HAYNES GENERATING STATION
UNITS 5 & 6
REPOWERING PROJECT

Draft
Environmental Impact Report (EIR)

(SCH#2005061111)

&

Appendix A: Notice of Preparation, Initial Study, and Comment Letters

Los Angeles Department of Water and Power
Environmental Services
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With Technical Assistance By:

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JANUARY 2010

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APPENDIX A

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CHAPTER 1.0
EXECUTIVE SUMMARY

1.1 PURPOSE OF THE EIR

This Draft Environmental Impact Report (EIR) has been prepared to evaluate potential effects on the environment associated with the Haynes Generating Station (HnGS) Units 5 and 6 Repowering Project (proposed project), which is located in the City of Long Beach, California. The City of Los Angeles Department of Water and Power (LADWP) is the public agency with the principal responsibility for carrying out and approving the proposed project and is the lead agency under the California Environmental Quality Act of 1970 (CEQA) responsible for preparing the EIR.

The EIR serves as an informational document for decision makers and the public regarding potential environmental impacts of the proposed project. It will be used by LADWP and responsible agencies with approval authority for the proposed project in assessing such impacts and their possible mitigation. These agencies must take into account the information in this EIR before considering approvals for the proposed project. This EIR is not a policy document of LADWP regarding the desirability of the proposed project or any of the potential project alternatives discussed herein.

1.2 OVERVIEW OF THE PROJECT

LADWP proposes to construct a new electrical simple cycle generating station (SCGS) at the existing HnGS in Long Beach, California (see Figure 1-1). The proposed SCGS would include six new natural gas-fired combustion turbine (CT) generators (at 100 megawatts [MW] net capacity each), associated cooling and pollution control systems, and other ancillary facilities. The new generation units would be designated Units 11, 12, 13, 14, 15, and 16 and would provide a total net generating capacity of 600 MW. The proposed project includes decommissioning of two existing steam boiler generators (Units 5 and 6) that also have a total net generation capacity of 600 MW. The proposed project is being implemented in part pursuant to a formal Settlement Agreement between LADWP and the South Coast Air Quality Management District (SCAQMD) related to air pollutant emissions from stationary sources under the Regional Clean Air Incentives Market (RECLAIM) program. The proposed SCGS would substantially improve the LADWP generation system efficiency, reliability, and flexibility compared to the existing steam boiler units it would replace. It would also provide effective load following capability that would maximize the utilization of wind power within the LADWP generation system.

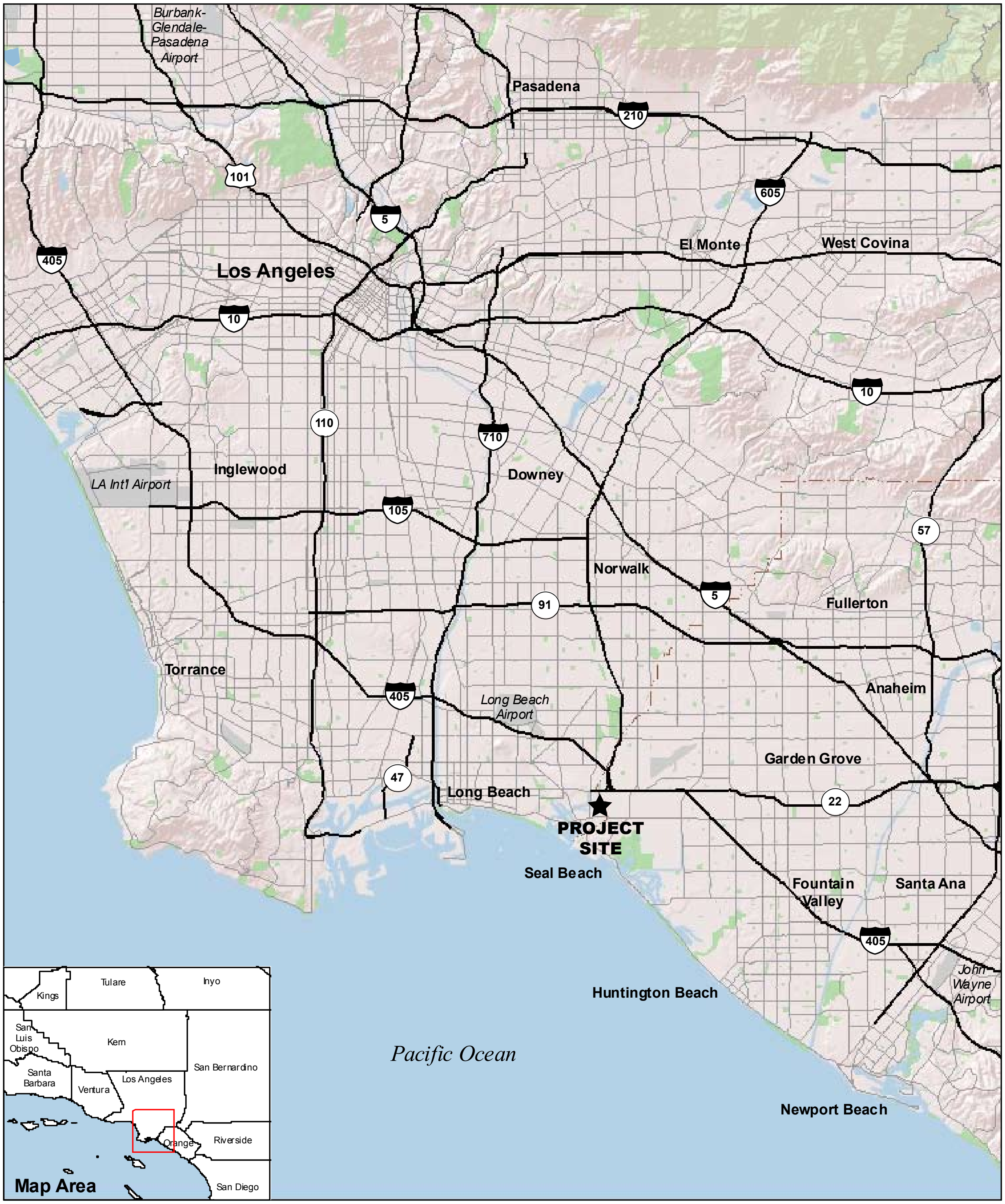

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Figure 1-1
Regional Location

1.3 PROJECT OBJECTIVES

The goal of the proposed project is to improve the LADWP generation system efficiency, reliability, and flexibility as well as providing support for wind generation. Specific objectives related to this goal include:

1. Achieving a net reduction in air pollutant emissions at HnGS by repowering pursuant to the 2003 Settlement Agreement between LADWP and SCAQMD

   The proposed project is being implemented in part pursuant to a formal Settlement Agreement (May 2003) between LADWP and the SCAQMD to reduce air pollutant emissions from stationary sources in the South Coast Air Basin (SCAB). In accordance with this agreement, HnGS Units 5 and 6 are to be repowered rather than HnGS Units 1 and 2, as specified in an earlier Stipulated Order of Abatement issued to LADWP by SCAQMD to reduce emissions under the RECLAIM program. The repowering of existing Units 5 and 6 at HnGS would reduce emissions by removing from service two aging and inefficient steam boiler generator units that are over 40 years old and replacing their generating capacity with a new SCGS. In accordance with the Settlement Agreement, this repowering must be achieved by December 31, 2013.

2. Reducing the consumption of natural gas and, as a result, the production of greenhouse gases

   A primary source of greenhouse gases (GHGs), particularly carbon dioxide (CO_2), is the combustion of fossil fuels for electrical generation. Therefore, an important means for LADWP to achieve a reduction in GHGs, while still ensuring that the demand for electrical energy is met, is by reducing fossil fuel consumption through the increased efficiency of its natural gas-fired generation facilities. The operational characteristics of the proposed project turbines, including fast start, rapid ramping, and multiple daily on-off cycling capabilities that enable the SCGS to quickly and precisely track demand, would greatly increase system generation efficiency and limit the combustion of natural gas compared with existing Units 5 and 6, which take significantly greater time to reach full generation load at startup and must often remain on line at minimum load, even when the power is not needed, in order to be available to generate increased power when necessary.

3. Facilitating the integration of wind power resources into the LADWP generation system

   LADWP brought a 120-MW wind power facility on line in 2009 to provide electrical energy directly to its system and is proposing the development of approximately 250 MW of additional wind power over the next 10 years. However, while wind power is an important component of a comprehensive and diversified approach to electrical energy generation, its use is limited by the intermittent and variable nature of wind itself. Since electricity cannot currently be feasibly stored on a large-scale basis, the availability of electricity generated by wind turbines fluctuates widely and unpredictably. The intermittent nature of wind power means that it may not be available, at least in sufficient quantities, during peak periods of demand in the LADWP service area. Conversely, if demand is already being met by larger but less responsive fossil fuel generation units, wind power that may suddenly become available may not be exploited to its fullest extent. In order to effectively integrate wind power into the generation system and take full advantage of this renewable resource when it is available, the LADWP generation system must include other resources that can respond rapidly and in a controlled manner to complement fluctuations in wind generation. Such dispatchable resources, so called because they are predictably available on short notice to generate and transmit electricity, are necessary to balance the highs and lows in the energy produced by wind resources. The configuration of the 600-MW SCGS, with six individual 100-MW units, provides significant flexibility and range to respond to such fluctuations, effectively facilitating the integration of large blocks of wind power into the LADWP generation system.

4. Providing for the energy demands of the City of Los Angeles

   The annual growth in demand for electricity in the City is expected to increase at an average annual rate of about 0.6 percent over the next 20 years, regardless of increasingly aggressive conservation efforts. It is estimated that between the years 2009 and 2030, growth in peak demand will necessitate an average increase of 62 MW in generation capacity per year. This would represent a 1,300 MW, or approximately 23 percent, increase in capacity (from approximately 5,650 MW in 2009 to 6,950 MW in 2030). The total generation capacity requirement is based on the projected peak demand plus a system reserve margin intended to satisfy the peak demand in the event of an unforeseen loss of a key component of the generation or transmission system. The reserve requirement is determined by the Western Electricity Coordinating Council Reliability Standard, to which LADWP adheres in accordance with the Energy Policy Act of 2005. By supplying an equivalent generation capacity as HnGS Units 5 and 6, which would be removed from service in relation to the repowering specified under the Settlement Agreement between LADWP and SCAQMD, the proposed project would continue to provide for the energy demands of the City. In accordance with the Los Angeles City Charter, LADWP is obligated to provide a reliable supply of electricity to meet this demand.

5. Increasing the reliability of the electrical power generation system

   HnGS Units 5 and 6 are each over 40 years old, having first been placed in service in 1966 and 1967, respectively. Required maintenance procedures on the units and the associated downtime have increased over time. The potential for unforeseen failures of the units' mechanical and electrical systems will rise as these units continue to wear with age. This reduces the reliability of not only the units themselves but the entire generation system, which is based on the predictability and stability of the available power supply. Decreased reliability could also influence the need to maintain higher operating reserve margins to guarantee a stable supply of electrical power for the City of Los Angeles, effectively increasing the requirement for additional generation capacity within the system. The repowering of Units 5 and 6 with a new SCGS would reduce the requirement for maintenance and the associated downtime and lessen the potential for unanticipated failures, thereby increasing the reliability of the electrical generation system and the power transmission and distribution grid that it supplies. The in-basin location of the SCGS at HnGS would also increase system reliability by placing electrical generation near the center of demand, limiting the potential for power outages due to a loss or overload in the regional transmission system that transports energy from more distant generation sources.

6. Eliminating the need to use ocean water for cooling on this project and reducing the use of ocean water for generator cooling at HnGS

   Since HnGS was first commissioned over 40 years ago, evolving state and federal regulations have established stricter limitations on the operation of once-through systems related to environmental impacts potentially created by the use of large volumes of ocean water for generator cooling. These regulations primarily address potential impacts in two areas: impacts associated with the discharge into the aquatic environment of cooling process water the temperature of which has been elevated above that of the ambient receiving water and impacts related to the impingement and entrainment of marine organisms drawn in through the cooling water intake apparatus. At HnGS, recent agency decisions have included the reclassification of the San Gabriel River as an estuarine environment, which will establish more stringent standards with respect to the temperature of cooling water discharged into the river than are currently in force.

   Regulatory compliance in relation to the operations of the existing HnGS once-through cooling system (which is currently utilized by all the existing steam generators at the station, including Units 5 and 6) is subject to several ongoing data-gathering efforts, analyses, regulation clarifications, and agency determinations. To help lessen potential environmental impacts, avoid possible future regulatory conflicts, and eliminate uncertainties concerning compliance related to once-through cooling, the proposed project would utilize a dry cooling system not dependent on either ocean water intake or discharge. The retirement of Units 5 and 6 would substantially reduce the maximum potential intake and discharge volumes of ocean water at the station.

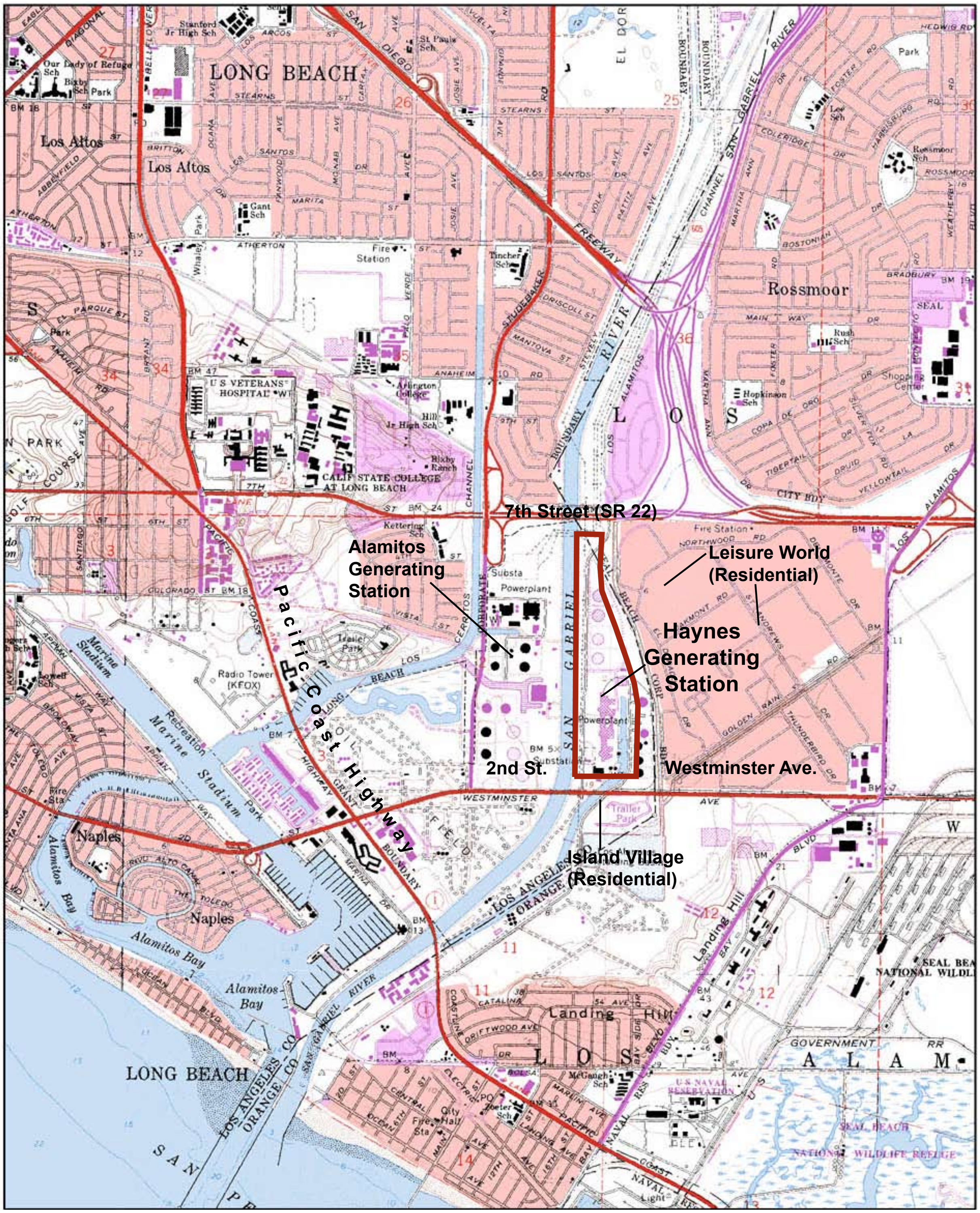
1.4 GENERAL SETTING OF SITE AND SURROUNDINGS

HnGS is an electric power generating facility that supplies power to the LADWP power distribution grid. HnGS is a largely developed industrial property consisting of approximately 120 acres, the majority of which is located in the City of Long Beach, County of Los Angeles. Approximately 10 acres in the northeast corner of the HnGS property are located in the City of Seal Beach, County of Orange. The proposed project would be located in the west-central portion of the HnGS property, entirely within the City of Long Beach.

Uses surrounding HnGS consist primarily of industrial, commercial, and residential uses, including the Leisure World residential community along the entire eastern boundary of HnGS, separated from HnGS by an Orange County Flood Control Channel; light industrial functions (including office, research and development, and manufacturing) in the Boeing Integrated Defense Systems Specific Plan Area to the southeast; the Island Village residential community to the south, across 2nd Street; vacant land to the southwest; the Alamitos Generating Station (an electrical generating station operated by the AES Corporation) along the entire western boundary, across the San Gabriel River; residential areas to the northwest; and a community park and residential areas to the north, across State Route 22. Most of the eastern station boundary is also the boundary between Los Angeles and Orange counties. A regional bike trail runs along the upper bank of the San Gabriel River, adjacent to HnGS. The general setting of the site and surrounding areas is shown on Figure 1-2.

Operating generators at the facility include four steam boilers units (Units 1, 2, 5, and 6) and a combined cycle generating system (CCGS) consisting of one steam turbine (Unit 8) and two natural-gas fired CT generators (Units 9 and 10) fitted with heat recovery steam generator (HRSG) systems. The existing generator units range in height from approximately 75 feet (the CCGS) to approximately 150 feet for the six older units (including decommissioned Units 3 and 4). In addition to the primary structures, the generator exhaust stacks range in height from approximately 150 feet (Units 9 and 10 of the CCGS) to approximately 250 feet for the six older units. All the generator units are located in roughly the southwest quadrant of the HnGS property. The operating and decommissioned generator units themselves occupy approximately 15 acres of the site.

A circulating water channel provides ocean water for cooling the HnGS steam boiler units. The channel extends southwestward from the HnGS property for approximately one mile, roughly paralleling the San Gabriel River between 2nd Street and State Highway 1. Near the highway, water is drawn into the channel through a system of pipes that cross under the San Gabriel River and connect to an intake structure in the Alamitos Bay Marina. At HnGS, water is drawn from the channel through separate pump and screen chambers for generator Units 1, 2, 5, 6, and 8 (which is part of the CCGS). The cooling water is released into the San Gabriel River through three discharge structures, which are located in the east bank of the river adjacent to HnGS and include two outfalls each. Each generator unit that utilizes once-through cooling has one discharge pipe. An aerial photo of the existing HnGS site is provided in Figure 1-3 showing the location of various existing site features.



Source: gis.ca.gov
USGS 7.5 Minute Digital Raster Graphic

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Figure 1-2
Vicinity Map

Source: Google Earth, 2009

N.T.S.

Figure 1-3
Existing Site

1.5 PROJECT DESCRIPTION

1.5.1 PROPOSED FACILITIES

The proposed SCGS for the HnGS Units 5 and 6 Repowering Project includes six natural gas-fired CTs and associated cooling and pollution control systems. The new generator units would be designated as Units 11, 12, 13, 14, 15, and 16. Two emergency power generators of 2.5-MW capacity each would also be provided. The net generating capacity of the proposed SCGS would be 600 MW. The proposed project also includes decommissioning existing steam boiler generation Units 5 and 6. Units 5 and 6 currently have a net capacity of 341 MW and 259 MW, respectively (600 MW total). The total net generating capacity of the HnGS facility after the completion of the proposed project would be 1619 MW, which is equivalent to the current capacity of the facility. The existing and proposed units, with expected net generating capacities, are summarized as follows:

Unit 1	222 MW	
Unit 2	222 MW	
CCGS	575 MW	(total of Units 8, 9, and 10)
Unit 5	-341 MW	(decommissioned under proposed project)
Unit 6	-259 MW	(decommissioned under proposed project)
SCGS	600 MW	(proposed project)
Total	1,619 MW	(equivalent to current capacity of HnGS)

The proposed SCGS facilities would encompass approximately 16 acres in the west-central portion of the HnGS property, immediately north of the existing CCGS and switchyard, in an area currently occupied primarily by several large abandoned fuel oil tanks (each 260 feet in diameter by 56 feet in height). The primary elements of the SCGS included in this area would include the CT generator units, dry cooling units, electrical switchyard, gas compression units, water treatment facilities, a control building, instrument shop, and maintenance shop/office. The three large unused aboveground fuel storage tanks on the site of the proposed SCGS will be dismantled prior to the beginning of the SCGS construction as part of ongoing site maintenance activities not related to the proposed project. A conceptual site plan of the SCGS facilities is provided in Figure 1-4.

