actual temp	given	661	deg F
Ref. temp	given	68	deg F
exhaust flow rate	calc	919	dacfm
moisture	assumed	10%	%
exhaust flow rate	calc	1,021	acfm

Kaiser Permanente San Diego KP Central Medical Center
Hot Water Boiler Emissions
Energy Plant

No. of Units	4	boilers (one standby)
Boiler Rating	287	HP
	12.0	MMBtu/hr
Fuel Usage (per unit)	112.8	MMBtu/day (at 39% load)
	21,759	MMBtu/yr (at 21% capacity factor)

	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2
Exhaust Concentration (ppmv @ 3% O2)		9	100				
Emission Factor (lb/MMBtu)	0.0055	0.011	0.074	0.0006	0.0008	0.0008	120
Data Source	1	2	2	1	1	1	1
Pounds/hour	0.20	0.39	2.66	0.02	0.03	0.03	4,320.00
Pounds/day	1.86	3.70	25.01	0.20	0.26	0.26	40,608
Pounds/year	359.02	713.29	4,824.22	39.17	49.61	49.61	7,833,172
Metric tons/year							3,553

Sources:
1. AP-42, Section 1.4, Table 1.4-1.
2. Equipment specifications.

Heat Content of Gas	1,000	MMBtu/scf
Proposed		
Daily Load	39%	
Annual Load	21%	

Stack Characterics		
Exhaust Flow	1,960	scfm
	3,379	acfm
Exhaust Temperature	450	^{o}F
Stack Diameter	28	inches
Stack Height	28	feet above cooling tower roof

Table 1 – Monthly HHW Consumption in a typical year

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Phase 1 - Annual HHW Boiler Consumption (Btu * 1000)	5,437,200	1,492,903	1,087,440	905,340	869,952	4,137	0	0	0	1,087,440	5,437,200	5,437,200	21,758,812
Phase 2 - Annual HHW Boiler Consumption (Btu * 1000)	8,155,800	2,239,354	1,631,160	1,358,009	1,304,928	6,206	0	0	0	1,631,160	8,155,800	8,155,800	32,638,217

Source: Lyzun, Jamey. 2012. Email communication from J. Lyzun (Arup) to David Deckman (Dudek). August 21, 2012.

Table 2 – Daily Profile (Peak "Coldest" Day) for HHW Plant (Btu*1000)

Peak Day (Hour)	Heating Plant % Capacity	Phase 1 HHW (Btu*1000)	Phase 2 HHW (Btu*1000)
1	10%	1,920	2,880
2	10%	1,920	2,880
3	20%	3,840	5,760
4	20%	3,840	5,760
5	20%	3,840	5,760
6	40%	7,680	11,520
7	65%	12,480	18,720
8	70%	13,440	20,160
9	80%	15,360	23,040
10	85%	16,320	24,480
11	80%	15,360	23,040
12	55%	10,560	15,840
13	50%	9,600	14,400
14	50%	9,600	14,400
15	60%	11,520	17,280
16	65%	12,480	18,720
17	65%	12,480	18,720
18	80%	15,360	23,040
19	80%	15,360	23,040
20	75%	14,400	21,600
21	70%	13,440	20,160
22	10%	1,920	2,880
23	10%	1,920	2,880
24	5%	960	1,440
		225,600	338,400

Source: Lyzun, Jamey. 2012. Email communication from J. Lyzun (Arup) to David Deckman (Dudek). August 21, 2012.

Kaiser Permanente San Diego KP Central Medical Center
Steam Boiler Emissions
Energy Plant

No. of Units	5	boilers (one standby)
Boiler Rating	60	HP
	2.04	MMBtu/hr
Fuel Usage (per unit)	15.8	MMBtu/day (at 32% load)
	3,753	MMBtu/yr (at 21% capacity factor)

	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$	CO_2
Exhaust Concentration (ppmv @ 3% O2)		20	50				
Emission Factor (lb/MMBtu)	0.0055	0.024	0.037	0.0006	0.0008	0.0008	120
Data Source	1	2	2	1	1	1	1
Pounds/hour	0.04	0.20	0.30	0.00	0.01	0.01	979
Pounds/day	0.35	1.54	2.34	0.04	0.05	0.05	7,594
Pounds/year	82.56	364.52	554.70	9.01	11.41	11.41	1,801,356
Metric tons/year							817

Sources:
1. AP-42, Section 1.4, Table 1.4-1.
2. Equipment specifications.

Heat Content of Gas	1,000	MMBtu/scf
Proposed		
Daily Load	32%	
Annual Load	21%	

Stack Characteristics		
Stack Characterics		
Exhaust Flow	300	scfm
	486	acfm
Exhaust Temperature	395	^{o}F
Stack Diameter	22	inches
Stack Height	28	feet above cooling tower roof

Table 1 – Monthly Steam Consumption in a typical year

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Phase 1 - Annual Steam Boiler Consumption (Btu * 1000)	1,406,662	386,230	281,332	234,221	225,066	1,070	0	0	0	281,332	1,406,662	1,406,662	5,629,239
Phase 2 - Annual Steam Boiler Consumption (Btu * 1000)	1,875,550	514,973	375,110	312,295	300,088	1,427	0	0	0	375,110	1,875,550	1,875,550	7,505,652

Source: Lyzun, Jamey. 2012. Email communication from J. Lyzun (Arup) to David Deckman (Dudek). August 21, 2012.

Table 3 – Daily Profile (Peak "Coldest" Day with Maximum consumption) for Steam Plant (Btu*1000)

Peak Day (Hour)	Heating Plant % Capacity	Phase 1 HHW (Btu*1000)	Phase 2 HHW (Btu*1000)
1	5%	251	335
2	5%	251	335
3	10%	502	670
4	10%	502	670
5	10%	502	670
6	20%	1,004	1,339
7	65%	3,264	4,352
8	65%	3,264	4,352
9	80%	4,018	5,357
10	85%	4,269	5,692
11	80%	4,018	5,357
12	75%	3,767	5,022
13	75%	3,767	5,022
14	60%	3,013	4,018
15	60%	3,013	4,018
16	60%	3,013	4,018
17	50%	2,511	3,348
18	40%	2,009	2,678
19	30%	1,507	2,009
20	20%	1,004	1,339
21	15%	753	1,004
22	10%	502	670
23	10%	502	670
24	5%	251	335
		47,457	63,280

Source: Lyzun, Jamey. 2012. Email communication from J. Lyzun (Arup) to David Deckman (Dudek). August 21, 2012.

Hot Water Boilers

	ppmvd @ 3% O2	lb/MMBtu
NOx	9	0.011
CO	100	0.074

Steam Boilers

	ppmvd @ 3% O2	lb/MMBtu
NOx	20	0.024
CO	50	0.037

Standard Temperature (SDAPCD)

68 deg F

Molar Volume

385.3 scf/mole

F-Factor

8710 scf/MMBtu @ 0% O2, 68 deg F

Microturbines (Pure Comfort)

	ppmvd @ 15% O2	lb/MMBtu
NOx	5	0.018
VOC	9	0.012
CO	15	0.034

Microturbines (Pure Thermal)

	ppmvd @ 15% O2	lb/MMBtu
NOx	9	0.033

Standard Temperature (SDAPCD)

68 deg F

Molar Volume

385.3 scf/mole

F-Factor

8710 scf/MMBtu @ 0% O2, 68 deg F

APPENDIX E

Greenhouse Gas Analysis

GREENHOUSE GAS ANALYSIS
for the
Kaiser Permanente San Diego
Central Medical Center Project
City of San Diego, California

City Project No. 274240

Prepared for:

City of San Diego
Development Services Department
Land Development Review Division
1222 First Avenue
San Diego, California 92101

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SUMMARY

Kaiser Foundation Hospitals, a California nonprofit public benefit corporation (Kaiser) proposes the development of a medical center project on approximately 20 acres in the Kearny Mesa planning area within the City of San Diego, California. The project area is zoned Light-Industrial (IL-2-1) which allows for the construction and operation of a hospital with a Conditional Use Permit (CUP). Buildout of the project site would include a total of 936,000 square feet of hospital campus uses. The proposed project would require demolition of the existing approximately 330,000-square foot County of San Diego government office building. The project is proposed in two phases, as illustrated in Table 1, Building Summary. Phase I would include a 562,000-square foot, seven-story general acute and tertiary care hospital building (Hospital), a 75,000-square foot outpatient hospital support building (HSB) and a 36,000-square foot central utility plant (Energy Center). The Hospital would include 321 beds, an outdoor service yard, and a 1,462-stall parking structure in addition to 100 surface parking spaces. Phase II (buildout) would include expansion of the hospital and/or the construction of new medical offices or other uses. More specifically, Phase II would include expansion of the Hospital by an additional seven-story, 158,000-square foot building to accommodate 129 beds (for a total of 450 beds), a new 105,000-square foot hospital support building and 937 surface and structured parking spaces (for a total of 2,499 parking spaces).

The project's potential effect on global climate change was evaluated, and emissions of greenhouse gases (GHGs) were estimated based on the use of construction equipment and vehicle trips associated with construction activities as well as operational emissions once construction phases are complete. With implementation of GHG reduction measures, the GHG emissions associated with the proposed project would be reduced by 17.5%. The proposed project would therefore not achieve the target of 28.3% below business as usual, which has been established for the purposes of assessing GHG emissions of projects in the City of San Diego. The project would therefore have a significant impact with respect to GHG emissions. Overall, while significant GHG impacts would be reduced through the incorporation of identified design features, residual impacts would remain significant and unavoidable.

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this report is to estimate and evaluate the potential greenhouse gas (GHG) impacts associated with implementation of the Kaiser Permanente San Diego KP Central Medical Center Project (proposed project) relative to the thresholds established in the City of San Diego's July 5, 2012 Scoping Letter (City of San Diego 2012) and the City's significance thresholds for GHGs. The report includes a quantitative analysis of project-related greenhouse gas emissions.

1.2 Project Location

The overall project site is approximately 20 acres located in the Kearny Mesa planning area in the City of San Diego (Figures 1 and 2). The project area is zoned Light-Industrial (IL-2-1) which allows for the construction and operation of a hospital with a Conditional Use Permit (CUP). The site is currently occupied by the County of San Diego government office building and associated surface parking lot. Surrounding land uses include commercial, office and light industrial uses to the north; child welfare services, a preschool and office buildings to the east; restaurant and commercial retails uses to the west; and a preschool, office buildings, and light industrial/manufacturing uses to the south. Currently, the main entrance to the site is off Ruffin Road on the western portion of the project site.

1.3 Project Description

Buildout of the project site would include a total of 936,000 square feet of hospital campus uses. The proposed project would require demolition of the existing 330,000-square foot County of San Diego government office building. The project is proposed in two phases, as illustrated in Table 1, Building Summary. Phase I would include of a 562,000-square foot, seven-story general acute and tertiary care hospital building (Hospital), a 75,000 square foot outpatient hospital support building (HSB), a 36,000 square foot central utility plant (Energy Center). The Hospital would include 321 beds, an outdoor service yard, and a 1,462-stall parking structure. Construction of Phase I is expected to commence in Spring 2013 and to be completed between Fall 2017 and Spring 2018. Phase II (full buildout) would include expansion of the hospital and/or the construction of new medical offices or other uses. More specifically, Phase II could include expansion of the KP Central Medical Center by an additional 263,000 square feet, including a 158,000-square foot, 7-story, 129-bed expansion of the hospital, the construction of a new 105,000-square foot HSB and surface and structured parking totaling 2,499 spaces. Buildout of the proposed project will be completed between 2025 and 2030. See Figure 3 for proposed project site plan.

Table 1
Building Summary

Building Type/Use	Building Area (sf)	Building Details
Phase 1		
Hospital	562,000	7-stories, 321 beds
Outpatient HSB	75,000	6-stories
Energy Center	36,000	-
Parking Structure	-	1,462 parking spaces
Phase 2 (build out)		
Hospital Expansion	158,000	7-stories, 129 beds
Medical Offices/ Outpatient HSB	105,000	6-stories
Additional Parking	-	937 parking spaces
Total	**936,000**	**450 beds, 2,499 parking spaces**

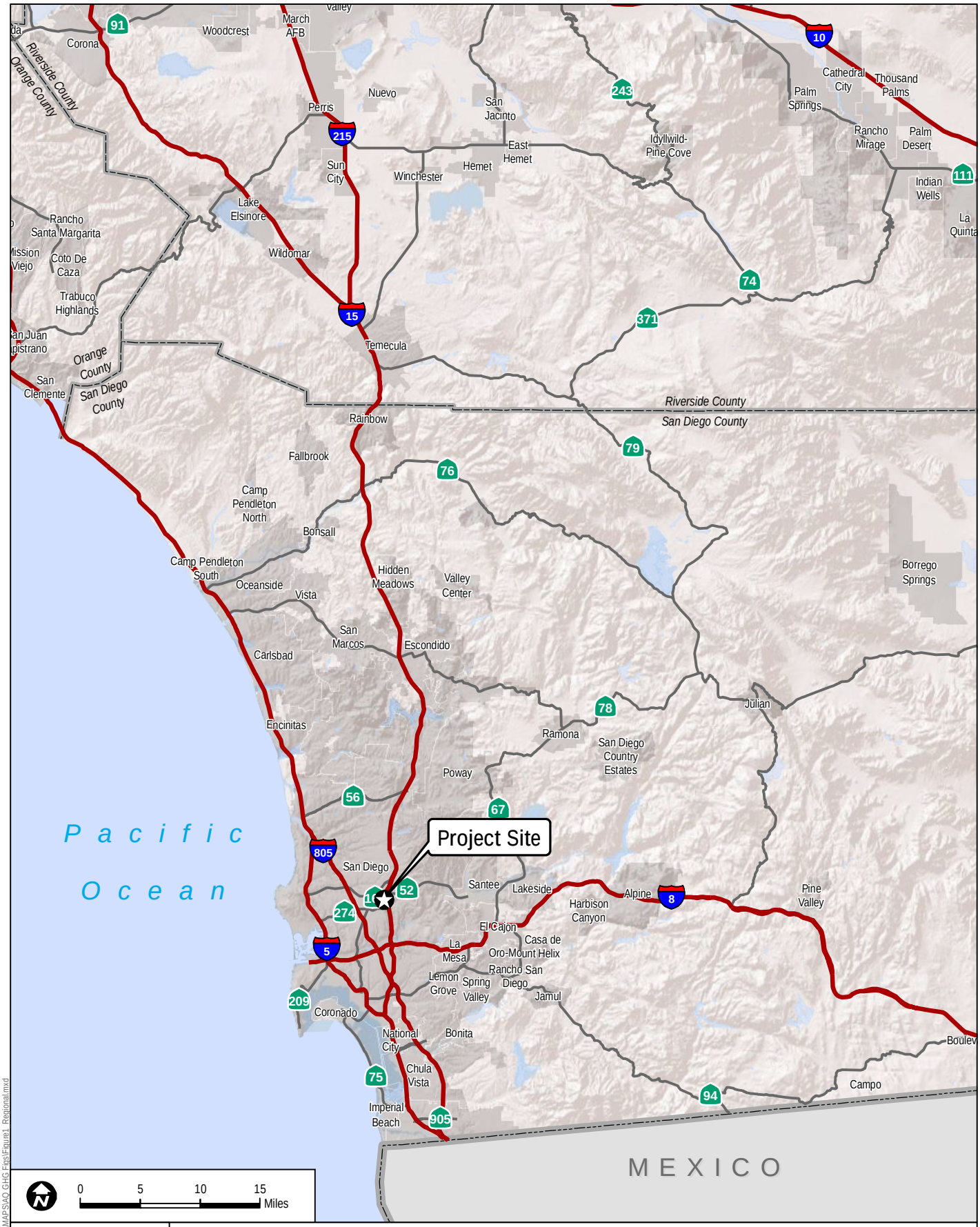

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FIGURE 1

Regional Map

Greenhouse Gas Analysis for the to Kaiser Permanente San Diego Central Medical Center Project

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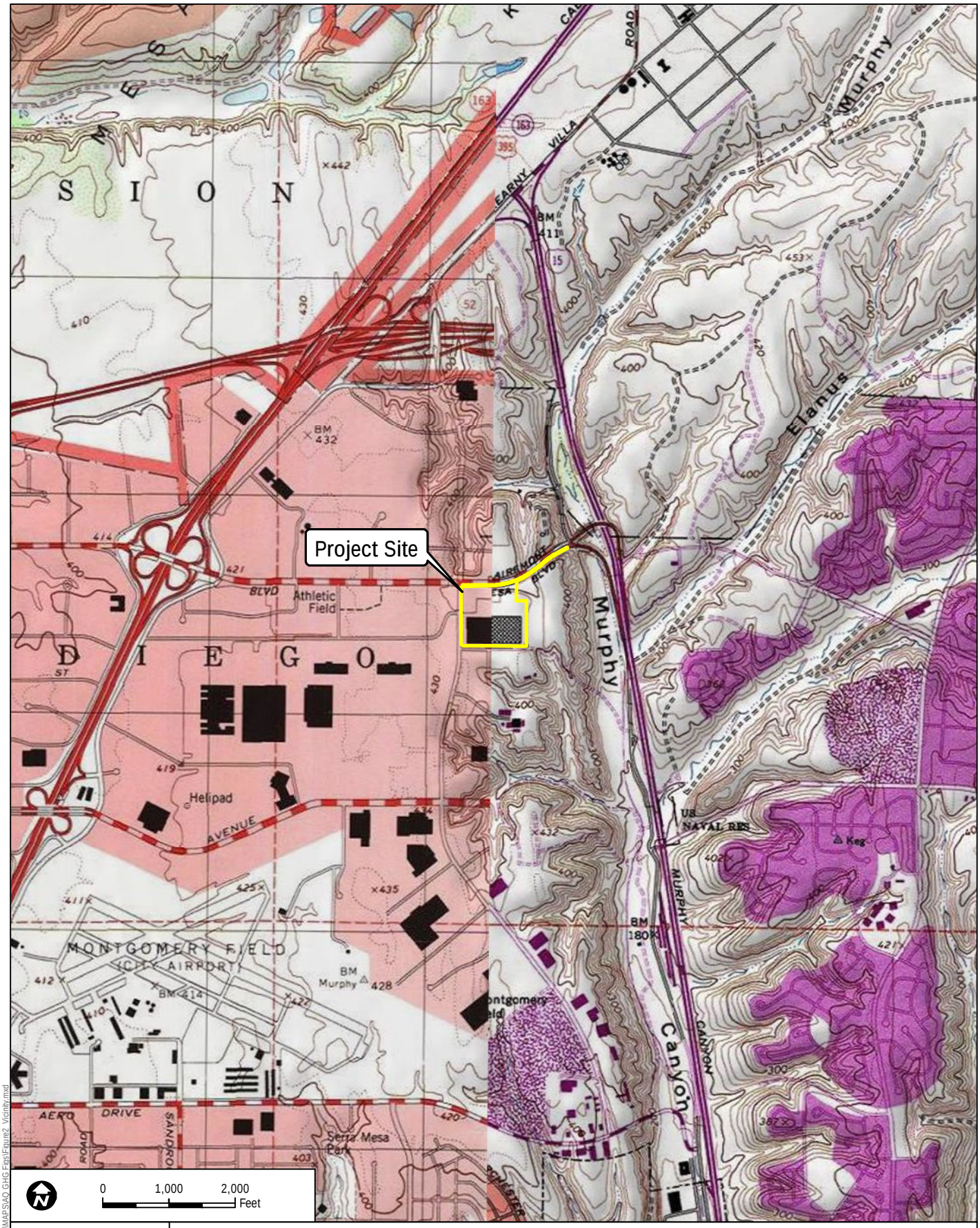

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7372-01

SOURCE: USGS topo 7.5-Minute Series Quadrangle

FIGURE 2
Vicinity Map

Greenhouse Gas Analysis for the to Kaiser Permanente San Diego Central Medical Center Project

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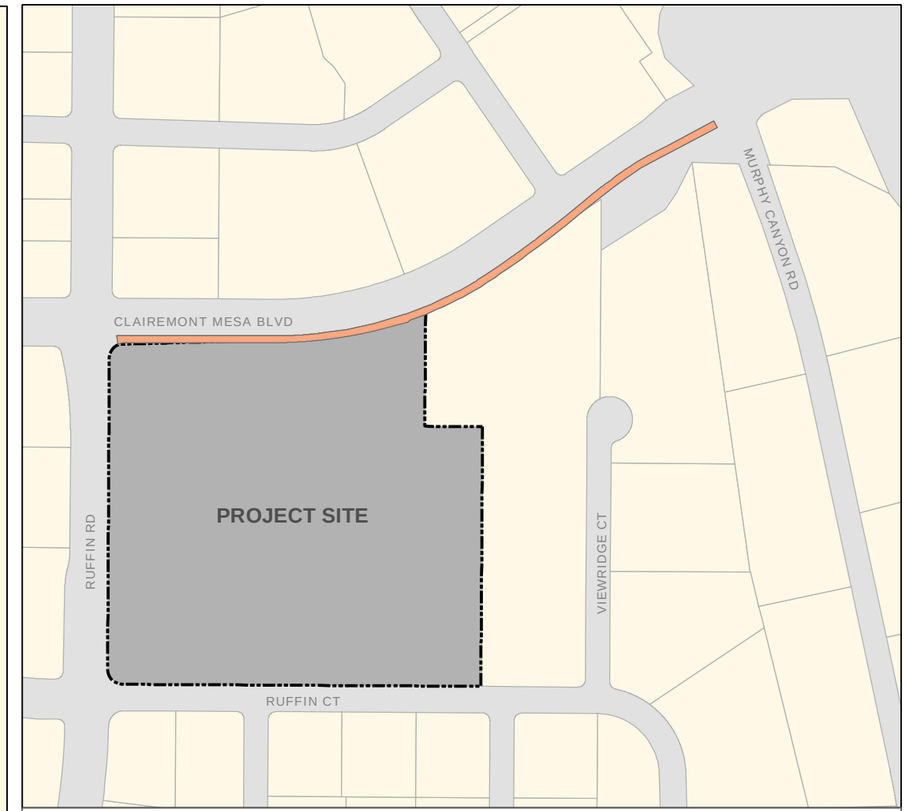

Limits of Off-Site Street Improvements

Legend

- Project Site
- Proposed Phase I Buildings/Structures
- Proposed Phase II Buildings/Structures
- Proposed Eastbound 3rd Lane Street Improvements

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SOURCE: CO ARCHITECTS 2012

FIGURE 3

Project Site Plan

Greenhouse Gas Analysis for the to Kaiser Permanente San Diego Central Medical Center Project

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Hospital

The hospital would be a full-service general acute care hospital and would accommodate 450 beds. Phase I would comprise 562,000 square feet and 321 beds. Phase II would include 158,000 square feet accommodating an additional 129 beds, for a total of 450 beds. In addition to the inpatient nursing functions, the hospital would include ancillary services, such as medical imaging/radiology, clinical laboratory and blood bank, operating rooms and associated recovery spaces, inpatient pharmacies, and an emergency department which would have associated treatment rooms. The hospital would also include administrative offices and conference rooms, as well as general building support departments such as environmental and material services, cafeteria and inpatient food services, communication, linen, and biomedical engineering.

Sustainable goals are set to ensure that the hospital building would achieve LEED (Leadership in Energy and Environmental Design) Gold certification. The project would be developed to incorporate reduced energy demand systems (solar, thermal insulation), utilization of rainwater, recycling of waste, utilize systems with energy recovery options, prefabrication elements across the project to minimize waste, and consideration of local materials for both landscape and construction.

Structured parking, with preferred parking for fuel-efficient vehicles, would eliminate the heat island effect of surface parking and encourage the use of alternative fuel vehicles. The site would be engineered to reduce runoff and improve the quality of the runoff that does enter the storm water system. The site would also be restored with native, low water use planting and maximum open space to provide healing gardens and outdoor event space for the patients and community.

In addition, low flow fixtures and water efficient medical and mechanical equipment, as well as metering for measurement and verification, would be used to conserve water in the hospital.