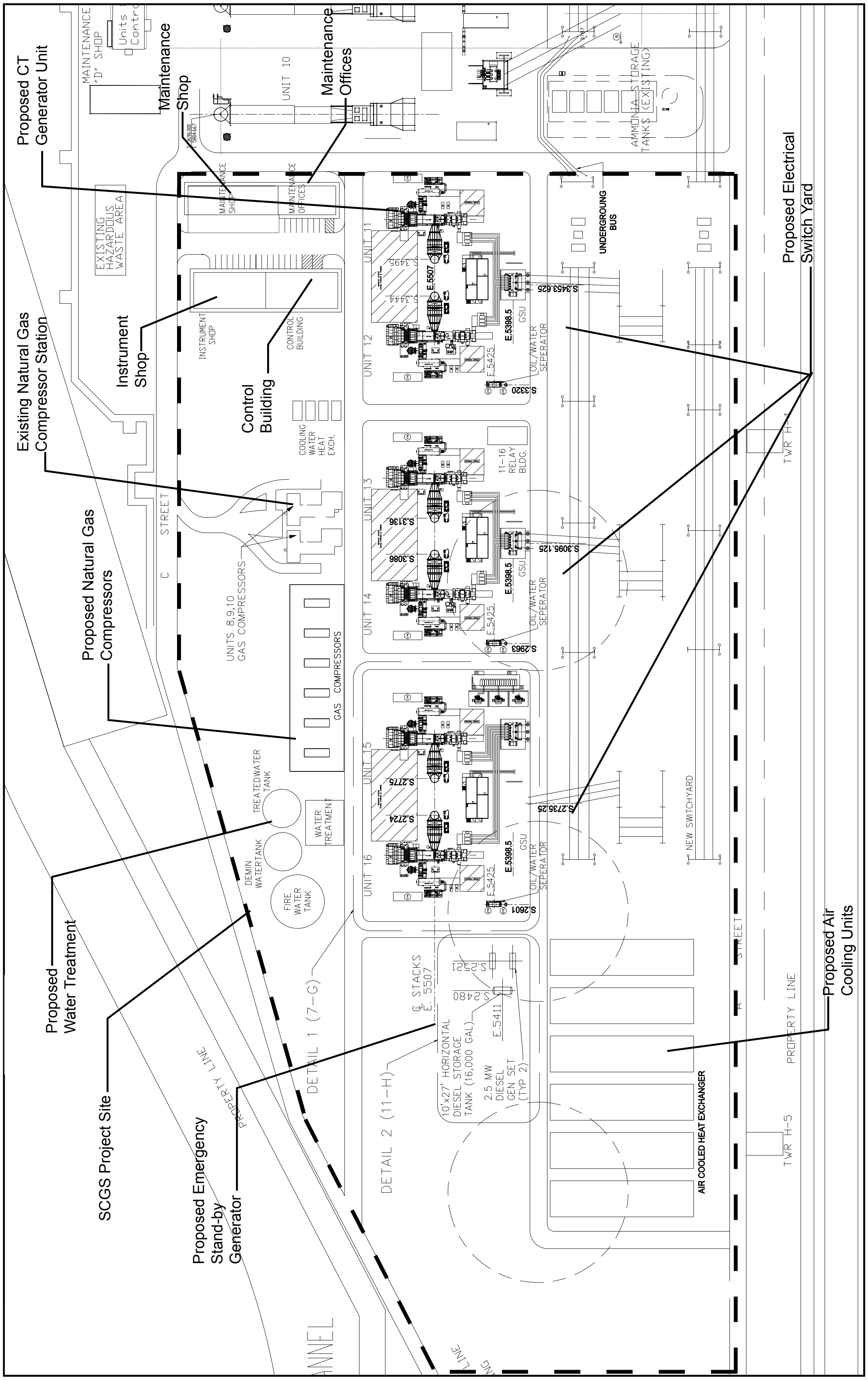

Figure 1-4
SCGS Facilities

Each of the six 100-MW generator units would consist of several primary components, including an air inlet filter structure, a CT, an intercooler system, an exhaust structure and stack, a generator, and a generator step-up transformer. These components would require a basic footprint of approximately 125 feet by 125 feet (approximately 16,000 square feet). Excluding the exhaust stack, the primary structure of the generator unit would reach a maximum height of approximately 40 feet. The exhaust stack would be approximately 90 feet in height. In addition, the separate silencer stack for the variable bleed vents of the unit would be approximately 50 feet in height. The individual generator units would be paired to feed a single step-up transformer unit, which in turn would feed power to the new switchyard. Including ancillary equipment, crane parking pads, and surrounding and internal access roads, the six CT generator units would require a total footprint of approximately 6.0 acres, although not all of this area would be covered by facilities.

The proposed switchyard provides a means of connecting to the existing LADWP transmission line located along the western boundary of HnGS. It would consist of circuit breakers, disconnect switches, and H-frame structures for stringing conductors. The switchyard would be located directly west of the proposed generators and north of the existing HnGS switchyard. It would require a total footprint of approximately 6.5 acres.

Each generator unit would be connected by water pipelines to an individual dry cooling unit to dissipate the heat from the intercooler system. The cooling unit would be an open lattice steel structure where water circulated in the pipelines would be cooled by means of an induced mechanical draft created by a series of fans. The cooling unit associated with each generator unit would be 180 feet long, 60 feet wide, and approximately 50 feet tall. There would be a total of six units (one for each generator unit), sited near the western boundary of HnGS, northwest of the proposed project generator units and north of the proposed switchyard. Including surrounding access roads, the six cooling units would require a total footprint of approximately 2.0 acres.

Each generator unit would also be connected via underground pipelines to an individual natural gas compressor unit, which is required to provide the necessary pressure for combustion in the CT. The individual gas compressors would be relatively small units, but the entire block, located directly to the east of the generator units, would require a total footprint of approximately 1.0 acres. The gas compressors would be enclosed in a single acoustical building to dampen noise.

The project proposes to use reclaimed water for various processes in the SCGS, including the closed loop cooling system and pollution control system. This water must be first treated to remove undesirable constituents that could foul the cooling or pollution control equipment. The water treatment facilities for the proposed project would include a small water treatment plant and aboveground storage tanks for fire water, demineralized water, and treated water, which would range from 50 to 75 feet in diameter. These facilities would be sited directly north of the gas compressor units and would require a total footprint of approximately 0.5 acres.

Administrative, maintenance, and control buildings would also be required to operate the proposed SCGS. These facilities would be located east of the southernmost generator units and would require about 1.0 acre of land.

1.5.2 PROJECT CONSTRUCTION

Construction of the proposed project is scheduled to begin the third quarter of 2010 and continue to completion in the last quarter of 2012. Construction of the SCGS would consist of several tasks, including mobilization; site clearing and grading; pile driving; foundation construction; component acquisition and fabrication; erection of the generator units, cooling units, and switchyard; and system startup and commissioning. While these various tasks are distinct and while some tasks must precede others at a given location, some would occur concurrently at different locations within the project site as construction of the six CT generators and associated facilities proceeds. The exact phasing and overlap of the tasks would be determined prior to the start of construction, but the total construction period, from mobilization to completion of generator commissioning, is anticipated to last approximately 26 months.

Construction activities would normally occur Mondays through Saturdays from 7:00 a.m. to 3:30 p.m. To ensure that construction activities stay on schedule, two shifts per day that would exceed these time limits may be necessary at times during the construction period, and occasional Sunday shifts may also be required. During the construction of the CCGS at HnGS (Units 3 and 4 repowering) in 2004, construction activities by reduced work crews were sometimes conducted until approximately 7:00 p.m., Mondays through Fridays. Some construction activities must be conducted continuously until complete (e.g., during construction of the CCGS, welding activities that could not be interrupted were conducted throughout the night over a two month period). Activities by smaller work crews were conducted on approximately half the Saturdays during construction of the CCGS. Most construction activities for the proposed project conducted after normal weekday working hours (3:30 p.m.) or on Saturdays and Sundays would not be the type that would create high noise levels or require high lighting levels.

A total of approximately 270 workers could be present at the site on the same day, in either one or two shifts, during the peak project construction period when simultaneous foundation and SCGS erection work would be underway. This peak period is expected to occur for several months in 2011.

After the SCGS construction is complete but prior to producing electrical energy for distribution to the LADWP service area, the SCGS would undergo a comprehensive commissioning program to evaluate and calibrate the various systems. This commissioning program includes testing and synchronizing the CT generator electrical and mechanical systems and completing simple cycle trial runs. The commissioning phase of the proposed project requires approximately 3 to 4 months and generally involves a total on-site work force of 100 or fewer personnel.

1.5.3 PROJECT OPERATIONS

The SCGS would include six simple cycle CT generator units. The equipment would be designed to provide a net load capacity of 600 MW. The SCGS would be fired by natural gas. Natural gas would be obtained through the site's existing gas supply lines. Gas compressor units would be required to boost the pressure of the gas at the turbine combustor above the pressure of the air from the high pressure compressor of the turbine. The proposed CTs would use a combination of processes to control air pollutant emissions. The combustors in the CTs would use water injection to reduce nitrogen oxides (NO_x) emissions. A selective catalytic reduction (SCR) system also would be provided for the CTs that would use a catalyst to facilitate a reaction between NO_x and aqueous ammonia to reduce NO_x emissions and produce nitrogen and water. A carbon monoxide (CO) catalyst, which would reduce both CO and volatile organic compound (VOC) emissions, would also be installed to comply with the SCAQMD's New Source Review and Best Available Control Technology (BACT) requirements.

The proposed SCGS would be cooled by dry cooling units utilizing a closed-loop water system to transfer heat from the CTs to the units. Each CT would have an intercooler in the compression section of the turbine in which warm air, discharged from the low pressure compressor, would be sent to an air-to-water heat exchanger for cooling before returning to the high pressure compressor section of the turbine assembly. This inter-stage cooling provides cooler flow to the high pressure compressor and substantially increases overall efficiency and power output. The warm water from the heat exchanger would be sent to one of six dry cooling units (one for each CT). The water would be cooled by fans that would draw cooler air over the tubes containing the warmer water, and the cooled water would then be pumped back to the heat exchangers. In addition, the proposed project would result in the decommissioning of the portion of the plant's existing once-through cooling water circulation system that is currently utilized for Units 5 and 6. The plant's existing once-through cooling water circulation system would continue to serve Units 1, 2, and 8.

Aqueous ammonia (ammonium hydroxide at 29.5 percent concentration by weight) is presently used in the SCR systems in existing HnGS Units 1, 2, 5, 6, 9, and 10 to reduce NO_x emissions. Aqueous ammonia would also be used in the proposed SCGS that would replace Units 5 and 6. No new ammonia storage or deliveries would be required for the proposed project since ammonia used for the SCGS would be offset by the removal from service of existing Units 5 and 6.

Once constructed, the proposed project would not require additional personnel beyond those currently employed at HnGS to support site operations. The facility would be capable of operating 24 hours per day, seven days per week. The estimated life of the new SCGS at HnGS is expected to be more than 25 years.

1.6 SUMMARY OF ENVIRONMENTAL IMPACTS

The proposed project for the HnGS Units 5 and 6 Repowering has been evaluated relative to its potential to create significant adverse effects on the environment. An Initial Study (contained in Appendix A) conducted for the proposed project identified potentially significant impacts to air quality; marine resources (biology and water quality); storm water, hydrology and water supply; noise; and transportation and traffic. The Initial Study concluded that an EIR was required to analyze these potential effects and discuss possible mitigation measures and alternatives that may reduce or eliminate them.

In accordance with CEQA, when these effects, even with the application of mitigation measures, cannot be reduced to a less than significant level, they must be identified as unavoidable significant impacts of the proposed project. The analysis in this EIR shows that the only significant environmental impacts that are unavoidable (cannot be mitigated to less than significant) relate to short-term construction noise occurring from pile driving and the short-term air quality impacts associated with commissioning and testing of the SCGS. The impacts and mitigation measures that have been proposed in the EIR to help reduce the magnitude of impacts are summarized in Table 1.6-1.

Table 1.6-1
Summary of Environmental Impacts and Mitigation Measures

IMPACTS	SIGNIFICANCE DETERMINATION	MITIGATION MEASURES	RESIDUAL IMPACT AFTER MITIGATION
Air Quality			
AIR1 During project construction, less than significant amounts of criteria pollutants would be emitted from earthmoving, construction worker travel, and general construction activities.	Less than significant	No specific mitigation measures required outside of regulatory requirements that include compliance with SCAQMD standard rules such as Rule 403 (dust mitigation) and Rule 1113 (architectural coatings).	Less than significant
AIR2 During construction, traffic would generate less than significant localized CO hot spot impacts. The project would not significantly affect traffic levels of service in the area; therefore, no CO hot spots would occur.	Less than significant	No mitigation measures are necessary.	Less than significant
AIR3 During construction, the proposed project would have significant short-term impacts on air quality during SCGS testing and commissioning. Based on the required testing scenario pollutant thresholds for daily emissions would be exceeded.	Significant	No mitigation measures are feasible to reduce commissioning emissions to less than significant.	Significant
AIR4 During construction, the proposed project would have less than significant GHG emissions during project construction. Based on the proposed	Less than significant	No mitigation measures are necessary.	Less than significant

IMPACTS	SIGNIFICANCE DETERMINATION	MITIGATION MEASURES	RESIDUAL IMPACT AFTER MITIGATION
inventory of construction equipment to be utilized, SCAQMD thresholds for GHG emissions during construction would not be exceeded.			
AIR5 During operations, the proposed project would generate less than significant criteria pollutant emissions on a daily basis. The proposed SCGS results in a net reduction in criteria pollutants compared to the existing Units 5 and 6 that are being replaced. Reclaim program NO_x emissions are also reduced with the proposed project.	Less than significant	No specific mitigation measures are required outside of the pollution control packages integrated with the SCGS.	Less than significant
AIR6 During operations, the proposed project would create less than significant public health impacts due to TAC emissions from the SCGS. Based on results of the risk assessment, the project poses an insignificant incremental cancer risk and non-cancer health risk impact.	Less than significant	No mitigation measures are necessary.	Less than significant
AIR7 During project operations, the project would emit less than significant amounts of GHG. The proposed project reduces the amount of GHG emitted at	Less than significant	No mitigation measures are necessary.	Less than significant

IMPACTS	SIGNIFICANCE DETERMINATION	MITIGATION MEASURES	RESIDUAL IMPACT AFTER MITIGATION
HnGS and would not exceed the SCAQMD interim significance threshold of 10,000 MT per year of CO_2e for industrial projects.			
Marine Resources (Water Quality and Biology)			
MWQ1 Discontinuation of cooling water flows associated with the decommissioning of Units 5 and 6 would not have an adverse impact on key water quality parameters in Alamitos Bay. LADWP modeled the flow characteristics and water quality (dissolved oxygen and chlorophyll *a*) impacts in Alamitos Bay that would result from the cessation of ocean water cooling. No significant impacts to water quality are expected.	Less than significant	No mitigation measures are required.	Less than significant
MWQ2 Discontinuation of cooling water flows associated with decommissioning Units 5 and 6 would not have an adverse impact on key water quality parameters in the HnGS intake channel. LADWP modeled the flow characteristics and water quality (dissolved oxygen and chlorophyll *a*) impacts in the HnGS intake channel that would result from the cessation of ocean water cooling. No significant impacts to water quality are expected.	Less than significant	No mitigation measures are required.	Less than significant

IMPACTS	SIGNIFICANCE DETERMINATION	MITIGATION MEASURES	RESIDUAL IMPACT AFTER MITIGATION
MWQ3 Discontinuation of cooling water flows associated with decommissioning of Units 5 and 6 would not have an adverse impact on key water quality parameters in the San Gabriel River. LADWP modeled the flow characteristics and water quality impacts in the HnGS Intake Canal that would result from the cessation of ocean water cooling. Less than significant impacts were forecasted.	Less than significant	No mitigation measures are required.	Less than significant
MBIO1 No adverse impacts to eelgrass would occur due to changes in water quality and flow associated with the proposed project. Changes in flows through the Alamitos Bay and the Haynes intake channel would not affect sensitive eelgrass beds.	Less than significant	No mitigation measures are necessary.	Less than significant
MBIO2 No adverse impacts to marine turtles would occur due to changes in water quality and flow associated with the proposed project. The green sea turtle population would not be affected by any aspects of the proposed project.	Less than significant	No mitigation measures are required.	Less than significant
MBIO3 No adverse impacts to Pacific Groundfish and Coastal Pelagics would occur due to changes in water quality and flow associated with the proposed project. Changes in water temperature caused by cessation of	Less than significant	No mitigation measures are required.	Less than significant

IMPACTS	SIGNIFICANCE DETERMINATION	MITIGATION MEASURES	RESIDUAL IMPACT AFTER MITIGATION
cooling water discharges would not significantly or adversely alter habitat conditions in the San Gabriel River or Alamitos Bay for noted fish species.			
MBIO4 No adverse impacts to marine resources would occur during project construction. No in-water construction would occur under the proposed project.	No impact	No mitigation measures are required.	No impact
Water Runoff, Supply, and Treatment			
WATER1 Construction and operation of the proposed project would not create significant impacts related to the alteration of on-site surface drainage patterns. Minor changes to on-site drainage would be made in conjunction with project construction necessitating regulatory amendment of the storm water pollution prevention plan and storm water discharge permits.	Less than significant	No mitigation measures are necessary.	Less than significant
WATER2 The proposed project would not create a significant impact related to an increased requirement for water resources. There would be an incremental reduction in water demand associated with the implementation of the proposed project, and there would be no impact related to water resources.	No impact	No mitigation measures are necessary.	No impact
WATER3 The proposed project would not create a significant impact related to	No impact	No mitigation measures are required.	No impact

IMPACTS	SIGNIFICANCE DETERMINATION	MITIGATION MEASURES	RESIDUAL IMPACT AFTER MITIGATION
quantity of wastewater generated and discharged to the San Gabriel River from on-site treatment facilities. There would be an incremental reduction in wastewater generation associated with the implementation of the proposed project, and there would be no impact related to wastewater flow.			
WATER4 The use of reclaimed water would not create a significant water quality impact related to the discharge of wastewater generated by the proposed project.	Less than significant	No mitigation measures are required.	Less than significant
WATER5 The proposed project would not adversely affect the capacity of industrial wastewater treatment facilities at HnGS. The proposed project would result in a net reduction in wastewater flow of about 140,000 gallons per day. Therefore, the proposed project would not have a significant adverse impact on wastewater flows and would actually benefit the wastewater operation by reducing treatment demand.	Less than significant	No mitigation measures are required.	Less than significant
Noise & Vibration			
N1 Significant short-term noise impacts will result from general construction activities.	Significant	**N1-1** All construction equipment shall be properly maintained and equipped with mufflers and other suitable noise attenuation devices.	Less than significant

IMPACTS	SIGNIFICANCE DETERMINATION	MITIGATION MEASURES	RESIDUAL IMPACT AFTER MITIGATION
		N1-2 A solid physical barrier shall be used on the perimeter of construction sites to block the line-of-sight from receptor to source, when feasible and necessary, to minimize noise to nearby noise-sensitive receptors. This perimeter fencing shall not have perforations or gaps. **N1-3** Grading and construction contractors shall endeavor to use quieter equipment as opposed to noisier equipment (such as rubber-tired equipment rather than track equipment). **N1-4** A public liaison for project construction shall be identified who shall be responsible for addressing public concerns about construction activities, including excessive noise. The liaison shall determine the cause of the concern (e.g., starting too early, bad muffler, etc.) and shall be authorized to implement reasonable measures to address the concern. **N1-5** Leisure World residential community, which may potentially be affected by construction activity, shall be sent a notice regarding the construction schedule of the proposed project. The notice shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register concerns. **N1-6** The construction contractor shall ensure that all stockpiling and vehicle staging areas are located away from noise-sensitive receivers, to the extent feasible.	
N2 Construction noise generation that is not consistent with the Long Beach Municipal Code may result in a	Significant	**N2-1** The construction contractor shall plan work such that activities that generate high noise levels will not be started during the hours codified in the LBMC, and all	Less than significant

IMPACTS	SIGNIFICANCE DETERMINATION	MITIGATION MEASURES	RESIDUAL IMPACT AFTER MITIGATION
significant impact.		reasonable efforts to conclude work in progress prior to the hours codified in the LBMC will be taken by the construction contractor.	
N3 Short-term significant noise impacts will result from construction pile driving.	Significant	The noise impact of driven piles cannot practically be mitigated to a less than significant level.	Significant
N4 A less than significant short-term noise impact results from construction delivery trucks. Noise generated by construction delivery truck would not exceed the significance threshold.	Less than significant	No mitigation measures are required.	Less than significant
N5 Long-term noise impacts resulting from new stationary noise sources would be less than significant. Operational noise would not exceed Noise District Four requirements of 65 dBA at the boundary limits.	Less than significant	No mitigation measures are required.	Less than significant
N6 Short-term ground-borne vibration impacts from construction activity would be less than significant.	Less than significant	No mitigation measures are required.	Less than significant
Transportation and Traffic			
TT1 The proposed project would have less than significant impact relative to construction traffic. The addition of project construction traffic would not result in any intersection changing during one or both peak hours from good LOS (LOS A, B, C, and D) to poor LOS (LOS E and F).	Less than significant	No mitigation measures are required.	Less than significant

IMPACTS	SIGNIFICANCE DETERMINATION	MITIGATION MEASURES	RESIDUAL IMPACT AFTER MITIGATION
TT2 The proposed project is consistent with the Los Angeles County and Orange County CMPs. There would be no Los Angeles County freeway monitoring locations in the project vicinity. In addition, due to the project's peak daily trip generation forecast, the project is exempt from further analysis that the County of Orange CMP would otherwise require for roadway segments or freeway segments.	No impact	No mitigation measures are required.	No impact

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1.7 ALTERNATIVES TO THE PROPOSED PROJECT

The proposed project was found to cause temporary significant impacts related to air quality during the initial commissioning of the CTs and related to noise resulting from pile driving during construction and from other general construction activity. The following alternatives were developed to provide a range of reasonable options to the proposed project that might address these environmental impacts. Table 1.7-1 provides a summary of the alternatives to the proposed projects.

1.7.1 ALTERNATIVE 1: NO PROJECT

An evaluation of a No Project Alternative is required under CEQA. Under this alternative, the proposed project would not be implemented. The SCGS would not be constructed, and existing HnGS generator Units 5 and 6 would remain in service with no modifications.

The No Project Alternative is a technically feasible alternative to the proposed project. However, because the No Project Alternative would leave Units 5 and 6 in operation with no modifications, it would be in direct violation of the formal Settlement Agreement between LADWP and SCAQMD, which stipulates repowering of the generator units at HnGS. In addition, while it would continue to help meet the energy demands of the City of Los Angeles (since Units 5 and 6 would remain in operation at their existing generating capacities), this alternative would not meet any of the other objectives identified for the project.

The No Project Alternative would avoid the significant temporary impacts to air quality and noise associated with the proposed project. Since no construction activities for the proposed project would occur at HnGS, no related impacts would occur. However, long-term impacts related to higher levels of air pollutant emissions and lower fuel efficiency (and the associated production of GHGs) related to the continued operation of Units 5 and 6 when compared to the proposed project would remain.

1.7.2 ALTERNATIVE 2: RELOCATE THE SCGS WITHIN THE HNGS PROPERTY

Under Alternative 2, the SCGS would still be constructed, and existing generator Units 5 and 6 would be removed from service; however, the SCGS would be relocated to another site within the HnGS property to help reduce potential impacts to adjacent areas from the noise created by construction activities. Because the SCGS would still undergo commissioning procedures, Alternative 2 would not reduce the temporary significant impacts to air quality associated with the proposed project.

The area at the north end of the HnGS property (north of the proposed project site) would generally be large enough to accommodate the SCGS. Construction of the SCGS in this location would require the acquisition of approximately 2.5 acres of Southern California Edison Company (SCE) property as well as the relocation of several existing facilities, including five

SCE high-voltage transmission towers, a Southern California Gas Company pressure regulating station, and underground gas lines. However, this alternative location would not reduce the impacts related to noise because relative to the proposed project, it would place construction activities closer to sensitive receptors east of HnGS.

The majority of the remainder of the HnGS property (south of the proposed project site) is dedicated to existing generator units and related support functions. Relocating the proposed project to these areas in order to potentially reduce construction noise impacts would require the removal of existing generators Units 3 and 4 (which are non-operational) as well as Units 5 and 6 (which are still operating generators). Since Units 5 and 6 must remain operational until the proposed project is available to replace their generation capacity, they could not be demolished to accommodate the construction of the SCGS. Even if Units 5 and 6 could be retired prior to construction of the SCGS, the demolition of the existing units (3, 4, 5, and 6) to make way for the SCGS would require significant time (up to 4 years), which would jeopardize the December 2013 completion date for the HnGS repowering stipulated in the formal Settlement Agreement between LADWP and the SCAQMD. Furthermore, since the demolition activity required under Alternative 2 would significantly expand the scope of project construction and lengthen the period of construction, it would in itself create additional impacts, including those related to noise, traffic, and air quality.

1.7.3 ALTERNATIVE 3: MODIFY EXISTING UNITS 5 AND 6

Under Alternative 3, the SCGS, as described in the proposed project, would not be constructed. Instead, Units 5 and 6 would be left in place but modified to help achieve the reductions in air pollutant emissions, fuel consumption, and the production of GHGs that would be attained by the project. Units 5 and 6 have been maintained and upgraded since their original construction in the mid-1960s to increase efficiency and reduce air emissions. This includes a conversion from fuel oil to natural gas for combustion in the steam boilers and the installation of SCRs and other BACT to control air pollutant emissions. However, since Units 5 and 6 rely on outdated steam boiler technology (as opposed to the modern CT technology of the SCGS), significant additional improvements to generator operations are limited. Given the age of the units (each over 40 years), further upgrades or modifications that would markedly increase efficiency and reduce emissions are effectively infeasible. Major improvements would involve retrofitting that would require the demolition of large portions of, if not essentially the entire generator units. The benefits expected from such a retrofit would be minimal in comparison to the environmental and economic benefits that would be attained by the proposed project. Furthermore, as discussed under Alternative 2, demolition activities would require significant time that may jeopardize the completion date for the HnGS repowering stipulated in the formal Settlement Agreement between LADWP and SCAQMD. Given the nature of steam boiler operations (which require significantly greater cooling than the CTs in the SCGS), the alteration of the existing cooling system for Units 5 and 6 to eliminate once-through ocean water cooling would likewise be infeasible due to insufficient area necessary to accommodate cooling towers, which would need to be significantly larger than those required for the proposed SCGS.

1.7.4 ALTERNATIVE 4: CONSTRUCT SCGS AT ALTERNATIVE LOCATION

Under Alternative 4, the SCGS would not be constructed at HnGS. However, a SCGS, as described in the proposed project, would be constructed at another location. Analysis of alternative locations is intended to determine if development of the project at a different site could reduce the significant impacts associated with development at the proposed project site.

Alternative 4 is technically feasible, but may be cost prohibitive because of the expense associated with property acquisition for the generator site itself as well as right of way acquisition for new or expanded transmission facilities. However, as stated above, the Settlement Agreement specifies that Units 5 and 6 shall be repowered at HnGS, which would not be achieved under this alternative. Because it would remove existing HnGS Units 5 and 6 from service and replace their generation capacity with a SCGS similar to that in the proposed project, this alternative would attain most of the objectives of the proposed project. While Alternative 4 would eliminate the short-term impacts directly associated with construction at HnGS, similar or greater construction-related impacts may be expected at an alternative location. In addition, because of issues inherent with the construction and operation of a SCGS outside the boundaries of an existing generating station, Alternative 4 would likely result in significant long-term impacts not caused by the proposed project, including impacts that would extend beyond the boundary of the new generation station itself.

1.7.5 ALTERNATIVE 5: DEVELOP ALTERNATIVE ENERGY SOURCES

Under Alternative 5, existing HnGS generator Units 5 and 6 would be removed from service, but the SCGS, as described in the proposed project, would not be constructed. Instead, the generation capacity of Units 5 and 6 would be replaced through the development of alternative sources of energy that could also achieve reductions in air pollutant emissions, fuel consumption, and the production of GHGs.

LADWP is currently involved in an aggressive alternative energy programs. The programs include demand side management (DSM) programs, Residential Consumer Rebate program, and distributed generation (DG) that places small electric generators of various types at or near the point of demand. LADWP initiated new solar energy plan entitled Solar LA that establishes a goal of developing 1,280 MW of solar energy by 2020, enough to serve about 10 percent of Los Angeles' electrical needs. LADWP has proposed a Renewable Portfolio Standard (RPS) intended to increase the amount of energy it produces from renewable energy sources. The goal of the RPS is to improve air quality, reduce GHGs, and provide a sustainable energy resource by lessening dependence on fossil fuels to generate power.

Although such programs are technically feasible and represent a means of achieving objectives similar to those of the proposed project, they do not represent a feasible alternative to the project because their implementation has already been accounted for in the assessment of the need for the project. Programs such as DSM, DG, and renewable energy are complementary to the proposed project and will continue as planned whether or not the project is implemented. Furthermore, a specific objective of the proposed SCGS is to integrate intermittent and unpredictable wind power generation sources into the LADWP generation system to more effectively utilize wind resources and reduce overall dependency on fossil fuel resources. The proposed repowering project is in fact a component of, not supplemental to, the alternative energy programs.

1.7.6 ALTERNATIVE 6: PURCHASE ADDITIONAL ENERGY

Under Alternative 6, existing HnGS generator Units 5 and 6 would be removed from service, but the SCGS, as described in the proposed project, would not be constructed. Instead, the generation capacity of Units 5 and 6 would be replaced through the purchase of additional energy from outside (non-LADWP) sources.

Alternative 6 is technically feasible, but it would only partially attain the proposed project objectives. It would eliminate the significant short-term impacts resulting from the proposed project. However, it may result in other currently unpredictable and nonquantifiable environmental impacts related to the production and transmission of the purchased energy.

TABLE 1.7-1
SUMMARY OF ALTERNATIVES

Alt.	Description	Feasibility	Attainment of Proposed Project Objectives	Elimination/Substantial Reduction of Proposed Project Impacts	Additional Impacts
1	No Project	Technically feasible, but would violate SCAQMD Settlement Agreement	• Would not achieve a net reduction in air pollutant emissions • Would not reduce the consumption of natural gas or the production of GHGs • Would not facilitate integration of wind power resources into LADWP generation system • Would provide for the energy demands of the City of Los Angeles • Would not increase the reliability of the electrical power generation system • Would not reduce the use of ocean water cooling at HnGS	• Would eliminate short-term construction impacts to air quality at HnGS • Would eliminate short-term construction impacts related to noise at HnGS	• Would result in greater long-term impacts to air quality • Would result in greater long-term impacts related to fuel consumption and GHGs
2	Relocate the SCGS within the HnGS Property	Infeasible	• Not applicable due to infeasibility	• Not applicable due to infeasibility	• Not applicable due to infeasibility
3	Modify Units 5 & 6	Infeasible	• Not applicable due to infeasibility	• Not applicable due to infeasibility	• Not applicable due to infeasibility
4	Construct SCGS at an alternative location (outside HnGS)	Technically feasible, but potentially cost prohibitive and may violate SCAQMD	• Would achieve a net reduction in air pollutant emissions • Would reduce the consumption of natural gas and the production of GHGs	• Would eliminate short-term construction impacts to air quality at HnGS • Would eliminate short-term construction impacts related to noise at HnGS	• May result in similar or greater short-term construction-related impacts at alternative location • Would likely result in significant long-term impacts to aesthetics, noise, safety.

Alt.	Description	Feasibility	Attainment of Proposed Project Objectives	Elimination/Substantial Reduction of Proposed Project Impacts	Additional Impacts
		Settlement Agreement	• Would facilitate integration of wind power resources into LADWP generation system • Would provide for the energy demands of the City of Los Angeles • May not increase the reliability of the electrical power generation system • Would reduce the use of ocean water cooling at HnGS		• May result in other long-term impacts to resources (biological, cultural, traffic, localized air quality) that cannot be accurately predicted.
5	Develop Alternative Energy Sources	Infeasible	• Not applicable due to infeasibility	• Not applicable due to infeasibility	• Not applicable due to infeasibility
6	Purchase Additional Energy from Outside Sources	Feasible	• May not achieve a net reduction in air pollutant emissions • May not reduce the consumption of natural gas and the production of GHGs • Would not facilitate integration of wind power resources into LADWP generation system • Would partially provide for the energy demands of the City of Los Angeles • Would not increase the reliability of the electrical power generation system • Would reduce the use of ocean water cooling at HnGS	• Would eliminate short-term construction impacts to air quality at HnGS • Would eliminate short-term construction impacts related to noise at HnGS	• May result in additional but currently unpr*edictable and nonquantifiable* impacts not created by the proposed project related to the production and transmission of purchased energy

CHAPTER 2.0
INTRODUCTION

2.1 PURPOSE OF THE EIR

This Draft Environmental Impact Report (EIR) has been prepared to evaluate potential effects on the environment associated with the Haynes Generating Station (HnGS) Units 5 and 6 Repowering Project (proposed project), which is located in the City of Long Beach, California. The City of Los Angeles Department of Water and Power (LADWP) is the public agency with the principal responsibility for carrying out and approving the proposed project and is the lead agency under the California Environmental Quality Act (CEQA) responsible for preparing the EIR.

The EIR serves as an informational document for decision makers and the public regarding potential environmental impacts of the proposed project. It will be used by LADWP and responsible agencies with approval authority for the proposed project in assessing such impacts and their possible mitigation. These agencies must take into account the information in this EIR before considering approvals for the proposed project. This EIR is not a policy document of LADWP regarding the desirability of the proposed project or any of the potential project alternatives discussed herein.

2.2 REQUIREMENTS AND PROCEDURES OF THE EIR

This EIR was prepared in accordance with CEQA, as amended (Public Resources Code, Section 21000 et seq.), the State Guidelines for Implementation of CEQA (State CEQA Guidelines), as amended (California Code of Regulations, Section 15000 et seq.), and the City of Los Angeles CEQA Guidelines. The State CEQA Guidelines require that the EIR contain certain essential elements of discussion. Table 2-1 identifies each element required by CEQA and the corresponding section(s) in this EIR where the elements are addressed.

In accordance with CEQA, an Initial Study was prepared by LADWP in April 2009 to evaluate the potential for environmental impacts from the proposed project. The Initial Study is contained in Appendix A of the Draft EIR. The Initial Study concluded that the proposed project may have a significant effect on the environment and that an EIR was required to analyze potential effects and identify possible mitigation measures and alternatives to the project that may reduce or eliminate those effects. A Notice of Preparation (NOP) for the EIR was issued by LADWP on April 16, 2009. It was circulated with the Initial Study for review by concerned public agencies and other interested parties. Review comments for the NOP were received from the Native American Heritage Commission; California Department of Transportation (Caltrans), Division of Aeronautics; City of Seal Beach; Orange County Airport Land Use Commission; South Coast Air Quality Management District (SCAQMD); and Caltrans District 7, Regional Planning.

The NOP and the comments received from its review are contained in Appendix A. The Initial Study concluded that significant effects on the environment may occur from the proposed project with respect to air quality; marine biological resources and marine water quality; water runoff, treatment, and supply; noise; and transportation and traffic. As a result, these issues are addressed in detail in this EIR.

Table 2.2-1
Required EIR Discussion Elements

	Required Element	**Section of EIR**
1.	Table of Contents (Section 15122 of the State CEQA Guidelines)	Table of Contents
2.	Summary (Section 15123 of the State CEQA Guidelines)	Chapter 1
3.	Project Description (Section 15124 of the State CEQA Guidelines)	Chapter 3
4.	Environmental Setting (Section 15125 of the State CEQA Guidelines)	Chapter 3 & 4
5.	Environmental Impact (Section 15126 of the State CEQA Guidelines) - Significant Environmental Effects - Significant Environmental Effects That Cannot be Avoided - Mitigation Measures	Chapter 4
6.	Alternatives to the Proposed Project (Section 15126 of the State CEQA Guidelines)	Chapter 5
7.	Significant Irreversible Environmental Changes (Section 15126 of the State CEQA Guidelines)	Chapter 6
8.	Growth-Inducing Impacts (Section 15126 of the State CEQA Guidelines)	Chapter 7
9.	Organizations and Persons Consulted and List of Preparers	Chapter 8

In accordance with Section 21086.1 of CEQA, a public agency is required to adopt a program for monitoring mitigation measures or conditions of project approval that reduce or eliminate significant effects on the environment. LADWP will prepare a Mitigation Monitoring and Reporting Program (MMRP) for the proposed project as a separate document and will submit it to approving agencies with the Final EIR prior to considering the proposed project for approval. The MMRP will include measures or conditions for those potentially significant effects that were identified in the EIR but were capable of being reduced to a less than significant level with appropriate mitigation. It will also include mitigation measures that would reduce, although not to a less than significant level, those effects that have been determined to be unavoidable significant impacts in the EIR.

2.3 PUBLIC REVIEW

The Draft EIR is available for review at the following locations.

Location	**Address**
LADWP – Corporate Environmental Services	111 N. Hope St., Room 1044, L.A., 90012
Bay Shore Library	195 Bay Shore Ave., Long Beach, 90803
Leisure World Library	1121 Northwood Rd., Seal Beach, 90740

The Draft EIR is available for review at http://www.ladwp.com/ladwp/cms/ladwp004156.jsp. Organizations and individuals are invited to comment on the issues presented in the Draft EIR during the public review period. Comments received and responses to those comments will be included in the Final EIR prior to its certification and the consideration of approval of the proposed project.

2.4 LEAD AGENCY AND DISCRETIONARY ACTIONS

LADWP, as the public agency with the principal responsibility for carrying out and approving the proposed project, is the lead agency responsible for preparing the EIR, pursuant to Section 15367 of the State CEQA Guidelines. The EIR is intended to provide information to other agencies that may have an interest in the proposed project and its potential environmental effects and may have approval or review authority for one or more actions involved with the proposed project. For the proposed project, SCAQMD and the Regional Water Quality Control Board (RWQCB) are considered responsible agencies under CEQA. A responsible agency "means a public agency which proposes to approve a project for which a lead agency is preparing an EIR" (CEQA Guidelines Section 15381). SCAQMD would need to issue permits for both the construction and operation of the proposed project. The State Water Resources Control Board (SWRCB) would need to issue a Waste Discharge Identification (WDID) under the statewide General Permit for Discharges of Storm Water Associated with Construction Activity for the construction of the proposed project. The proposed project would operate under the provisions of the HnGS National Pollution Discharge Elimination System (NPDES) Waste Discharge Permit under the authority of the RWQCB.

The following primary discretionary actions are expected for the proposed project.

- Certification by the Board of the LADWP that the EIR was prepared in compliance with CEQA, the State CEQA Guidelines, and the City of Los Angeles CEQA Guidelines and that the information contained in the EIR was considered in the decision regarding the proposed project.
- Approval by the Board of the LADWP to construct the proposed project.

- Approval by the SCAQMD of a Permit to Construct and Permit to Operate the proposed project.
- Issuance by the SWRCB of a WDID under the statewide General Permit for Discharges of Storm Water Associated with Construction Activity upon receipt of a Notice of Intent to construct from the applicant.

The proposed project would also fall under various other federal, state, and local laws, some of which may also require regulatory action by governmental agencies. For example, use of oversize loads on trucks and transportation of hazardous/flammable materials requires a transportation permit from Caltrans and California Highway Patrol. Use and storage of hazardous materials on the site requires compliance with the Resource Conservation and Recovery Act under state and federal Environmental Protection Agencies.

2.5 CONTACT PERSONS

The primary contact person for this EIR is Ms. Adrene Briones, Los Angeles Department of Water and Power, 111 North Hope Street, Room 1044, Los Angeles, CA 90012. Ms. Briones can be reached via email at Adrene.Briones@ladwp.com and by fax at (213) 367-4710. A secondary point of contact is Mr. Charles Holloway who can be reached via email at Charles.Holloway@ladwp.com.

CHAPTER 3.0
PROJECT DESCRIPTION

3.1 OVERVIEW OF THE PROPOSED PROJECT

LADWP proposes to construct a new electrical simple cycle generating station (SCGS) at the existing HnGS in Long Beach, California. The proposed SCGS would include six new natural gas-fired combustion turbine (CT) generators (at 100 MW net capacity each), associated cooling and pollution control systems, and other ancillary facilities. The new generation units would be designated Units 11, 12, 13, 14, 15, and 16 and would provide a total net generating capacity of 600 MW. The proposed project includes decommissioning of two existing steam boiler generators (Units 5 and 6) that also have a total net generation capacity of 600 MW. The proposed project is being implemented in part pursuant to a formal Settlement Agreement between LADWP and the SCAQMD related to air pollutant emissions from stationary sources under the Regional Clean Air Incentives Market (RECLAIM) program. The proposed SCGS would substantially improve the LADWP generation system efficiency, reliability, and flexibility compared to the existing steam boiler units it would replace. It would also provide effective load following capability that would maximize the utilization of wind power within the LADWP generation system.

3.2 PROJECT LOCATION

HnGS is located at 6801 East 2nd Street in the City of Long Beach, immediately south of State Route 22 (Garden Grove Freeway) and approximately one mile east of State Route 1 (Pacific Coast Highway). Figure 3-1 shows HnGS in relation to the region. Access to HnGS is provided from 2nd Street, which forms the southern property boundary. Seventh Street (State Route 22) serves as the northern site boundary; only emergency access is provided from this street. On the west, the project site is bordered by the San Gabriel River channel, and the eastern boundary is formed by an Orange County flood control channel.

3.3 HISTORICAL PERSPECTIVE AND CURRENT OPERATIONS AT HnGS

The site of HnGS was acquired by LADWP in 1957 for the purpose of constructing a generating facility to replace the Seal Beach Steam Generating Plant, which had been operating in the area since the 1920s. Units 1 and 2 at HnGS were placed into operation in 1962 and 1963, respectively; Units 3 and 4 were placed into operation in 1964 and 1965, respectively; and Units 5 and 6 were placed into operation in 1966 and 1967, respectively. Unit 7 (a 2 MW emergency backup power generator) was added in 1970. In 2004, a combined cycle generating system (CCGS; Units 8, 9, and 10) with a rated net capacity of 575 MW replaced the generation capacity of steam boiler Units 3 and 4, which were decommissioned. As part of the CCGS project, Unit 6 was also physically altered to reduce its net generating capacity from 341 MW to 259 MW. Currently, the installed total net generating capacity at HnGS is 1,619 MW. The former and current net capacities for generators at HnGS are summarized below (excluding the emergency generator):

Original Generating Capacity:

Unit 1	222 MW
Unit 2	222 MW
Unit 3	222 MW
Unit 4	222 MW
Unit 5	341 MW
Unit 6	341 MW
Total	1570 MW

Changes resulting from Units 3 and 4 Repowering (2004):

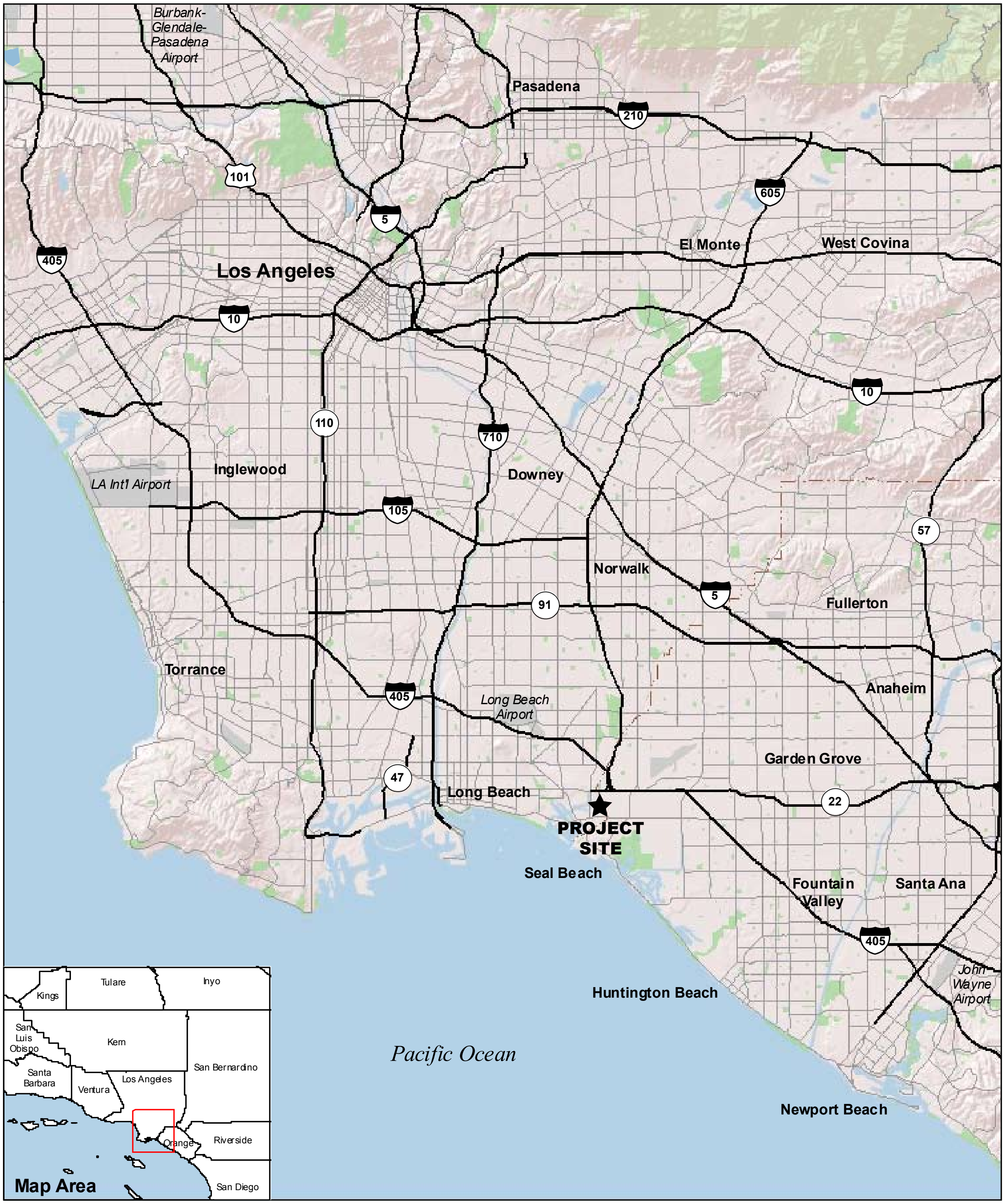
Unit 3	-222 MW	(permanently disabled)
Unit 4	-222 MW	(permanently disabled)
Unit 6	-82 MW	(permanently derated)
CCGS	575 MW	(total of Units 8, 9, and 10)
Total	49 MW	(net gain for HnGS)

3.4 EXISTING SITE DESCRIPTION

HnGS is an electric power generating facility that supplies power to the LADWP power distribution grid. HnGS is a largely developed industrial property consisting of approximately 120 acres, the majority of which is located in the City of Long Beach, County of Los Angeles. Approximately 10 acres in the northeast corner of the HnGS property are located in the City of Seal Beach, County of Orange. The proposed project would be located in the west-central portion of the HnGS property, entirely within the City of Long Beach.