Hospital Support Building

The HSB would be comprised of two buildings (180,000 square feet) located immediately adjacent to and connected to the hospital building. Phase I would include a 75,000-square foot building and Phase II would provide an additional 105,000 square feet. The HSB would provide outpatient clinical departments including physician offices, exam and treatment rooms, imaging/radiology, pharmacies, and additional administrative offices. The HSB would also provide member services departments including a business office, health education, and conference rooms.

Energy Center and Generator Yard

The 36,000-square foot Energy Center is included in Phase I and would serve both the hospital and HSB. The Energy Center would contain all of the major mechanical and electrical equipment for the Kaiser Permanente Central Medical Center. Major equipment would include electric-centrifugal water cooler chillers located on the first floor, open cooling towers located on the roof, hot water boilers located on the third floor, an absorption chiller connected to the emergency/standby power, microturbines (PureComfort™) to serve the chilled water process and produce electricity and microturbines (PureThermal™) to serve the hot water system and produce electricity located in the service yard, as well as steam boilers.

Accessory equipment would include cold water pumps and heat and power (CHP) pumps co-located with the water cooler chillers on the first floor, fan coil units to serve the water treatment and elevator equipment rooms, variable air volume units located on all floors, constant air volume units located on the first floor, air handling units and supply/exhaust fans located on the roof, condenser water feed systems to serve the water treatment room, sup filters located on the roof to serve the cooling towers, hot water pumps and high-pressure water-jet propulsion system (HWPS) pumps co-located with the hot water boilers on the first floor, a feed water deaerator and shell and tube heat exchanger located in the boiler room, and gas packs co-located with microturbines located in the service yard. The Energy Center would also contain the offices and shops for the facilities services (engineering) department. The Energy Center would be operational with the opening of the HSB.

The following equipment would be housed within the Energy Center, located in the southwest corner of the project site:

Hot Water Boilers: Three dual fuel (natural gas with diesel fuel backup) Cleaver Brooks FLX-1200 hot water boilers with one future identical boiler would be located on the third floor of the Energy Center. One boiler would be a standby unit. Proposed hot water boilers would maintain an input of approximately 12.0 million British thermal units per hour (MMBtu/hr) and a minimum efficiency of 80%. Each is equipped with a 15 horsepower (hp) fan connected to emergency/standby power and exhaust would exit through a 28-inch diameter flue on the roof of the Energy Center.

Steam Boilers: Five Cleaver Brooks CFH 60 steam boilers would be installed in the Energy Center to produce steam. One boiler would be a standby unit. The steam boilers would be rated at 60 hp and produce approximately 2,070 pounds/hour of steam at 125 psig. The steam boilers would have a heat input rating of 2.04 MMBtu/hour.

Microturbines (PureComfort™): Six Carrier CAP65R-HG4-BE0U microturbines would serve the chilled water processes and would be located in the service yard north of the Energy Center. Each unit would have a natural gas input of 842 thousand Btu per hour (MBtu/hour) with an output power of 65 kilowatts (kW) with a total of 370 kW.

Microturbines (PureThermal™): Four Carrier CAP65R-HG4-DE0U microturbines would serve the hot water system and would be located in the service yard north of the Energy Center. Each unit would have natural gas input of 842 MBtu/hour with an output power of 65 kW with a total of 260 kW.

Emergency Generators: Three 2500-kW diesel-powered emergency generators, with provisions provided for a future fourth generator in Phase II, would be located in the Generator Yard southeast of the Energy Center. The generators would be powered by Caterpillar 3516C-HD TA diesel engines compliant with U.S. Environmental Protection Agency Tier 2 standards. The emergency generators would be located on grade to the southeast of the Energy Center, and would feed directly to the emergency paralleling and control gear located on the third floor, above the normal equipment room. An underground fuel storage tank would be sized and provided near the generator yard with the capacity to run all generators simultaneously at full load for 96 hours. In addition an individual day tank will be provided next to each generator to accommodate approximately 90 minutes of runtime.

Parking Facilities

A total of 2,499 parking spaces are proposed, in the form of two parking structures and surface parking. Parking in Phase I includes a six-story parking structure as well as surface parking, which would provide a total of 1,562 parking spaces. Parking for Phase II (buildout) would include an additional seven-story structure that would provide 937 additional spaces, for a total of 2,499 structured and surface parking spaces. The project would also provide secure bike racks and storage facilities on site to encourage bicycle use as an alternative means of transportation.

Access/Road Improvements

The project is located at the southeastern intersection of Ruffin Road and Clairemont Mesa Boulevard, and is bound by Ruffin Court to the south. Currently, a right-in / right-out only access is located approximately 330 feet east of Ruffin Road on Clairemont Mesa Boulevard. A 130-foot long eastbound right-turn lane is provided at this driveway. Access to the project site is also currently provided by two driveways along Ruffin Road and one driveway on Ruffin Court located at the southeastern boundary of the site.

The project proposes to close the existing access point on Clairemont Mesa Boulevard and instead provide a warranted signalized access approximately 760 feet east of Ruffin Road on Clairemont Mesa Boulevard. One outbound left-turn lane and two outbound right-turn lanes are proposed at this driveway.

For access from Ruffin Road, a driveway is proposed approximately 540 feet south of Clairemont Mesa Boulevard. This driveway would provide right-in / right-out only access on Ruffin Road for ambulance access and access to the emergency room. Patients and ambulances accessing the Emergency Department from the north would make a U-turn at the Ruffin Court signal and approach the Ruffin Road access from the south.

Along Ruffin Court, the existing access is proposed to be maintained for full access. This access driveway is located east of the proposed parking structure. A second access driveway on Ruffin Court is proposed to provide direct access to the proposed parking structure and to continue to provide mutual access to Polinsky Center. A third access driveway on Ruffin Court is proposed west of HSB to provide access exclusively to loading docks, the SDG&E yard and the tech docks for use by delivery trucks only. A sign restricting access to all vehicles except delivery and other trucks only would be posted at the driveway,

In summary, a total of five access points are proposed for the project site including one full signalized access on Clairemont Mesa Boulevard, one access driveway on Ruffin Road, and three access driveways on Ruffin Court (one emergency only, one delivery only and one for public access).

Off-site Road Improvements

The project would include off-site road improvements. In order to provide the full signalized access on Clairemont Mesa Boulevard, as described above, widening along the south side of Clairemont Mesa Boulevard is proposed, as shown conceptually on Figure 3, Proposed Site Plan.

In addition, a storm drain located to the east of the project site, just south of Clairemont Mesa Boulevard, requires modifications. The existing off-site brow ditch and type F inlet would be removed and replaced with a reinforced concrete pipe and manhole/cleanout structure to accommodate the road widening of Clairemont Mesa Boulevard.

Construction Schedule

Construction of the project is anticipated to commence in Spring 2013, with Phase 1 to be completed by between fall 2017 and Spring 2018. Buildout is expected to be completed between 2025 and 2030. The project includes the following distinct components.

Phase I - Hospital, HSB, Energy Center, and Parking

Construction would likely commence in the Spring 2013. Initial site work would include demolition of the existing County government building and surface parking lot, the construction of additional entrances to the site with associated street and signal improvements, modifications to the current site improvements (including modifications to the current storm drainage system and potential soils remediation of unidentified fill), major excavation and grading for the hospital site, and completion of the site improvements to meet the requirements of the City of San Diego, Office of Statewide Health Planning and Delivery and Caltrans, and coordinated with the requirements of the Federal Highway Administration, as applicable.

The HSB is expected to be completed as a part of Phase 1 along the same timeframe. The Energy Center would be operational with the opening of the HSB.

Phase II - Build-out

Future development capacity for additional integrated nursing wings, additional diagnostic and treatment space, medical specialty buildings, ancillary commercial/retail and, if needed, additional parking structures would be included Buildout of the KP Central Medical Center Project.

The precise timing, order and rate of development would be at Kaiser's discretion and these decisions may depend upon factors not within the control of Kaiser, such as changes in health care delivery requirements, member needs, market orientation and demand, interest rates, competition and other similar factors.

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2.0 BACKGROUND

2.1 The Greenhouse Effect and Greenhouse Gases

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer).

Gases that trap heat in the atmosphere are often called "greenhouse gases" (GHGs). The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short-wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long-wave radiation; and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. This "trapping" of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect. Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and water vapor (H_2O). Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely byproducts of fossil fuel combustion, whereas CH_4 results mostly from off-gassing associated with agricultural practices and landfills. Man-made GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3), which are associated with certain industrial products and processes (CAT 2006).

The greenhouse effect is a natural process that contributes to regulating the earth's temperature. Without it, the temperature of the Earth would be about 0°F (−18°C) instead of its present 57°F (14°C). Global climate change concerns are focused on whether human activities are leading to an enhancement of the greenhouse effect (National Climatic Data Center 2009).

The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its "global warming potential" (GWP). GWP varies between GHGs; for example, the GWP of CH_4 is 21, and the GWP of N_2O is 310. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG gas emissions are typically measured in terms of pounds or tons of "CO_2 equivalent" (CO_2E).[1]

[1] The CO_2 equivalent for a gas is derived by multiplying the mass of the gas by the associated GWP, such that $MTCO_2E$ = (metric tons of a GHG) x (GWP of the GHG). For example, the GWP for CH_4 is 21. This means that emissions of 1 metric ton of methane are equivalent to emissions of 21 metric tons of CO_2.

2.2 Contributions to Greenhouse Gas Emissions

In 2010, the United States produced 6,822 million metric tons of CO_2E (MMT CO_2E) (EPA 2012). The primary GHG emitted by human activities in the United States was CO_2, representing approximately 84% of total GHG emissions. The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 94% of the CO_2 emissions and 78% of overall GHG emissions.

According to the 2009 GHG inventory data compiled by CARB for the California Greenhouse Gas Inventory for 2000–2009, California emitted 457 MT CO_2E of GHGs, including emission resulting from out-of-state electrical generation (CARB 2011). The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources, industry, agriculture and forestry, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2009 are presented in Table 2, GHG Sources in California.

Table 2
GHG Sources in California

Source Category	Annual GHG Emissions (MMT CO_2E)	% of Total
Agriculture	32.13	7.03%
Commercial and residential	42.95	9.40%
Electricity generation	103.58a	22.68%
Forestry (excluding sinks)	0.19	0.04%
Industrial uses	81.36	17.81%
Recycling and waste	7.32	1.60%
Transportation	172.92	37.86%
High-GWP substances	16.32	3.57%
Totals	456.77	100.00%

Source: CARB 2011.
Notes:
[a] Includes emissions associated with imported electricity, which account for 48.05 MMTCO_2E annually.

2.3 Potential Effects of Human Activity on Climate Change

According to the California Air Resources Board (CARB), some of the potential impacts in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high O_3 days, more large forest fires, and more drought years (CARB 2006). Several recent studies have attempted to explore the possible negative consequences that climate change, left unchecked, could have in California. These reports acknowledge that climate scientists' understanding of the complex global climate system, and the interplay of the various

internal and external factors that affect climate change, remains too limited to yield scientifically valid conclusions on such a localized scale. Substantial work has been done at the international and national level to evaluate climatic impacts, but far less information is available on regional and local impacts.

The primary effect of global climate change has been a rise in average global tropospheric temperature of 0.2°C per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming would occur, which would induce further changes in the global climate system during the current century. Changes to the global climate system and ecosystems and to California would include, but would not be limited to:

- The loss of sea ice and mountain snowpack resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures (IPCC 2007)
- A rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps and the Greenland and Antarctic ice sheets (IPCC 2007)
- Changes in weather that includes widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones (IPCC 2007)
- A decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 70% to as much as 90% over the next 100 years (CAT 2006)
- An increase in the number of days conducive to O_3 formation by 25% to 85% (depending on the future temperature scenario) in high O_3 areas of Los Angeles and the San Joaquin Valley by the end of the 21st century (CAT 2006)
- High potential for erosion of California's coastlines and sea water intrusion into the Delta and levee systems due to the rise in sea level (CAT 2006).

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3.0 REGULATORY SETTING

3.1 Federal Activities

Massachusetts vs. EPA. On April 2, 2007, in *Massachusetts v. EPA*, the Supreme Court directed the EPA Administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA Administrator is required to follow the language of Section 202(a) of the CAA. On December 7, 2009, the Administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the CAA:

- The Administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the "endangerment finding."
- The Administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the CAA.

Energy Independence and Security Act. On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007. Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022
2. Set a target of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by model year 2020 and directs National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

EPA and NHTSA Joint Final Rule for Vehicle Standards. On April 1, 2010, the EPA and NHTSA announced a joint final rule to establish a national program consisting of new standards for light-duty vehicles model years 2012 through 2016. The joint rule is intended to reduce GHG emissions and improve fuel economy. The EPA is finalizing the first-ever national GHG emissions standards under the Clean Air Act, and NHTSA is finalizing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act (EPA 2010). This final rule follows the EPA and Department of Transportation's joint proposal on September 15, 2009, and is the result of the President Obama's May 2009 announcement of a national program to reduce greenhouse gases and improve fuel economy (EPA 2011). The final rule became effective on July 6, 2010 (EPA and NHTSA 2010).

The EPA GHG standards require new passenger cars, light-duty trucks, and medium-duty passenger vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile in model year 2016, equivalent to 35.5 mpg if the automotive industry were to meet this CO_2 level through fuel economy improvements alone. The CAFE standards for passenger cars and light trucks will be phased in between 2012 and 2016, with the final standards equivalent to 37.8 mpg for passenger cars and 28.8 mpg for light trucks, resulting in an estimated combined average of 34.1 mpg. Together, these standards will cut GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program. The rules will simultaneously reduce GHG emissions, improve energy security, increase fuel savings, and provide clarity and predictability for manufacturers (EPA 2011).

In August 2012, the EPA and NHTSA approved a second round of GHG and CAFE standards for model years 2017 and beyond (EPA and NHTSA 2012). These standards will reduce motor vehicle GHG emissions to 163 grams of CO_2 per mile, which is equivalent to 54.5 mpg if this level were achieved solely through improvements in fuel efficiency, for cars and light-duty trucks by model year 2025. A portion of these improvements, however, will likely be made through improvements in air conditioning leakage and through use of alternative refrigerants, which would not contribute to fuel economy. The first phase of the CAFE standards, for model year 2017 to 2021, are projected to require, on an average industry fleet-wide basis, a range from 40.3 to 41.0 mpg in model year 2021. The second phase of the CAFE program, for model years 2022 to 2025, are projected to require, on an average industry fleet-wide basis, a range from 48.7 to 49.7 mpg in model year 2025. The second phase of standards have not been finalized due to the statutory requirement that NHTSA set average fuel economy standards not more than five model years at a time. The regulations also include targeted incentives to encourage early adoption and introduction into the marketplace of advanced technologies to dramatically improve vehicle performance, including:

- Incentives for electric vehicles, plug-in hybrid electric vehicles, and fuel cells vehicles
- Incentives for hybrid technologies for large pickups and for other technologies that achieve high fuel economy levels on large pickups

- Incentives for natural gas vehicles
- Credits for technologies with potential to achieve real-world greenhouse gas reductions and fuel economy improvements that are not captured by the standards test procedures.

3.2 State of California

Title 24. Although not originally intended to reduce GHG emissions, California's Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The premise for the standards is that energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for space and water heating) results in GHG emissions. Therefore, increased energy efficiency in buildings results in relatively lower rates of GHG emissions on a building by building basis.

Assembly Bill (AB) 1493. In a response to the transportation sector accounting for more than half of California's CO_2 emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards will result in a reduction of about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30%.

Before these regulations could go into effect, the EPA had to grant California a waiver under the federal CAA, which ordinarily preempts state regulation of motor vehicle emission standards. The waiver was granted by Lisa Jackson, the EPA Administrator, on June 30, 2009. On March 29, 2010, the CARB Executive Officer approved revisions to the motor vehicle GHG standards to harmonize the state program with the national program for 2012–2016 model years (see "EPA and NHTSA Joint Final Rule for Vehicle Standards" above). The revised regulations became effective on April 1, 2010.

Executive Order S-3-05. In June 2005, former governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80% below 1990 levels by 2050. CalEPA Secretary is required to coordinate efforts of various

agencies to collectively and efficiently reduce GHGs. The Climate Action Team is responsible for implementing global warming emissions reduction programs. Representatives from several state agencies comprise the Climate Action Team. The Climate Action Team fulfilled its report requirements through the March 2006 Climate Action Team Report to the governor and the legislature (CAT 2006). A second draft biennial report was released in April 2009.

The 2009 Draft Climate Action Team Report (CAT 2009) expands on the policy outlined in the 2006 assessment. The 2009 report provides new information and scientific findings regarding the development of new climate and sea-level projections using new information and tools that have recently become available and evaluates climate change within the context of broader soil changes, such as land use changes and demographics. The 2009 report also identifies the need for additional research in several different aspects that affect climate change in order to support effective climate change strategies. The aspects of climate change determined to require future research include vehicle and fuel technologies, land use and smart growth, electricity and natural gas, energy efficiency, renewable energy and reduced carbon energy sources, low GHG technologies for other sectors, carbon sequestration, terrestrial sequestration, geologic sequestration, economic impacts and considerations, social science, and environmental justice.

AB 32. In furtherance of the goals established in Executive Order S-3-05, the legislature enacted AB 32 (Núñez and Pavley), the California Global Warming Solutions Act of 2006, which former governor Schwarzenegger signed on September 27, 2006. The GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020.

CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

The first action under AB 32 resulted in the adoption of a report listing early action GHG emission reduction measures on June 21, 2007. The early actions include three specific GHG control rules. On October 25, 2007, CARB approved an additional six early action GHG reduction measures under AB 32. The three original early-action regulations meeting the narrow legal definition of “discrete early action GHG reduction measures” include:

1. A low-carbon fuel standard to reduce the "carbon intensity" of California fuels
2. Reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of "do-it-yourself" automotive refrigerants
3. Increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.

The additional six early-action regulations, which were also considered "discrete early action GHG reduction measures," consist of:

1. Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology
2. Reduction of auxiliary engine emissions of docked ships by requiring port electrification
3. Reduction of PFCs from the semiconductor industry
4. Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products)
5. Requirements that all tune-up, smog check and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency
6. Restriction on the use of SF_6 from non-electricity sectors if viable alternatives are available.

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 million metric tons CO_2E. In addition to the 1990 emissions inventory, CARB also adopted regulations requiring mandatory reporting of GHGs for large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and other industrial sources that emit CO_2 in excess of specified thresholds.

On December 11, 2008, CARB approved the *Climate Change Proposed Scoping Plan: A Framework for Change* (Scoping Plan; CARB 2008) to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program.

The key elements of the Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewables energy mix of 33%
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State of California's long term commitment to AB 32 implementation.

SB 1368. In September 2006, former governor Schwarzenegger signed SB 1368, which requires the California Energy Commission (CEC) to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC). This effort will help protect energy customers from financial risks associated with investments in carbon-intensive generation by allowing new capital investments in power plants whose GHG emissions are as low or lower than new combined-cycle natural gas plants, by requiring imported electricity to meet GHG performance standards in California, and by requiring that the standards be developed and adopted in a public process.

Executive Order S-1-07. Issued on January 18, 2007, Executive Order S-1-07 sets a declining Low Carbon Fuel Standard (LCFS) for GHG emissions measured in CO_2E gram per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered. CARB adopted the implementing regulation in April 2009. The regulation is expected to increase the production of biofuels, including those from alternative sources such as algae, wood, and agricultural waste. In addition, the LCFS would drive the availability of plug-in hybrid, battery electric, and fuel-cell power motor vehicles. The LCFS is anticipated to lead to the replacement of 20% of the fuel used in motor vehicles with alternative fuels by 2020.

SB 97. In August 2007, the legislature enacted SB 97 (Dutton), which directs the Governor's Office of Planning and Research (OPR) to develop guidelines under the California Environmental Quality Act (CEQA) for the mitigation of GHG emissions. OPR was to develop proposed guidelines by July 1, 2009, and the Natural Resources Agency was directed to adopt the guidelines by January 1, 2010. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the State CEQA Guidelines.

On June 19, 2008, OPR issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents (OPR 2008). The advisory indicated that a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities, should be identified and estimated. The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures that are necessary to reduce GHG emissions to a level that is less than significant.

On April 13, 2009, OPR submitted to the Natural Resources Agency its proposed amendments to the state CEQA Guidelines relating to GHG emissions. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting the proposed amendments, starting the public comment period.

The Natural Resources Agency adopted the CEQA Guidelines Amendments on December 30, 2009, and transmitted them to the Office of Administrative Law on December 31, 2009. On February 16, 2010, the Office of Administrative law completed its review and filed the amendments with the secretary of state. The amendments became effective on March 18, 2010. The amended guidelines establish several new CEQA requirements concerning the analysis of GHGs, including the following:

- Requiring a lead agency to "make a good faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emissions resulting from a project" (Section 15064(a))
- Providing a lead agency with the discretion to determine whether to use quantitative or qualitative analysis or performance standards to determine the significance of GHG emissions resulting from a particular project (Section 15064.4(a))
- Requiring a lead agency to consider the following factors when assessing the significant impacts from greenhouse gas emissions on the environment:
    - The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
    - Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

  - The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. (Section 15064.4(b))
- Allowing lead agencies to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures, including offsets that are not otherwise required (Section 15126.4(c)).

The amended guidelines also establish two new guidance questions regarding GHG emissions in the Environmental Checklist set forth in CEQA Guidelines Appendix G:

- Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The adopted amendments do not establish a GHG emission threshold, and instead allow a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts.[2] The Natural Resources Agency also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions.[3]

SB 375. In August 2008, the legislature passed and on September 30, 2008, former governor Schwarzenegger signed SB 375 (Steinberg), which addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. Regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, as determined by CARB, are required to consider the emission reductions associated with vehicle emission standards (see SB 1493), the composition of fuels (see Executive Order S-1-07), and other CARB-approved measures to reduce GHG emissions. Regional metropolitan planning organizations (MPOs) will be responsible for preparing a Sustainable Communities Strategy within their Regional Transportation Plan. The goal of the Sustainable Communities Strategy is to establish a development plan for the

[2] "The CEQA Guidelines do not establish thresholds of significance for other potential environmental impacts, and SB 97 did not authorize the development of a statement threshold as part of this CEQA Guidelines update. Rather, the proposed amendments recognize a lead agency's existing authority to develop, adopt and apply their own thresholds of significance or those developed by other agencies or experts" (California Natural Resources Agency 2009, p. 84).

[3] "A project's compliance with regulations or requirements implementing AB 32 or other laws and policies is not irrelevant. Section 15064.4(b)(3) would allow a lead agency to consider compliance with requirements and regulations in the determination of significance of a project's greenhouse gas emissions" (California Natural Resources Agency 2009, p. 100).

region, which, after considering transportation measures and policies, will achieve, if feasible, the GHG reduction targets. If a Sustainable Communities Strategy is unable to achieve the GHG reduction target, an MPO must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies. SB 375 provides incentives for streamlining CEQA requirements by substantially reducing the requirements for "transit priority projects," as specified in SB 375, and eliminating the analysis of the impacts of certain residential projects on global warming and the growth-inducing impacts of those projects when the projects are consistent with the Sustainable Communities Strategy or Alternative Planning Strategy. On September 23, 2010, CARB adopted the SB 375 targets for the regional MPOs. The targets for the San Diego Association of Governments (SANDAG) are a 7% reduction in emissions per capita by 2020 and a 13% reduction by 2035. Achieving these goals through adoption of a Sustainable Communities Strategy will be the responsibility of the MPOs.