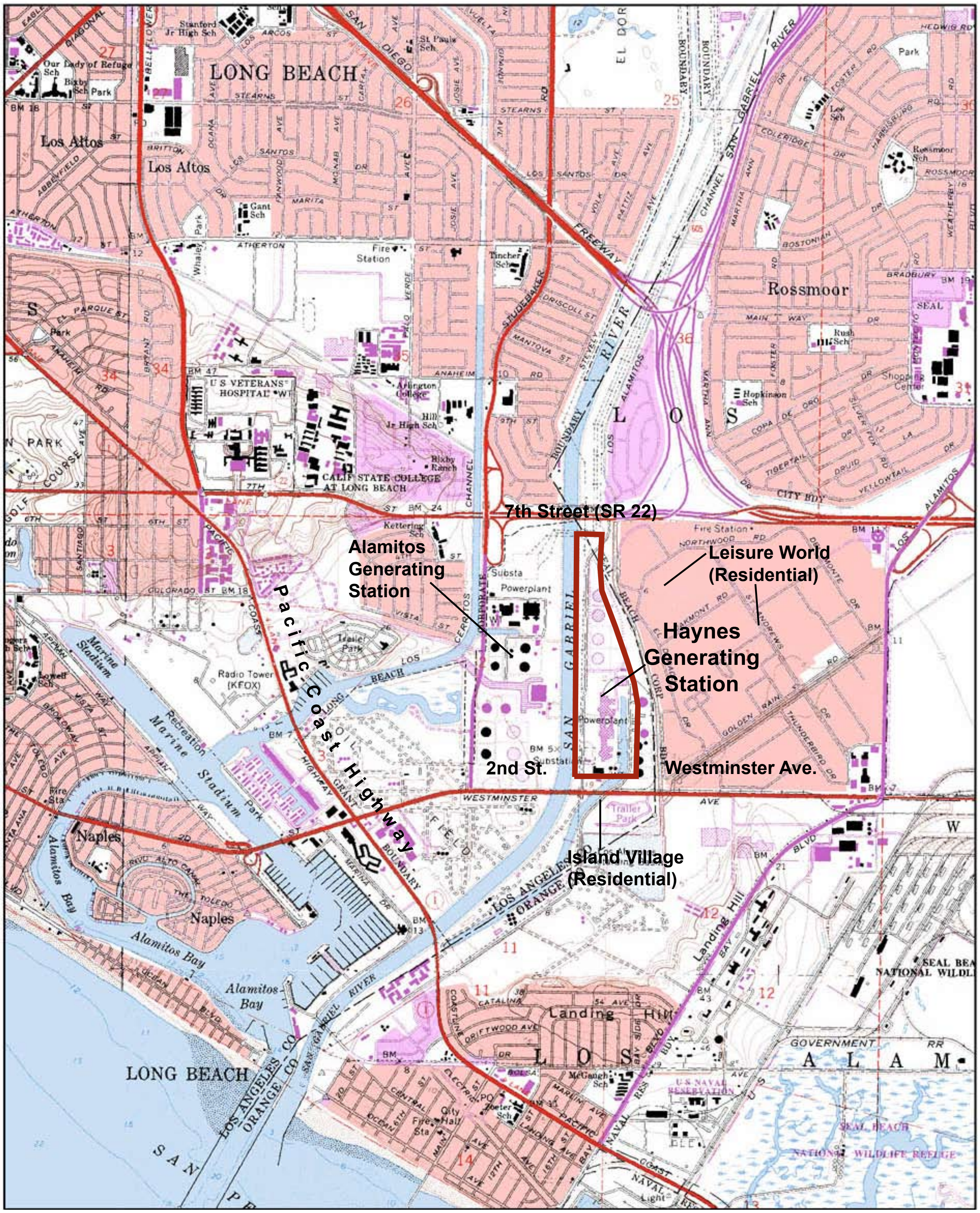
Uses surrounding HnGS consist primarily of industrial, commercial, and residential uses, including the Leisure World residential community along the entire eastern boundary of HnGS, separated from HnGS by an Orange County Flood Control Channel; light industrial functions (including office, research and development, and manufacturing) in the Boeing Integrated Defense Systems Specific Plan Area to the southeast; the Island Village residential community to the south, across 2nd Street; vacant land to the southwest; the Alamitos Generating Station (an electrical generating station operated by the AES Corporation) along the entire western boundary, across the San Gabriel River; residential areas to the northwest; and a community park and residential areas to the north, across State Route 22. Most of the eastern station boundary is also the boundary between Los Angeles and Orange counties. A regional bike trail runs along the upper bank of the San Gabriel River, adjacent to HnGS. The general setting of the site and surrounding areas is shown on Figure 3-2.

Operating generators at the facility include four steam boilers units (Units 1, 2, 5, and 6) and a CCGS consisting of one steam turbine (Unit 8) and two natural-gas fired CT generators (Units 9 and 10) fitted with heat recovery steam generator (HRSG) systems. The existing generator units range in height from approximately 75 feet (the CCGS) to approximately 150 feet for the six older units (including decommissioned Units 3 and 4). In addition to the primary structures, the



N.T.S.

Figure 3-1
Regional Location



Source: gis.ca.gov
USGS 7.5 Minute Digital Raster Graphic

N.T.S.

Figure 3-2
Vicinity Map

generator exhaust stacks range in height from approximately 150 feet (Units 9 and 10 of the CCGS) to approximately 250 feet for the six older units. All the generator units are located in roughly the southwest quadrant of the HnGS property. The operating and decommissioned generator units themselves occupy approximately 15 acres of the site.

A circulating water channel provides ocean water for cooling the HnGS steam boiler units. The channel extends southwestward from the HnGS property for approximately one mile, roughly paralleling the San Gabriel River between 2nd Street and State Highway 1. Near the highway, water is drawn into the channel through a system of pipes that cross under the San Gabriel River and connect to an intake structure in the Alamitos Bay Marina. At HnGS, water is drawn from the channel through separate pump and screen chambers for generator Units 1, 2, 5, 6, and 8 (which is part of the CCGS). The cooling water is released into the San Gabriel River through three discharge structures, which are located in the east bank of the river adjacent to HnGS and include two outfalls each. Each generator unit that utilizes once-through cooling has one discharge pipe.

To the west of the existing generator units are the electrical switchyards that are fed by the generators and connect to an electrical transmission line that runs along the western edge of HnGS and supplies electrical power to the LADWP distribution grid. Existing generator Units 1, 2, 5, 6, 9, and 10 run on natural gas that is supplied by continuous feed from a line that enters the HnGS property from the north. A small compressor station in the central part of the property boosts the natural gas pressure for use in Units 9 and 10 of the CCGS.

Near the northern end of the HnGS property are three large, unused aboveground tanks formerly utilized to store fuel oil prior to the conversion of the original HnGS generators to natural gas fuel. These tanks are approximately 260 feet in diameter and 56 feet in height. As part of the ongoing facilities management program, these tanks are being cleaned and certified free of hazardous materials and will be dismantled prior to the beginning of the proposed project construction.

There are five additional aboveground fuel oil storage tanks in the southeastern quadrant of the HnGS property. One tank is used to store distillate oil as a backup fuel for the CCGS in emergency situations when natural gas may not be available. The other tanks are not in use and are essentially empty. The northernmost of the five tanks is approximately 200 feet in diameter and 43 feet in height. Each of the other tanks is approximately 160 feet in diameter and 43 feet in height. Each tank is located within a spill containment area surrounded by an approximately 4-foot high earthen dike.

Three 500,000-gallon settling basins, used to process industrial wastewater at HnGS, are also located in the southeastern quadrant of the property. An aerial photo of the existing HnGS site is provided in Figure 3-3 showing the location of various existing site features.

Source: Google Earth, 2009

N.T.S.

Figure 3-3
Existing Site

3.5 PROJECT OBJECTIVES

As stated above, the goal of the proposed project is to improve the LADWP generation system efficiency, reliability, and flexibility as well as providing support for wind generation. Specific objectives related to this goal include:

- Achieving a net reduction in air pollutant emissions at HnGS by repowering pursuant to the 2003 Settlement Agreement between LADWP and SCAQMD
- Reducing the consumption of natural gas and, as a result, the production of greenhouse gases
- Facilitating the integration of wind power resources into the LADWP generation system
- Providing for the energy demands of the City of Los Angeles
- Increasing the reliability of the electrical power generation system
- Eliminating the need to use ocean water for cooling on this project and reducing the use of ocean water for generator cooling at HnGS

3.5.1 REDUCTION IN AIR POLLUTANT EMISSIONS

The proposed project is being implemented in part pursuant to a formal Settlement Agreement (May 2003) between LADWP and the SCAQMD to reduce air pollutant emissions from stationary sources in the South Coast Air Basin (SCAB). In accordance with this agreement, HnGS Units 5 and 6 are to be repowered rather than HnGS Units 1 and 2, as specified in an earlier Stipulated Order of Abatement issued to LADWP by SCAQMD to reduce emissions under the RECLAIM program. The repowering of existing Units 5 and 6 at HnGS would reduce emissions by removing from service two aging and inefficient steam boiler generator units that are over 40 years old and replacing their generating capacity with a new SCGS. In accordance with the Settlement Agreement, this repowering must be achieved by December 31, 2013.

In addition to incorporating the best available control technology (BACT) to limit air pollutant emissions, the proposed SCGS would possess several characteristics that would increase generation efficiency to further reduce emissions. This includes a fast start capability that allows the individual CT generators to reach full generation load and total emission compliance in a relatively short time (10 minutes and 35 minutes, respectively). This is in contrast to existing Units 5 and 6, which require a significantly longer start time (24 hours or more) before emission compliance is achieved. The fast start capability of the SCGS would also allow for the turbines to be entirely shut down when not required because they could restart rapidly when necessary to meet an increased need for power generation. This cycling capability would further reduce air pollutant emissions by reducing combustion. This contrasts with the typical operational characteristics of Units 5 and 6, which must often be left on line at minimal loads even when not needed for power generation because their long start times preclude rapid response to an increased demand for energy. The individual CT generator units of the SCGS have the capability to cycle on and off numerous times per day to meet the needs of the system.

In addition to fast start capability, the SCGS is able to ramp up or down rapidly in response to increased or decreased power generation demands. Because the SCGS consists of six individual turbines, this ability to respond to changing power demand is wide ranging and incremental. This capability to efficiently and precisely track demand over a wide load range would result in decreased air pollution emissions. The inter-stage cooling process of the SCGS also decreases emissions by increasing overall unit efficiency by providing cooler air flow at the high pressure compressor of the CTs.

Based on these design features, it is anticipated that the proposed project would result in net reductions in several criteria air pollutants at HnGS, including nitrogen oxides (NO_X), sulfur oxides (SO_X), carbon monoxide (CO), volatile organic compounds (VOCs), and particulate matter (PM). The reduction in NO_X and VOCs would also result in a reduction of ozone (O_3) since these emissions are the primary precursors for the production of ground level O_3 in the atmosphere. Because, in accordance with the Settlement Agreement between LADWP and SCAQMD, Units 5 and 6 must be repowered (which would result in a reduction in emissions), this objective is an essential aspect of the proposed project.

3.5.2 REDUCTION IN NATURAL GAS CONSUMPTION AND GREENHOUSE GASES

California is the world's 12th largest producer of carbon dioxide (CO_2), the primary heat-trapping greenhouse gas (GHG) that contributes to global warming, and the state has recognized its responsibility to decrease GHG emissions. The California Global Warming Solutions Act of 2006, Assembly Bill 32, requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. LADWP has further established the goal of reducing GHG emissions from its facilities to 35 percent below 1990 levels by 2030 (LADWP Integrated Resources Plan, December 2007). A primary source of GHGs, particularly CO_2, is the combustion of fossil fuels for electrical generation. Therefore, an important means for LADWP to achieve a reduction in GHGs, while still ensuring that the demand for electrical energy is met, is by reducing fossil fuel consumption through the increased efficiency of its natural gas-fired generation facilities.

The operational characteristics of the proposed project turbines as described above, including fast start, rapid ramping, and multiple daily on-off cycling capabilities that enable the SCGS to quickly and precisely track demand, would greatly increase system generation efficiency and limit the combustion of natural gas compared with existing Units 5 and 6, which, as described above, take significantly greater time to reach full generation load at startup and must often remain on line at minimum load, even when the power is not needed, in order to be available to generate increased power when necessary.

Beyond the operational flexibility and responsiveness of the SCGS, the individual gas turbines function at higher efficiency than the existing steam boiler units, consuming less fuel per kilowatt-hour (kWh) of generation. It is estimated that the SCGS would have a heat rate of approximately

9,200 British thermal units (BTUs) per kWh at full net load versus a comparable heat rate of approximately 10,000 BTUs per kWh for existing Units 5 and 6. Based on the projected annual operating capacity factor for the SCGS (5,256 hours at 60 percent yearly operation), the reduction in fossil fuel use that would be realized from the proposed project would lower the emissions of CO_2 equivalents by approximately 86,000 metric tons per year compared to existing Units 5 and 6. This estimate accounts for only the efficiency of the individual generator units per se functioning at similar levels of energy production and does not include CO_2 reductions realized from the operational flexibility offered by the SCGS as a whole compared to Units 5 and 6, which could result in significant additional reductions in GHGs.

The combustion of natural gas itself releases relatively little methane (CH_4), the primary constituent of natural gas, into the atmosphere. However, the greater fuel efficiency anticipated from the proposed SCGS would nonetheless result in some reduction in combustion emissions of methane, which is a far less common but considerably more potent GHG by volume than CO_2. The anticipated reduction in fuel use from the proposed project would also lessen the requirement for the extraction, refinement, and transmission of natural gas, a process that in itself contributes to the release of CH_4 and CO_2 into the atmosphere. Because of state mandates and LADWP policy commitments to substantially decrease the production of GHGs from its energy generation, this objective is an essential aspect of the proposed project.

3.5.3 INTEGRATION OF WIND POWER GENERATION RESOURCES

In 2002, the California Legislature passed Senate Bill 1078, which implemented a Renewable Portfolio Standard (RPS) program for the state. The goals of the RPS include increasing total annual retail power sales from eligible renewable resources by at least 1 percent per year and attaining 20 percent aggregate annual retail sales by 2010. The California RPS also included a goal of achieving 33 percent renewable power generation by 2020 for the state as a whole. Municipal utilities, such as LADWP, are exempt from the specific provisions set forth in SB 1078, which apply only to investor owned utilities. However, the legislation does require municipal utilities to develop their own renewable energy programs that adhere to the intent of SB 1078. Based on this mandate, the City of Los Angeles has adopted an RPS that is consistent with the California Legislature's SB 1078 requirements to provide 20 percent of its energy sales to retail customers from renewable energy resources by 2010. Furthermore, LADWP's long-term RPS goal set by its Board of Commissioners is 35 percent renewable energy by 2020, including that generated from wind, solar, geothermal, biomass, and small hydroelectric power sources.

LADWP brought a 120-MW wind power facility on line in 2009 to provide electrical energy directly to its system and is proposing the development of approximately 250 MW of additional wind power over the next 10 years. However, while wind power is an important component of a comprehensive and diversified approach to electrical energy generation, its use is limited by the intermittent and variable nature of wind itself. Since electricity cannot currently be feasibly stored on a large-scale basis, the availability of electricity generated by wind turbines fluctuates widely and unpredictably. The intermittent nature of wind power means that it may not be available, at least in sufficient quantities, during peak periods of demand in the LADWP service area. Conversely, if demand is already being met by larger but less responsive fossil fuel generation units, wind power that may suddenly become available may not be exploited to its fullest extent. In order to effectively integrate wind power into the generation system and take full advantage of this renewable resource when it is available, the LADWP generation system must include other resources that can respond rapidly and in a controlled manner to complement fluctuations in wind generation. Such dispatchable resources, so called because they are predictably available on short notice to generate and transmit electricity, are necessary to balance the highs and lows in the energy produced by wind resources.

The proposed SCGS is an effective complement to wind power based on its ability to quickly achieve full generation capacity and ramp up or down rapidly (at approximately 10 times the rate of existing HnGS Units 5 and 6) in response to unpredictable and uncontrollable fluctuations in wind resources. The configuration of the 600-MW SCGS, with six individual 100-MW units, provides significant flexibility and range to respond to such fluctuations, effectively facilitating the integration of large blocks of wind power into the LADWP generation system. Existing Units 5 and 6, which take significantly greater time to reach full generation load at start up, must be run at much higher minimum loads, and are markedly slower to increase or decrease load than the SCGS, are not responsive enough to effectively complement wind energy resources. The benefits of effectively integrating wind power include reducing GHG emissions, improving air quality, increasing the utilization of sustainable energy resources, providing protection against market fluctuations of fuel costs, and reducing dependence on fossil fuels. Because of state mandates and LADWP policy commitments to substantially increase the proportion of annual retail power sales from renewable energy resources (of which wind power is an important component), this objective is an essential aspect of the proposed project.

3.5.4 MEETING ENERGY DEMAND

Despite considerable progress in energy conservation in the City of Los Angeles, including through both energy efficiency and load management programs, the overall demand for electricity in the City has continued to grow at a moderate pace since the early 1990s, driven by increases in population. Population in Los Angeles is projected to expand by an additional approximately 25 percent between 2000 and 2025. As a result, the annual growth in demand for electricity in the City is expected to increase at an average annual rate of about 0.6 percent over the next 20 years, regardless of increasingly aggressive conservation efforts. It is estimated that between the years 2009 and 2030, growth in peak demand will necessitate an average increase of 62 MW in generation capacity per year. This would represent a 1,300 MW, or approximately 23 percent, increase in capacity (from approximately 5,650 MW in 2009 to 6,950 MW in 2030).

To avoid blackouts or brownouts during critical periods, providing for peak demand is the critical factor in determining LADWP’s generation capacity requirement. The total generation capacity requirement is based on the projected peak demand plus a system reserve margin intended to satisfy the peak demand in the event of an unforeseen loss of a key component of the generation or transmission system. The reserve requirement is determined by the Western Electricity Coordinating Council Reliability Standard, to which LADWP adheres in accordance with the Energy Policy Act of 2005. By supplying an equivalent generation capacity as HnGS Units 5 and 6, which would be removed from service in relation to the repowering specified under the Settlement Agreement between LADWP and SCAQMD, the proposed project would continue to provide for the energy demands of the City. In accordance with the Los Angeles City Charter, LADWP is obligated to provide a reliable supply of electricity to meet this demand.

3.5.5 INCREASING RELIABILITY OF ELECTRICAL POWER SYSTEM

HnGS Units 5 and 6 are each over 40 years old, having first been placed in service in 1966 and 1967, respectively. Required maintenance procedures on the units and the associated downtime have increased over time. The potential for unforeseen failures of the units' mechanical and electrical systems will rise as these units continue to wear with age. This reduces the reliability of not only the units themselves but the entire generation system, which is based on the predictability and stability of the available power supply. Decreased reliability could also influence the need to maintain higher operating reserve margins to guarantee a stable supply of electrical power for the City of Los Angeles, effectively increasing the requirement for additional generation capacity within the system. The repowering of Units 5 and 6 with a new SCGS would reduce the requirement for maintenance and the associated downtime and lessen the potential for unanticipated failures, thereby increasing the reliability of the electrical generation system and the power transmission and distribution grid that it supplies.

The SCGS would be capable of producing a total of 600 MW net of electrical energy, but it would be composed of six separate identical elements consisting of a 100-MW net gas turbine generator coupled with an associated dry cooling unit and gas compressor. Compartmentalizing the SCGS in this manner would provide a significant advantage relative to reliability when compared with the existing Units 5 and 6, which provide a combined capacity of 600 MW net between only two generators. The unexpected failure of more than a single SCGS element at the same time, through a malfunction of the generator, cooling, or gas compressor components or the interconnecting infrastructure, would be unlikely. In the event of the failure of a single element, only 100 MW of generation capacity would be lost; the other elements would remain functional, capable of providing up to 500 MW of power. If Units 5 or 6 were to unexpectedly fail, 341 MW or 259 MW, respectively, of generation capacity would be temporarily lost, affecting system reliability to a greater degree. The compartmentalization of the SCGS would also allow periodic recurring maintenance to occur on a rotating basis such that only a single 100-MW element would be temporarily removed from service at a given time. Similar maintenance activities on Units 5 or 6 or their associated components would temporarily remove 341 MW or 259 MW from service.