Executive Order S-13-08. Former governor Schwarzenegger issued Executive Order S-13-08 on November 14, 2008. The Executive Order is intended to hasten California's response to the impacts of global climate change, particularly sea level rise. It directs state agencies to take specified actions to assess and plan for such impacts. It directs the Resources Agency, in cooperation with the California Department of Water Resources, CEC, California's coastal management agencies, and the Ocean Protection Council that the request the National Academy of Sciences prepare a Sea Level Rise Assessment Report by December 1, 2010. The Ocean Protection Council, California Department of Water Resources, and CEC, in cooperation with other state agencies are required to conduct a public workshop to gather information relevant to the Sea Level Rise Assessment Report. The Business, Transportation, and Housing Agency was ordered to assess within 90 days of the order the vulnerability of the state's transportation systems to sea level rise. OPR and the Resources Agency are required to provide land use planning guidance related to sea level rise and other climate change impacts. The order also requires the other state agencies to develop adaptation strategies by June 9, 2009, to respond to the impacts of global climate change that are predicted to occur over the next 50 to 100 years. A discussion draft adaptation strategies report was released in August 2009, and the final adaption strategies report was issued in December 2009. To assess the state's vulnerability, the report summaries key climate change impacts to the state for the following areas: public health, ocean and coastal resources, water supply and flood protection, agriculture, forestry, biodiversity and habitat, and transportation and energy infrastructure. The report then recommends strategies and specific responsibilities related to water supply, planning and land use, public health, fire protection, and energy conservation.

Executive Order S-14-08. On November 17, 2008, former governor Schwarzenegger issued Executive Order S-14-08. This Executive Order focuses on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. The governor's order requires that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the order directs state agencies to take appropriate actions to facilitate reaching this target. The Resources Agency, through collaboration with the CEC and California Department of Fish and Game (CDFG), is directed to lead this effort. Pursuant to a Memorandum of Understanding between the CEC and CDFG creating the Renewable Energy Action Team, these agencies will create a "one-stop" process for permitting renewable energy power plants.

Executive Order S-21-09. On September 15, 2009, former governor Schwarzenegger issued Executive Order S-21-09. This Executive Order directed CARB to adopt a regulation consistent with the goal of Executive Order S-14-08 by July 31, 2010. CARB is further directed to work with the CPUC and CEC to ensure that the regulation builds upon the Renewable Portfolio Standard program and is applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB is to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health and can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB adopted regulations to implement a "Renewable Electricity Standard," which would achieve the goal of the executive order with the following intermediate and final goals: 20% for 2012–2014; 24% for 2015–2017; 28% for 2018–2019; and 33% for 2020 and beyond. Under the regulation, wind; solar; geothermal; small hydroelectric; biomass; ocean wave, thermal, and tidal; landfill and digester gas; and biodiesel would be considered sources of renewable energy. The regulation would apply to investor-owned utilities and public (municipal) utilities.

SB X1 2. On April 12, 2011, Governor Jerry Brown signed SB X1 2 in the First Extraordinary Session, which would expand the RPS by establishing a goal of 20% of the total electricity sold to retail customers in California per year, by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current and that meets other specified requirements with respect to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the RPS. By January 1, 2012, the CPUC is required to establish the quantity of electricity products from eligible renewable energy resources to be procured by retail sellers in order to achieve targets of 20% by December 31, 2013; 25% by December 31, 2016; and 33% by December 31, 2020. The statute also requires that the governing

boards for local publicly owned electric utilities establish the same targets, and the governing boards would be responsible for ensuring compliance with these targets. The CPUC will be responsible for enforcement of the RPS for retail sellers, while the CEC and CARB will enforce the requirements for local publicly owned electric utilities.

California Air Pollution Control Officers Association. The California Air Pollution Control Officers Association (CAPCOA) is the association of Air Pollution Control Officers representing all 35 air quality agencies throughout California. CAPCOA is not a regulatory body, but has been an active organization in providing guidance in addressing the CEQA significance of GHG emissions and climate change as well as other air quality issues.

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4.0 THRESHOLDS OF SIGNIFICANCE

The California Natural Resources Agency, through its December 2009 amendments to the CEQA Guidelines, and the City of San Diego, through its interim guidance for assessment of GHG emissions, provide a framework for the evaluation of the GHG emissions associated with proposed project. The state's and City's guidance are discussed in the following sections.

State of California

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

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Neither the State of California nor the SDAPCD has adopted emission-based thresholds for GHG emissions under CEQA. OPR's Technical Advisory titled *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review* states that "public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact" (OPR 2008, p. 4). Furthermore, the advisory document indicates in the third bullet item on page 6 that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice."

City of San Diego

In order to determine the significance of the proposed project's GHG emissions, the City of San Diego's Scoping Letter for the proposed project was utilized (City of San Diego 2012). With respect to GHG emissions, the Scoping Letter recommends the use of the thresholds established in Appendix G of the CEQA Guidelines (indicated above).

As the City of San Diego has not established official thresholds of significance for GHG emissions, the City has adopted a screening threshold of 900 metric tons CO_2E per year based on the approach outlined in the California Air Pollution Control Officers Association (CAPCOA) report *CEQA & Climate Change* (CAPCOA 2008). Under this interim guidance, any project exceeding 900 metric tons CO_2E per year would be required to demonstrate a 28.3% reduction in emissions from the "business as usual" scenario consistent with the goal of AB 32 to achieve 1990 statewide GHG emission levels by 2020. The City requires that projects analyze emissions associated with both construction and operation, where construction emissions are amortized over a 30-year "project life" and then included with the operational emissions.

5.0 IMPACTS

5.1 Construction Impacts

GHG emissions would be associated with the construction phase of the proposed project through use of construction equipment and vehicle trips. Emissions of CO_2 were estimated using the URBEMIS 2007, Version 9.2.4, land use and air emissions model (Jones & Stokes 2007). For the purposes of modeling, it was assumed that construction of the proposed project would commence in Spring 2013. Construction of Phase I would occur over approximately 3 years, and construction of Phase II is anticipated to occur over a one-year period. Construction would consist of various components as previously described in Section 1.3. A detailed depiction of the construction schedule—including information regarding subphases, demolition, and equipment utilized during each subphase—is included in Appendix A of this report. The information contained in Appendix A was utilized as URBEMIS inputs.

Construction equipment specifications were provided by the applicant and equipment mix is meant to represent a reasonably conservative estimate of construction activity. For the analysis, it was generally assumed that heavy construction equipment would be operating at the site for approximately 8 hours per day, 5 days per week (22 days per month), during project construction. Additionally, URBEMIS assumptions were used for worker trips and vendor trips during building construction subphases.

The model results were adjusted to estimate CH_4 and N_2O emissions in addition to CO_2. The CO_2 emissions from off-road equipment and vehicles and delivery trucks, which are assumed by URBEMIS 2007 to be diesel fueled, were adjusted by a factor derived from the relative CO_2, CH_4, and N_2O for diesel fuel as reported in the California Climate Action Registry's (CCAR) *General Reporting Protocol* (CCAR 2009) for transportation fuels and the GWP for each GHG to estimate the emissions in units of CO_2E. The CO_2 emissions associated with construction worker trips were multiplied by a factor based on the assumption that CO_2 represents 95% of the CO_2E emissions associated with passenger vehicles (EPA 2005). The results were then converted from annual tons per year to metric tons per year. Table 3, Estimated Construction GHG Emissions, shows the estimated annual GHG construction emissions associated with the proposed project, as well as the amortized annual construction emissions over a 30-year "project life."

Table 3
Estimated Construction GHG Emissions (metric tons CO_2E/year)

Construction Year	GHG Emissions
2013	1,868
2014	2,356
2016	213
2023	885
2024	313
Total Construction Emissions	5,635
Amortized Annual Construction Emissions	188

Source: URBEMIS 2007 Version 9.2.4. See Appendix B for complete results.

5.2 Operational Impacts

Operation of the proposed project would result in GHG emissions from vehicular traffic, area sources (natural gas combustion, landscaping), stationary sources (diesel generators, boilers and microturbines), electrical generation, water supply, and solid waste.

To effectively analyze operational GHG emissions associated with the proposed project, two scenarios were modeled. The first scenario represents project emissions under a "business as usual" approach, which estimates project emissions absent federal, state and local measures and without project features intended to reduce GHG emissions. The second scenario represents project emissions with implementation of applicable federal, state and local GHG reduction measures and project features. Statewide emission reduction measures proposed in CARB's *Scoping Plan* (CARB 2008) that are applicable to the proposed project as well as the percent reduction from "business as usual" are indicated in Table 4 below. Detailed calculations can be found in Appendix B.

Table 4
State Measures Addressing Reduction of GHG Emissions

Measure	Sector	Percent Reduction from Business as Usual
AB 1493 – Pavley Standards	Transportation	19.71%
Energy Efficiency	Energy Consumption (Electricity)	10.92%
Renewable Portfolio Standard (33% by 2020)	Energy Consumption (Electricity)	15.30%
Residential and Commercial (Hospital)	Energy Consumption (Natural Gas)	9.54%
Renewable Portfolio Standard (33% by 2020)	Energy Consumption (Water Supply)	15.30%

Source: CARB 2008. See Appendix B for complete results.

Vehicular Traffic

The proposed project would impact air quality through the vehicular traffic generated by the proposed project. According to the proposed project's traffic report (LLG 2012), the baseline traffic scenario consists of 3,527 trips, while the proposed project would result in a total of 12,600 trips at Kaiser Central Hospital (see Table 5 below). The net change in trips that can be attributed to the proposed project is 9,073 trips. See Appendix A for detailed trip generation information.

Annual CO_2 emissions from motor vehicle trips for full project buildout were quantified using URBEMIS 2007 (refer to Appendix A for additional details and model assumptions). As described earlier, CH_4 and N_2O emissions were accounted for by multiplying the URBEMIS 2007 CO_2 emissions by a factor based on the assumption that CO_2 represents 95% of the CO_2E emissions associated with passenger vehicles (EPA 2005).

GHG emission reduction measures identified above in Table 4 would reduce emissions associated with vehicular traffic by approximately 20%.

Area Sources

In addition to estimating mobile source emissions, URBEMIS 2007 was also used to estimate emissions from the project's area sources, which include natural gas combustion and landscape maintenance (which would not produce winter emissions). Refer to Appendix B for additional information. The CO_2 emissions from natural gas combustion were adjusted by a factor derived from the relative CO_2, CH_4, and N_2O for natural gas as reported in the CCAR's *General Reporting Protocol* (CCAR 2009) for stationary combustion fuels and their GWPs.

GHG emission reduction measures identified above in Table 4 would reduce emissions associated with natural gas combustion by approximately 10%.

Diesel Generators

Operational emissions under the proposed project would result from intermittent use of three 2500-kW diesel-powered emergency generators for maintenance and testing purposes. Each generator would be run for testing and maintenance approximately 30 minutes each week with a 4-hour full load test once per 3 years for a total of 30 hours per year, assuming the triennial test is run in a given year. Generator engines would meet the EPA standards for Tier 2 engines as required by the CARB ATCM for new and in-use stationary diesel engines. Under the baseline scenario, it is assumed that no emergency generators would operate on-site. The CO_2 emission factor was obtained from Section 3.4 (Large Stationary Diesel and All Stationary Dual-fuel Engines) of the EPA's *Compilation of Air Pollutant Emission Factors* (EPA 1996). The CO_2 emissions from diesel combustion were adjusted by a factor derived from the relative CO_2, CH_4,

and N_2O for natural gas as reported in the CCAR's *General Reporting Protocol* (CCAR 2009) for stationary combustion fuels and their GWPs. The estimated emissions from the emergency generator engines are shown in Table 5. Refer to Appendix B for additional information. No GHG reduction measures have been applied to the diesel generators.

Boilers

Hot Water Boilers

Three natural gas-fired hot water boilers and one standby boiler would be proposed as part of the project's Energy Center components. These boilers would have an input of approximately 12.0 MMBtu/hr at 287 hp and operate a minimum efficiency of 80%. The hot water boilers would be operated as required to provide the needs of the hospital. Total annual fuel usage is estimated to 65,277MMBtu per year at 21% annual capacity factor; the estimated capacity factor was based on fuel usage estimates by the project engineers, Arup.

Steam Boilers

Under the proposed project, four Cleaver Brooks CFH 60 steam boilers and one standby boiler would be installed in the Energy Center to produce steam. Steam boilers would be rated at 60 hp and produce approximately 2,070 pounds/hour of steam at 125 psig. Steam boilers would have a heat input rating of 2.04 MMBtu/hour. The steam boilers would be operated as required to provide the needs of the hospital. Total annual fuel usage is estimated to be 15,012 MMBtu per year at 21% annual capacity factor. Under the baseline scenario, no boilers are assumed to operate on-site. The CO_2 emission factor was obtained from Section 1.4 (Natural Gas Combustion) of the EPA's *Compilation of Air Pollutant Emission Factors* (EPA 1998). The CO_2 emissions from natural gas combustion in the boilers were adjusted by a factor derived from the relative CO_2, CH_4, and N_2O for natural gas as reported in the CCAR's *General Reporting Protocol* (CCAR 2009) for stationary combustion fuels and their GWPs. The estimated emissions from the hot water and steam boilers are shown in Table 5. Refer to Appendix B for additional information. No GHG reduction measures have been applied to the boilers.

Microturbines

PureComfort Microturbines

As part of the proposed project, six PureComfort microturbines would operate at full load with a natural gas input of 0.842 MMBtu per hour and an output of 65 kW per unit. The microturbines would be operated continuously. Total annual fuel usage is estimated to be 44,256 MMBtu per year. The CO_2 emission factors was obtained from Section 3.1 (Stationary Gas Turbines) of EPA's *Compilation of Air Pollutant Emission Factors* (EPA 2000).

PureThermal Microturbines

In addition to pure comfort microturbines, 4 PureThermal microturbines would operate at full load with a natural gas input of 0.842 MMBtu per hour and an output of 65 kW per unit. The microturbines would be operated continuously. Total annual fuel usage is estimated to 29,504 MMBtu per year.

Under the baseline scenario, no microturbines would operate on-site.

The CO_2 emission factors was obtained from Section 3.1 (Stationary Gas Turbines) of EPA's *Compilation of Air Pollutant Emission Factors* (EPA 2000). The CO_2 emissions from natural gas combustion in the microturbines were adjusted by a factor derived from the relative CO_2, CH_4, and N_2O for natural gas as reported in the CCAR's *General Reporting Protocol* (CCAR 2009) for stationary combustion fuels and their GWPs. The estimated emissions from the microturbines are shown in Table 5. Refer to Appendix B for additional information. No GHG reduction measures have been applied to the microturbines; however, as proposed microturbines would generate electricity on-site, net positive electricity generation due to turbine operation has been accounted for in GHG emissions associated with electricity consumption as discussed below.

Table 5
Estimated Annual Stationary Source GHG Emissions (metric tons CO_2E/year)

Emission Source	GHG Emissions
Proposed Project	
Emergency Generators	235
Hot Water Boilers	3,562
Steam Boilers	819
Comfort Microturbines	2,214
Thermal Microturbines	1,476
Total	**8,306**

Source: See Appendix B for complete results.

Electrical Generation

Default electric usage rates as shown in Appendix D of the California Emissions Estimator Model were used to estimate electricity consumption from the baseline scenario and the proposed project (CalEEMod 2011). The net change in electricity consumption would be approximately 13,300,560 kilowatt-hours per year (see Appendix B for calculations) without considering the electricity generated by the microturbines. The 10 microturbines would generate a total of 5,518,800 kilowatt-hours of net positive electricity usage.

The generation of electricity through combustion of fossil fuels typically results in emissions of CO_2 and to a smaller extent CH_4 and N_2O. Annual electricity emissions were estimated using the reported CO_2 emissions per kilowatt-hour for San Diego Gas & Electric, which would provide electricity for the project. The contributions of CH_4 and N_2O for power plants in California were obtained from the CCAR's *General Reporting Protocol* (CCAR 2009), which were adjusted for their GWPs.

GHG emission reduction measures identified above in Table 4 would reduce emissions associated with electrical generation by approximately 26%. Net positive electricity generated by microturbines would reduce emissions associated with electricity consumption by approximately 41%.

Water Supply

Water supplied to the proposed project requires the use of electricity. Accordingly, the supply, conveyance, treatment, and distribution of water would indirectly result in GHG emissions through use of electricity. Default water usage rates as shown in Appendix D of the California Emissions Estimator Model were used to estimate electricity consumption from water use for the baseline scenario (CalEEMod 2011). Water usage rates for the proposed project were taken from the proposed project's Preliminary Water and Sewer Report (RBF 2012). The estimated electrical usage associated with supply, conveyance, treatment, and distribution of water was obtained from a CEC report on electricity associated with water supply in California (CEC 2006).

GHG emission reduction measures identified above in Table 4 would reduce emissions associated with electricity used for water supply by approximately 15%.

Solid Waste

The proposed project would generate solid waste, and would therefore result in CO_2E emissions associated with landfill off-gassing. Solid waste generation rates for the baseline scenario and the proposed project, and CO_2E conversion factors were obtained from the Bay Area Air Quality Management District's Greenhouse Gas Model, Version 1.1.9 Beta (BAAQMD 2010).

5.3 Summary of GHG Emissions

The net change in estimated GHG emissions associated with vehicular traffic, area sources, stationary sources, electrical generation, water supply, and solid waste relative to the baseline emissions is shown below in Table 6, Estimated Net Change in GHG Emissions. The emission reductions due to statewide measures and project features shown in Table 4 and discussed previously are reflected in the proposed project emissions. The amortized annual construction emissions are included in these overall emissions estimates as well. Additional detail regarding these calculations can be found in Appendix B. The net change in GHG emissions is 24,670 metric tons CO_2E per year.

Table 6
Estimated Net Change in GHG Emissions (metric tons CO_2E/year)

Source	GHG Emissions Proposed Project	GHG Emissions Baseline Project	Net Change
Motor Vehicles	17,063	5,487	11,577
Area Sources			
Natural Gas Combustion	661	498	163
Landscaping	1	1	1
Stationary Sources	8,306	—	8,306
Electrical Generation	1,446	1,336	110
Water Supply	1,325	1,119	207
Solid Waste	6,470	2,350	4,120
Amortized Annual Construction Emissions	188	—	188
Total	**35,459**	**10,789**	**24,670**

Source: See Appendix B for complete results.

Per the City's interim guidance, the proposed project's "business as usual" emissions were compared to the proposed project's gross (not net) emissions after accounting for statewide measures and project features. As shown in Table 7, Estimated GHG Emissions Compared to Business as Usual, the estimated GHG emissions from the proposed project would be 42,990 metric tons CO_2E per year without the GHG reduction measures ("business as usual"), and 35,459 metric tons CO_2E per year with the GHG reduction measures including project features. As indicated in Table 7, implementation of the GHG reduction measures would reduce GHG emissions by 17.5%.

Table 7
Estimated GHG Emissions Compared to Business as Usual (metric tons CO_2E/year)

Source	GHG Emissions Business As Usual	GHG Emissions Proposed Project with GHG Reduction Measures	Percent Reduction
Motor Vehicles	21,253	17,063	19.71%
Area Sources			
Natural Gas Combustion	730	661	9.54%
Landscaping	1	1	0%
Stationary Sources	8,306	8,306	0%
Electrical Generation	4,478	1,446	68%
Water Supply	1,565	1,325	15.3%
Solid Waste	6,470	6,470	0%
Amortized Annual Construction Emissions	188	188	0%
Total	**42,990**	**35,460**	**17.5%**

Source: See Appendix B for complete results.

5.4 Assessment of GHG Impacts

As shown in Table 7, the proposed project, after accounting for statewide GHG reduction measures and project features, would result in a net change of 24,670 metric tons CO_2E per year relative to the baseline scenario. To assess the impact of the proposed project's GHG emissions, the emissions under a "business as usual" scenario are compared with the proposed project's gross emissions. As shown in Table 7, with implementation of GHG reduction measures the proposed project would reduce GHG emissions by 17.5 %. The proposed project would therefore not achieve the target of 28.3% below business as usual that has been established for the purposes of assessing the GHG emissions of projects in the City of San Diego, and impacts would be considered significant.

As shown in Table 8, the project has incorporated the following sustainable features into the project design in order to reduce its overall emissions. Sustainable goals are set to ensure that the hospital building would achieve LEED Gold certification:

Table 8
Project Design Features

Feature	Specifications
Energy	Installation of solar infrastructure and thermal insulation to reduce energy demand throughout the project and increase building efficiency.
	Installation of PureComfort™ and PureThermal™ microturbines which would generate on-site electricity.
	Consideration of energy recovery options to be incorporated into project design.
Water Conservation	Utilization of rainwater/rain capture systems for outdoor water use.
Waste Reduction	Implementation of project-wide recycling program.
	Prefabrication elements incorporated across project construction to minimize waste.
	Incorporation of native, drought-tolerant landscaping and open spaces.
	Installation of low-flow fixtures and water-efficient medical and mechanical equipment.
	Installation of water metering for measurement and verification of water conservation features.
Material Sourcing	Consideration of local materials for landscape and construction.
Transportation	Structured parking to reduce heat-island effect of surface parking.
	Provisions for preferred parking for fuel-efficient vehicles.

The identified project design features reflect the types of emissions reduction measures recommended by public agencies to contribute to reducing the intensity of GHG emissions and helping California achieve its economy-wide goals. Additionally, the project would achieve LEED Gold certification and would incorporate additional design features including energy and water conservation measures, designed to further reduce GHG emissions once operational. Even with the features presented above, however, the proposed project would still result in a significant impact. This is also due to the uniqueness of hospital facilities, which are not

generally subject to energy efficiency requirements applied to other non-residential building types (e.g., Title 24). Hospitals are also required to meet other state laws related to ventilation and air exchanges, resulting in increased energy needs. Overall, while significant GHG impacts would be reduced through the incorporation of identified design features, residual impacts would remain significant and unavoidable.

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6.0 SUMMARY AND CONCLUSIONS

The project's potential effect on global climate change was evaluated, and emissions of greenhouse gases were estimated based on the use of construction equipment and vehicle trips associated with construction activities, as well as operational emissions once construction phases are complete. With implementation of GHG reduction measures, the proposed project's GHG emissions would be reduced by 17.5%. The proposed project would therefore not exceed the target of 28.3% below business as usual that has been established for the purposes of assessing GHG emissions of projects in the City of San Diego, and the GHG impact would be considered significant. Overall, while GHG impacts would be reduced through the incorporation of reduction measures, they would remain above the threshold of significance. Impacts to GHG contribution therefore would be significant and unavoidable and would not be reduced to below a level of significance with implementation of the proposed project.

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7.0 REFERENCES

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APPENDIX A

URBEMIS 2007 Version 9.2.4 Modeling and Estimated Emissions and Trip Generation

Table 7-1

Trip Generation

Land Use	Quantity	Daily Trip Ends (ADT)		AM Peak Hour					PM Peak Hour				
				% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume[b]		
		Rate [a]	Volume			In	Out	Total			In	Out	Total
Kaiser Permanente Hospital - Phase I													
Hospital	321 Beds	20 /Bed	6,420	9%	70 : 30	405	173	578	10%	30 : 70	193	449	642
Medical Offices													
Driveway Trips	75 KSF	50 /KSF	3,750	6%	80 : 20	180	45	225	10%	30 : 70	113	262	375
With Passby / Diverted Trips [c]	75 KSF	20 /KSF	1,500	6%	80 : 20	72	18	90	10%	30 : 70	45	105	150
Project Phase I													
Driveway Trips			**10,170**			**585**	**218**	**803**			**306**	**711**	**1,017**
With Passby / Diverted Trips (New Trips) [c]			**7,920**			**477**	**191**	**668**			**238**	**554**	**792**
(Less) Existing Site Trip Generation (June 2011)			(3,527)			(335)	(64)	(399)			(68)	(276)	(344)
Increase in Net Trips - Project Phase I			**4,393**			**142**	**127**	**269**			**170**	**278**	**448**
Kaiser Permanente Hospital - Phase II													
Hospital	129 Beds	20 /Bed	2,580	9%	70 : 30	162	70	232	10%	30 : 70	77	181	258
Medical Offices													
Driveway Trips	105 KSF	50 /KSF	5,250	6%	80 : 20	252	63	315	10%	30 : 70	158	367	525
With Passby / Diverted Trips [c]	105 KSF	20 /KSF	2,100	6%	80 : 20	101	25	126	10%	30 : 70	63	147	210
Phase II													
Driveway Trips			**7,830**			**414**	**133**	**547**			**235**	**548**	**783**
With Passby / Diverted Trips (New Trips) [c]			**4,680**			**263**	**95**	**358**			**140**	**328**	**468**
Entire Project													
Driveway Trips			**18,000**			**999**	**351**	**1,350**			**541**	**1,259**	**1,800**
With Passby / Diverted Trips (New Trips) [c]			**12,600**			**740**	**286**	**1,026**			**378**	**882**	**1,260**
(Less) Existing Site Trip Generation (June 2011)			(3,527)			(335)	(64)	(399)			(68)	(276)	(344)
Increase in Net Trips - Entire Project			**9,073**			**405**	**222**	**627**			**310**	**606**	**916**

Footnotes:

a. Trip rates from *Trip Generation Manual* , City of San Diego, May 2003.

b. KSF - 1,000 Square Feet.

c. Daily cumulative trip rate is 20 per KSF for MOB of less than 100 KSF and 16 per KSF for MOB of 100 KSF or more.

c. City of San Diego terms trip rates with Pass-by / diverted trips as "Cumulative Trips".

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Combined Annual Emissions Reports (Tons/Year)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Hospital Construction.urb924

Project Name: Kaiser Hospital - Construction Phase I

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	CO2
2013 TOTALS (tons/year unmitigated)	2,017.37
2013 TOTALS (tons/year mitigated)	2,017.37
Percent Reduction	0.00
2014 TOTALS (tons/year unmitigated)	2,503.88
2014 TOTALS (tons/year mitigated)	2,503.88
Percent Reduction	0.00
2016 TOTALS (tons/year unmitigated)	232.21
2016 TOTALS (tons/year mitigated)	232.21
Percent Reduction	0.00

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Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	CO2
2013	2,017.37
Demolition 03/01/2013-07/28/2013	430.95
Fugitive Dust	0.00
Demo Off Road Diesel	161.84
Demo On Road Diesel	257.57
Demo Worker Trips	11.53
Building 07/01/2013-02/01/2014	695.87
Building Off Road Diesel	251.42
Building Vendor Trips	91.01
Building Worker Trips	353.44
Mass Grading 07/01/2013-09/01/2013	697.18
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	679.70
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	17.48
Trenching 07/01/2013-12/01/2013	35.22
Trenching Off Road Diesel	30.09
Trenching Worker Trips	5.13

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Building 12/01/2013-07/18/2014	115.98
Building Off Road Diesel	41.90
Building Vendor Trips	15.17
Building Worker Trips	58.91
Building 12/20/2013-08/08/2014	42.17
Building Off Road Diesel	15.24
Building Vendor Trips	5.52
Building Worker Trips	21.42

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2014	2,503.88
Building 07/01/2013-02/01/2014	121.24
Building Off Road Diesel	43.81
Building Vendor Trips	15.86
Building Worker Trips	61.58
Building 12/01/2013-07/18/2014	753.83
Building Off Road Diesel	272.37
Building Vendor Trips	98.60
Building Worker Trips	382.86
Building 12/20/2013-08/08/2014	832.90
Building Off Road Diesel	300.94
Building Vendor Trips	108.94
Building Worker Trips	423.02
Building 03/05/2014-09/29/2014	785.45
Building Off Road Diesel	283.80
Building Vendor Trips	102.73
Building Worker Trips	398.92
Coating 10/01/2014-12/31/2014	10.46
Architectural Coating	0.00
Coating Worker Trips	10.46

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2016	232.21
Asphalt 01/02/2016-07/04/2016	232.21
Paving Off-Gas	0.00
Paving Off Road Diesel	214.19
Paving On Road Diesel	3.77
Paving Worker Trips	14.25

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 7/1/2013 - 9/1/2013 - Phase I - Earthwork

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

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Architectural Coating 10/1/2014 - 12/31/2014 - Phase I - Arch Coatings

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

ROG: 100%

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

ROG: 100%

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Combined Annual Emissions Reports (Tons/Year)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Phase II Construction.urb924

Project Name: Kaiser Hospital - Construction Phase II

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	CO2
2023 TOTALS (tons/year unmitigated)	951.46
2023 TOTALS (tons/year mitigated)	951.46
Percent Reduction	0.00
2024 TOTALS (tons/year unmitigated)	336.37
2024 TOTALS (tons/year mitigated)	336.37
Percent Reduction	0.00

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

CO2

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2023		951.46
Demolition 05/01/2023-07/02/2023	35.78	
Fugitive Dust	0.00	
Demo Off Road Diesel	32.98	
Demo On Road Diesel	0.00	
Demo Worker Trips	2.80	
Building 06/05/2023-07/28/2023	128.80	
Building Off Road Diesel	76.19	
Building Vendor Trips	10.78	
Building Worker Trips	41.83	
Mass Grading 06/05/2023-06/23/2023	43.24	
Mass Grading Dust	0.00	
Mass Grading Off Road Diesel	41.61	
Mass Grading On Road Diesel	0.00	
Mass Grading Worker Trips	1.63	
Trenching 06/05/2023-06/16/2023	3.05	
Trenching Off Road Diesel	2.74	
Trenching Worker Trips	0.31	
Building 07/31/2023-01/24/2024	354.20	
Building Off Road Diesel	209.52	
Building Vendor Trips	29.65	
Building Worker Trips	115.03	

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Building 08/21/2023-02/05/2024	305.90
Building Off Road Diesel	180.95
Building Vendor Trips	25.61
Building Worker Trips	99.35
Building 11/27/2023-03/11/2024	80.50
Building Off Road Diesel	47.62
Building Vendor Trips	6.74
Building Worker Trips	26.14

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2024	336.37
Building 07/31/2023-01/24/2024	57.96
Building Off Road Diesel	34.28
Building Vendor Trips	4.85
Building Worker Trips	18.82
Building 08/21/2023-02/05/2024	83.72
Building Off Road Diesel	49.52
Building Vendor Trips	7.01
Building Worker Trips	27.19
Building 11/27/2023-03/11/2024	164.22
Building Off Road Diesel	97.14
Building Vendor Trips	13.75
Building Worker Trips	53.33
Asphalt 05/06/2024-05/31/2024	26.47
Paving Off-Gas	0.00
Paving Off Road Diesel	22.31
Paving On Road Diesel	2.30
Paving Worker Trips	1.86
Coating 06/01/2024-08/01/2024	3.99
Architectural Coating	0.00
Coating Worker Trips	3.99

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 6/5/2023 - 6/23/2023 - Phase II - Earthwork

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

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Architectural Coating 6/1/2024 - 8/1/2024 - Phase II - Arch Coatings

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

ROG: 100%

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

ROG: 100%

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Combined Annual Emissions Reports (Tons/Year)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Hospital - Operational Baseline.urb924

Project Name: Kaiser Hospital - Operational Baseline

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	496.85

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	5,745.66

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	6,242.51

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Natural Gas	496.34
Hearth	
Landscape	0.51
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	496.85

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Existing County Admin Building	5,745.66
TOTALS (tons/year, unmitigated)	5,745.66

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Existing County Admin Building		10.38	1000 sq ft	339.96	3,528.78	31,663.78
					3,528.78	31,663.78

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	51.5	0.6	99.2	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.7	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.6	0.0	81.2	18.8
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	60.7	39.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

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

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Existing County Admin Building				2.0	1.0	97.0

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Combined Annual Emissions Reports (Tons/Year)

File Name: P:\300.Environmental\7372 Kaiser Central SD Hospital EIR\DUDEK WORK PRODUCTS\DOCUMENTS\Technical Reports\Air Quality\Emissions Calcs\Kaiser Hospital - Operational Proposed Project.urb924

Project Name: Kaiser Hospital - Operational Proposed Project

Project Location: South Coast AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	803.88

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	22,256.02

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	23,059.90

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Natural Gas	802.85
Hearth	0.00
Landscape	1.03
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	803.88

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Medical office building	6,038.31
Hospital	16,217.71
TOTALS (tons/year, unmitigated)	22,256.02

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2025 Season: Annual

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Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Medical office building		20.00	1000 sq ft	180.00	3,600.00	32,959.80
Hospital		20.00	beds	450.00	9,000.00	88,312.50
					12,600.00	121,272.30

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.0	0.0	100.0	0.0
Light Truck < 3750 lbs	7.2	0.0	98.6	1.4
Light Truck 3751-5750 lbs	23.6	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.2	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	83.3	16.7
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.8	35.7	64.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Medical office building				7.0	3.5	89.5
Hospital				25.0	12.5	62.5

APPENDIX B

Greenhouse Gas Emissions Calculations

Kaiser SD Central Hospital
Summary of Greenhouse Gas Emissions
Net Change

Source	Proposed CO_2E (Mtons/yr)	Baseline CO_2E (Mtons/yr)	Net Change CO_2E (Mtons/yr)
Motor Vehicles	17,063	5,487	11,577
Area Sources			
Natural Gas Combustion	661	498	163
Landscaping	1	1	1
Stationary Sources	8,306	-	8,306
Electrical Generation	1,446	1,336	110
Water Supply	1,325	1,119	207
Solid Waste	6,470	2,350	4,120
Amortized Const. Emissions	188	-	188
Total	35,459	10,789	24,670

Notes for Proposed Project:

1. Motor vehicle emissions reduced by 19.71%
2. Natural gas combustion emissions reduced by 9.54%
3. Electrical generation emissions reduced by 26.22% due to statewide measures and 41.49% due to electricity generated by microturbines.
4. Water supply (electricity) emissions reduced by 15.30% for Renewable Portfolio Standard

Kaiser SD Central Hospital
Summary of Greenhouse Gas Emissions
Business As Usual

Source	CO_2E (Mtons/yr)	Percent of Total
Motor Vehicles	21,253	49.4%
Area Sources		
Natural Gas Combustion	730	1.7%
Landscaping	1	0.0%
Stationary Sources	8,306	19.3%
Electrical Generation	4,478	10.4%
Water Supply	1,565	3.6%
Solid Waste	6,470	15.0%
Amortized Const. Emissions	188	0.4%
Total	42,990	100.0%

Kaiser SD Central Hospital
Summary of Greenhouse Gas Emissions
Proposed Project

Source	CO_2E (Mtons/yr)	Percent of Total
Motor Vehicles	17,063	48.1%
Area Sources		
Natural Gas Combustion	661	1.9%
Landscaping	1	0.0%
Stationary Sources	8,306	19.3%
Electrical Generation	1,446	4.1%
Water Supply	1,325	3.7%
Solid Waste	6,470	18.2%
Amortized Const. Emissions	188	0.5%
Total	35,459	100.0%
REDUCTION FROM BAU	**17.5%**	

Notes:
1. Motor vehicle emissions reduced by 19.71%
2. Natural gas combustion emissions reduced by 9.54%
3. Electrical generation emissions reduced by 26.22% due to statewide measures and 41.49% due to electricity generated by microturbines.
4. Water supply (electricity) emissions reduced by 15.3% for Renewable Portfolio Standard

Motor vehicles	19.71%
Natural gas combustion	9.54%
Electrical generation	26.22%
Water supply	15.30%

Kaiser SD Central Hospital
CO_2-to-CO_2 Equivalent Factors

	Source	Units	CO_2	CH_4	N_2O	CO_2E/CO_2
Global Warming Potential			1	21	310	
Diesel Equipment	1	kg/gal	10.15	0.00058	0.00026	1.009
Diesel Trucks	2	g/mi	1,450.00	0.0051	0.0048	1.001
Passenger Vehicles	3					1.053
Electrical Generation	4	lb/MWh	739.05	0.0302	0.0081	1.004
Diesel Combustion	5	kg/gal	10.15	0.003	0.0006	1.025
Natural Gas Combustion	5	kg/MMBtu	53.06	0.005	0.0001	1.003

Serving Utility: SDG&E

1. California Climate Action Registry. 2009. *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* , Version 3.1, Tables C.6 and C.7.
2. California Climate Action Registry. 2009. *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* , Version 3.1, Tables C.3 and C.4.
3. US EPA, Office of Transportation and Air Quality. 2005. *Greenhouse Gas Emissions from a Typical Passenger Vehicle* (EPA420-F-05-004), p. 4.
4. San Diego Gas & Electric. 2010. Annual Entity Emissions: Electric Power Generation/Electric Utility Sector. http://www.climateregistry.org/CarrotDocs/35/2009/2008_SDGE_PUP(March 26).xls and California Climate Action Registry. 2009. *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* , Version 3.1, Table C.2.
5. California Climate Action Registry. 2009. *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* , Version 3.1, Tables C.7 and C.8.

PG&E	641.35
SCE	630.89
SDG&E	739.05

PG&E

3. Pacific Gas &Electric. 2010. Annual Emissions Report. https://www.climateregistry.org/CarrotDocs/19/2008/2008_PG&E_CCAR_PUP_Spreadsheet_FINAL_2-11-10.xls and California Climate Action Registry. 2009. *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* , Version 3.1, Table C.2.

SDG&E

3. San Diego Gas & Electric. 2010. Annual Entity Emissions: Electric Power Generation/Electric Utility Sector. http://www.climateregistry.org/CarrotDocs/35/2009/2008_SDGE_PUP(March 26).xls and California Climate Action Registry. 2009. *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* , Version 3.1, Table C.2.

SCE

3. Southern California Edison. 2009. Annual Emissions Report for 2007. https://www.climateregistry.org/CarrotDocs/26/2007/SCEPUP07r3.xls and California Climate Action Registry. 2009. *General* Reporting Protocol: Reporting *Entity-Wide Greenhouse Gas Emissions* Version 3.1, Table C.2.

Kaiser SD Central Hospital
Construction Emissions

	CO_2 (tons/yr)	CO_2E (Mtons/yr)
2013		
Off-Road Diesel	1,180.19	1,080.45
On-Road Diesel	257.57	233.92
Worker/Vendor Trips	579.61	553.49
Total	2,017.37	**1,867.86**
2014		
Off-Road Diesel	900.92	824.78
On-Road Diesel	-	-
Worker/Vendor Trips	1,602.97	1,530.74
Total	2,503.89	**2,355.52**
2016		
Off-Road Diesel	214.19	196.09
On-Road Diesel	3.77	3.42
Worker/Vendor Trips	14.25	13.61
Total	232.21	**213.12**
2023		
Off-Road Diesel	591.61	541.61
On-Road Diesel	-	-
Worker/Vendor Trips	359.87	343.65
Total	951.48	**885.27**
2024		
Off-Road Diesel	203.25	186.07
On-Road Diesel	2.30	2.09
Worker/Vendor Trips	130.80	124.91
Total	336.35	**313.07**
SUMMARY		
Total Construction Emissions		5,634.84
Amortized Annual Construction Emissions		**187.83**

Kaiser SD Central Hospital
Motor Vehicle and Area Source Operational Emissions
(Business As Usual)

	Baseline	Proposed	Net Change	
Source	**CO_2 (tons/yr)[1]**	**CO_2 (tons/yr)[1]**	**CO_2 (tons/yr)**	**CO_2E (Mtons/yr)**
Motor Vehicles	5,746	22,256	16,510	15,766
Area Sources	497	804	307	279
Natural Gas Combustion	496	803	307	279
Landscaping	1	1	1	1
Total Operational	6,243	23,060	16,817	**16,046**

Source:
1. URBEMIS Output

Notes:

CO_2E	Carbon dioxide equivalent
Mtons	metric tons (= 1.1023 tons)

For Utility Section of EIR

Natural Gas Consumption=	9,180	14,849	5,669

Kaiser SD Central Hospital
Stationary Source Operational Emissions
(Business As Usual)

	Baseline	Proposed	Net Change
Source	**CO_2E (Mtons/yr)[1]**	**CO_2E (Mtons/yr)[1]**	**CO_2E (Mtons/yr)**
Diesel Generators	-	235	235
Hot Water Boilers	-	3,562	3,562
Steam Boilers	-	819	819
PureComfort Microturbines	-	2,214	2,214
PureThermal Microturbines	-	1,476	1,476
Total Stationary Source	-	8,306	**8,306**

Source:
1. Stationary Source Emissions spreadsheet

Notes:

CO_2E	Carbon dioxide equivalent
Mtons	metric tons (= 1.1023 tons)

Kaiser SD Central Hospital
Greenhouse Gas Emissions from Project Electrical Demand
(Business As Usual)

Land Use	Units	Electrical Demand Factor[1] (kW-hr/unit/yr)	Electric Demand (kW-hr/yr)	CO_2E Emission Factor[2] (lbs CO_2E/kW-hr)	Annual CO_2E Emissions (Mtons CO_2E/yr)	
Baseline Scenario	339,964 sq. ft.	11.67	3,967,380	0.742	1,335.63	
Proposed Project	936,000 sq. ft.	14.21	13,300,560	0.742	4,477.69	
Microturbines[3]			(5,518,800)	0.742	(1,857.93)	-41.49%
Net Change					**1,284.13**	

Utility Region: SDG&E

Sources:
1. CalEEMod "Energy Use by Climate Zone and Land Use Type". Appendix D, Table 8.1
2. San Diego Gas & Electric. 2010. Annual Entity Emissions: Electric Power Generation/Electric Utility Sector
   http://www.climateregistry.org/CarrotDocs/35/2009/2008_SDGE_PUP(March 26).xls
   and California Climate Action Registry. 2009. *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* , Version 3.1, Table C.2.
3. Stationary Source Emissions Spreadsheet

Notes:

CO_2E	Carbon dioxide equivalent
kW-hr	kilowatt-hour
MT	metric tons (= 2,204.623 lbs)

Government Office Building	T24 E	NT24 E	Lighting E
	3.78	3.31	4.58
Hospital	4.7	4.96	4.55

Kaiser SD Central Hospital
Greenhouse Gas Emissions from Project Water Supply

Land Use	Water Supply	Average Day Demand (gpd)	Acre-Feet per Year	Electrical Demand Factor[3] (kW-hr/AF)	Electric Demand (kW-hr/yr)	CO_2E Emission Factor[4] (lbs CO_2E/kW-hr)	Annual CO_2E Emissions (Mtons CO_2E/yr)
Baseline Scenario[1]	Potable Water	267,009	299.089	11,110	3,322,874	0.742	1,118.66
Proposed Project[2]	Potable Water	373,500	418.37	11,110	4,648,132	0.742	1,564.81
Net Change							**446.15**

Sources:
1. Environ (ENVIRON International Corporation). 2011. CalEEMod User's Guide. Appendix D, Table 9.1 – Water Use Rates. February.
2. RBF. 2012. Kaiser Permanente San Diego Central Hospital Medical Center. Preliminary Water and Sewer Report. April 4.
3. California Energy Commission. 2006. *Refining Estimates of Water Related Energy Use in California.* http://www.energy.ca.gov/2006publications/CEC-500-2006-118/CEC-500-2006-118.PDF
4. San Diego Gas & Electric. 2010. Annual Entity Emissions: Electric Power Generation/Electric Utility Sector http://www.climateregistry.org/CarrotDocs/35/2009/2008_SDGE_PUP(March 26).xls and California Climate Action Registry. 2009. *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions* , Version 3.1, Table C.2.

Notes:

CO_2E	Carbon dioxide equivalent
kW-hr	kilowatt-hour
Mtons	metric tons (= 2,204.62 lbs)

Government Office Building Water Use[1]	Indoor	177,734	gpy/1000 s.f.	165,545.60	gpd (average)
	Outdoor	108,934	gpy/1000 s.f.	101,463.43	gpd (average)
	Total	286,667	gpy/1000 s.f.	267,009.03	gpd (average)

Southern California		
Water Supply and Conveyance	9,727	kW-hr/AF
Water Treatment	111	kW-hr/AF
Water Distribution	1,272	kW-hr/AF
Total	11,110	kW-hr/AF

Kaiser SD Central Hospital
Greenhouse Gas Emissions from Solid Waste
(Business As Usual)

Land Use	Units	Estimated Solid Waste Generation Rate[1] (tons/sq. ft./yr)	Estimated Solid Waste Generation Per Year (tons)	Annual CO_2E Emissions (Mtons CO_2E/yr)[1]
Baseline Scenario	339,964 sq. ft.	0.01080	3,671.6	2,349.83
Proposed Project	936,000 sq. ft.	0.01080	10,108.8	6,469.63
Net Change				**4,119.80**

Sources:
1. Bay Area Air Quality Management District (BAAQMD). 2010. Greenhouse Gas Model (BGM). Version 1.1.9 Beta.

Notes:

CO_2E	Carbon dioxide equivalent
MT	metric tons (= 2,204.623 lbs)

Kaiser SD Central Hospital
Greenhouse Gas Emission Reductions - Federal and State Measures

SECTOR	EMISSIONS (MMTCO2E)	
	2002 - 2004 Avg	**2020 Forecast**
Transportation	**179.3**	**225.4**
On Road	168.7	209.1
Passenger Vehicles	133.9	160.8
Heavy Duty Trucks	34.7	48.3
Ships/Commercial Boats	3.3	6.3
Aviation (Intrastate)	3.2	4.8
Rail	3.0	3.8
Unspecified	1.2	1.4
Electric Power	**109.0**	**139.2**
In-State Generation	52.5	87.2
Natural Gas	44.2	78.8
Other Fuels	8.4	8.4
Imported Electricity	56.5	52.0
Unspecified Imports	24.3	26.1
Specified Imports	32.2	25.9
Commercial and Residential	**41.0**	**46.7**
Residential Fuel Use	28.5	32.1
Natural Gas	26.9	30.6
Other Fuels	1.6	1.5
Commerical Fuel Use	11.9	14.0
Natural Gas	10.5	12.3
Other Fuels	1.4	1.6
Commercial Cogeneration Heat Output	0.6	0.7
Industrial	**95.9**	**100.5**
Refineries	35.0	36.7
General Fuel Use	21.3	19.8
Natural Gas	14.0	11.7
Other Fuels	7.3	8.1

Oil & Gas Extraction	14.2	14.2
Fuel Use	13.4	13.4
Fugitive Emissions	0.8	0.7
Cement Plants	9.7	12.6
Clinker Production	5.7	7.6
Fuel Use	4.1	5.0
Cogeneration Heat Output	9.2	9.3
Other Process Emissions	6.4	7.9
Recycling and Waste (Landfills)	**5.6**	**7.7**
High GWP	**14.7**	**46.9**
Ozone Depleting Substance Substitutes	12.9	45.0
Electricity Grid SF6 Losses	1.0	1.0
Semiconductor Manufacturing	0.8	0.8
Agriculture	**27.7**	**29.8**
Livestock	13.9	16.2
Enteric Fermentation (Digestive Process)	7.0	8.2
Manure Management	6.9	8.0
Crop Growing & Harvesting	9.2	9.2
Ferlilizers	7.1	7.1
Soil Preparation & Disturbances	2.0	2.0
Crop Residue Burning	0.1	0.1
General Fuel Use	4.6	4.5
Diesel	3.3	3.3
Natural Gas	0.7	0.5
Gasoline	0.4	0.4
Other Fuels	0.2	0.2
Forestry (Wildfire - CH4, N2O Emissions)	**0.2**	**0.2**

MEASURES	% Reduction (apply to project)			
Transportation	% Reduction from BAU	Before Reduction	After Reduction	Reduction
SB375	7.00%	3,453.0		241.7
CA Light-Duty Vehicle GHG Standards (Pavley)	19.71%	3,453.0		680.7
Low Carbon Fuel Standard (LCFS)	7.17%	3,453.0		247.7
Remaining Emissions after Reductions			2,282.8	
Energy Consumption				
Energy Efficiency (Electricity)	10.92%	327.4		35.8
Renewable Portfolio Standard (RPS)	15.30%	327.4		50.1
Remaining Emissions after Reductions			241.6	
Residential & Commercial (Natural Gas)	9.54%	479.0		45.7
Remaining Emissions after Reductions			433.3	
Water Supply				
Renewable Portfolio Standard (RPS)	15.30%	377.1		57.7
Remaining Emissions after Reductions			319.4	
Solid Waste				
Landfill Methane Control	38.96%	7.7		2.0
Anaerobic Digestion			5.7	1.00
TOTAL REDUCTION			3,278.1	1,359.4
				29.3%

Kaiser SD Central Hospital
Greenhouse Gas Emissions Reductions - Federal and State Measures
Project-Specific % Reductions

	Estimated Reduction	2020 Forecast	% Reduction
Transportation			
CA Light-Duty Vehicle GHG Standards (Pavley)	31.7	160.8	19.71%
Subtotal			**19.71%**
Energy Consumption			
Energy Efficiency (Electricity)	15.2	139.2	10.92%
Renewable Portfolio Standard (RPS)	21.3	139.2	15.30%
Subtotal			**26.22%**
Natural Gas			
Residential & Commercial (Natural Gas)	4.4	46.1	**9.54%**
Water Supply			
Renewable Portfolio Standard (RPS)	21.3	139.2	**15.30%**

SOURCE: CARB. 2008. Climate Change Scoping Plan.