The characteristics of the SCGS that would enable it to quickly respond to sharp fluctuations in demand through fast start and rapid ramping capabilities and that provide flexibility to efficiently and precisely track changes in the demand would also increase the reliability of the LADWP power system. Based on these operational characteristics, the individual CTs would have the ability to cycle from startup to rapidly ramping up and down to complete shutdown several times a day, singly or in combination with other SCGS turbines to respond to peaks in demand. This cycling operation could be repeated continuously without compromising the availability or dependability of the individual turbines. The ability of the SCGS to rapidly react to complement the available but unpredictable wind power resources of the LADWP generation system also increases reliability by ensuring that wind energy is fully utilized to help meet demand.

The in-basin location of the SCGS at HnGS would also increase system reliability by placing electrical generation near the center of demand, limiting the potential for power outages due to a loss or overload in the regional transmission system that transports energy from more distant generation sources.

3.5.6 REDUCTION IN USE OF OCEAN WATER COOLING

In a once-through cooling system, cooling water is drawn into the generator equipment from an external water body, passed through the equipment once, and discharged back to the external water body. Because of water's high thermal conductivity, the use of a once-through cooling system is a very efficient means to condense steam in a steam boiler unit after the steam exits a turbine. However, a once-through cooling system for large steam generator units such as those at HnGS requires a constant flow of significant volumes of relatively cool water. The location of HnGS near the outfall of the San Gabriel River was established based on the availability of ocean water from Alamitos Bay for generator cooling and the ability to discharge the cooling water to the river channel once it had been used to condense steam. Once-through systems were a prevalent means of providing cooling for thermal generation plants along coastal and inland water bodies, as evidenced by not only HnGS but the Alamitos Generating Station, located across the San Gabriel River from HnGS, and the earlier Seal Beach Steam Generating Plant, which was located on the east bank of the river, downstream from the current site of HnGS.

However, since HnGS was first commissioned over 40 years ago, evolving state and federal regulations have established stricter limitations on the operation of once-through systems related to environmental impacts potentially created by the use of large volumes of ocean water for generator cooling. These regulations primarily address potential impacts in two areas: impacts associated with the discharge into the aquatic environment of cooling process water the temperature of which has been elevated above that of the ambient receiving water and impacts related to the impingement and entrainment of marine organisms drawn in through the cooling water intake apparatus. At HnGS, recent agency decisions have included the reclassification of the San Gabriel River as an estuarine environment, which will establish more stringent standards with respect to the temperature of cooling water discharged into the river than are currently in force.

Regulatory compliance in relation to the operations of the existing HnGS once-through cooling system (which is currently utilized by all the existing steam generators at the station, including Units 5 and 6) is subject to several ongoing data-gathering efforts, analyses, regulation clarifications, and agency determinations. To help lessen potential environmental impacts, avoid possible future regulatory conflicts, and eliminate uncertainties concerning compliance related to once-through cooling, the proposed project would utilize a dry cooling system not dependent on either ocean water intake or discharge. The retirement of Units 5 and 6 would substantially reduce the maximum potential intake and discharge volumes of ocean water at the station.

Because the SCGS consists of gas combustion rather than steam turbines, its cooling requirements differ from the existing HnGS steam generators in that it is not necessary to condense steam to water to recycle within the generator system. However, cooling is still required in the SCGS for general purposes, such as maintaining the temperature of lubricants, and for the inter-stage cooling process, which reduces the temperature of the air used in the combustion process, significantly increasing turbine efficiency. This cooling process would be achieved more efficiently utilizing a once-through ocean water system. Nonetheless, to help lessen potential environmental impacts, avoid possible future regulatory conflicts, and eliminate uncertainties concerning compliance related to once-through cooling, the proposed project would utilize a dry cooling system not dependent on either ocean water intake or discharge. Because potential compliance and permitting issues related to once-through cooling for the SCGS could delay the implementation of the proposed project beyond the completion date specified in the Settlement Agreement with SCAQMD (December 2013), the use of a cooling system that avoids the intake and discharge of ocean water is an essential aspect of the proposed project.

3.6 PROPOSED PROJECT DESCRIPTION

3.6.1 PROPOSED FACILITIES

The proposed SCGS for the HnGS Units 5 and 6 Repowering Project includes six natural gas-fired CTs and associated cooling and pollution control systems. The new generator units would be designated as Units 11, 12, 13, 14, 15, and 16. Two emergency power generators of 2.5-MW capacity each would also be provided. The net generating capacity of the proposed SCGS would be 600 MW. The proposed project also includes decommissioning existing steam boiler generation Units 5 and 6. Units 5 and 6 currently have a net capacity of 341 MW and 259 MW, respectively (600 MW total). The total net generating capacity of the HnGS facility after the completion of the proposed project would be 1619 MW, which is equivalent to the current capacity of the facility. The existing and proposed units, with expected net generating capacities, are summarized as follows:

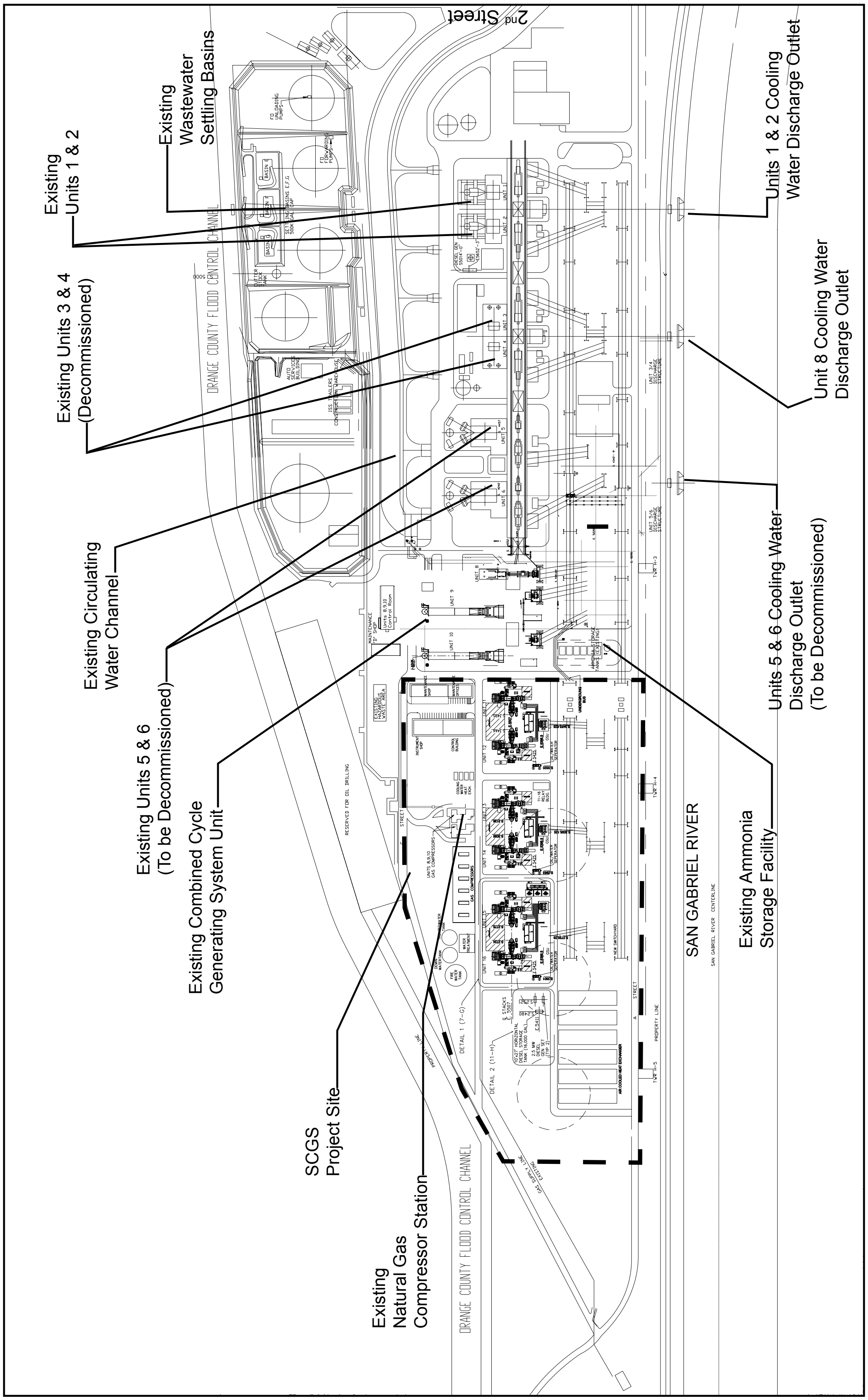
Unit 1	222 MW
Unit 2	222 MW
CCGS	575 MW (total of Units 8, 9, and 10)
Unit 5	-341 MW (decommissioned under proposed project)
Unit 6	-259 MW (decommissioned under proposed project)
SCGS	600 MW (proposed project)
Total	1,619 MW (equivalent to current capacity of HnGS)

The proposed SCGS facilities would encompass approximately 16 acres in the west-central portion of the HnGS property, immediately north of the existing CCGS and switchyard, in an area currently occupied primarily by several large abandoned fuel oil tanks (each 260 feet in diameter by 56 feet in height). The primary elements of the SCGS included in this area would include the CT generator units, dry cooling units, electrical switchyard, gas compression units, water treatment facilities, a control building, instrument shop, and maintenance shop/office. The three large unused aboveground fuel storage tanks on the site of the proposed SCGS will be dismantled prior to the beginning of the SCGS construction as part of ongoing site maintenance activities not related to the proposed project. A plan showing the location of the SCGS within HnGS is provided in Figure 3-4, and a conceptual site plan of the SCGS facilities is provided in Figure 3-5.

Each of the six 100-MW generator units would consist of several primary components, including an air inlet filter structure, a CT, an intercooler system, an exhaust structure and stack, a generator, and a generator step-up transformer. These components would require a basic footprint of approximately 125 feet by 125 feet (approximately 16,000 square feet). Excluding the exhaust stack, the primary structure of the generator unit would reach a maximum height of approximately 40 feet. The exhaust stack would be approximately 90 feet in height. In addition, the separate silencer stack for the variable bleed vents of the unit would be approximately 50 feet in height. The individual generator units would be paired to feed a single step-up transformer unit, which in turn would feed power to the new switchyard (see Figure 3-6). Including ancillary equipment, crane parking pads, and surrounding and internal access roads, the six CT generator units would require a total footprint of approximately 6.0 acres, although not all of this area would be covered by facilities.

The proposed switchyard provides a means of connecting to the existing LADWP transmission line located along the western boundary of HnGS. It would consist of circuit breakers, disconnect switches, and H-frame structures for stringing conductors. The switchyard would be located directly west of the proposed generators and north of the existing HnGS switchyard. It would require a total footprint of approximately 6.5 acres.

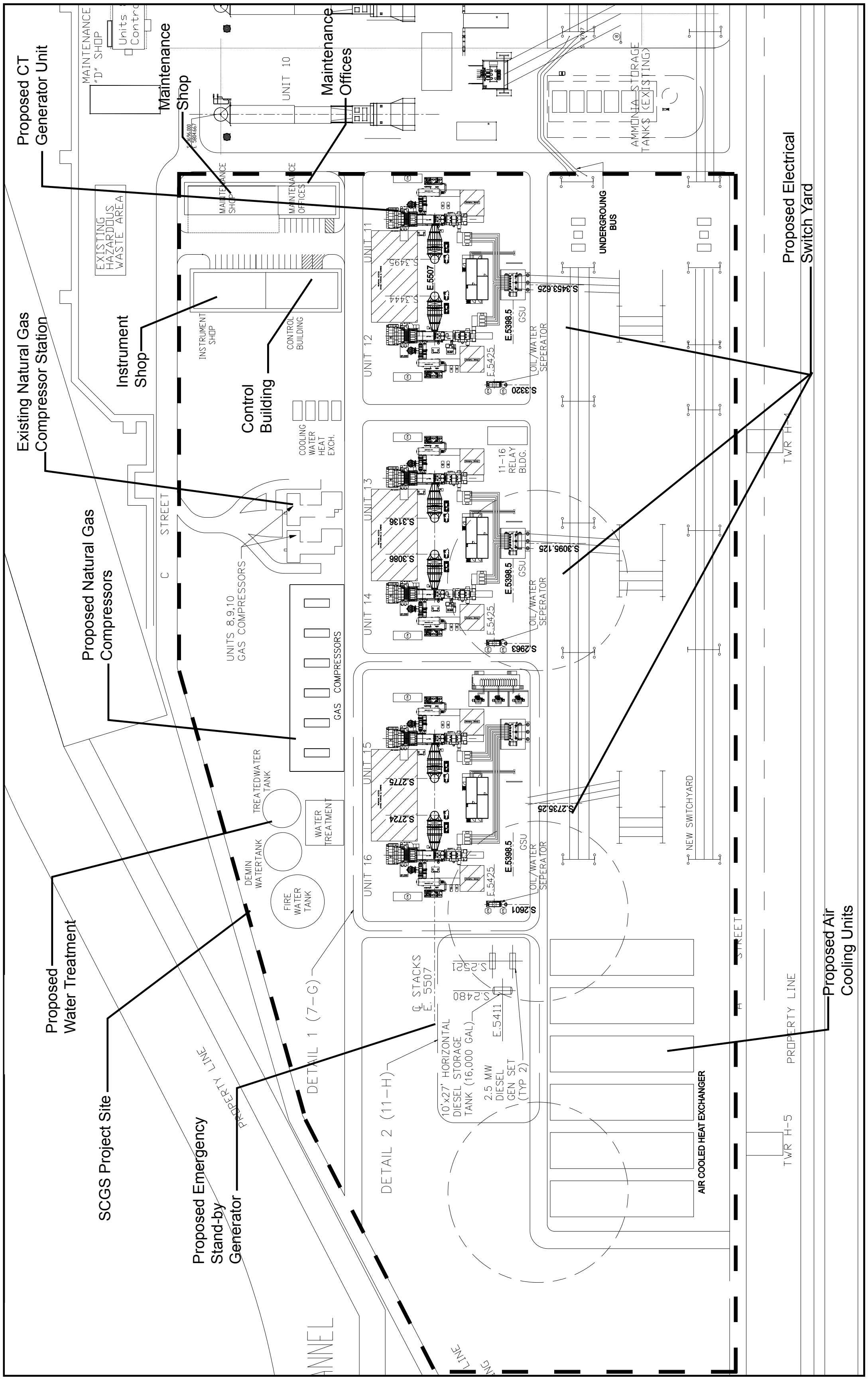
Each generator unit would be connected by water pipelines to an individual dry cooling unit to dissipate the heat from the intercooler system. The cooling unit would be an open lattice steel structure where water circulated in the pipelines would be cooled by means of an induced mechanical draft created by a series of fans. The cooling unit associated with each generator unit would be 180 feet long, 60 feet wide, and approximately 50 feet tall. There would be a total of six units (one for each generator unit), sited near the western boundary of HnGS, northwest of the proposed project generator units and north of the proposed switchyard. Including surrounding access roads, the six cooling units would require a total footprint of approximately 2.0 acres.



Source: LADWP, 2010

N.T.S.

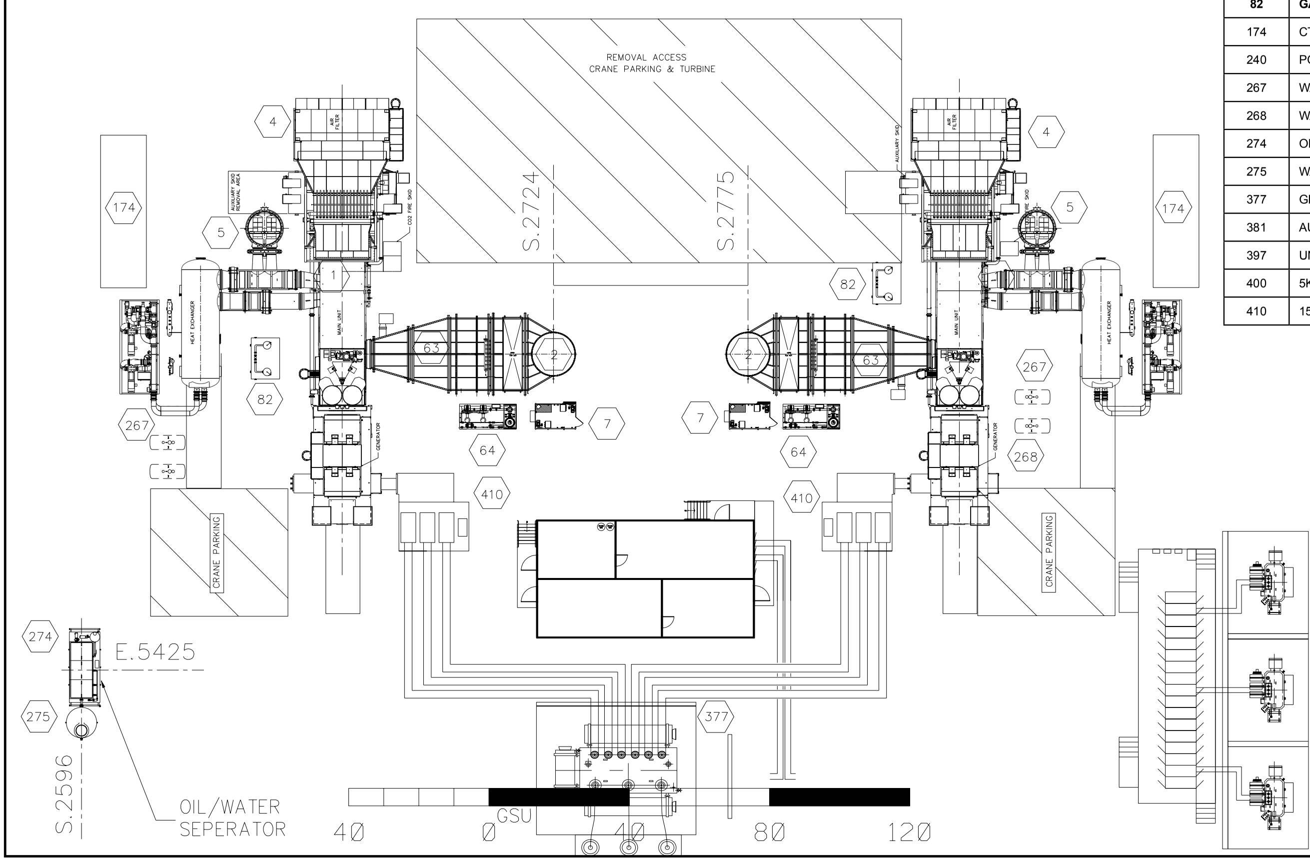
Figure 3-4
SCGS Site Location



Source: LADWP, 2010

N.T.S.

Figure 3-5
SCGS Facilities



ITEM	DESCRIPTION	QTY	NOTE
1	LMS100 SAC CTG	2	
2	STACK EXHAUST	2	
4	AUCILIARY SKID	2	
5	VBV STACK	2	
7	CEMS CABINET	2	
63	SCR	2	
64	SCR AMMONIA INJECTION SKID	2	
82	**GAS FUEL COALESCING FILTER**	1	
174	CT PUMPS	2	
240	POWER CONTROL MODULE	2	
267	WASTE WASH WATER SUMP / TANK	2	
268	WASTE WATER PLANT SUMP / TANK	3	
274	OILY / WATER SEPARATOR SKID	1	
275	WASTE OIL STORAGE TANK	1	2000 GALLONS
377	GENERATOR STEP-UP TRANSFORMER	1	
381	AUXILIARY TRANSFORMER (5KV:600V)	2	
397	UNIT DISTRIBUTION SWITCHBOARD (CTG)	2	
400	5KV DISTRIBUTION PANEL	2	
410	15KV SWITCHGEAR (SF6)	2	

Source: LADWP, 2010

N.T.S.

Figure 3-6
Typical CT Generator Unit Layout

Each generator unit would also be connected via underground pipelines to an individual natural gas compressor unit, which is required to provide the necessary pressure for combustion in the CT. The individual gas compressors would be relatively small units, but the entire block, located directly to the east of the generator units, would require a total footprint of approximately 1.0 acres. The gas compressors would be enclosed in a single acoustical building to dampen noise.

The project proposes to use reclaimed water for various processes in the SCGS, including the closed loop cooling system and pollution control system. This water must be first treated to remove undesirable constituents that could foul the cooling or pollution control equipment. The water treatment facilities for the proposed project would include a small water treatment plant and aboveground storage tanks for fire water, demineralized water, and treated water, which would range from 50 to 75 feet in diameter. These facilities would be sited directly north of the gas compressor units and would require a total footprint of approximately 0.5 acres.

Administrative, maintenance, and control buildings would also be required to operate the proposed SCGS. These facilities would be located east of the southernmost generator units and would require about 1.0 acre of land.

3.6.2 PROJECT CONSTRUCTION

Construction of the proposed project is scheduled to begin the third quarter of 2010 and continue to completion in the last quarter of 2012. Construction of the SCGS would consist of several tasks, including mobilization; site clearing and grading; pile driving; foundation construction; component acquisition and fabrication; erection of the generator units, cooling units, and switchyard; and system startup and commissioning. While these various tasks are distinct and while some tasks must precede others at a given location, some would occur concurrently at different locations within the project site as construction of the six CT generators and associated facilities proceeds. The exact phasing and overlap of the tasks would be determined prior to the start of construction, but the total construction period, from mobilization to completion of generator commissioning, is anticipated to last approximately 26 months.