APPENDIX F

Environmental Noise Assessment

ENVIRONMENTAL NOISE ASSESSMENT
for the
Kaiser Permanente San Diego
Central Medical Center Project
City of San Diego, California

City Project No. 274240

Prepared for:

City of San Diego
Development Services Department
Land Development Review Division
1222 First Avenue
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Prepared by:

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DECEMBER 2012

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Environmental Noise Assessment Report for the Kaiser Permanente San Diego Central Medical Center Project

SUMMARY

This report contains the noise impact assessment of the proposed Kaiser Permanente San Diego Central Medical Center project located in the City of San Diego. The overall project site is approximately 20 acres located Kearny Mesa planning area in the City of San Diego (Figures 1 and 2). The project area is zoned Light-Industrial (IL-2-1) which allows for the construction and operation of a hospital with a Conditional Use Permit (CUP). The site is currently occupied by the County of San Diego government office building and associated surface parking lot. Surrounding land uses include commercial, office and light industrial uses to the north; child welfare services, a preschool and office buildings to the east; restaurant and commercial retails uses to the west; and a preschool, office buildings, and light industrial/manufacturing uses to the south. Currently, the main entrance to the site is off Ruffin Road on the western portion of the project site. The closest sensitive receptors are the Polinsky Children's Center located approximately 50 feet from the project site and the Chinese Bilingual Preschool, located approximately 125 feet from the project site.

Noise associated with the project would include short-term noise impacts associated with construction activities, and long-term operational noise associated with hospital operations, project-generated traffic, overall traffic noise at the site and outdoor mechanical equipment including all equipment housed within the proposed on-site energy center.

Hourly average noise levels associated with construction activities will vary, but, can range up to approximately 75 to 80 dB at a distance of 50 feet. The closest off-site daytime noise sensitive receptors are the Polinsky Children's Center located approximately 50 feet from the project site and the Chinese Bilingual Preschool, located approximately 125 feet from the project site. At these distances, the average noise level associated with construction noise would be approximately 73 dB or less at the Chinese Bilingual Preschool, and approximately 80 dB or less at the Polinsky Center. Therefore, the daytime construction noise resulting from the construction of the parking structure would result in a **potentially significant noise impact** for off-site sensitive receptors (Polinsky Center) because noise levels would be in excess of 75 dB during the 12 hour period from 7:00 a.m. to 7:00 p.m. at noise-sensitive receptors. The applicant would construct during the City's allowable hours of construction; however, impacts would remain **significant and unavoidable**.

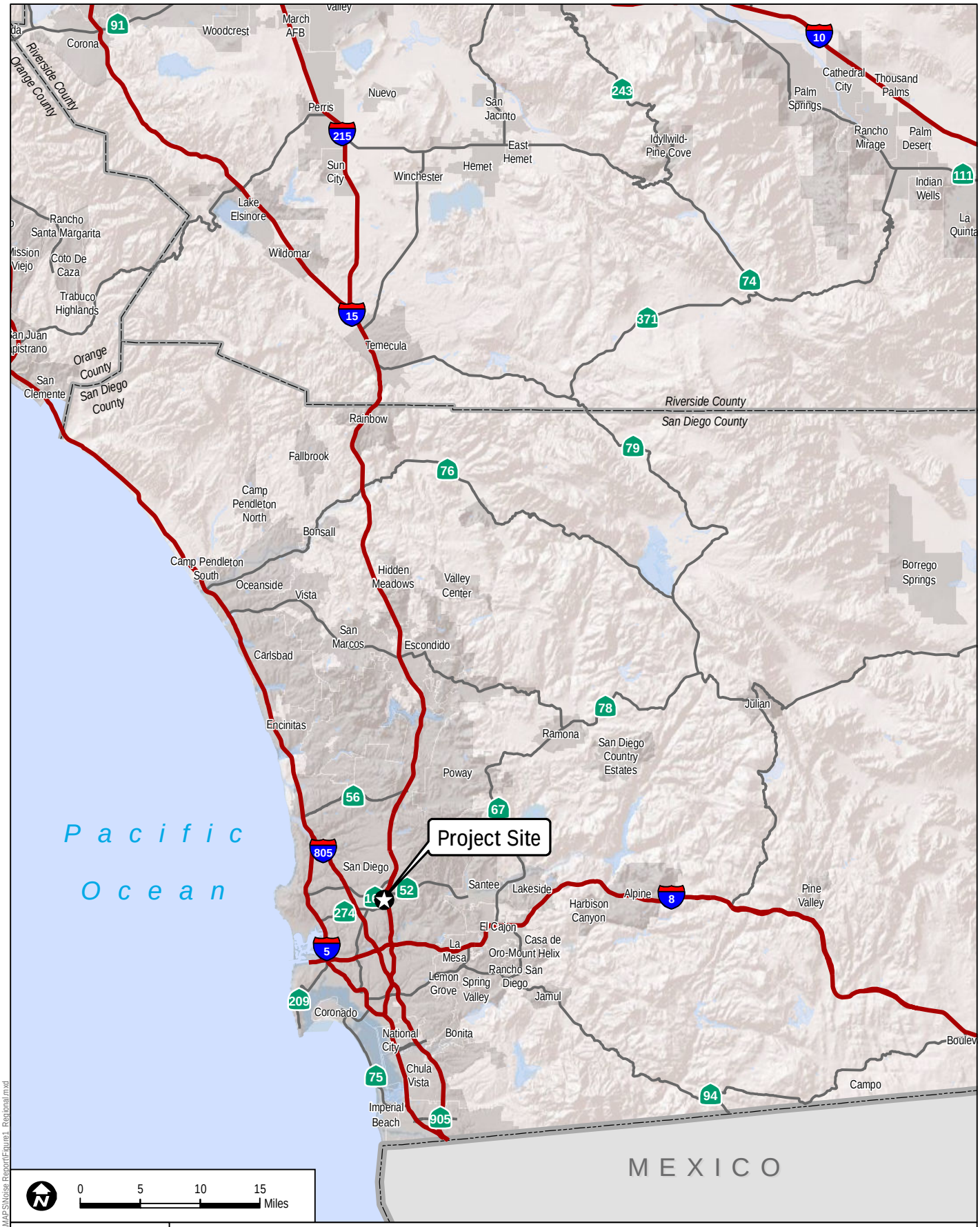
On-site sensitive receptors could also be disturbed by construction activities while equipment is in operation. Exterior noise levels generated from construction activities associated with the proposed project would result in a **significant and unavoidable impact**. In addition to exceeding the 75 dB exterior Noise Ordinance threshold at various on-site sensitive receptors, construction of the proposed project would result in maximum interior noise levels of up to approximately 66 dB at the nearest on-site sensitive receptors. Therefore, the interior noise levels

from construction activities associated with the proposed project could adversely affect sensitive on-site receptors, resulting in a **potentially significant impact**.

Regarding on-site mechanical equipment, with all the equipment operating, and the noise attenuation due to distance and shielding provided by rooftop parapets, screen walls, and generator sound walls, the resulting one-hour average noise level would be 59 dBA or less at the project site boundaries. This noise level would comply with the City's noise ordinance criteria and result in a less than significant noise impact. Additionally, the City has determined that outdoor mechanical equipment noise levels that exceed 65 dB CNEL at outdoor use areas on the property, 45 dB CNEL within hospital patient rooms, and 50 dB CNEL within hospital offices would result in a significant noise impact for this project.

Traffic along Clairemont Mesa Boulevard, Ruffin Road and Ruffin Court would contribute to on-site traffic impacts. The future traffic noise level at the Canyon Slope outdoor use space associated with the hospital building would be approximately 64 dB CNEL. Impacts at this location would be **less than significant**. Interior noise levels at the Acute Care West and Acute Care South areas would not exceed 45 dB. The Acute Care North area would be exposed to an exterior noise level of approximately 69 dB CNEL at the first floor, and 70 dB CNEL at the sixth floor. Thus, this segment of the building would require 25 dB CNEL exterior to interior noise reduction in order to meet the City's 45 CNEL interior noise standard for hospital buildings. With standard construction practices common in California, typical buildings achieve outdoor to indoor noise reductions of at least 20 dB with the windows closed. Thus, even with closed windows the interior noise levels could exceed the City's interior noise threshold by up to 5 dB interior CNEL at the Acute Care North rooms and impacts would be **potentially significant**. Regarding off-site traffic, the additional traffic volume along the adjacent roads would not substantially increase the existing noise level in the project vicinity and would not exceed a 3 dB CNEL noise level increase; therefore, the traffic noise level increase is considered **less than significant**.

The project is located within the Airport Influence Area for Montgomery Field Airport and MCAS Miramar. Based on the Program Environmental Impact Report for the City of San Diego General Plan, MCAS Miramar and Montgomery Field Airport Land Use Compatibility Plan Noise Contours with Generalized Planned Land Use, the project site is located outside of the 60 dB(A) CNEL noise contour for both airfields (City of San Diego 2007). As such, project site would not be exposed to excessive airport noise.



DUDEK

7372-01

FIGURE 1

Regional Map

Environmental Noise Assessment for the Kaiser Permanente San Diego Central Medical Center

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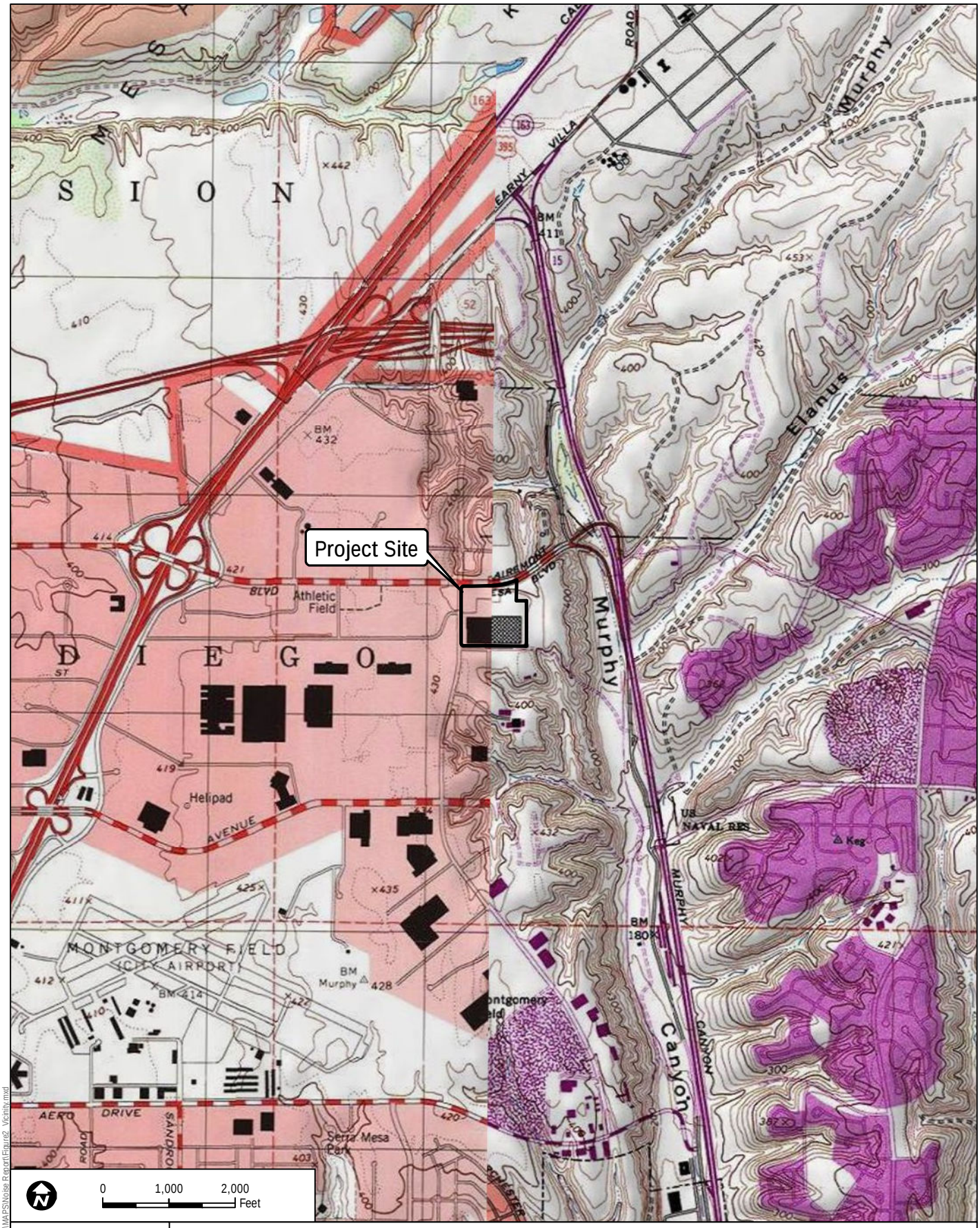

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7372-01

SOURCE: USGS topo 7.5-Minute Series Quadrangle

FIGURE 2
Vicinity Map

Environmental Noise Assessment for the Kaiser Permanente San Diego Central Medical Center

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1.0 BACKGROUND AND PROJECT DESCRIPTION

Buildout of the project site would include a total of 936,000 square feet of hospital campus uses. The proposed project would require demolition of the existing 330,000-square foot County of San Diego government office building. The project is proposed in two phases, as illustrated in Table 1, Building Summary. Phase I would include of a 562,000-square foot, seven-story general acute and tertiary care hospital building (Hospital), a 75,000 square foot outpatient hospital support building (HSB), a 36,000 square foot central utility plant (Energy Center). The Hospital would include 321 beds, an outdoor service yard, and a 1,462-stall parking structure. Construction of Phase I is expected to commence in Spring 2013 and to be completed between Fall 2017 and Spring 2018. Phase II (full buildout) would include expansion of the hospital and/or the construction of new medical offices or other uses. More specifically, Phase II could include expansion of the Central Medical Center by an additional 263,000 square feet, including a 158,000 square foot, 7-story, 129-bed expansion of the hospital, the construction of a new 105,000-square foot HSB and surface and structured parking totaling 2,499 spaces. Buildout of the proposed project will be completed between 2025 and 2030. See Figure 3 for proposed project site plan.

Table 1
Building Summary

Building Type/Use	Building Area (sf)	Building Details
Phase 1		
Hospital	562,000	7-stories, 321 beds
Outpatient HSB	75,000	6-stories
Energy Center	36,000	-
Parking Structure	-	1,462 parking spaces
Phase 2 (buildout)		
Hospital Expansion	158,000	7-stories, 129 beds
Medical Offices/Outpatient HSB	105,000	6-stories
Additional Parking	-	937 parking spaces
TOTAL	936,000	450 beds, 2,499 parking spaces

Hospital

The hospital would be a full-service general acute care hospital and would accommodate 450 beds. Phase I would comprise 562,000 square feet and 321 beds. Phase II would include 158,000 square feet accommodating an additional 129 beds, for a total of 450 beds. In addition to the inpatient nursing functions, the hospital would include ancillary services, such as medical imaging/radiology, clinical laboratory and blood bank, operating rooms and associated recovery

spaces, inpatient pharmacies, and an emergency department which would have associated treatment rooms. The hospital would also include administrative offices and conference rooms, as well as general building support departments such as environmental and material services, cafeteria and inpatient food services, communication, linen, and biomedical engineering.

Sustainable goals are set to ensure that the hospital building would be certified LEED (Leadership in Energy and Environmental Design) Gold. The project would be developed to embrace both technology and the environment, incorporate reduced energy demand systems (solar, thermal insulation), utilization of rainwater, recycling of waste, utilize systems with energy recovery options, prefabrication elements across the project to minimize waste, and consideration of local materials for both landscape and construction.

Structured parking, with preferred parking for fuel-efficient vehicles, would eliminate the heat island effect of surface parking and encourage the use of alternative fuel vehicles. The site would be engineered to reduce runoff and improve the quality of the runoff that does enter the storm water system. The site would also be restored with native, low-water use planting and maximum open space to provide healing gardens and outdoor event space for the patients and community.

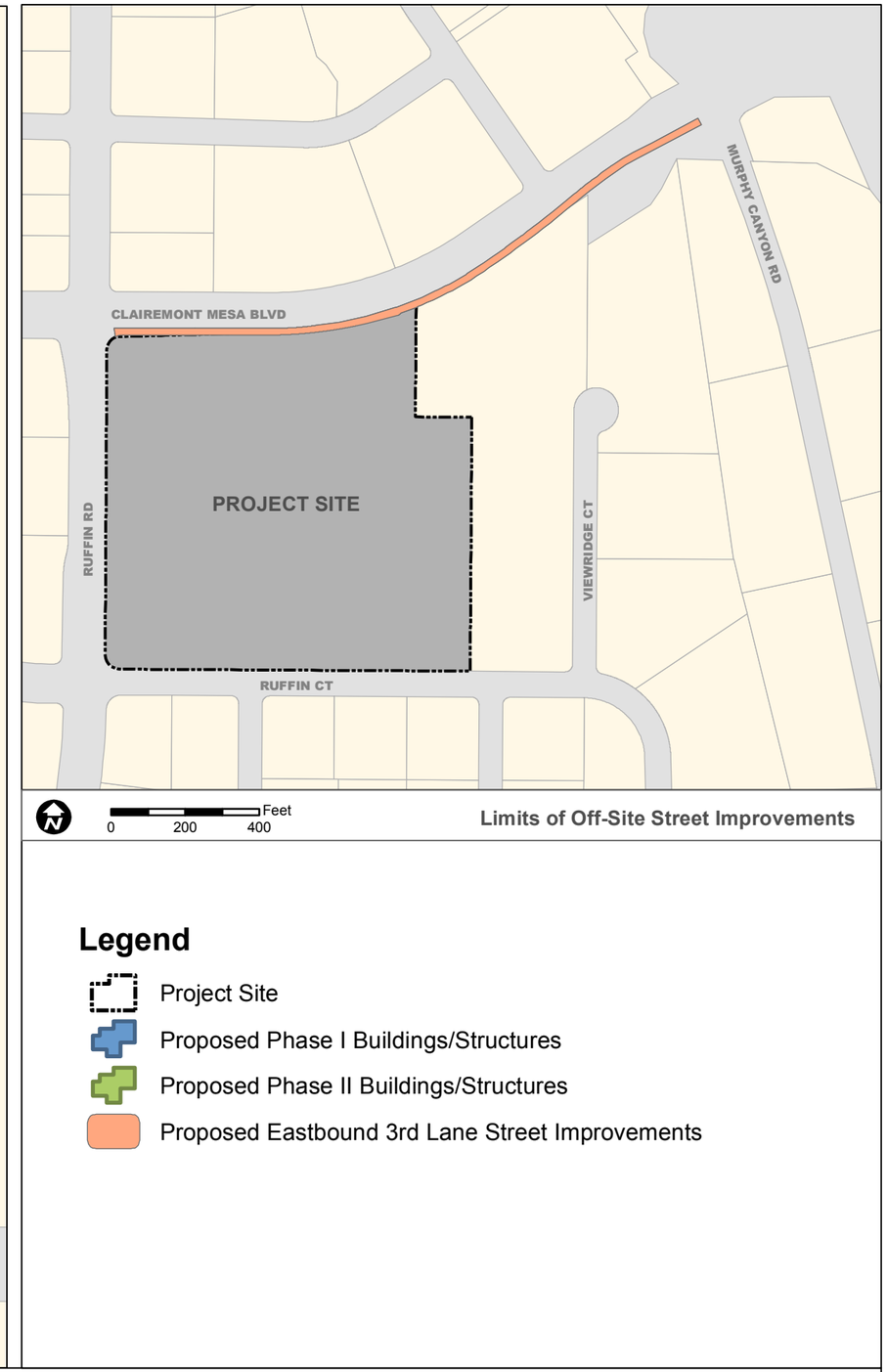
In addition, low-flow fixtures and water-efficient medical and mechanical equipment, as well as metering for measurement and verification, would be used to conserve water in the hospital.

Hospital Support Building

The HSB would be two buildings (180,000 square feet) located immediately adjacent to and connected to the hospital building. Phase I would include a 75,000-square foot building and Phase II would provide an additional 105,000 square feet. The HSB would provide outpatient clinical departments including physician offices, exam and treatment rooms, imaging/radiology, pharmacies, and additional administrative offices. The HSB would also provide member services departments including a business office, health education, and conference rooms.

Energy Center and Generator Yard

The 36,000-square foot Energy Center is included in Phase I and would serve both the hospital and HSB. The Energy Center would contain all of the major mechanical and electrical equipment for the Kaiser Permanente Central Medical Center. Major equipment would include electric-centrifugal water cooler chillers located on the first floor, open cooling towers located on the roof, hot water boilers located on the third floor, an absorption chiller connected to the emergency/standby power, microturbines (PureComfort™) to serve the chilled water process and produce electricity and microturbines (PureThermal™) to serve the hot water system and produce electricity located in the service yard, as well as steam boilers.



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SOURCE: CO ARCHITECTS 2012

FIGURE 3

Project Site Plan

Environmental Noise Assessment for the Kaiser Permanente San Diego Central Medical Center

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Accessory equipment would include cold water pumps and heat and power (CHP) pumps co-located with the water cooler chillers on the first floor, fan coil units to serve the water treatment and elevator equipment rooms, variable air volume units located on all floors, constant air volume units located on the first floor, air handling units and supply/exhaust fans located on the roof, condenser water feed systems to serve the water treatment room, filters located on the roof to serve the cooling towers, hot water pumps and high-pressure water-jet propulsion system (HWPS) pumps co-located with the hot water boilers on the first floor, a feed water deaerator and shell and tube heat exchanger located in the boiler room, and gas packs co-located with microturbines located in the service yard. The Energy Center would also contain the offices and shops for the facilities services (engineering) department. The Energy Center would be operational with the opening of the HSB.

The following equipment would be housed within the Energy Center, located in the southwest corner of the project site:

Hot Water Boilers: Three dual fuel (natural gas with diesel fuel backup) Cleaver Brooks FLX-1200 hot water boilers with one future identical boiler would be located on the third floor of the Energy Center. One boiler would be a standby unit. Proposed hot water boilers would maintain an input of approximately 12.0 million British thermal units per hour (MMBtu/hr) and a minimum efficiency of 80%. Each is equipped with a 15 horsepower (hp) fan connected to emergency/standby power and exhaust would exit through a 28-inch diameter flue on the roof of the Energy Center.

Steam Boilers: Five Cleaver Brooks CFH 60 steam boilers would be installed in the Energy Center to produce steam. One boiler would be a standby unit. The steam boilers would be rated at 60 hp and produce approximately 2,070 pounds/hour of steam at 125 psig. The steam boilers would have a heat input rating of 2.04 MMBtu/hour.

Microturbines (PureComfort™): Six Carrier CAP65R-HG4-BE0U microturbines would serve the chilled water processes and would be located in the service yard north of the Energy Center. Each unit would have a natural gas input of 842 thousand Btu per hour (MBtu/hour) with an output power of 65 kilowatts (kW) with a total of 370 kW.

Microturbines (PureThermal™): Four Carrier CAP65R-HG4-DE0U microturbines would serve the hot water system and would be located in the service yard north of the Energy Center. Each unit would have natural gas input of 842 MBtu/hour with an output power of 65 kW with a total of 260 kW.