Construction activities would normally occur Mondays through Saturdays from 7:00 a.m. to 3:30 p.m. To ensure that construction activities stay on schedule, two shifts per day that would exceed these time limits may be necessary at times during the construction period, and occasional Sunday shifts may also be required. During the construction of the CCGS at HnGS (Units 3 and 4 repowering) in 2004, construction activities by reduced work crews were sometimes conducted until approximately 7:00 p.m., Mondays through Fridays. Some construction activities must be conducted continuously until complete (e.g., during construction of the CCGS, welding activities that could not be interrupted were conducted throughout the night over a two month period). Activities by smaller work crews were conducted on approximately half the Saturdays during construction of the CCGS. Most construction activities for the proposed project conducted after normal weekday working hours (3:30 p.m.) or on

Saturdays and Sundays would not be the type that would create high noise levels or require high lighting levels.

A total of approximately 270 workers could be present at the site on the same day, in either one or two shifts, during the peak project construction period when simultaneous foundation and SCGS erection work would be underway. This peak period is expected to occur for several months in 2011.

All construction workers would access the site through the main gate on 2nd Street, at the southwest corner of the HnGS property, and worker private vehicle parking would be accommodated within the property in existing parking areas or in open areas along the western boundary. Construction equipment, materials, and components would also generally be delivered through the main gate at the southwest corner of the property. However, some larger and heavier loads may be delivered through the industrial gate at the southeast corner of the HnGS property or through the north gate off of 7th Street. Truck trips may average approximately 25 loads per day during the peak construction materials delivery period of several months during 2011. During the balance of the project, truck trips are expected to generally average less than 10 loads per day, although approximately 15 loads a day may be necessary during some non-peak months. During the peak of construction activity, between 35 and 40 pieces of equipment would be operating on site. As mentioned above, although the exact phasing and overlap of the tasks would be determined prior to the start of construction, for impact analysis purposes in the EIR it has been assumed that the peak in construction workers (270), the peak in truck deliveries (25), and the peak in on-site equipment use (40) would occur simultaneously over several months during the middle of the project construction in 2011.

Construction activity for the proposed project would include minor grading and site preparation; construction of access roads; the driving of piles and the construction of foundations for the SCGS; installation of the generator units, dry cooling systems, and associated auxiliary equipment; turbine commissioning (testing and calibration of SCGS prior to operations); and decommissioning existing Units 5 and 6. All required staging, storage, and laydown areas related to project construction would be located within the existing HnGS boundaries. Contractors would require temporary trailers on site for construction planning and management activities.

3.6.2.1 Site Preparation and Foundation Construction

A portion of the site for the proposed SCGS served briefly as a temporary staging area during the construction of the CCGS (Units 3 and 4 repowering project) and is essentially clear; fuel oil storage tanks and associated protective berms are located on the majority of the rest of the project site. However, these tanks will be demolished prior to project construction as part of an ongoing site maintenance program. Though the SCGS site is essentially flat, some grading would be required to eliminate berms and prepare the site for foundations. Grading activities would not create excess material that would need to be hauled off site, nor is the importation of soil material from off site anticipated. However, it may be necessary to temporarily stockpile dirt on site during grading operations. All soil stockpiles would be stabilized or covered to limit dust and erosion. Equipment use during site grading would include push-pull scrapers, track loaders, skip loaders, water trucks, pick-up trucks, excavators, backhoes, bulldozers, motor graders, and dump trucks.

The proposed SCGS facilities would be primarily located in the area currently occupied by the large fuel oil tanks that are surrounded by earthen containment berms. Currently, during significant rainfall events, catch basins within the tank containment berms capture runoff and convey it to skim ponds along the eastern periphery of the HnGS property, from which the water is eventually discharged to the adjacent Orange County flood control channel. After project construction, which would remove the earthen containment berm, runoff from the SCGS area would no longer be directed to the existing skim ponds. Instead it would be collected by a new system of catch basins located within the project site, from which it would be conveyed to a lift station, pumped to a storage facility, and tested before being discharged to the flood control channel.

Because soils at HnGS consist of marine tidal deposits and river alluvial deposits with low bearing capacity, foundation piles are required to adequately support the SCGS components. It is estimated that the generator units and other project elements may require up to 3,000 piles driven to depths of up to 80 feet, depending on site-specific geotechnical conditions. The pile driving operation would be restricted to between the hours of 8 a.m. and 6 p.m., Mondays through Fridays. The pile driving operation is anticipated to last up to four months, depending on the methods and equipment used. Concrete foundations would then be constructed over the piles. Equipment used during the foundation construction would include concrete vibrators, concrete pumps, and light plants.

Construction traffic related to the site preparation and foundation construction phase would include approximately 250 one-way truck trips over a four-month period to deliver the pre-cast concrete piles and 2,600 one-way truck trips over a 12- to 15-month period to deliver concrete and the reinforcing steel required to construct the foundations for the generator units, electrical equipment, and cooling towers. The entire site preparation phase, including grading, pile driving, and foundations, would last approximately 7 months and would require up to 100 personnel on site during a peak work day.

3.6.2.2 Erection of the SCGS

Once the site is prepared and the foundations are constructed at a given location, the CT generator units would be erected. Many components of the SCGS, including the CTs, are prefabricated and would be delivered to the site by truck for final assembly. The major components for the CT generator system would be delivered in a staged manner during the peak of construction activity. This would involve approximately 34 loads per CT generator, delivered over an approximately 10-month period. Some of these loads would be oversized, which would require a special transportation permit. Most would be expected to be delivered during normal work hours, but some heavier loads may be delivered at night to minimize traffic disruptions. The components and other materials required for the construction of the SCGS would be stored in various laydown areas on the HnGS property until needed.

To lift and place the heavy prefabricated components, a number of cranes would be used during the SCGS erection. These would include electric hoists and hydraulic cranes (for the heaviest loads). Additional equipment used during the SCGS erection would include forklifts, compressors, light plants, welders, trenchers, and plate compactors.

3.6.2.3 Dry Cooling System

The dry cooling units would consist of six banks of cooling equipment (one for each turbine) supported by an open lattice steel structure. Each bank would have 11 bays of fans, with 3 fans in each bay. The bays come in one piece and weight approximately 85,000 lbs each and would require 66 truck deliveries. The deliveries may be staged to allow direct placement of the bays at the site without having to temporarily store them. Roughly 400,000 lbs to 450,000 lbs of structural steel would be needed for each bank, generating about 60 additional truck loads.

The proposed project would result in the decommissioning of the portion of the plant’s existing once-through cooling water circulation system that is currently utilized for Units 5 and 6. However, no physical modifications to this system would occur within either the circulating water channel (located east of the existing generating units) or the San Gabriel River.

3.6.2.4 Transformers/Switchyard and Natural Gas Supply

A single step-up transformer would be installed for each pair of generator units of the SCGS. The transformers would be connected by pole-mounted electrical lines to a new switchyard that would be constructed in the area to the west of the SCGS. From the switchyard, new lines would connect to an existing high-voltage transmission line that runs along the western edge of the HnGS property. The existing transmission line would have adequate capacity to accommodate the power produced by the proposed SCGS because existing generator Units 5 and 6, which currently feed the transmission line, would be permanently removed from service as part of the proposed project.

A new natural gas supply line would be constructed to the CTs from the existing gas compressor station located just north of the proposed SCGS site. New compressor units to support the proposed SCGS would be constructed at the compressor station. The new gas compressors would be enclosed in a single acoustical building to dampen noise. The construction of the transformers, switchyard, and natural gas supply system would occur concurrently with the erection of the SCGS.

3.6.2.5 Start Up and Commissioning

After the SCGS construction is complete but prior to producing electrical energy for distribution to the LADWP service area, the SCGS would undergo a comprehensive commissioning program to evaluate and calibrate the various systems. This commissioning program includes testing and synchronizing the CT generator electrical and mechanical systems and completing simple cycle trial runs. The commissioning phase of the proposed project requires approximately 3 to 4 months and generally involves a total on-site work force of 100 or fewer personnel.

3.6.2.6 Decommissioning of Units 5 and 6

Contingent upon issuance of the actual Permit to Operate (PTO) from SCAQMD, it is anticipated that the permit would require LADWP to remove existing Units 5 and 6 from service within 90 days of completion of the commissioning of the proposed SCGS. The operating permits for Units 5 and 6 would be surrendered pursuant to SCAQMD Rule 2012. The units would be left in place but permanently disabled.

3.6.3 PROJECT OPERATIONS

3.6.3.1 Power Generating Equipment

The SCGS would include six simple cycle CT generator units. The equipment would be designed to provide a net load capacity of 600 MW. The SCGS would be fired by natural gas. The CTs would produce thermal energy through the combustion of the natural gas, and the thermal energy would be converted into mechanical energy required to drive the turbines and generators, which produce electricity. Natural gas would be obtained through the site's existing gas supply lines. Gas compressor units would be required to boost the pressure of the gas at the turbine combustor above the pressure of the air from the high pressure compressor of the turbine. Air would be supplied to the CTs through an inlet air filter and evaporative coolers via an air inlet duct. Fuel (natural gas) would be supplied at approximately 920 pounds per square inch gauge pressure by gas compressors at full operating load. This mixture of fuel and air would be ignited and burned, producing high-temperature pressurized gas to drive the turbine and electric generator.

The proposed CTs would use a combination of processes to control air pollutant emissions. The combustors in the CTs would use water injection to reduce NO_x emissions. A selective catalytic reduction (SCR) system also would be provided for the CTs that would use a catalyst to facilitate a reaction between NO_x and aqueous ammonia to reduce NO_x emissions and produce nitrogen and water. The aqueous ammonia would be atomized with air and vaporized with an electric heater. The ammonia/air mixture would be blended within a static mixer and injected into the flue gas ahead of the catalyst bed via an injection grid. A CO catalyst, which would reduce both CO and VOC emissions, would also be installed to comply with the SCAQMD's New Source Review and BACT requirements.

Each CT section would include a weatherproof enclosure. Lighting as well as fire and gas detection equipment would be provided in each compartment.

There would be three step-up transformers. Two CT generators would share and feed a single step-up transformer, which would be connected by pole-mounted electrical lines to a new switchyard. Power would be transmitted off site through existing transmission lines.

As mentioned above, reclaimed water would be utilized for various processes in the SCGS, including the closed loop cooling system and pollution control. This water would be delivered to HnGS through an extension of an existing reclaimed water line that would be constructed by the City of Long Beach separate from the proposed project. The reclaimed water used in the SCGS must be first treated to remove undesirable constituents that could foul the cooling or pollution control equipment. This water purification process generates wastewater that would be collected and discharged to the waste settling basins in the southeast corner of HnGS. Here, the wastewater is monitored for compliance with the NPDES permit conditions and discharged with other HnGS facility wastewater.

3.6.3.2 Cooling System

The proposed SCGS would be cooled by dry cooling units utilizing a closed-loop water system to transfer heat from the CTs to the units. Each CT would have an intercooler in the compression section of the turbine in which warm air, discharged from the low pressure compressor, would be sent to an air-to-water heat exchanger for cooling before returning to the high pressure compressor section of the turbine assembly. This inter-stage cooling provides cooler flow to the high pressure compressor and substantially increases overall efficiency and power output. The warm water from the heat exchanger would be sent to one of six dry cooling units (one for each CT). The water would be cooled by fans that would draw cooler air over the tubes containing the warmer water, and the cooled water would then be pumped back to the heat exchangers.

As discussed above, the proposed project would result in the decommissioning of the portion of the plant’s existing once-through cooling water circulation system that is currently utilized for Units 5 and 6. The plant’s existing once-through cooling water circulation system would continue to serve Units 1, 2, and 8.

3.6.3.3 Ammonia Handling and Storage

Aqueous ammonia (ammonium hydroxide at 29.5 percent concentration by weight) is presently used in the SCR systems in existing HnGS Units 1, 2, 5, 6, 9, and 10 to reduce NO_x emissions. Aqueous ammonia would also be used in the proposed SCGS that would replace Units 5 and 6. The ammonia for the existing and new units would continue to be delivered to HnGS by truck and stored at the site’s existing aqueous ammonia tank facility. The existing ammonia storage consists of six cylindrical aboveground storage tanks, with a total capacity of 225,000 gallons

(37,500 gallons in each tank). No new ammonia storage or deliveries would be required for the proposed project since ammonia used for the SCGS would be offset by the removal from service of existing Units 5 and 6.

3.6.3.4 Operating Personnel Requirements

Once constructed, the proposed project would not require additional personnel beyond those currently employed at HnGS to support site operations. The facility would be capable of operating 24 hours per day, seven days per week.

3.6.3.5 Project Termination and Decommissioning

The estimated life of the new SCGS at HnGS is expected to be more than 25 years. Equipment that is no longer effective may then be shut down and/or decommissioned, replaced, or modified in accordance with applicable regulations, market conditions, and technology prevailing at the time of termination. Decommissioning of the new units in the future may involve a combination of salvage or disposal in accordance with applicable federal, state, and local regulations.

CHAPTER 4.0
ENVIRONMENTAL ANALYSIS

4.1 ORGANIZATION OF ANALYSIS

This section of the EIR discusses the potentially significant environmental impacts of the proposed project. The Initial Study for the proposed project (contained in Appendix A) identified potentially significant impacts to air quality, marine biology and marine water quality, surface hydrology and water supply, noise, and transportation and traffic, which are addressed in Sections 4.4 through 4.8. Each of these resource areas is organized as follows:

The Environmental Setting section describes the existing conditions before commencement of the project. This provides a baseline for comparison to establish the type and level of the potential environmental impacts. The description of the setting is focused on the particular environmental impact being discussed. The description addresses the local setting and the regional setting, to the extent that the regional context is important in determining the type and level of environmental impacts of the proposed project.

The Thresholds Used to Determine Significance of Impact section describes the criteria used to determine whether an impact should be considered potentially significant. These thresholds are defined in Appendix G of the State CEQA Guidelines and in other state, federal, or local standards that have been established relative to the particular environmental factor.

The Environmental Impacts section describes how the implementation of the proposed project would affect existing conditions and create potentially significant effects on the environment, including direct effects and reasonably foreseeable indirect effects.

The Cumulative Impacts section describes effects that may be individually limited but cumulatively considerable when measured along with other approved, proposed, or reasonably foreseeable future projects.

The Mitigation Measures section identifies actions to reduce or eliminate potentially significant impacts of the proposed project. Existing standard regulations, requirements, and procedures that apply to similar projects are taken into account in determining what additional project-specific mitigation may be needed to reduce or eliminate impacts.

The Significance of Impact After Mitigation section indicates whether impacts would remain significant even after application of the proposed mitigation measures. Any impacts that cannot be eliminated or lessened to a level of less than significant are considered unavoidable significant impacts of the proposed project.

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4.2 IMPACTS FOUND NOT TO BE SIGNIFICANT

The following potential impacts from the proposed project were found not to be significant in the Initial Study for the proposed project. These impacts are not discussed in detail in the EIR. A brief explanation as to why these impacts were found to be less than significant is provided below. More detailed discussions may be found in the Initial Study included in Appendix A of the EIR.

4.2.1 AESTHETICS

Industrial Nature of Site

The proposed project would be located in the interior of the existing 120-acre HnGS, a fully developed industrial complex that began operations in the early 1960s and consists of large generator units, fuel tanks, and other facilities related to electrical power generation. The proposed project would be located adjacent to these facilities and generally on the site of several existing large aboveground storage tanks, which will be dismantled prior to construction of the proposed project. Elements of the proposed project may be partially or largely visible from certain viewpoints within adjacent residential areas (Leisure World, Seal Beach, to the east), along public roads that border HnGS (2nd Street to the south and 7th Street to the north), and along the San Gabriel River Trail, a bike path located along the western edge of HnGS. However, based on the nature of the proposed project in relation to the existing setting of HnGS and its surroundings (including the 150-acre AES Alamitos Generating Station located across the San Gabriel River from HnGS), there would be no adverse effects on existing aesthetic resources from the construction and operation of the proposed project.

The proposed generator units and dry cooling structures would be similar in appearance to other facilities on the existing HnGS site. However the proposed facilities are shorter in height than existing generator units at HnGS and the exhaust stacks are substantially shorter than those belonging to either the original generator units or the CCGS. The proposed project would be sufficiently set back from property lines so as to not result in substantial shadows being cast on the surrounding properties.

Lack of Scenic Views or Vistas

The proposed project would not require the removal of, or impact views, of any scenic resources such as trees, rock outcroppings, or historic buildings within a state scenic highway. State Route 1 (Pacific Coast Highway) is an eligible (although not officially designated) state scenic highway (*Caltrans Scenic Highway Program*). It is located approximately one mile west of the proposed project site. There are no other scenic highways in the vicinity of the proposed project. The project facilities would be located within an existing fully developed industrial site and, from viewpoints along State Route 1, would either be screened by or blend in with existing larger generator units and other facilities within HnGS and the AES Alamitos Generating Station (located between HnGS and State Route 1). The proposed project would not damage any scenic resources within a state scenic highway.

New Lighting

The proposed generator units and dry cooling structures would require lighting similar to those on the existing facilities at HnGS. Based on the existing level of lighting at the station and the smaller scale of the proposed units compared with the existing facilities, this new source of light would not be expected to adversely affect nighttime views in the area. The materials used in the construction of the new generator units would not be expected to add a new source of glare at the facility. If nighttime construction lighting is required, it would create a new source of light. However, this impact would be temporary and would be related to only the construction phase of the proposed project. Based on the distance of the construction from residences adjacent to HnGS (generally several hundred feet) and on the ability to direct light away from the residential areas, construction related lighting would not be expected to create a significant adverse effect.
The wall and grade separation along the Leisure World boundary to the east of HnGS generally minimizes the view of the proposed project site from residential properties.

4.2.2 AGRICULTURAL RESOURCES

The proposed project would be located within an existing fully developed industrial site that does not meet the definition of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance in the State of California or of Farmland of Local Importance in the County of Los Angeles. The proposed project site is not subject to a Williamson Act contract. It would not involve other changes in the existing environment that could result in the conversion of Farmland, either directly or indirectly, outside the property boundaries to non-agricultural use.

4.2.3 AIR QUALITY

A detailed air quality technical report is included as Appendix B of this EIR. It addresses potential air quality impacts of the proposed SCGS with the exception of those topics described in this section.

The potential impacts of odors are considered less than significant. Since HnGS converted primarily to natural gas as a fuel source, complaints about odors emanating from the plant are virtually non-existent. Byproducts from the combustion of natural gas are not known to produce objectionable odors. Other than construction vehicle operation, no activities are anticipated to occur that would have the potential to cause odor impacts during the construction of the proposed project. Any odors during project construction (e.g., odors from construction vehicle emissions) would be controlled in accordance with SCAQMD Rule 402 (Nuisance Emissions). Use of the construction vehicles would be temporary, and no objectionable odors would remain after project construction.

Diesel fuel is presently stored on site and is used as a fuel for the existing emergency generator and for cleaning the fuel oil lines. Diesel fuel would be used for the emergency generator as part of the proposed project. Low sulfur/low nitrogen distillate oil would continue to be stored on site and used to fuel the site's existing power generators if there was an emergency and the natural gas supply to the site was cut off. However, the use of this oil would be extremely infrequent. Ammonia is also currently stored on site in an approved storage system with an operational spill monitoring system in place. The proposed project would not alter this condition.

4.2.4 BIOLOGICAL RESOURCES

Marine biology and water quality are discussed in detail as technical issues in this EIR (see Section 4.5 and Appendix C of this EIR). Impacts related to terrestrial biological resources are considered to be less than significant.

According to the previous surveys at HnGS by qualified biologists (*Biological Survey Report for the Haynes Generating Station Units 5 and 6 Repowering Project by EDAW, Inc., November 2003*), there are no sensitive natural terrestrial communities at the HnGS. The project site has been regularly maintained and is essentially free of any vegetation. Areas that would be involved in the construction of the proposed project have been recently disturbed by activities associated with the construction of the CCGS and recent tank cleaning projects. Based on the previous survey, there are no portions of the proposed construction areas that could be considered riparian habitat. The only non-wastewater surface water on site is the HnGS intake water channel, located in the south-central part of the station. This channel is a wholly constructed, functional component of the HnGS operational system and is not a remnant of a former natural channel. This feature would not be altered as a result of the proposed project, although the potential impact of water quality changes due to cessation of ocean water cooling at Units 5 and 6 is addressed in the Section 4.5 of the EIR. The adjacent San Gabriel River provides very marginal riparian habitat in the vicinity of the site, as the river's banks are rip-rapped and contain little vegetation. No construction activity related to the proposed project would take place in the San Gabriel River. The previous surveys also found that there are no portions of the areas to be affected by construction of the SCGS that meet the definition of federal wetlands.

The proposed project would not conflict with any local policies or ordinances relative to biological resources. The primary vegetation on site consists of perimeter trees and shrubs along the east property line, and there are no oak trees, heritage trees, or other unique tree specimens.

The proposed project site is not part of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.2.5 CULTURAL RESOURCES

According to a records search for the HnGS property conducted for a previous project (*Archaeological Survey Report for the Haynes Generating Station Repowering Project, November 2001*), and a November 14, 2003 site survey (*Archaeological Survey Report for the Haynes Generating Station Units 5 and 6 Repowering Project by EDAW Inc., 2003*), no resources on the proposed project site are currently listed in the National Register of Historic Places, the California Register of Historical Resources, or any local register of historical resources. In addition, the facility construction started in the late 1950s and completed in the early to mid-1960s and is not old enough to be of historic significance.

According to the previous surveys, no known archaeological resources exist on the project site. The records search revealed that multiple small archaeological sites exist in the vicinity of the HnGS, one of which included human remains. Due to the extensive amount of construction and ground disturbing activity that has taken place on the property in the past, it is unlikely that undisturbed cultural resources would be encountered during construction. However, typical LADWP measures, such as training grading contractors to be aware of resources that may be encountered and establishing a procedure to divert construction so that any unexpected discovery can be investigated, would be incorporated in the grading specifications.

There are no unique geologic features or known paleontological resources at the proposed project site. The site is not likely to contain scientific resources due to the predominance of river deposited alluvium. Accordingly, the project would not destroy unique or important paleontological resources.

There are no known human interment sites on the proposed project site. Should human remains be unearthed during construction, appropriate procedures, including halting of construction activities in the area of the remains and contacting the Los Angeles County Coroner, shall be followed. These procedures follow state law and are not discretionary.

4.2.6 GEOLOGY AND SOILS

Two major active earthquake faults, the Palos Verdes Fault and Newport-Inglewood Fault, are located within the vicinity of the HnGS. However, no fault is known to pass through the station property, and fault rupture at the station is not anticipated.

The HnGS is located within the seismically active Southern California region, and, like all locations within the area, is potentially subject to strong seismic ground shaking. The proposed project would conform to the latest version of the California Building Code, the Uniform Building Code, and all other applicable federal, state, and local codes relative to seismic design.

The HnGS property is subject to seismic-related ground failures related to liquefaction. The soil at the site consists of marine tidal deposits and alluvial deposits. Liquefaction may occur in the saturated silt and sand layers during a maximum credible earthquake event at the site. However, the proposed removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries would not increase the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure. Construction plans for the SCGS incorporate the use of driven foundation piles, which is an approved method of mitigating liquefaction hazards. The proposed project also would conform to the latest version of the California Building Code, the Uniform Building Code, and all other applicable federal, state, and local codes relative to liquefaction conditions.

The proposed project site and surroundings are essentially flat, and the potential for landslides does not exist.

Construction of the proposed project would result in ground surface disturbance during excavation and grading that could create the potential for erosion to occur. However, the site is relatively flat and has been previously graded. Storm Water General Construction Permit Best Management Practices (BMPs) would be employed to control any potential erosion or sedimentation impacts related to the proposed project or its construction. Therefore, the project construction would not result in substantial soil erosion or the loss of topsoil. Based on the soil formations at HnGS, the proposed project would not encounter expansive soils.

The proposed project would not increase the number of personnel on site or require an expansion of the existing wastewater treatment facility for sanitary waste purpose. No septic tanks or alternative wastewater disposal system would be included.

4.2.7 HAZARDS AND HAZARDOUS MATERIALS

Construction of the proposed project may involve the transport, storage, and use of some hazardous materials (e.g., on-site fueling and servicing of construction equipment); however, such activities would be temporary and would not be expected to create a significant hazard to workers or the community either from routine use of the materials or a reasonably foreseeable accident. In addition, all construction activities involving hazardous materials would be subject to federal, state, and local health and safety requirements involving transport, use, storage, and disposal.

The City of Seal Beach commented in response to the NOP for the project that the EIR should contain an updated Risk Management Plan within the EIR. The EIR does not include an updated plan because the project would not represent a significant change from the existing condition at HnGS related to operations and associated risks. The operation of the proposed project would involve the use of potentially hazardous materials, including natural gas to fuel the CT units and aqueous ammonia and catalysts used in the SCR systems of the CT units to reduce air pollutant emissions. All of these materials are currently used at HnGS in similar quantities related to the operation of the existing generator units that would be removed from service under the proposed project. Relative to the transport, use, and when necessary, disposal of these materials during operations, they would be handled and contained in accordance with government regulations and industry standards, including the existing LADWP Risk Management Plan for HnGS.

The proposed SCGS would consist of six individual 100-MW net CT generator units that would be fueled with natural gas. As is the case with the existing generator units at HnGS, natural gas would be supplied to the proposed units by continuous feed from existing gas company lines. There would be no storage of natural gas on site. The natural gas used for the proposed generator units would replace that currently used for existing Units 5 and 6, which have a combined generating capacity of 600 MW net and which would be removed from service as part of the proposed project. Based on the increased fuel efficiency related to the individual CT units and the operational flexibility of the SCGS as a whole, the proposed project would consume less natural gas per unit of energy produced than the existing steam boilers it would replace. Therefore, under the proposed project, there would be no increased hazard to the public or the environment resulting either from routine use or a reasonably foreseeable accident involving natural gas.

Similar to existing Units 5 and 6, which would be removed from service under the proposed project, the SCGS would employ catalysts in the SCR systems to reduce air emissions. They are a toxic solid but would not be in a form that could catch fire, be introduced into the storm water system, or be dispersed by the wind, limiting the potential for off-site impacts. Spent SCR catalysts would be recycled or disposed of properly, and no significant hazard to the public or the environment resulting either from routine use or a reasonably foreseeable accident involving the catalyst material is anticipated.

The SCR systems would utilize aqueous ammonia to reduce NO_X air emissions. A release of toxic gas could occur from vapors that would emanate from an accidental spill of the ammonia solution. Aqueous ammonia is currently stored at HnGS site for use in SCR systems associated with the existing steam boiler units and the CCGS. The ammonia is currently stored in five aboveground storage tanks. A sixth tank is kept unfilled in the event that one of the other tanks must be emptied. These tanks would remain in the same location and continue to operate after completion of the proposed project. It is estimated that under similar operating parameters, the proposed SCGS would use an equal or lesser amount of ammonia than the existing steam generators it would replace. No increase in the existing storage capacity or the rate of use or delivery of ammonia would be required for the proposed project.

No schools are located within one-quarter mile of HnGS. The nearest schools to HnGS are Kettering Elementary School (approximately 0.4 mile to the west); Hill Middle School (approximately 0.5 mile to the northwest); and Hopkinson Elementary School (approximately 0.6 mile to the northeast).

Government Code Section 65962.5 refers to a list of facilities that may be subject to the Resource Conservation and Recovery Act corrective action program. HnGS is listed on the database because the facility is a generator of hazardous waste. HnGS is not on a list of known contaminated sites nor is it subject to corrective action. Hazardous wastes from the facility are managed in accordance with applicable federal, state, and local rules and regulations. The hazardous waste generated from proposed project activities would consist primarily of spent catalyst, which is not expected to present a significant risk to human health or the environment. The catalyst would be disposed or recycled at an approved facility.

The proposed project is not located within an airport land use plan area or within two miles of a public airport or public use airport. There are no general aviation airports or airstrips in the vicinity of HnGS. The Initial Study for the proposed project concluded that the project would not interfere with air navigation or contribute to an increased safety hazard for HnGS personnel related to local air operations.

However, both the California Department of Transportation (Caltrans) Division of Aeronautics and the Orange County Airport Land Use Commission commented in the response to the NOP that the proposed project would be located generally beneath the southwestward extension of the centerline of Runway 4R/22L at the Joint Forces Training Base (JFTB), Los Alamitos. It should be noted that the project would also be located generally beneath the southeastward extension of the centerline of Runway 12/30 at Long Beach Airport. As noted in the comment letter from Caltrans, according to the Federal Aviation Regulation, Part 77, an object may be considered an obstruction to air navigation if it is located within 20,000 feet of a public use or military airport with at least one runway of more than 3,200 feet in length and the object penetrates an imaginary surface extending outward from the edge of the runway at an upward slope of 1 foot vertical climb for each 100 feet horizontal distance. Runway 4R/22L at JFTB is approximately 8,000 feet in length, and the proposed project is located approximately 12,000 feet southwest of the end of the runway. At this distance, the 100:1 imaginary surface would be approximately 120 feet in height; in addition, the ground elevation at the proposed project site (approximately 10 feet above mean sea level [AMSL]) is approximately 10 feet lower than at the southwest end of Runway 4R/22L (approximately 20 feet AMSL), placing the 100:1 imaginary surface approximately 130 feet above ground level. The tallest elements of the SCGS would be the exhaust stacks, which would be 90 feet in height. This would place the stacks approximately 40 feet below the imaginary surface. Runway 12/30 at Long Beach Airport is approximately 10,000 feet in length, and the proposed project is located approximately 19,000 feet southeast of the end of the runway. At this distance, the 100:1 imaginary surface would be approximately 190 feet in height; in addition, the ground elevation at the proposed project site (approximately 10 feet AMSL) is approximately 15 feet lower than at the southeast end of Runway 12/30 (approximately 25 AMSL), placing the 100:1 imaginary surface approximately 205 feet above ground level. This would place the exhaust stacks of the SCGS approximately 115 feet below the imaginary surface. Therefore, the propose project would not represent an obstruction to air navigation at either the JFTB or Long Beach Airport.

In addition, the Caltrans Division of Aeronautics and the City of Seal Beach commented in the response to the NOP regarding the potential for light and glare associated with the proposed project to create a hazard for air navigation at the JFTB and Long Beach Airport. As noted in the Initial Study for the proposed project, the SCGS would require lighting to provide for safe operations at night. The lighting would be similar to that on existing HnGS facilities. It would occur in the context of the existing generating station and the surrounding urban setting, would not significantly increase overall lighting levels at the station. The lighting would be directed so as not to create a hazard for air navigation in the vicinity.

Caltrans Division of Aeronautics also commented regarding the potential for plumes from the proposed project exhaust stacks to create visibility hazards or turbulence. Visible plume formation from CT exhaust stacks is not expected to occur since the turbine exhaust contains very little moisture (water vapor), the condensation of which creates the visible plume seen at many power plants. The implementation of the proposed project, including decommissioning of existing steam boiler Units 5 and 6, would generally decrease visible plumes at HnGS. Likewise, the exhaust stacks of the SCGS would be located generally adjacent to the stacks of the existing HnGS generators but would be substantially lower in height (90 feet) than the 150-foot stacks of the CCGS and the 250-foot stacks of operating generator Units 1, 2, 5, and 6. Based on the increased opportunity for dispersion associated with the lower stack height, the implementation of the proposed project, including decommissioning of existing Units 5 and 6, would generally decrease any air turbulence associated with operations at HnGS.

The proposed project would be located in the interior of the existing HnGS site. It would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan for any area outside the station. Procedures for emergency response and evacuation are provided to all LADWP employees at the station. Communication and coordination with local Fire Department officials would occur as required by the Risk Management Plan. All personnel involved in the construction of the proposed project would also receive training regarding emergency response and evacuation measures at the station during the construction phase of the proposed project.

The proposed project site is located in an urbanized area, surrounded primarily by existing industrial and residential development, and is not subject to risk from wildland fires.

4.2.8 HYDROLOGY AND WATER QUALITY

The EIR, Section 4.6 addresses the potential impacts of the proposed SCGS relative to water runoff, treatment and water use. The following issues were determined to be less than significant.

The proposed project would involve the construction of new generator units that would cover a relatively small surface area in HnGS. The proposed project would not require groundwater supplies or substantially interfere with groundwater recharge.

The HnGS is not located within a 100-year flood hazard area as indicated on Federal Emergency Management Agency Flood Insurance zone maps for Los Angeles County. The proposed project would not provide any new housing nor would it increase the risk related to flood hazard for existing housing in the vicinity currently located outside the 100-year flood hazard area.

The proposed project would not increase the risk associated with seiche, tsunami, or mudflow at the site. It is considered unlikely that the HnGS would be significantly affected by tsunami because the facility is located approximately two miles upstream from the point where the San Gabriel River enters San Pedro Bay. The facility is also protected by the dikes along the San Gabriel River and by its elevation (approximately ten feet) above the cooling water channel. The HnGS is not subject to seiche or mudflows.

4.2.9 LAND USE/PLANNING

The proposed project would be located in the interior of an existing fully developed industrial site and would not physically divide any established community.

HnGS, along with the Alamitos Generating Station, located across the San Gabriel River, forms Subarea 19 of the Southeast Area Development and Improvement Plan (SEADIP) of the City of Long Beach Local Coastal Plan. According to the SEADIP ordinance, Subarea 19 is a completely developed site of industrial use and is zoned PD-1 (Planned Development). The existing industrial use of the site is consistent with the PD-1 ordinance. In addition, the City of Long Beach has issued a categorical exclusion for HnGS from Local Coastal Plan permitting pursuant to the California Government Code (section 53091 et seq.), which exempts municipally owned electrical generation facilities from local regulations.

The proposed project would be located in the interior of an existing fully developed industrial site that is not part of a habitat conservation plan or natural community conservation plan.

4.2.10 MINERAL RESOURCES

The proposed project would not result in the loss of a locally important mineral resource. No mineral resources are known to exist on the project site that would be affected by the proposed project. Also, the project site is not located on significant mineral or energy deposits as mapped by the City of Long Beach or the state.

4.2.11 NOISE

A detailed noise technical report is included as Appendix E of this EIR. It addresses potential noise impacts from construction and operation of the proposed SCGS with the exception of those topics described below.

The proposed project is not located within an airport land use plan are or within two miles of a public airport or public use airport or within the vicinity of a private airstrip. HnGS is located approximately two miles from the JFTB, Los Alamitos. Based on the approach-departure flight tracks of aircraft using the base, the proposed project site is well outside the 60 dBA Community Noise Equivalent Level contour, and people working in the project area would not be exposed to excessive noise levels related to aircraft operations at the base.

4.2.12 POPULATION AND HOUSING

The proposed project would provide no new homes or businesses. The project would not increase the power generating capacity at HnGS, and, therefore, the project would not indirectly induce population growth in the area in the context of total power generation and demand for the Southern California region.

The proposed project is located within a fully developed industrial site owned by the LADWP and would not displace any existing housing or people.

4.2.13 PUBLIC SERVICES

The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the current HnGS property boundaries. Therefore, the proposed project would not require new or expanded fire and police protection services from the City of Long Beach Fire and Police Departments. Also, the proposed project would not require new or expanded schools, parks, or other government facilities.

The City of Seal Beach commented in response to the NOP for the proposed project that the EIR should include a cumulative analysis that addresses emergency response issues relative to AES Alamitos and HnGS. This analysis is not included in the EIR because an increase in need for emergency services is not predicted based on the proposed project. There would be no substantive change in the general types or capacities of facilities or the types of operations at HnGS under the proposed project, and the SCGS facilities involve less complex operating requirements compared to the older steam boiler units they replace. See discussion in section 4.2.7, Hazards and Hazardous Materials.

4.2.14 RECREATION

The proposed project does not include the construction or expansion of recreational facilities. It would not increase the use of existing neighborhood or regional parks or other recreational facilities and would have no affect on the San Gabriel River bike trail.

4.2.15 TRANSPORTATION AND TRAFFIC

A detailed traffic technical report is included as Appendix F of this EIR. It addresses potential construction traffic impacts at selected intersections in the vicinity of HnGS with the exception of those topics described below.

The proposed project would include exhaust stacks on the new SCGS units; however, these stacks would be considerably lower than any of the existing stacks on the site and would not create significant hazards to navigation or require changes in approach patterns at the Long Beach Airport (see discussion in Section 4.2.7 Hazards and Hazardous Materials).

The proposed project would not result in inadequate emergency access. Construction activities would take place within the existing HnGS property boundaries and would not impact the existing emergency access to the station or to locations outside the station. During project operation, no change would occur at HnGS that would significantly affect emergency access to the site.

Operation of the proposed project would not result in inadequate parking capacity because it would not significantly increase beyond current levels the number of workers or vehicles required to operate facilities at the station, which currently has adequate parking area to accommodate personnel and operations vehicles. All construction-related vehicles and equipment and construction worker vehicles would be stored within the boundaries of the HnGS and would not impact off-site parking.

The proposed project would not conflict with adopted policies, plans, or programs supporting alternative transportation. Construction activities would take place entirely within the boundaries of the HnGS and would not require the removal or relocation of alternative transportation facilities (i.e., bus stops and bike lanes).

4.2.16 UTILITIES AND SERVICE SYSTEMS

HnGS is not served by a municipal or other wastewater treatment provider. All industrial process wastewater is treated on site. Sanitary waste generated at HnGS is hauled off site for disposal. . The proposed project would not result in significant increase in the number of personnel at the station during the project operations, and therefore, no significant increase in sanitary wastewater is anticipated.

The discharge of industrial wastewater from the proposed project is addressed in the EIR in Section 4.6. No new off-site water or wastewater treatment facilities or expansion of existing off-site facilities would be required.

The operation of the proposed project would not significantly increase the solid waste disposal needs for HnGS such that the landfill that serves the site would exceed its permitted capacity.

Small amounts of hazardous waste would be generated during proposed project operations. Over time, the catalyst material used in the SCR process loses its effectiveness and must be replaced. The spent catalyst would be recycled, or it would be transported by a licensed hazardous waste transporter to a permitting hazardous waste treatment, storage, or disposal facility. There are currently three Class I (hazardous waste) landfills located in California, and hazardous wastes can also be transported to permitted facilities outside California. The relatively small amount of hazardous waste generated by the proposed project would not contribute significant quantities of material to these facilities.

The construction of the proposed project would temporarily generate increase solid waste at the site. Construction debris would be recycled or transported to a landfill site and disposed of appropriately. In accordance with California Assembly Bill 939, LADWP's construction contractor would ensure that source reduction techniques and recycling measures are incorporated into project construction. The amount of debris generated during project construction is not expected to significantly impact landfill capacities.

The proposed project would be located within the existing HnGS property boundaries. Solid wastes at the station are currently accumulated, handled, and disposed in accordance with federal, state, and local regulations. Since the proposed project is a modification to this existing facility, solid wastes would continue to be managed in accordance with these regulations. During construction and operation of the proposed project, LADWP would comply with all City and state solid waste diversion, reduction, and recycling mandates, including compliance with the County-wide Integrated Waste Management Plan (IWMP).

4.3 OTHER PROJECTS IN THE VICINITY OF THE PROPOSED PROJECT

To properly evaluate the potential environmental impacts of the proposed project, other projects in the vicinity must also be taken into account to determine if the proposed project would contribute to any impacts that may be considered cumulatively significant. Cumulative impacts are those impacts on the environment that may result from the incremental effects of the proposed project when they are added to the effects of other projects that are not yet implemented but are currently under construction or whose future implementation can be realistically predicted. Cumulative impacts can result from projects whose individual impacts are separately less than significant but collectively significant when considered along with other reasonably foreseeable projects within the proposed project area.

State CEQA Guidelines require that the potential cumulative impacts of the proposed project be evaluated based on an identification of related projects in the area or on projections regarding future conditions in the area that may contribute to a cumulative impact. Conditions in both the short-term and long-term are relevant. Relative to short-term, the potential for specific projects in the vicinity of HnGS to become operational at the same time that HnGS Repowering is under construction was investigated during preparation of the HnGS EIR technical studies. No specific projects were identified in either the City of Seal Beach or the City of Long Beach that would lead to potential cumulative impacts during the project construction phase. However, the project traffic study incorporates a growth factor to account for potential increases in traffic over the existing condition through the construction phase. Cumulative considerations relative to long-term impacts, including air quality and noise effects, are also addressed in their respective EIR sections and both are addressed according to accepted protocols of permitting agencies and/or standard practice for EIR preparation.

The City of Seal Beach, in response to the Notice of Preparation, suggests that the AES Alamitos Generating Station be considered for potential cumulative impact with respect to provision of Emergency Response services. However, there are no identified projects or changes in conditions at AES that are reasonably foreseeable and could be considered from a cumulative perspective. AES is a part of the existing environmental condition (this applies to air quality and noise as well) and since HnGS does not increase the need for emergency services (relative to the existing operation); there are no potential impacts that would serve as the subject of the analysis.

In addition, an analysis of cumulative impacts related to topics addressed in detail in the EIR is included within the each relevant impact section.

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4.4 AIR QUALITY

This section evaluates potential air quality impacts associated with the implementation of the proposed project. Air pollution produced from the proposed project would occur both during construction and operation of the project. This section analyzes potential air quality impacts associated with the short-term construction and long-term operation of the proposed project and compares them to the baseline air emissions case defined by operation of the existing generator units 5 and 6. In all cases examined relative to project operations, the proposed SCGS would result in a net emissions reduction when compared to the operation of existing HnGS Units 5 and 6. Mitigation measures for potentially significant impacts are recommended, where appropriate. The air quality impact technical report from which the information in this section was obtained is included as Appendix B of this EIR.

4.4.1 ENVIRONMENTAL SETTING

4.4.1.1 Regional Climate

The regional climate significantly influences the air quality in the SCAB. Climatic variables, including temperature, wind, humidity, precipitation, and even the amount of sunshine, influence air quality of a region. In addition, the SCAB is frequently subjected to an inversion layer that traps air pollutants. Temperature has an important influence on SCAB wind flow, pollutant dispersion, vertical mixing, and photochemistry. Annual average temperatures throughout the SCAB vary from the low to middle 60 degrees Fahrenheit (ºF). However, due to decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47ºF in downtown Los Angeles and 36ºF in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100ºF.

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of the SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide (SO_2) to sulfates is heightened in air with high relative humidity. The marine layer is an excellent environment for that conversion process, especially during the spring and summer months. The annual average relative humidity is 71 percent along the coast and 59 percent inland. Because the ocean effect is dominant, periods of heavy early morning fog are frequent, and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90 percent of the rainfall in the SCAB occurs from November through April. Annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thundershowers near the coast and slightly heavier shower activity in the eastern portion of the region and near the mountains. Rainy days make up 5 to 10 percent of all days in the SCAB, with the frequency being higher near the coast. The influence of rainfall on the air pollutant contaminant levels in the SCAB is minimal.

Although some wash-out of pollution would be expected with winter rains, air masses that bring precipitation of consequence are very unstable and provide excellent dispersion that masks wash-out effects. Summer thunderstorm activity affects pollution only to a limited degree. High contaminant levels can persist even in areas of light showers if the inversion is not broken by a major weather system. However, heavy clouds associated with summer storms minimize ozone (O_3) production because of reduced sunshine and cooler temperatures.

HnGS is located less than one mile from the coast and is influenced by its proximity to the Pacific Ocean. Rainfall averages about 14.5 inches a year, falling almost entirely from late October to early April. The meteorological data (temperature and precipitation) from the Los Angeles International Airport are detailed in Table 4.4-1.

Table 4.4-1
Average Monthly Temperatures and Precipitation
for Los Angeles International Airport, CA, 1961-1990

Month	**Mean Daily Temperatures**		**Mean Monthly Precipitation (inches)**
	Max (ºF)	**Min (ºF)**	
January	65	47	2.40
February	66	49	2.51
March	65	50	1.98
April	68	53	0.72
May	69	56	0.14
June	72	60	0.03
July	75	63	0.01
August	76	64	0.15
September	76	63	0.31
October	74	59	0.34
November	71	52	1.76
December	66	48	1.66
Absolute extreme temperatures	110	23	12.01 (total)
Source: Local Climatological Data, Annual Summary with Comparative Data, Los Angeles, California, International Airport, www.wrcc.dri.edu			

The importance of wind to air pollution is considerable. The direction and speed of the wind determine the horizontal dispersion and transport of air pollutants. During the late autumn to early spring rainy season, the SCAB is subjected to wind flows associated with traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed “Santa Anas” each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind.