Emergency Generators: Three 2500-kW diesel-powered emergency generators, with provisions provided for a future fourth generator in Phase II, would be located in the Generator Yard southeast of the Energy Center. The generators would be powered by Caterpillar 3516C-HD TA diesel engines compliant with U.S. Environmental Protection Agency Tier 2 standards. The emergency generators would be located on grade to the southeast of the Energy Center, and would feed directly to the emergency paralleling and control gear located on the third floor, above the normal equipment room. An underground fuel storage tank would be sized and provided near the generator yard with the capacity to run all generators simultaneously at full load for 96 hours. In addition an individual day tank will be provided next to each generator to accommodate approximately 90 minutes of runtime.

Parking Facilities

A total of 2,499 parking spaces are proposed, in the form of two parking structures and surface parking. Parking in Phase I includes a six-story parking structure as well as surface parking, which would provide a total of 1,562 parking spaces. Parking for Phase II (buildout) would include an additional seven-story structure that would provide 937 additional spaces, for a total of 2,499 structured and surface parking spaces. The project would also provide secure bike racks and storage facilities on site to encourage bicycle use as an alternative means of transportation.

Access/Road Improvements

The project is located at the southeastern intersection of Ruffin Road and Clairemont Mesa Boulevard, and is bound by Ruffin Court to the south. Currently, a right-in / right-out only access is located approximately 330 feet east of Ruffin Road on Clairemont Mesa Boulevard. A 130-foot long eastbound right-turn lane is provided at this driveway. Access to the project site is also currently provided by two driveways along Ruffin Road and one driveway on Ruffin Court located at the southeastern boundary of the site.

The project proposes to close the existing access point on Clairemont Mesa Boulevard and instead provide a warranted signalized access approximately 760 feet east of Ruffin Road on Clairemont Mesa Boulevard. One outbound left-turn lane and two outbound right-turn lanes are proposed at this driveway.

For access from Ruffin Road, a driveway is proposed approximately 540 feet south of Clairemont Mesa Boulevard. This driveway would provide right-in/ right-out only access on Ruffin Road for ambulance access and access to the emergency room. Patients and ambulances accessing the Emergency Department from the north would make a U-turn at the Ruffin Court signal and approach the Ruffin Road access from the south.

Along Ruffin Court, the existing access is proposed to be maintained for full access. This access driveway is located east of the proposed parking structure. A second access driveway on Ruffin Court is proposed to provide direct access to the proposed parking structure and to continue to provide mutual access to Polinsky Center. A third access driveway on Ruffin Court is proposed west of HSB to provide access exclusively to loading docks, the SDG&E yard and the docks for use by delivery trucks only. A sign restricting access to all vehicles except delivery and other trucks only would be posted at the driveway,

In summary, a total of five access points are proposed for the project site including one full signalized access on Clairemont Mesa Boulevard, one access driveway on Ruffin Road, and three access driveways on Ruffin Court (one emergency only, one delivery only and one for public access).

Off-site Road Improvements

The project would include off-site road improvements. In order to provide the full signalized access on Clairemont Mesa Boulevard, as described above, widening along the south side of Clairemont Mesa Boulevard is proposed.

In addition, a storm drain located to the east of the project site, just south of Clairemont Mesa Boulevard, requires modifications. The existing off-site brow ditch and type F inlet would be removed and replaced with a reinforced concrete pipe and manhole/cleanout structure to accommodate the road widening of Clairemont Mesa Boulevard.

Construction Schedule

Construction of the project is anticipated to commence in Spring 2013, with Phase 1 to be completed by between fall 2017 and Spring 2018. Buildout is expected to be completed between 2025 and 2030. The project includes the following distinct components.

Phase I - Hospital, HSB, Energy Center, and Parking

Construction would likely commence in the Spring 2013. Initial site work would include demolition of the existing County government building and surface parking lot, the construction of additional entrances to the site with associated street and signal improvements, modifications to the current site improvements (including modifications to the current storm drainage system and potential soils remediation of unidentified fill), major excavation and grading for the hospital site, and completion of the site improvements to meet the requirements of the City of San Diego, Office of Statewide Health Planning and Delivery and Caltrans, and coordinated with the requirements of the Federal Highway Administration, as applicable.

The HSB is expected to be completed as a part of Phase 1 along the same timeframe. The Energy Center would be operational with the opening of the HSB.

Phase II - Build-out

Future development capacity for additional integrated nursing wings, additional diagnostic and treatment space, medical specialty buildings, ancillary commercial/retail and, if needed, additional parking structures would be included under full buildout of the Central Medical Center Project.

The precise timing, order and rate of development would be at Kaiser's discretion and these decisions may depend upon factors not within the control of Kaiser, such as changes in health care delivery requirements, member needs, market orientation and demand, interest rates, competition and other similar factors.

2.0 FUNDAMENTALS OF NOISE

The following is a brief discussion of fundamental noise concepts. The basic terminology and concepts of noise are described below, with technical terms defined in Appendix A.

2.1 Sound, Noise, and Acoustics

Sound is actually a process that consists of three components: the sound source, the sound path, and the sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there is no sound. Likewise, without a medium to transmit sound pressure waves, there is no sound. Finally, sound must be received; a hearing organ, sensor, or object must be present to perceive, register, or be affected by, sound or noise. In most situations, there are many different sound sources, paths, and receptors rather than just one of each. Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired.

2.2 Sound Pressure Levels and Decibels

The amplitude of a sound determines its loudness. Loudness of sound increases with increasing amplitude. Sound pressure amplitude is measured in units of micro-Newton per square meter, also called micro-Pascal. One micro-Pascal is approximately one-hundred billionths (0.00000000001) of normal atmospheric pressure. The pressure of a very loud sound may be 200 million micro-Pascals, or 10 million times the pressure of the weakest audible sound. Because expressing sound levels in terms of micro-Pascal would be very cumbersome, sound pressure level in logarithmic units is used instead to describe the ratio of actual sound pressures to a reference pressure squared. These units are called Bels. To provide a finer resolution, a Bel is subdivided into 10 decibels, abbreviated dB.

2.3 A-Weighted Sound Level

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited not only in the range of audible frequencies but also in the way it perceives the sound in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 Hertz (Hz) and 5,000 Hz, and it perceives a sound within that range as more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of sound level adjustments is usually applied to the sound measured by a sound level meter. The adjustments (referred to as a weighting network) are frequency-dependent.

The A-scale weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special situations (e.g., B-scale, C-scale, D-scale), but these scales are rarely used in conjunction with most environmental noise. Noise levels are typically reported in terms of A-weighted sound levels. All sound levels discussed in this report are A-weighted. Examples of typical noise levels for common indoor and outdoor activities are depicted in Table 2.

Table 2
Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
	110	Rock Band
Jet Fly-over at 300 m (1000 ft)	100	
Gas Lawn Mower at 1 m (3 ft)	90	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	80	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower at 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	60	Normal Speech at 1 m (3 ft)
Quite Urban Daytime	50	Large Business Office Dishwasher Next Room
Quite Urban Nighttime	40	Theater, Large Conference Room (Background)
Quite Suburban Nighttime	30	Library
Quite Rural Nighttime	20	Bedroom at Night, Concert Hall (Background)
	10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans 1998

2.4 Human Response to Changes in Noise Levels

Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of one dB when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of two dB in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of three dB. A change of five dB is readily perceptible, and a change of 10 dB is perceived as twice or half as loud. As discussed above, a doubling of sound energy results in a three dB increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a road) would result in a barely perceptible change in sound level.

2.5 Noise Descriptors

Additional units of measure have also been developed to evaluate the long-term characteristics of sound. The equivalent sound level (L_{eq}), is also referred to as the time-average sound level. It is the equivalent steady state sound level which in a stated period of time would contain the same acoustical energy as the time-varying sound level during the same time period. The one-hour A-weighted equivalent sound level, L_{eq} (h), is the energy average of the A-weighted sound levels occurring during a one-hour period and is the basis for the City of San Diego noise ordinance criteria.

People are generally more sensitive and annoyed by noise occurring during the evening and nighttime hours. Thus, another noise descriptor used in community noise assessments termed the Community Noise Equivalent Level (CNEL) was introduced. The CNEL scale represents a time-weighted 24-hour average noise level based on the A-weighted sound level. The CNEL accounts for the increased noise sensitivity during the evening hours (7:00 p.m. to 10 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.) by adding 5 and 10 dB, respectively, to the average sound levels occurring during the nighttime hours.

2.6 Sound Propagation

Sound propagation (i.e., the passage of sound from a noise source to a receiver) is influenced by several factors. These factors include geometric spreading, ground absorption and atmospheric effects, as well as shielding by natural and/or manmade features.

Sound levels are attenuated at a rate of approximately six dB per doubling of distance from an outdoor point source due to the geometric spreading of the sound waves. Additional sound attenuation can result from manmade features such as intervening walls, buildings, as well as natural features such as hills and dense woods. Atmospheric conditions such as humidity, temperature and wind gradients can temporarily either increase or decrease sound levels. In general, the greater the distance the receiver is from the source, the greater the potential for variation in sound levels due to atmospheric effects.

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3.0 CITY OF SAN DIEGO NOISE CRITERIA

The City of San Diego has established noise criteria in the City General Plan Noise Element and City Municipal Code.

3.1 City General Plan Noise Element

The City's General Plan Noise Element contains noise guidelines (City of San Diego 2008a). The maximum noise exposure depends on the land use category. As depicted in Table 3, the City considers outdoor noise levels to be conditionally acceptable for hospitals of up to 65 dB CNEL. For the purposes of this analysis, 65 dB CNEL is considered the threshold of significance for analyzing impacts under CEQA relative to outdoor noise levels.

Table 3
Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	60	*65*	*70*	*75*	
Open Space and Parks and Recreational					
Community & Neighborhood Parks; Passive Recreation					
Regional Parks; Outdoor Spectator Sports, Golf Courses; Athletic Fields; Outdoor Spectator Sports, Water Recreational Facilities; Horse Stables; Park Maint. Facilities					
Agricultural					
Crop Raising & Farming; Aquaculture, Dairies; Horticulture Nurseries & Greenhouses; Animal Raising, Maintenance & Keeping; Commercial Stables					
Residential					
Single Units; Mobile Homes; Senior Housing		45			
Multiple Units; Mixed-Use Commercial/Residential; Live Work; Group Living Accommodations **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.*		45	45*		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Places of Worship; Child Care Facilities		45			
Vocational or Professional Educational Facilities; Higher Education Institution Facilities (Community or Junior Colleges, Colleges, or Universities)		45	45		
Cemeteries					
Sales					
Building Supplies/Equipment; Food, Beverages & Groceries; Pets & Pet Supplies; Sundries, Pharmaceutical, & Convenience Sales; Wearing Apparel & Accessories			50	50	
Commercial Services					
Building Services; Business Support; Eating & Drinking; Financial			50	50	

Table 3
Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	60	*65*	*70*	*75*	
Institutions; Assembly & Entertainment; Radio & Television Studios; Golf Course Support					
Visitor Accommodations		45	45	45	
Offices					
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters			50	50	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries					
Research & Development				50	

	Compatible	Indoor Uses	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.
		Outdoor Uses	Activities associated with the land use may be carried out.
	Conditionally Compatible	Indoor Uses	Building structure must attenuate exterior noise to the indoor noise level indicated by the number for occupied areas. Refer to Section I.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I.
	Incompatible	Indoor Uses	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

Source: City of San Diego 2008a.

3.2 City Noise Ordinance Criteria

The City has adopted a quantitative noise ordinance to control excessive noise generated in the City of San Diego Municipal Code, Chapter 5: Public Safety, Morals and Welfare, Article 9.5: Noise Abatement and Control Division 4: Limits Section 59.5.0401 Sound Level Limits (City of San Diego 2008b). The noise ordinance limits are in terms of a one-hour average sound level. The allowable noise limits depend upon the land use zone, time of day, and duration of the noise as depicted in Table 4.

Table 4
City of San Diego Sound Level Limits

Land Use	Time of Day	One-Hour Average Sound Level (dB)
Single Family Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
Multi-Family Residential (up to maximum density of 1/2000)	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50 45
All other residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	65 60 60
Industrial or Agricultural	Anytime	75

Source: City of San Diego 2008b, Municipal Code, Section 59.5.0401

The City also regulates noise associated with construction activities. Construction is permitted between the hours of 7:00 a.m. to 7:00 p.m. Monday through Saturdays with the exception of legal holidays. Construction equipment shall be operated so as not to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 dB during the 12-hour period from 7:00 a.m. to 7:00 p.m. For the purposes of this analysis, 75 dB is considered the threshold of significance for analyzing impacts under CEQA relative to construction activities.

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4.0 METHODOLOGY

Ambient noise measurements were conducted to quantify the existing daytime noise environment at three sites. The noise measurements were made using a Larson-Davis Laboratories Model 700 integrating sound level meter. Sound level meter calibration documentation is included as Attachment 2 of this document. The measurements were conducted with the microphone positioned approximately 5 feet aboveground. Noise levels resulting from the proposed construction activities have been obtained from reports prepared by the Environmental Protection Agency, Federal Transit Administration (FTA 2006) and field data from files. Typical noise levels from construction equipment are shown in Figure 4. The assumptions regarding hours of construction activities, construction equipment, duration of construction activities, etc. are based on information provided by the applicant. The noise impact assessment utilized criteria established in the City of San Diego General Plan Noise Element and Municipal Code noise ordinance. As stated previously, noise criteria delineated in the City of San Diego General Plan Noise Element and Municipal Code are used for the purposes of impact significant determination under CEQA for this analysis.

The noise level associated with selected roadways was determined based on ambient noise measurements and using the Federal Highway Administrations TNM 2.5 Traffic Noise Prediction Model. Assumptions regarding the mechanical equipment noise impact assessment are based on the proposed project plans and preliminary mechanical equipment design information provided by the applicant. The TNM 2.5 traffic noise prediction model was calibrated first, using the measured average noise levels and the concurrently counted traffic volumes. The same traffic volume and vehicle composition ratios (i.e., percentage of autos, medium trucks and heavy trucks) counted during the noise measurements were used to calibrate the model and verify the input used in the noise model. During model calibration, modeled vehicle speed limits were increased from 40 mph to 45 mph along Clairemont Mesa Boulevard to more accurately reflect on-road traffic conditions. Similarly, modeled vehicle speed limits were decreased from 45 mph to 40 mph along Ruffin Road in the model calibration inputs to more accurately reflect vehicle speeds west of the project site. The modeled noise levels are within one dB of the measured noise levels. This result generally confirms the assumptions used in the noise model. The TNM 2.5 calibration output file is included in Attachment 3 of this document. Field data sheets, including counted traffic volumes are included in Attachment 4.

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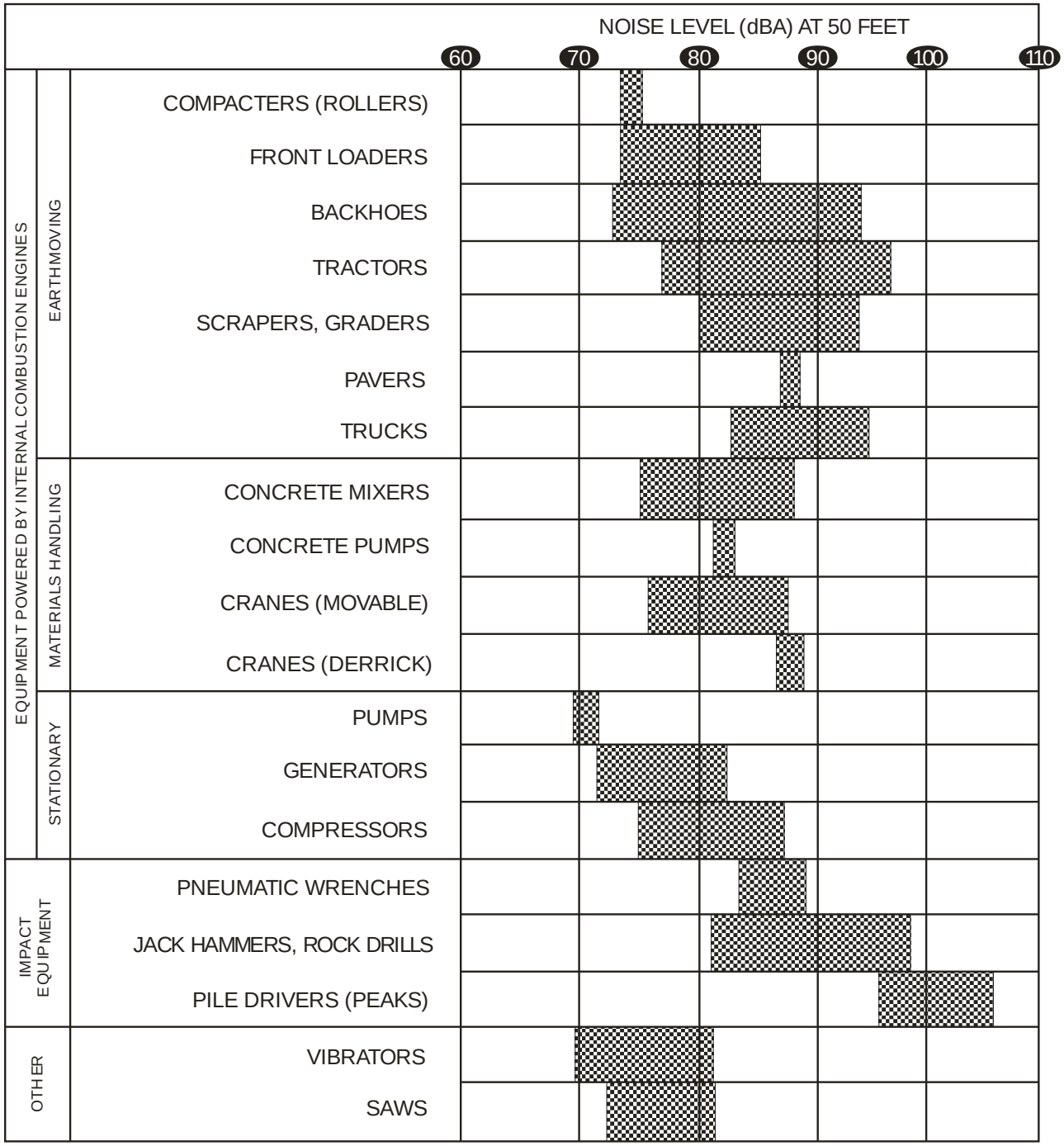
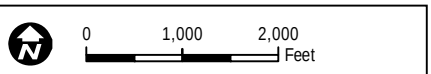


NOTE: Based on limited available data samples.



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SOURCE: EPA PB 206717, Environmental Protection Agency, Dec. 31, 1971, "Noise from Construction Equipment & Operations"

FIGURE 4

Typical Construction Equipment Noise Generation Level

Environmental Noise Assessment for the Kaiser Permanente San Diego Central Medical Center

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5.0 EXISTING CONDITIONS

The ambient noise in the project area is primarily generated by traffic along Clairemont Mesa Boulevard, Ruffin Road and Ruffin Court. Montgomery Field Airport is located approximately 0.7 mile southwest of the site and MCAS Miramar is located approximately 2.4 miles north of the project site. The project site is exposed to noise levels of less than 60 dB CNEL due to the aircraft noise generated at both airfields (City of San Diego 2008c). On-site noise sources such as noise from vehicles in parking lots also generate noise at the site.

Three noise measurement locations were selected at the project site and are depicted as M1, M2 and M3 in Figure 5. Based on data collected at the site, the existing noise level at a distance of 58 feet from the centerline of Clairemont Mesa Boulevard is 70 dBA. The existing noise level along Ruffin Road is 64 dBA at a distance of 40 feet from the centerline of the roadway. The existing noise level at a distance of 30 feet from the centerline of Ruffin Court is 62 dBA. The results of these field measurements are shown in Table 5.

Table 5
Measured Noise Levels and Traffic Volumes

Site	Traffic Volume (20 minute traffic count)	Speed Limit (mph)	Noise Level (Leq)[1]
M1 - Clairemont Mesa Blvd.	445	40	70
M2 - Ruffin Road	414	45	64
M3 - Ruffin Court	113	30	62

Note: [1] Equivalent Continuous Sound Level

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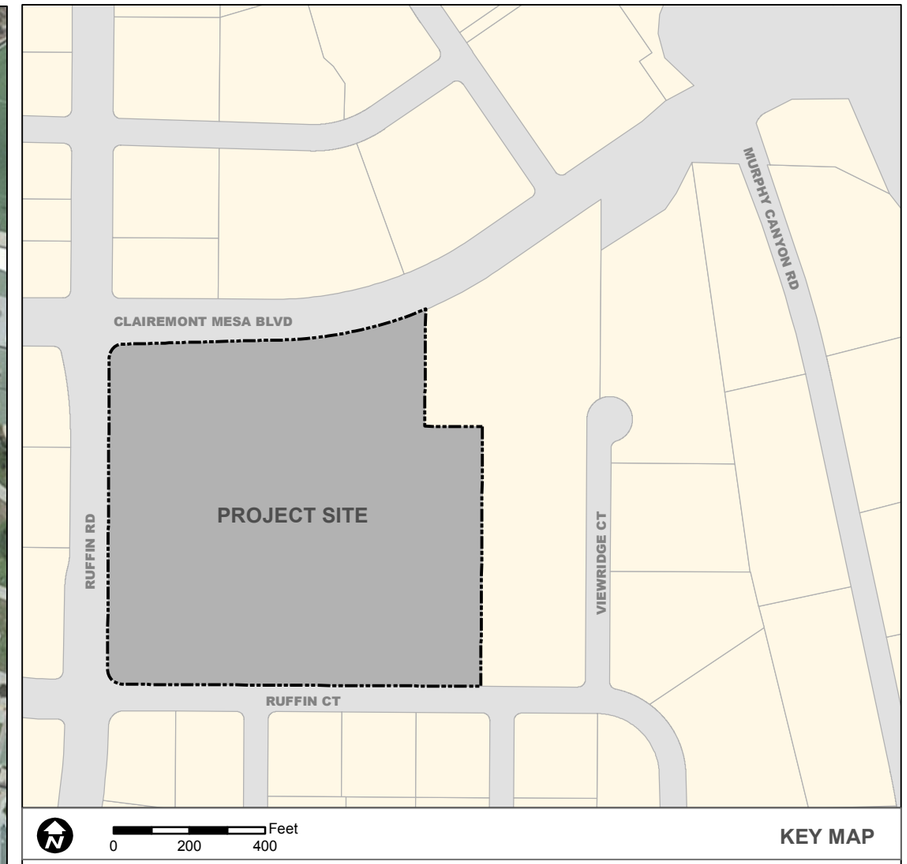

Legend

Project Site

M1 Noise Measurement Location

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SOURCE: CO ARCHITECTS 2012

FIGURE 5

Noise Measurement Locations

Environmental Noise Assessment for the Kaiser Permanente San Diego Central Medical Center

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6.0 NOISE ASSESSMENT

The project would generate noise from such sources as short-term construction activities, mechanical equipment and additional project traffic on surrounding roads. The project would be developed in two different phases.

6.1 Short-Term Construction Noise

Future development of the project would occur during two construction phases. Phase I is anticipated to begin in 2013 and be completed in 2016, and Phase II construction is anticipated to occur over the course of one year from 2023 to 2024.

Construction noise would be primarily associated with construction of the medical buildings, hospital support building, energy center and parking structures. The maximum noise levels associated with construction at 50 feet would range from approximately 70 to 90 dB for the type of equipment expected to be used for this project. Based on a preliminary construction equipment list for the project, construction of the buildings would include equipment such as excavators, rubber tire loaders, scrapers, backhoes, cranes, concrete surfacing machines, pavers, water trucks, welders, concrete trucks, aerial lifts, compactors, boom pumps, fork lifts, dozers, rollers, skid steer loaders, and air compressors.

The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are depicted in Figure 4. Construction noise in a well defined area typically attenuates at approximately six dB per doubling of distance. Therefore, at a distance of 100 feet the maximum noise level would be approximately six dB less than depicted in Figure 4. This assumes a direct line of-sight from the receiver to the construction equipment. Note that the noise levels in Figure 4 are maximum noise levels, not the average sound level. The average sound level at construction sites is typically less than the maximum noise level because the equipment operates in alternating cycles of full power and low power. Also, the equipment rotates in various directions (i.e., noisiest side of the equipment to quieter sides of the equipment), and moves around the construction site, especially during clearing and grading activities. Thus, the average noise levels produced are less than the maximum level. Hourly average noise levels associated with construction activities will vary, but, can range up to approximately 75 to 80 dB at a distance of 50 feet.

Off-site Impacts

The closest off-site daytime noise sensitive receptors are the Polinsky Children’s Center located approximately 50 feet from the project site and the Chinese Bilingual Preschool, located approximately 125 feet from the project site. At these distances, the average noise level associated

with construction noise would be approximately 73 dB or less at the Chinese Bilingual Preschool, and approximately 80 dB or less at the Polinsky Center. Therefore, the daytime construction noise resulting from the construction of the parking structure would result in a **potentially significant noise impact** for off-site sensitive receptors (Polinsky Center) because noise levels would be in excess of 75 dB during the 12 hour period from 7:00 a.m. to 7:00 p.m. at noise-sensitive receptors. The applicant would construct during the City's allowable hours of construction; however, impacts would remain **significant and unavoidable**.

On-site Impacts

Appendix G of the CEQA Guidelines and the City's Significance Thresholds require assessment of noise impacts on the environment, including an analysis of potential exposure of persons to noise levels in excess of standards established in the local general plan or noise ordinance. For this project the City is evaluating construction noise levels at sensitive on-site receptors relative to the 75 dB threshold. Additionally, while the City's General Plan Noise Element does not identify specific thresholds for construction noise, for this project the City is evaluating interior construction noise levels at sensitive on-site receptors relative to a 45 dB threshold for hospital rooms and a 50 dB threshold for medical office space and outpatient facilities.

As mentioned above, hourly average noise levels associated with construction activities will vary, but can range up to approximately 75 to 80 dB at a distance of 50 feet based on the construction equipment that is anticipated to be utilized as part of the proposed project. The closest sensitive receptors to construction activities would vary as the proposed project is built out in phases. For example, hospital beds in the Phase I Acute Care Hospital building would be affected by construction of the Phase II Diagnostic and Treatment building and Patient Tower. The Phase I Hospital Support Building would be affected by construction of the Phase II Hospital Support Building and Phase II Parking Structure. In addition, medical office building receptors could be affected by nearby construction activities. It is conservatively assumed that construction activities would occur within 25 feet of any of these on-site sensitive receptors.

Based on the loudest construction equipment anticipated to be used and minimum distance to on-site sensitive receptors, construction noise could generate hourly average noise levels of up to approximately 86 dB at the nearest receptors. This noise level could intermittently occur for a few days while construction equipment is operating immediately adjacent to hospital buildings. The remainder of the time construction noise levels would be greatly reduced as equipment would be working in a large area at further distances from sensitive receptors. As on-site sensitive receptors could be disturbed by construction activities while equipment is in operation, exterior noise levels generated from construction activities associated with the proposed project would result in a **potentially significant impact**. In addition to exceeding the 75 dB exterior Noise Ordinance threshold at various on-site sensitive receptors, construction of the proposed project would result in maximum interior noise levels of up to approximately 66 dB at the nearest on-site sensitive receptors. This is assuming that 20 dB attenuation is provided with standard building construction materials and design. As a result, interior noise levels at on-site sensitive receptors during construction activities would exceed the 45 dB Noise Element threshold for hospital rooms and the 50 dB threshold for medical office space and outpatient facilities. Therefore, the interior noise levels from construction activities associated with the proposed project could adversely affect sensitive on-site receptors, resulting in a **potentially significant impact**.

6.1.1 Nighttime Construction Activities

The City's noise ordinance notes that construction between the hours of 7:00 p.m. and 7:00 a.m. shall not be conducted in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. Construction activities are not anticipated to occur between the hours of 7:00 p.m. and 7:00 a.m. in accordance with the City's Noise Ordinance.

6.2 Outdoor Mechanical Equipment

Mechanical equipment for the proposed for the project would be located at the southwest portion of the site at the proposed energy center building and generator yard. Also, mechanical equipment would be located at the hospital building.

Energy Center, Generator Yard, and Hospital Outdoor Mechanical Equipment

Based on preliminary design information, the rooftop equipment at the energy center would ultimately include four air-handling units, 10 microturbines and five exhaust and supply fans. Four cooling towers would be located within the cooling tower yard and five generators (Caterpillar 2500 kW) are ultimately planned to be located within the generator yard.

The air-handling units have manufacturer sound power ratings ranging from 93 to 96 dBA depending on the type and capacity size of the equipment. The microturbines have a manufacturer sound rating of 75 dBA at 10 meters. The exhaust and supply fans have manufacturer sound power level ratings ranging from approximately 72 to 78 dBA. The cooling tower noise level would vary along the sides and top of the units depending on the orientation of the units. The manufacturer indicates the cooling towers would generate a noise level of 68 dB to 74 dB at a distance of 50 feet. The generators would be installed within sound attenuation enclosures having a sound rating of 70 dBA at 23 feet. Various equipment such as chillers, boilers, and pumps would be enclosed within rooms at the energy center building and would not generate substantial noise to the outside due to the attenuation provided by the building.

Outdoor mechanical equipment would also be located on the roof of the hospital building. Based on preliminary information it is anticipated the equipment would include approximately 10 air-handling units, and 27 exhaust and supply fans.

The air-handling units have manufacturer sound power ratings ranging from 68 to 82 dBA depending on the type and capacity size of the equipment. The exhaust and supply fans have sound power level ratings ranging from approximately 72 to 89 dBA.

Off-Site Impacts

The City's noise ordinance requires that the mechanical equipment generated by the project not exceed a one-hour average sound level of 65 dBA between 7 a.m. and 7 p.m., and 60 dBA between 7 p.m. and 7 a.m. on or beyond the boundaries of the property. All the equipment would be shielded from the various property boundaries by intervening parapets or screen walls located on the energy center building and hospital building, and a sound wall located around the generator yard. With all the equipment operating, and the noise attenuation due to distance and shielding provided by rooftop parapets, screen walls, and generator sound walls, the resulting one-hour average noise level would be 59 dBA or less at the north, south and east project site boundaries. This noise level would comply with the City's noise ordinance criteria and result in a less than significant noise impact. Without mitigation, the noise level would reach approximately 79 dBA Leq at the western property line and exceed the City's noise ordinance requirements by up to approximately 19 dBA Leq due to the cooling towers; thus, resulting in a **potentially significant** noise impact.

On-Site Impacts

On a case-by-case basis, the City Planning Department regulates the level of noise that can be generated by a project's own outdoor mechanical equipment within their private property. The City has determined that outdoor mechanical equipment noise levels that exceed 65 dB CNEL at

outdoor use areas on the property, 45 dB CNEL within hospital patient rooms, and 50 dB CNEL within hospital offices would result in a significant noise impact for this project.

Exterior Noise Level at the Outdoor Use Area

The project proposes several outdoor use areas. The closest outdoor use area, during either Phase I or Phase II, would be located approximately 250 feet east of the proposed generator yard. This outdoor use area would ultimately be removed during Phase II to allow for the hospital building expansion. In the interim, the mechanical equipment noise level at the worst-case outdoor use area would be less than 60 dB CNEL. Thus, the mechanical equipment noise level would comply with the City's 65 dB CNEL threshold and would result in a **less than significant** noise impact for the on-site visitors, workers, and hospital patients at the outdoor use areas.

Interior Noise Level within the Hospital Building

As part of the standard building design, the hospital building would include a curtain wall system with dual-glazed windows, acoustical tile ceilings, and a mechanical ventilation system. With these construction materials, the hospital rooms and offices are calculated to achieve a minimum exterior to interior noise level reduction of approximately 20 dB CNEL. Assuming 20 dB of noise attenuation would be provided with standard building construction materials and design, the resulting interior noise levels would range up to approximately 55 dB CNEL at the rooms along the hospital buildings western facade, primarily as a result of the cooling tower noise. This noise level would exceed the City's 45 dB and 50 dB CNEL thresholds for noise-sensitive uses on the site, thus, the noise impact would be significant. The noise level at the remaining rooms would be less than 45 dBA CNEL, resulting in a **less than significant** noise impact.

The majority of the mechanical equipment, including the larger and louder rooftop mechanical equipment, would be mounted on 6-inch thick concrete pads. In addition, the roof assemblies would include minimum 6-inch thick concrete, below these roofs would be suspended ceilings with either acoustical tile or gypsum board. These assembly combinations would attenuate the exterior airborne noise by more than 50 dBA. The rooftop equipment would have sound levels ranging from approximately 60 to 81 dBA at a distance of 3 feet depending on the type and capacity size of the equipment. With the sound attenuation provided by the mechanical equipment pads, roof and ceiling assemblies, the interior noise level would be less than 40 dBA CNEL within both the hospital rooms and staff offices. Thus, the interior noise level would meet the City's Planning Department's interior noise criteria, and the noise impact would be **less than significant**.

6.3 On-Site Traffic Noise Impact

The project site would primarily be affected by traffic noise along Clairemont Mesa Boulevard, Ruffin Road, and Ruffin Court. The future (Year 2035) traffic volume along Clairemont Mesa

Boulevard, Ruffin Road, and Ruffin Court adjacent to the project site are listed in Table 6. ADT volumes were divided by 10 to estimate hourly segment volumes along these roadways, and these hourly segment volumes were utilized in the model. The locations of modeled receptors along these roadways are shown in Figure 6.

Table 6
Future (Year 2035) Anticipated Traffic Volumes

Roadway	Traffic Volume (ADT)[1]	Speed Limit (mph)
Clairemont Mesa Blvd.	30,440	40
Ruffin Road	23,460	45
Ruffin Court	6,640	30

[1] Source: LLG 2012.

The noise levels at the first floor of the Acute Care Building would range from 63 dB CNEL to 69 dB CNEL. Noise levels at the sixth floor of the Acute Care Building would range from 63 dB CNEL to 70 dB CNEL. Noise levels at the Canyon Slope open space area would be approximately 64 dB CNEL. Exterior traffic noise levels at these receptors are shown in Table 7.

Table 7
Exterior Traffic Noise Levels at Modeled Receptors

Receptor	First Floor Noise Level (dB CNEL)	Sixth Floor Noise Level (dB CNEL)
Acute Care North	69	70
Acute Care West	63	64
Acute Care South	63	63
Canyon Slope - Open Space	64	—

Source: TNM 2.5 model output. See Appendix C for complete results.

6.3.1 Exterior Noise Impact

The proposed primary hospital building would include the Mesa Gardens and outdoor event space for the patients and community in addition to the Canyon Slope open space area to the northeast of the project site. The Mesa Gardens would be located at the interior of the project site and would be effectively shielded from traffic noise by the main Acute Care Hospital building providing adequate noise attenuation. The future traffic noise level at the Canyon Slope outdoor use space associated with the hospital building would be approximately 64 dB CNEL. Noise levels at this location would be below 65 dB CNEL and therefore, impacts would be **less than significant**.

Legend

- Project Site
- Proposed Phase I Buildings/Structures
- Proposed Phase II Buildings/Structures
- Proposed Eastbound 3rd Lane Street Improvements
- R1 Canyon Slope
- R2 Acute Care North
- R3 Acute Care West
- R4 Acute Care South

DUDEK

7372-01

SOURCE: CO ARCHITECTS 2012

FIGURE 6

Modeled Receptor Locations

Environmental Noise Assessment for the Kaiser Permanente San Diego Central Medical Center

Z:\Projects\7372011\MAPDOC\MAPS\Noise Report\Figure3_SitePlan.mxd

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6.3.2 On-site Interior Noise Impacts

Traffic Noise

The City considers noise levels of 45 dB CNEL within hospitals and 50 dB CNEL within offices to be the maximum acceptable interior noise level. Typically, with the windows closed, and using standard California construction materials and methods, building shells provide approximately 20 dB of noise reduction. Therefore, hospital patients and visitors exposed to an exterior CNEL greater than 65 dB could result in an interior CNEL greater than 45 dB. Interior noise levels associated with each receptor are shown in Table 8, based on the assumption that building shells provide 20 dB of noise reduction.

Table 8
Interior Traffic Noise Levels at Modeled Receptors

Receptor	First Floor Noise Level (dB CNEL)	Sixth Floor Noise Level (dB CNEL)
Acute Care North	49	50
Acute Care West	43	44
Acute Care South	43	43

Source: TNM 2.5 model output. See Appendix C for complete results.

Interior noise levels at the Acute Care West and Acute Care South areas would not exceed 45 dB. The Acute Care North area would be exposed to an exterior noise level of approximately 69 dB CNEL at the first floor, and 70 dB CNEL at the sixth floor. Thus, this segment of the building would require 25 dB CNEL exterior to interior noise reduction in order to meet the City's 45 CNEL interior noise standard for hospital buildings. With standard construction practices common in California, typical buildings achieve outdoor to indoor noise reductions of at least 20 dB with the windows closed. Therefore, even with closed windows the interior noise levels could exceed the City’s interior noise threshold by up to 5 dB interior CNEL at the Acute Care North building location. Impacts would be **potentially significant**.

6.4 Off-Site Traffic Noise Impact

At buildout the project would generate a net increase of approximately 8,268 ADT (LLG 2012) and would increase traffic along several existing roads in the area including Ruffin Road, Ruffin Court, and Clairemont Mesa Boulevard. The City does not have a specific Noise Element noise criterion for evaluating off-site noise impacts from project-related traffic to residences or noise-sensitive areas. A 3 dB increase is generally considered to be the point of change in environmental noise that can just be detected by the human ear. Therefore, for the purposes of this noise study, traffic-related noise impacts are considered significant when they either exceed a 3 dB CNEL increase and elevate noise levels above 65 dB CNEL, or they exceed a 3 dB CNEL

increase in an existing noisy area (i.e., where noise level already exceed 65 dB CNEL) at existing schools or other noise-sensitive land uses. The City's conditionally acceptable noise level is 65 dB CNEL; therefore, a threshold of 65 dB CNEL is utilized for the purposes of determining impact significance under CEQA. The closest noise sensitive receptors are the Polinsky Children's Center located approximately 50 feet from the project site and the Chinese Bilingual Preschool, located approximately 125 feet from the project site.

Off-site traffic noise increase was evaluated for the existing plus project and year 2035 with project traffic scenarios. The existing plus project study scenario assumes the existing street network and includes analysis of existing traffic count data plus the addition of project trips forecast to be generated at buildout. The 2035 with project condition assumes buildout of the project assuming the 2025 roadway network plus planned improvements to be completed by year 2035.

The existing plus project traffic noise would generate a noise level increase of up to 3 dB CNEL along Ruffin Court where the greatest increase in traffic volumes would occur. Similarly, with the project, the Year 2035 traffic noise would generate a noise level increase of up to 3 dB CNEL along Ruffin Court. Traffic noise level increases along Clairemont Mesa Boulevard and Ruffin Road would be 1 dB CNEL or less. The additional traffic volume along the adjacent roads would not substantially increase the existing noise level in the project vicinity and would not exceed a 3 dB CNEL noise level increase; therefore, the traffic noise level increase is considered **less than significant**. The noise level increases associated with the existing plus project traffic volume are depicted in Table 9. The noise level increases associated with the Year 2035 conditions are depicted in Table 10.

Table 9
Existing Off-Site Traffic Noise Level Increase

Street (Segment)	Existing ADT[1]	Existing w/ Project ADT[1]	Noise Level Increase (CNEL)
Clairemont Mesa Boulevard			
Ruffin Road to Project Access Driveway	25,500	27,840	<1
Ruffin Road			
Project Driveway to Ruffin Court	18,500	21,560	1
Ruffin Court			
Ruffin Road to Project Driveway	1,900	3,390	3

[1] Source: LLG 2012

Table 10
2035 Off-Site Traffic Noise Level Increase

Street (Segment)	2035 ADT[1]	2035 w/ Project ADT[1]	Noise Level Increase (CNEL)
Clairemont Mesa Boulevard			
Ruffin Road to Project Access Driveway	28,100	30,440	<1
Ruffin Road			
Project Driveway to Ruffin Court	20,400	23,460	1
Ruffin Court			
Ruffin Road to Project Driveway	3,400	6,640	3

[1] Source: LLG 2012

Additionally, emergency transport vehicles would continue to arrive at the hospital. Emergency sirens can generate noise levels of approximately 100 dB at a distance of 50 feet. Noise from sirens during an emergency are exempt from the City's noise ordinance per Municipal Code, Section 59.5.0402 (b) (City of San Diego 2008b).

6.5 Airport Noise

The project is located within the Airport Influence Areas for Montgomery Field Airport and MCAS Miramar. Based on the Program Environmental Impact Report for the City of San Diego General Plan, MCAS Miramar and Montgomery Field Airport Land Use Compatibility Plan Noise Contours with Generalized Planned Land Use, the project site is located outside of the 60 dB(A) CNEL noise contour for both airfields (City of San Diego 2008c). As such, the project site would not be exposed to excessive airport noise.

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7.0 MITIGATION

7.1 Construction Noise

To mitigate the on-site exterior and interior noise impacts associated with daytime construction activities, the following features shall be incorporated into the project:

- All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers.
- Construction noise reduction methods such as shutting off idling equipment, maximizing the distance between construction equipment staging areas and occupied sensitive receptor areas, and use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible.
- Implement noise attenuation measures, which may include, but are not limited to, temporary noise barriers or noise blankets around stationary construction noise sources.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from or shielded from sensitive receptors.
- During construction, stockpiling and vehicle staging areas shall be located as far as practical from noise sensitive receptors.
- Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow surrounding property owners and residents to contact the job superintendent if necessary. In the event the City receives a complaint, appropriate corrective actions shall be implemented and a report of the action provided to the reporting party.

Since this is a phased project and it is uncertain exactly where construction activities may occur relative to on-site sensitive receptors, the degree to which proposed mitigation actually reduces on-site exterior and interior noise levels cannot be accurately determined. Therefore, the on-site construction noise impacts (both exterior and interior) are considered **significant and unavoidable**.

7.2 On-site Exterior Noise

To mitigate the exterior noise impact resulting from outdoor mechanical equipment, the applicant shall be required to construct a minimum 22-foot high noise barrier around the north and west sides of the cooling tower yard. The noise barrier could consist of a masonry sound wall, berm or manufactured noise barrier panels and shall be constructed as a solid, continuous structure (i.e. no openings). Noise barrier panels should have a minimum manufacturer's STC 30 rating, or equivalent. In addition, the ends of the cooling towers shall face the western

property boundary. Implementation of noise barrier mitigation would reduce impacts to a level that is **less than significant**.

7.3 On-site Interior Noise

To mitigate the on-site interior noise impacts at the Acute Care Center North building area due to traffic along Clairemont Mesa Boulevard, an interior noise study will be required to ensure that the interior CNEL would not exceed 45 dB. The interior acoustical analysis will be required prior to issuance of building permits. To mitigation the interior noise impact, the hospital rooms facing Clairemont Mesa Boulevard would likely require air-conditioning and/or mechanical ventilation and possibly sound-rated windows.

Regarding interior noise impacts resulting from outdoor mechanical equipment operation, it is anticipated that the interior noise impact could be mitigated by using sound-rated windows having a minimum STC 38 sound-rating, and acoustical tile ceilings for the hospital rooms and staff offices along the western hospital building façade. An interior noise study will be required prior to submittal of final building plans to ensure the hospital rooms and staff offices have been adequately designed to attenuate outdoor mechanical equipment noise so that interior CNEL would not exceed 45 dB in hospital patient rooms, and 50 dB within hospital offices. Following implementation of mitigation, impacts would be **less than significant**.

8.0 REFERENCES

Caltrans (California Department of Transportation). 1998. Traffic Noise Analysis Protocol. October 1998.

City of San Diego. 2008a. *City of San Diego General Plan Noise Element*. March.

City of San Diego. 2008b. *City of San Diego Municipal Code Chapter 5 (Noise Abatement and Control Ordinance).*

City of San Diego. 2008c. *City of San Diego General Plan Update – Final Program EIR.* Accessed November 2,2012 at http://www.sandiego.gov/planning/genplan/peir.shtml.

FTA (Federal Transit Administration). 2006. *Transit Noise and Vibration Impact Assessment*. July 1.

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ATTACHMENT 1

Definitions

APPENDIX A
Definitions

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
A-Weighted Sound Level, (dB[A])	The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Community Noise Equivalent Level, (CNEL)	CNEL is the A-weighted equivalent continuous sound exposure level for a 24-hour period with a ten dB adjustment added to sound levels occurring during nighttime hours (10 p.m. to 7 a.m.) and a five dB adjustment added to the sound levels occurring during the evening hours (7 p.m. to 10 p.m.).
Decibel, (dB)	A unit for measuring sound pressure level, equal to 10 times the logarithm to the base 10 of the ratio of the measured sound pressure squared to a reference pressure, which is 20 micropascals.
Time-Average Sound Level, (TAV)	The sound level corresponding to a steady state sound level and containing the same total energy as a time varying signal over a given sample period. TAV is designed to average all of the loud and quiet sound levels occurring over a specific time period.
Sound Transmission Class, (STC)	A single number rating of the noise reduction of a building element.

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ATTACHMENT 2

Sound Meter Calibration Documentation

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC and APLAC signatory)

NVLAP®

NVLAP Lab Code: 200625-0

Calibration Certificate No.27212

Instrument:	**Sound Level Meter / Dosimeter**	*Date Calibrated:* **9/20/2012** *Cal Due:*		
Model:	**700**	*Status:*	**Received**	**Sent**
Manufacturer:	**Larson Davis**	*In tolerance:*	**X**	**X**
Serial number:	**4086B0724**	*Out of tolerance:*		
Tested with:	**Microphone**	*See comments:*		
		Contains non-accredited tests: __Yes _X_ No		
Type (class):	**2**	*Calibration service:* __ Basic _X_ Standard		
Customer:	**Dudek**	*Address:*	**605 Third Street**	
Tel/Fax:	**760-942-5147 / -632-0164**		**Encinitas, CA 92024**	

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/22/2012
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	25747	Jul 2, 2012	Scantek, Inc./ NVLAP	Jul 2, 2013
DS-360-SRS	Function Generator	61646	Nov 16, 2011	ACR Env./ A2LA	Nov 16, 2013
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Dec 9, 2011	ACR Env. / A2LA	Dec 9, 2012
DPI 141-Druck	Pressure Indicator	790/00-04	Dec 13, 2010	ACR Env./ A2LA	Dec 13, 2012
HMP233-Vaisala Oyj	Humidity & Temp.	V3820001	Sep 6, 2012	ACR Env./ A2LA	Mar 6, 2014
PC Program 1019 Norsonic	Calibration software	v.5.2	Validated Mar 2011	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Dec 13, 2011	Scantek, Inc./ NVLAP	Dec 13, 2012
4226-Brüel&Kjær	Multifunction calibrator	2305103	Jul 24, 2012	Scantek, Inc./ NVLAP	Jul 24, 2013

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.5 °C	100.537 kPa	47.1 %RH

Calibrated by:	Valentin Buzduga	**Authorized signatory:**	Mariana Buzduga
Signature		Signature	
Date	9/20/2012	Date	9/20/2012

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.
Document stored Z:\Calibration Lab\SLM 2012\LD700_4086B0724_M1.doc

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES[1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
CALIBRATION OF SOUND LEVEL METER - ANSI S1.4 CLAUSE 3.2	Passed	0.2
LEVEL LINEARITY TEST - ANSI S1.4-1983, CLAUSE 6.9 & 6.10	Passed	0.25
OVERLOAD DETECTOR TEST: A-NETWORK - ANSI S1.4-1983 CLAUSE 8.3.1	Passed	0.25
F/S/I/PEAK TEST: STEADY STATE RESPONSE - ANSI S1.4 1983 CLAUSE 6.4	Passed	0.25
FAST-SLOW TEST: OVERSHOOT TEST - ANSI S1.4 1983 CLAUSE 8.4.1	Passed	0.25
FAST-SLOW TEST: SINGLE SINE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.1 & 8.4.3	Passed	0.25
IMPULSE TEST: CONTINUOUS SINE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.3	Passed	0.25
IMPULSE TEST: SINGLE SINE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.1 & 8.4.3	Passed	0.25
PEAK DETECTOR TEST, SINGLE SQUARE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.4	Passed	0.25
RMS DETECTOR TEST: CREST FACTOR TEST - ANSI S1.4-1983 CLAUSE 8.4.2	Passed	0.25
RMS DETECTOR TEST: CONTINUOUS SINE WAVE BURST - ANSI S1.4-1983 CLAUSE 8.4.2	Passed	0.25
TIME AVERAGING TEST: AVERAGING FUNCTIONS - ANSI S1.43 CLAUSE 9.3.2	Passed	0.25
LINEARITY TEST - ANSI S1.43 CLAUSE 9.3.3	Passed	0.25
WEIGHTING NETWORK TEST: A NETWORK - ANSI S1.4-1983 CLAUSE 8.2.2	Passed	0.25
WEIGHTING NETWORK TEST: C NETWORK - ANSI S1.4-1983 CLAUSE 8.2.2	Passed	0.25
EXPONENT CIRCUIT AND INTEGRATOR TEST - ANSI S1.25 #7.7	Passed	0.3

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Parameters are certified at actual environmental conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The instrument was tested and met all specifications found in the referenced procedures.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger.
Compliance with any standard cannot be claimed based solely on the periodic tests.

Tests made with the following attachments to the instrument:

Microphone: Larson Davis microphone for acoustical test
Preamplifier: none
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: none

Measured Data: in Test Report # 27212 of two sections with nine pages total.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

ATTACHMENT 3

Traffic Noise Modeling Input/Output and Calibration

Dudek
Brian P. Grover

7 November 2012
TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: 7372
RUN: Kaiser Central Medical Center

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Ruffin Road N-bound	12.0	point1	1	43.4	1.1	430.00				Average	
		point2	2	43.4	1,729.7	390.00					
Ruffin Road S-bound	12.0	point3	3	0.9	1,727.7	390.00				Average	
		point4	4	0.9	-0.9	430.00					
Clairemont Mesa E-bound	12.0	point5	5	89.9	1,223.7	417.00				Average	
		point6	6	519.0	1,223.7	400.00				Average	
		point7	7	859.1	1,288.4	380.00				Average	
		point8	8	1,191.1	1,438.2	360.00					
Clairemont Mesa W-bound	12.0	point9	9	1,162.7	1,498.9	417.00				Average	
		point10	10	840.9	1,353.2	400.00				Average	
		point11	11	511.0	1,284.4	380.00				Average	
		point12	12	85.9	1,282.4	360.00					
Ruffin Court E-bound	12.0	point13	13	68.0	245.3	420.00				Average	
		point14	14	1,148.3	245.3	420.00					
Ruffin Court W-bound	12.0	point15	15	1,146.4	275.3	420.00				Average	
		point16	16	64.2	275.3	420.00					

Dudek
Brian P. Grover

7 November 2012
TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: 7372
RUN: Kaiser Central Medical Center

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Ruffin Road N-bound	point1	1	1126	40	24	40	24	40	0	0	0	0
	point2	2										
Ruffin Road S-bound	point3	3	1126	40	24	40	24	40	0	0	0	0
	point4	4										
Clairemont Mesa E-bound	point5	5	1461	45	31	45	31	45	0	0	0	0
	point6	6	1461	45	31	45	31	45	0	0	0	0
	point7	7	1461	45	31	45	31	45	0	0	0	0
	point8	8										
Clairemont Mesa W-bound	point9	9	1461	45	31	45	31	45	0	0	0	0
	point10	10	1461	45	31	45	31	45	0	0	0	0
	point11	11	1461	45	31	45	31	45	0	0	0	0
	point12	12										
Ruffin Court E-bound	point13	13	319	30	7	30	7	30	0	0	0	0
	point14	14										
Ruffin Court W-bound	point15	15	319	30	7	30	7	30	0	0	0	0
	point16	16										

Dudek
Brian P. Grover

7 November 2012
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 7372
RUN: Kaiser Central Medical Center

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Acute Care North - 1st floor	8	1	491.1	1,146.6	420.00	4.92	0.00	66	10.0	8.0	Y
Acute Care North - 6th floor	9	1	506.5	1,146.6	495.00	4.92	0.00	66	10.0	8.0	Y
Acute Care West - 1st floor	10	1	275.0	809.1	420.00	4.92	0.00	66	10.0	8.0	Y
Acute Care West - 6th floor	11	1	275.0	793.6	495.00	4.92	0.00	66	10.0	8.0	Y
Acute Care South - 1st floor	12	1	533.5	317.2	420.00	4.92	0.00	66	10.0	8.0	Y
Acute Care South - 6th floor	13	1	552.8	317.2	495.00	4.92	0.00	66	10.0	8.0	Y
Open Space Area North	14	1	650.0	1,050.0	410.00	4.92	0.00	66	10.0	8.0	Y

Dudek 7 November 2012
Brian P. Grover TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 7372
RUN: Kaiser Central Medical Center

Barrier Name	Type	Height Min	Height Max	If Wall $ per Unit Area	If Berm $ per Unit Vol.	If Berm Top Width	If Berm Run:Rise	Add'tnl $ per Unit Length	Points Name	No.	Coordinates (bottom) X	Y	Z	Height at Point	Segment Seg Ht Increment	Perturbs #Up	Perturbs #Dn	On Struct?	Important Reflections?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Acute Care Hospital	W	0.00	99.99	0.00				0.00	point6	6	463.3	1,145.1	420.00	0.00	0.00	0	0		
									point7	7	554.1	1,147.0	420.00	0.00	0.00	0	0		
									point8	8	554.1	959.6	420.00	0.00	0.00	0	0		
									point9	9	727.9	959.6	420.00	0.00	0.00	0	0		
									point10	10	729.9	866.9	420.00	0.00	0.00	0	0		
									point11	11	556.0	866.9	420.00	0.00	0.00	0	0		
									point12	12	556.0	874.6	420.00	0.00	0.00	0	0		
									point13	13	500.0	876.6	420.00	0.00	0.00	0	0		
									point14	14	500.0	826.3	420.00	0.00	0.00	0	0		
									point15	15	546.3	826.3	420.00	0.00	0.00	0	0		
									point16	16	544.4	548.2	420.00	0.00	0.00	0	0		
									point17	17	592.7	548.2	420.00	0.00	0.00	0	0		
									point18	18	592.7	567.5	420.00	0.00	0.00	0	0		
									point19	19	768.5	563.6	420.00	0.00	0.00	0	0		
									point20	20	768.5	457.4	420.00	0.00	0.00	0	0		
									point21	21	583.0	457.4	420.00	0.00	0.00	0	0		
									point22	22	583.0	432.2	420.00	0.00	0.00	0	0		
									point23	23	608.2	432.2	420.00	0.00	0.00	0	0		
									point24	24	608.2	318.3	420.00	0.00	0.00	0	0		
									point25	25	496.1	318.3	420.00	0.00	0.00	0	0		
									point26	26	496.1	497.9	420.00	0.00	0.00	0	0		
									point27	27	335.8	499.9	420.00	0.00	0.00	0	0		
									point28	28	335.8	749.1	420.00	0.00	0.00	0	0		
									point29	29	275.9	749.1	420.00	0.00	0.00	0	0		
									point30	30	275.9	847.6	420.00	0.00	0.00	0	0		
									point31	31	337.7	845.7	420.00	0.00	0.00	0	0		
									point32	32	335.8	913.3	420.00	0.00	0.00	0	0		
									point33	33	461.3	913.3	420.00	0.00	0.00	0	0		
									point34	34	461.3	1,147.0	420.00	0.00					
Energy Center	W	0.00	99.99	0.00				0.00	point35	35	160.0	664.1	400.00	0.00	0.00	0	0		
									point36	36	160.0	412.9	400.00	0.00	0.00	0	0		
									point37	37	88.5	412.9	400.00	0.00	0.00	0	0		
									point38	38	88.5	662.1	400.00	0.00	0.00	0	0		
									point39	39	160.0	664.1	400.00	0.00					
Parking Structure	W	0.00	99.99	0.00				0.00	point40	40	1,002.2	932.6	419.00	0.00	0.00	0	0		

									point41	41	1,000.3	345.3	419.00	0.00	0.00	0	0			
									point42	42	812.9	345.3	419.00	0.00	0.00	0	0			
									point43	43	812.9	932.6	419.00	0.00	0.00	0	0			
									point44	44	1,000.3	932.6	419.00	0.00						

Dudek
Brian P. Grover

7 November 2012
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 7372
RUN: Kaiser Central Medical Center
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Acute Care North - 1st floor	8	1	0.0	69.0	66	69.0	10	Snd Lvl	69.0	0.0	8	-8.0
Acute Care North - 6th floor	9	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0
Acute Care West - 1st floor	10	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
Acute Care West - 6th floor	11	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
Acute Care South - 1st floor	12	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
Acute Care South - 6th floor	13	1	0.0	63.1	66	63.1	10	----	63.1	0.0	8	-8.0
Open Space Area North	14	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	7	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

ATTACHMENT 4

Noise Measurement Field Data Sheets

NOISE LEVEL MEASUREMENT #1

Project Name: Kaiser Hospital - 7372
Noise Source: traffic
Distance to Source (C.L.): _____

Date: 9/5/12
Start Time: 10:17 am

Temperature: 77 Degrees
Wind (speed/direction): 3mph NW
Cloud Cover: Cloudy P.Coudy (Clear)

Humidity: Humid (Normal) Dry

L_{eq} 69.6
L_{max} 82.5
L_{min} 48.5
L_1 77.0
L_{10} 73.5
L_{50} 66.5
L_{90} 56.0

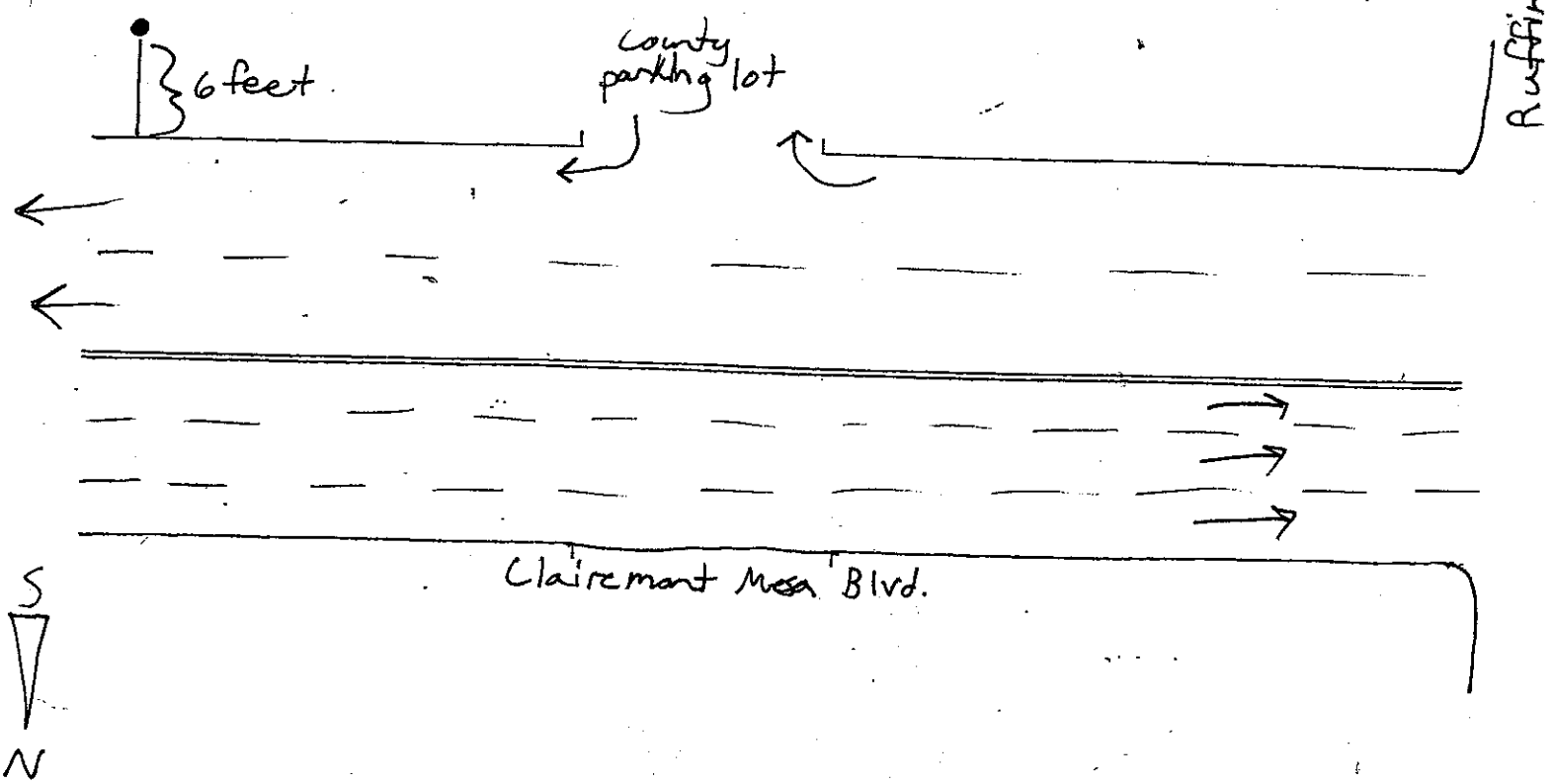
Running Average

$L_{eq}(5)$ 70.2	$L_{eq}(35)$ ____
$L_{eq}(10)$ 69.9	$L_{eq}(40)$ ____
$L_{eq}(15)$ 69.6	$L_{eq}(45)$ ____
$L_{eq}(20)$ 69.6	$L_{eq}(50)$ ____
$L_{eq}(25)$ ____	$L_{eq}(55)$ ____
$L_{eq}(30)$ ____	$L_{eq}(60)$ ____

Cars (L_{max}) ____
MT (L_{max}) ____
HT (L_{max}) ____

	5	10	15	20		1-hr. est.
Cars	114	100	89	101	409	1,227
MT	8	3	8	5	24	72
HT	2	4	2	1	9	27
motorcycles	1	1	1	0	3	9

Speed limit = 40mph



NOISE LEVEL MEASUREMENT #2

Project Name: Kaiser Hospital-7372
Noise Source: traffic
Distance to Source (C.L.):

* Note: traffic may have been moving slower than posted speed limit.

Date: 4/5/12
Start Time: 10:46 am

Temperature: Degrees
Wind (speed/direction): 3mph NW
Cloud Cover: Cloudy P.Coudy Clear

Humidity: Humid (Normal) Dry

L_{eq} 63.5
L_{max} 76.5
L_{min} 48.5
L_1 72.0
L_{10} 67.0
L_{50} 60.5
L_{90} 53.5

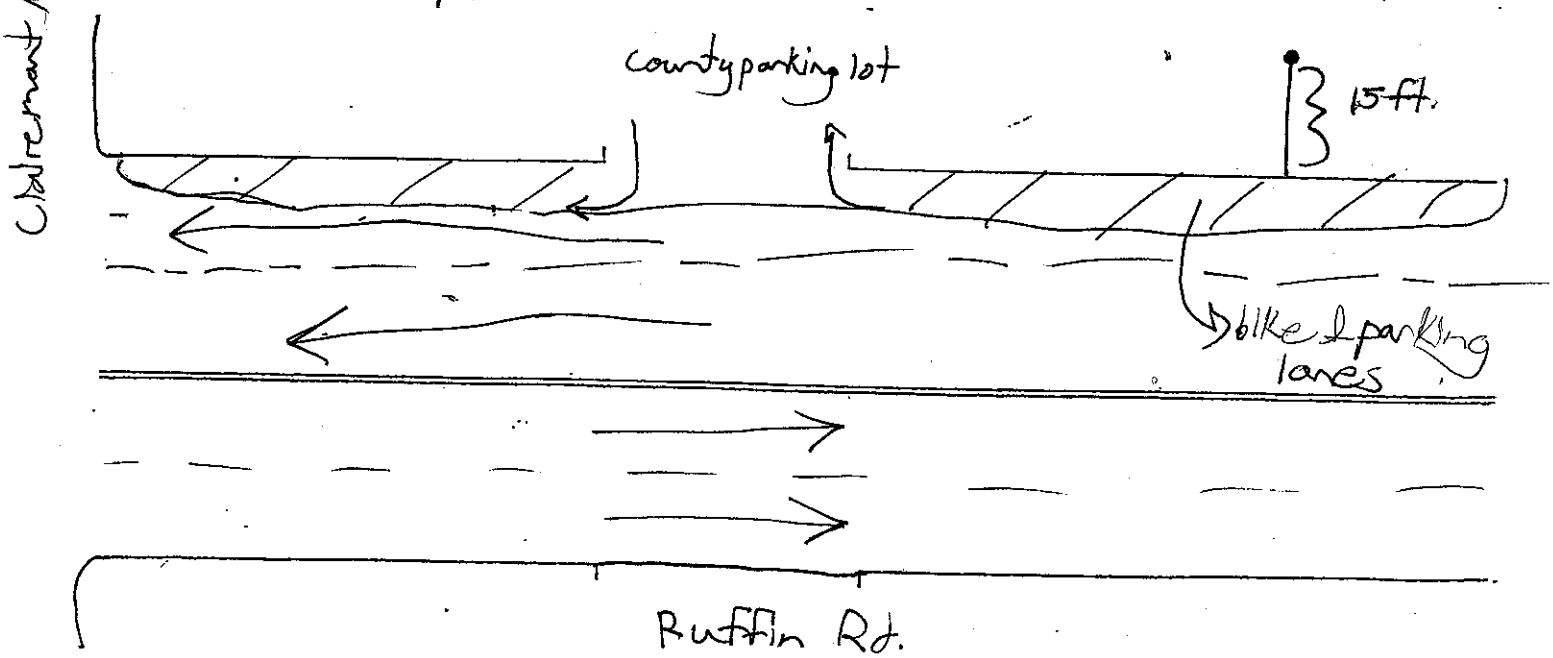
Running Average

$L_{eq}(5)$ 62.5	$L_{eq}(35)$
$L_{eq}(10)$ 62.3	$L_{eq}(40)$
$L_{eq}(15)$ 63.3	$L_{eq}(45)$
$L_{eq}(20)$ 63.5	$L_{eq}(50)$
$L_{eq}(25)$	$L_{eq}(55)$
$L_{eq}(30)$	$L_{eq}(60)$

Cars (L_{max})
MT (L_{max})
HT (L_{max})

	5	10	15	20		1-hr est.
Cars	78	79	109	122	388	1,164
MT	4	2	5	3	14	42
HT	2	1	3	2	8	24
motorcycle	1	0	0	3	4	12

Speed limit = 45 mph



NOISE LEVEL MEASUREMENT #3

Project Name: Kaiser Hospital-7372
Noise Source: traffic
Distance to Source (C.L.): _____

Date: 9/5/12
Start Time: 11:20am

Temperature: ___ Degrees
Wind (speed/direction): 8mph / East
Cloud Cover: Cloudy P.Coudy Clear

Humidity: Humid (Normal) Dry

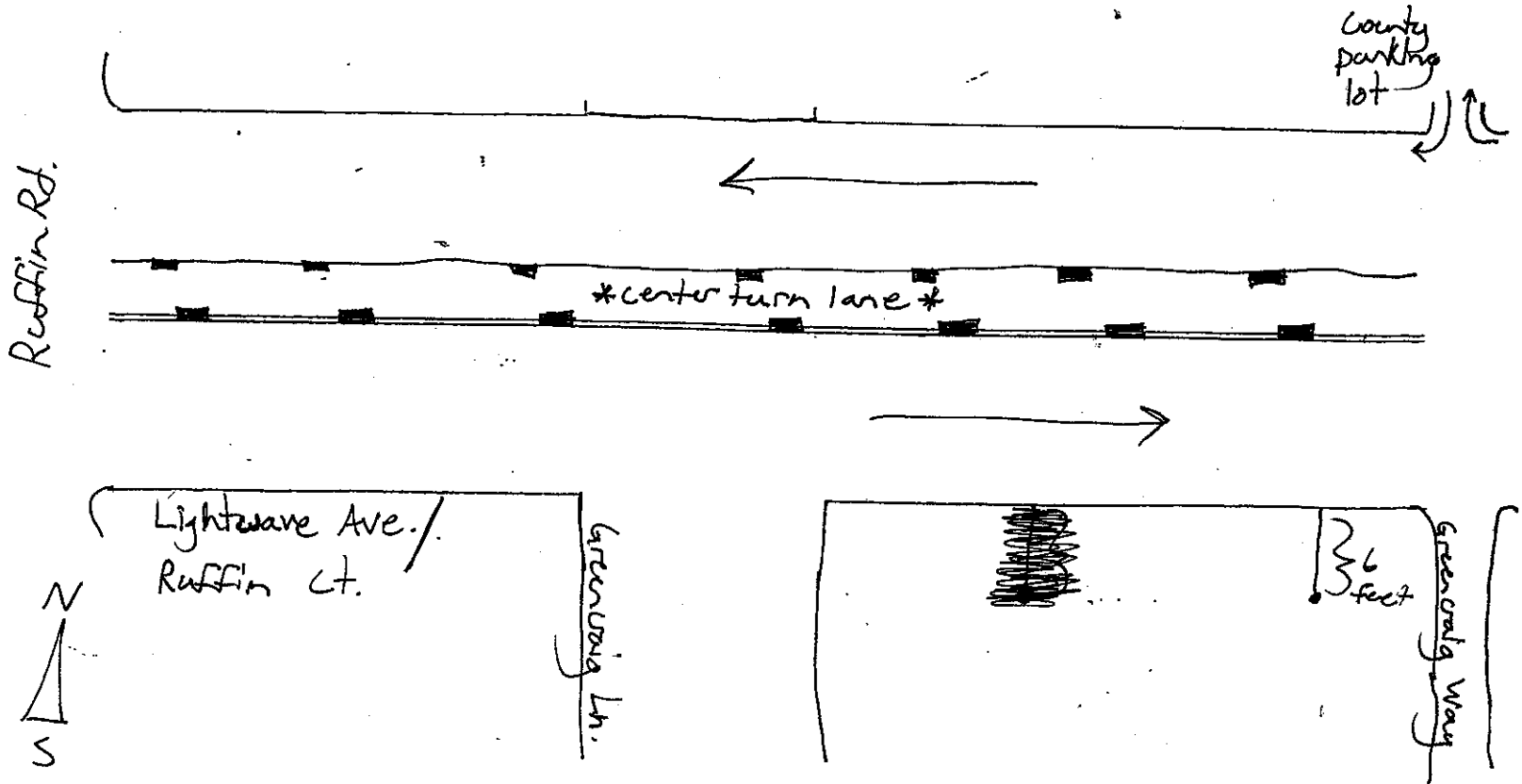
L_{eq} 62.1
L_{max} 74.0
L_{min} 47.0
L_1 71.0
L_{10} 66.5
L_{50} 56.5
L_{90} 48.5

Running Average

$L_{eq}(5)$ 60.1	$L_{eq}(35)$ ___
$L_{eq}(10)$ 60.8	$L_{eq}(40)$ ___
$L_{eq}(15)$ 62.4	$L_{eq}(45)$ ___
$L_{eq}(20)$ 62.1	$L_{eq}(50)$ ___
$L_{eq}(25)$ ___	$L_{eq}(55)$ ___
$L_{eq}(30)$ ___	$L_{eq}(60)$ ___

Cars (L_{max}) ___
MT (L_{max}) ___
HT (L_{max}) ___

	5	10	15*	20		1-hr. est.
Cars	19	29	34	27	109	327
MT	0	0	2	2	4	12
HT	0	0	0	0	0	0

Speed limit = 30 mph

*jet flyover in the distance to the north