Summer wind flows are created by the pressures differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the SCAB is the “Catalina Eddy,” a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

The vertical dispersion of air pollutants in the SCAB is frequently restricted by the presence of a persistent temperature inversion in the atmospheric layer near the earth’s surface. Normally, the temperature of the atmosphere decreases with altitude; however, when the temperature of the atmosphere increases with altitude, the phenomenon is termed an inversion. An inversion condition can exist at the surface or at any height above the ground. The bottom of the inversion, known as the mixing height, is the height of the base of the inversion.

In the SCAB, there are two distinct temperature inversion structures that control the vertical mixing of air pollution. During the summer, warm, high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire SCAB. The mixing height for this inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as NO_x and CO from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primarily pollutants along the coastline.

In general, inversions in the SCAB are lower before sunrise than during the daylight hours. As the day progresses, the mixing height normally increases as the warming of the ground heats the surface air layer. As this heating continues, the temperature of the surface layer approaches the temperature of the base of the inversion layer. When these temperatures become equal, the inversion layer’s lower edge begins to erode, and if enough warming occurs, the layer breaks up. The surface layers are gradually mixed upward, diluting the previously trapped pollutants. The breakup of inversion layers frequently occurs during mid- to late-afternoon on hot summer days. Winter inversions usually break up by mid-morning.

4.4.1.2 Existing Air Quality

Criteria Air Pollutants

The SCAQMD monitors levels of various pollutants at its 33 monitoring stations within the SCAB. The closest ambient air quality monitoring station to the HnGS is the South Coastal Los Angeles County monitoring station. Background ambient air quality data from 2004 through 2007 for criteria pollutants measured at the South Coastal Los Angeles County monitoring station are presented in Table 4.4-2. Ambient air quality was compared to the most stringent of either the California Ambient Air Quality Standards (CAAQS) or the National Ambient Air Quality Standards (NAAQS) to determine exceedance of the standard. In all cases, CAAQS are the most stringent.

The air quality data indicates that the area is in compliance with both CAAQS and NAAQS for CO, nitrogen dioxide (NO_2), and SO_2. Additionally, lead (Pb) and sulfate concentrations measured were below state and national standards. State O_3, particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) standards were exceeded on several days each year. The state 1-hour O_3 standard was exceeded once in 2007; however, the federal 1-hour and 8-hour ozone standards were not exceeded. At this monitoring station, peak 24-hour PM_{10} concentrations ranged from 66 $\mu g/m^3$ in 2005, 78 $\mu g/m^3$ in 2006, and 75 $\mu g/m^3$ in 2007. The number of observed exceedance of the state 24-hour PM_{10} standard varied from five days in 2005 and 2007 to six days in 2006. The station recorded five exceedance of the 24-hour $PM_{2.5}$ standard in 2006 and 12 exceedance in 2007.

Table 4.4-2
Background Air Quality Data for the South Coastal Los Angeles County Station (2005-2007)

Constituent	Maximum Observed Concentration (No. of Standard Exceedance - most restrictive)				
	State Standard	**Federal Standard**	**2005**	**2006**	**2007**
CO					
1-hr	20.0 ppm	35.0 ppm	4.0 (0 days)	4.0 (0 days)	3.0 (0 days)
8-hr	9.0 ppm	9.5 ppm	3.5 (0 days)	3.4 (0 days)	2.6 (0 days)
O_3					
1-hr	0.09 ppm	0.12 ppm	0.091 (0 days)	0.091 (0 days)	0.099 (1 day)
8-hr	0.07 ppm	0.08 ppm	0.068 (0 days)	0.068 (0 days)	0.073 (1 day)
NO_x					
1-hr	0.25 ppm	---	0.14 (0 days)	0.1 (0 days)	0.11 (0 days)
Annual	---	0.053 ppm	0.0241	0.0215	0.0207

Constituent	Maximum Observed Concentration (No. of Standard Exceedance - most restrictive)				
	State Standard	Federal Standard	2005	2006	2007
SOx					
1-hr	0.25 ppm	---	0.04 (0 days)	.03 (0 days)	0.11 (0 days)
3-hr	---	0.5 ppm	---	---	---
24-hr	0.04 ppm	0.14 ppm	0.01 (0 days)	.010 (0 days)	0.011 (0 days)
Annual	---	0.03 ppm	---	---	0.0027 (0 days)
PM_{10}					
24-hr	50 µg/m3	150 µg/m3	66 (5 days)	78 (6 days)	75+ (5 days)
Annual	20 µg/m3	50 µg/m3	29.6	31.1	30.2+
$PM_{2.5}$					
24-hr	12 µg/m3	65 µg/m3	41.4 (0 days)	58.5 (5 days)	82.9 (12 days)
Annual	--	35 µg/m3	16.0	14.2	14.6
3 Year Nat'l. Avg	---	---	---	---	---
Lead					
30-day	1.5 µg/m3	---	0.01	0.01	0.02
Calendar Quarter	---	1.5 µg/m3	0.01	0.01	0.01
Sulfates					
24-hour	25	---	16.8 (0 days)	17.8 (0 days)	11.1 (0 days)
Source: SCAQMD Historical Data – Air Quality Data Table, South Coastal LA Monitoring Station					

The project site is located within the SCAB, which is currently designated "severe nonattainment" for the federal eight-hour O_3 ambient air quality standard and has until 2021 to achieve the national standard. The SCAB is also in nonattainment for $PM_{2.5}$ and has until 2010 to achieve the national standard, but will be filing a five-year extension to 2015 (as per the SCAQMD June 2007 board meeting). The SCAB is in attainment for NO_2. Table 4.4-3 below represents SCAB non-attainment designations from 2004-2006.

Table 4.4-3
SCAB Non-attainment Designation

Constituent	Non-attainment Designation		
	2004	2005	2006
CO	--	--	--
NO_2	--	--	--
SO_2	--	--	--
PM_{10}	--	Yes	Yes
$PM_{2.5}$	--	Yes	Yes
O_3	--	Yes	Yes

Toxic Air Contaminants

Cancer Risk

One of the primary health risks of concern due to exposure to toxic air contaminants (TACs) is the risk of contracting cancer. The carcinogenic potential of TACs is a particular public health concern because it is currently believed by many scientists that there is no “safe” level of exposure to carcinogens, that is, any exposure to a carcinogen poses some risk of causing cancer. Health statistics show that one in four people will contract cancer over their lifetime, or 250,000 in a million, from all causes, including diet, genetic factors, and lifestyle choices. Approximately two percent of cancer deaths in the United States may be attributable to environmental pollution (Doll and Peto 1981).

Non-cancer Health Impacts

Unlike carcinogens, for most non-carcinogens, it is believed that there is a threshold level of exposure to the compound below which it will not pose a health risk. The California Environmental Protection Agency (CalEPA) and California Office of Environmental Health Hazard Assessment (OEHHA) have developed reference exposure levels (RELs) for non-carcinogenic TACs that are health-conservative estimates of the levels of exposure at or below which health effects are not expected. The non-cancer health risk due to exposure to a TAC is assessed by comparing the estimated level of exposure to the REL. The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index (HI).

Multiple Air Toxics Exposure Study

The Multiple Air Toxics Exposure Study (MATES) is considered to be one of the most comprehensive urban air toxic studies conducted by the SCAQMD within the SCAB. The MATES III (2004-2006) is a monitoring and evaluation study conducted in the SCAB as a follow on to previous air toxics studies in the SCAB (MATES II [1998-1999] and MATES I [1987]) and is part of the SCAQMD Governing Board Environmental Justice Initiative.

MATES III consisted of several elements such as monitoring program, an updated emissions inventory of TACs, and a modeling effort to characterize risk across the SCAB. The study estimated the SCAB-wide carcinogenic risk from air toxics at 1,200 cases per million. About 94 percent of this risk was attributed to emissions associated with mobile sources, with the remaining attributed to toxics emitted from stationary sources. The estimated population weighted risk across the SCAB for the MATES III period showed an 8 percent decrease compared to the MATES II period. MATES III (2005 inventory) also noted an 11 percent decrease in the carcinogenic potency weighted emissions since MATES II (1998 emission inventory year). Emissions from on-road, point, and area source categories were estimated to have decreased 12 percent, 66 percent, and 42 percent, respectively, while off-road emissions were determined to be essentially unchanged, with an increase of 1 percent (SCAQMD 2008).

Regional Emissions Inventory

Criteria Pollutant Inventory

SCAQMD's current emissions inventory for the SCAB is summarized in Table 4.4-4. Anthropogenic sources of emissions include stationary sources, area-wide sources, and mobile sources (both on-road and off-road mobile sources). On-road mobile sources include light-duty passenger vehicles; light-, medium-, and heavy-duty trucks; motorcycles; and urban buses. Off-road mobile sources include off-road vehicles, trains, ships, aircraft, and mobile equipment. The SCAQMD emissions inventory only includes emissions in the SCAB for criteria air pollutants NO_x, CO, SO_x, PM_{10}, and VOCs (a precursor of O_3). Since O_3 is formed by photochemical reactions involving the precursors, VOCs and NO_x, it is not inventoried.

Table 4.4-4
Sources of Criteria Pollutant Emissions (tons per year)

Source Category	VOC	CO	NO_X	SO_X	PM_{10}
Stationary Sources	59.0	35.8	40.0	17.9	12.6
Area-wide Sources	85.3	43.8	15.3	0.4	103.2
Mobile Sources	252.5	2133.5	529.4	24.6	29.5
Natural Sources	34.3	65.0	1.9	0.6	6.6
TOTAL =	**431.1**	**2278.0**	**586.7**	**43.5**	**151.9**
Source: CARB Estimated Annual Average Emissions, SCAB Los Angeles					

As shown in Table 4.4-4 above, mobile sources are the major contributors to emissions in the SCAB; i.e., CO (93 percent), NO_x (90 percent), SO_x (43 percent), and VOCs (58 percent). A significant percentage of PM_{10} in the atmosphere is attributable to mobile sources (19 percent), but as shown in the table, the majority of PM_{10} emissions (67 percent) are from area-wide sources in the SCAB.

TAC Inventory

Table 4.4-5 presents the TAC inventory as published by the SCAQMD in its MATES III final report. The 2007 Air Quality Management Plan (AQMP) is the basis for the toxics emissions inventory developed for MATES III. The 2005 inventory used in the MATES III modeling analysis is projected from the 2002 baseline inventory in the 2007 AQMP. MATES III identified diesel particulate matter (DPM) to account for over 85 percent of the overall potency weighted emissions (emissions for carcinogenic chemicals from Table 4.4-5 weighted by a ratio of their cancer potency to the cancer potency of DPM). The other significant compounds (i.e., contributions greater than 1 percent) included 1,3-butadiene, benzene, perchloroethylene, and hexavalent chromium. On-road and off-road mobile sources were identified to contribute nearly 93 percent of the potency weighted air toxics emissions, while stationary (i.e., point and area) sources contributed about 7 percent of the potency weighted risk in the SCAB.

Table 4.4-5
2005 Annual Average Day Toxic Emissions for the SCAB

Pollutant	Emissions (lbs/day)				
	On-road	**Off-road**	**Point**	**Area**	**Total**
Acetaldehyde*	4857.0	8622.4	125.8	505.1	14110.3
*Acetone***	4020.5	7189.1	552.4	28904.9	40666.9
Benzene	13244.8	7808.3	906.5	609.3	22568.9
1,3 Butadiene	2723.1	1755.6	537.1	108.7	5124.5
Carbon tetrachloride	0.0	0.0	11.2	0.0	11.2
Chloroform	0.0	0.0	206.9	0.0	206.9
1,1 Dichloroethane	0.0	0.0	0.5	0.0	0.5
1,4 Dioxane	0.0	0.0	0.8	0.7	1.5
Ethylene dibromide	0.0	0.0	2.2	0.0	2.2
Ethylene dichloride	0.0	0.0	67.2	0.0	67.2
Ethylene oxide	0.0	0.0	16.1	52.6	68.7
Formaldehyde*	12596.6	19889.0	1488.8	1302.0	35276.4
*Methyl ethyl ketone**	745.6	1366.0	1244.3	6466.7	9822.6
Methylene chloride	0.0	0.0	325.1	13548.3	13873.4
MTBE	0.0	4.4	89.6	0.0	93.9
Naphthalene	573.4	376.8	16.6	568.1	1534.9
p-Dichlorobenzene	0.0	0.0	115.4	5553.9	5669.3
Perchloroethylene	0.0	0.0	940.4	9685.3	10625.7
Propylene oxide	0.0	0.0	2.2	0.1	2.3
Styrene	681.7	326.3	1332.5	76.5	2417.0
Toluene	37707.9	15369.2	8724.3	21029.4	82830.8
Trichloroethylene	0.0	0.0	587.1	633.0	1220.1
Vinyl chloride	0.0	0.0	51.1	0.0	51.1
Arsenic	0.2	3.9	13.4	24.8	42.3
Cadmium	1.5	2.1	3.2	7.2	14.0
Chromium	21.1	9.2	49.2	77.3	156.8
Diesel particulate	22164.5	37406.2	489.5	618.3	60678.5
*Elemental carbon****	10498.2	9337.4	4850.4	14197.3	38883.3
Hexavalent chromium	1.1	0.6	0.6	0.5	2.8
Lead	2.4	4.8	13.7	180.9	201.8
Nickel	15.3	5.8	44.2	23.4	88.7
Organic carbon	19972.7	18073.3	371.0	69230.1	107647.1
Selenium	0.5	0.5	41.4	2.2	44.6
*Silicon***	838.7	136.5	1211.9	218527.2	220714.3

Italics represent *Not a known human carcinogen.*

* Primarily emitted emissions. These materials are also formed in the atmosphere as a result of photochemical reactions.

** Acetone and silicon are not toxic compounds. Their emissions are included here because they were measured in the sampling program and were subsequently modeled for the purpose of model evaluation.

*** Includes elemental carbon from all sources (including diesel particulate).

4.4.1.3 Greenhouse Gas Emissions

Background

Greenhouse gases (GHGs) are defined as any gas that absorbs infrared radiation within the atmosphere. GHGs include, but are not limited to, water vapor, CO_2, CH_4, nitrous oxide (N_2O), and fluorocarbons. These GHGs lead to the trapping and buildup of heat in the atmosphere near the Earth's surface, commonly known as the "greenhouse effect." The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without natural GHGs, the Earth's surface would be cooler. Emissions from human activities such as electricity production and vehicles have elevated the concentration of these gases in the atmosphere. Emissions of GHGs in excess of natural ambient concentrations are thought to be responsible for the enhancement of the greenhouse effect and contribute to what is termed "global warming," a trend of unnatural warming of the Earth's natural climate. Unlike criteria air pollutants and TACs, which are pollutants of regional and local concern, GHGs are global pollutants and climate change is a global issue.

Types of Greenhouse Gases

Water vapor is the most abundant and variable GHG in the atmosphere. It is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. The main source of water vapor is evaporation from the oceans (approximately 85%). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves (AEP 2007).

CO_2 is an odorless, colorless GHG. Natural sources of CO_2 include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic degassing. Anthropogenic (human caused) sources of CO_2 include burning fuels, such as coal, oil, natural gas, and wood. Concentrations of CO_2 in the atmosphere are currently around 379 ppm; that may rise to 1,130 CO_2 equivalents (CO_2e) ppm by 2100 as a direct result of anthropogenic sources (IPCC 2007).

CH_4 is a gas and is the main component of natural gas used in homes. A natural source of CH_4 is from the decay of organic matter. Geological deposits known as natural gas fields contain CH_4, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure and cattle.

N_2O, also known as laughing gas, is a colorless gas. N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (nylon production, nitric acid production) also emit N_2O. It is used in rocket engines, as an aerosol spray propellant, and in race cars. During combustion, NO_x (NO_x is a generic term for mono-nitrogen oxides, NO and NO_2) is produced as a criteria pollutant and is not the same as N_2O. Very small quantities of N_2O may be formed during fuel combustion by reaction of nitrogen and oxygen.

Chlorofluorocarbons are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane with chlorine and/or fluorine atoms. Chlorofluorocarbons are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at the earth's surface). Chlorofluorocarbons were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone, therefore their production was stopped in 1996 as required by the Montreal Protocol. Fluorocarbons have a global warming potential of between 140 and 11,700, with the low end being for HFC-152a and the higher end being for HFC-23. Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest global warming potential of any gas - 23,900. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

O_3 is also a GHG; however, unlike the other GHGs, O_3 in the troposphere is relatively short-lived and therefore is not global in nature. According to the California Air Resources Board (CARB), it is difficult to make an accurate determination of the contribution of O_3 precursors (NO_x and VOCs) to global warming.

4.4.2 REGULATORY FRAMEWORK

The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county SCAB, the Mojave Desert Air Basin (MDAB), and the Riverside County portions of the Salton Sea Air Basin (SSAB). The SCAB, which is a sub-area of the SCAQMD jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. HnGS lies within the SCAB. The current air quality settings in the vicinity of the HnGS are discussed below.

4.4.2.1 Regional Authority

In the SCAB, the SCAQMD is the agency responsible for the administration of federal and state air quality laws, regulations, and policies. SCAQMD regulations require that any equipment that emits or controls air contaminants, such as NO_x and VOCs, be permitted prior to construction, installation, or operation (Permit to Construct or Permit to Operate). The SCAQMD is responsible for review of applications and for the approval and issuance of these permits. In addition, the project must comply with the relevant federal air quality requirements.

4.4.2.2 Air Quality Regulations, Plans and Policies

Air quality is determined primarily by the type and amount of contaminants emitted into the atmosphere, the size and topography of the air basin, and the meteorological conditions. The

SCAB has low mixing heights and light winds, which are conducive to the accumulation of air pollutants. Pollutants that impact air quality are generally divided into two categories: criteria pollutants (those for which health standards have been set) and TACs (those that cause cancer or have adverse human health effects other than cancer).

It is the responsibility of the SCAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in the SCAB. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: O_3, CO, NO_2, PM_{10}, $PM_{2.5}$, SO_2, and Pb. These standards were established to protect sensitive receptors from adverse health impacts due to exposure to air pollution. The CAAQS are more stringent than the federal standards. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride. Hydrogen sulfide and vinyl chloride are currently not monitored in the SCAB because these contaminants are not seen as a significant air quality problem. CAAQS and NAAQS for each of these pollutants and their effects on human health are summarized in Table 4.4-6.

Table 4.4-6
Ambient Air Quality Standards

Air Pollutant	Concentration/Averaging Time		Most Relevant Health Effects
	State Standard	Federal Primary Standard	
O_3	0.09 ppm, 1-hr. avg.	0.12 ppm, 1-hr avg., 0.075 ppm, 8-hr avg.	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
CO	9.0 ppm, 8-hr avg. 20 ppm, 1-hr avg.	9 ppm, 8-hr avg. 35 ppm, 1-hr avg.	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
NO_2	0.030 ppm, 1-hr avg.	0.053 ppm, annual arithmetic mean	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration

Air Pollutant	Concentration/Averaging Time		Most Relevant Health Effects
	State Standard	Federal Primary Standard	
SO_2	0.04 ppm, 24-hr avg. 0.25 ppm, 1-hr. avg.	0.030 ppm, annual arithmetic mean 0.14 ppm, 24-hr avg.	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
PM_{10}	50 µg/m3, 24-hr avg 20 µg/m3, annual arithmetic mean	150 µg/m3, 24-hr avg.	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
$PM_{2.5}$	12 µg/m3, annual arithmetic mean	35 µg/m3, 24-hr avg. 15 µg/ m3, annual arithmetic mean	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Sulfates	25 µg/ m3, 24-hr avg.	None	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease;(d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/ m3, 30-day avg.	1.5 µg/ m3, calendar quarter	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility Reducing Particles	Insufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70%, 8-hour average	None	Visibility impairment on days when relative humidity is less than 70 percent

4.4.2.3 GHG State-wide Regulatory Efforts

AB 32 Scoping Plan

The California Global Warming Solutions Act, or AB 32, has been implemented to establish specific GHG emission reduction targets as well as monitoring and reporting requirements for businesses and industries state-wide. The first emission reduction target for California is to reduce GHG emissions back to 1990 levels by 2020. In order to achieve this goal, a Climate Action Team was formed and a Scoping Plan was drafted and accepted by the CARB. The Scoping Plan describes comprehensive, sector-based strategies and programs tasked with significantly reducing statewide GHG emissions in California.

Sector based strategies will have a direct impact on electricity generators such as LADWP. Electricity generation is the second largest contributor to the national GHG emission inventory. In 2004, California's energy sector contributed 25 percent of the state's GHG emissions. The

Draft Scoping Plan tasks the electricity sector with reducing GHG emissions by 40 percent by 2020. The Plan recommends a multi-faceted approach including aggressive energy efficiency programs and standards, a multi-sector regional cap-and-trade program, and economic incentives for renewable energy development in order to achieve the reduction targets.

Table 4.4-7
California State-Wide GHG Policy Progress

Calendar Year	Policy	Initiative
1988	AB 4420	California Energy Commissioners began a study of statewide global warming impacts, and developed an inventory of GHG emission sources
2000	SB 1771	Established California Climate Action Registry to allow companies, cities, and government agencies the ability to voluntarily record GHG emissions in anticipation of early reduction credit
2004	AB 1493	CARB enacted and enforced emissions standards that reduced GHG emissions from automobiles
2005	EO S-3-05	Established GHG emission reduction targets through CY 2050. Assigned lead agencies to develop a Climate Action Plan; the Plan developed programs and strategies to meet reduction targets
2006	SB 107 (Renewable Portfolio Standard)	Required investor owned utilities to get 20% of electricity from renewable sources by 2010
2006	AB 1925	Required California Energy Commission to study and make recommendations for capturing and storing industrial CO_2
2006	SB 1368	Required Public Utilities Commission to develop and adopt a GHG emission performance standard for private electric utilities
2006	AB 32 (Global Warming Solutions Act)	Established statewide GHG emission limits, reporting requirements, and a verification procedure to monitor and enforce compliance
2007	SB 97	Required CEQA projects to provide GHG impact analysis; tasked local air districts to help lead and develop significance thresholds and significant impact criteria
2008	CARB Interim Significance Thresholds	CARB developed and proposed significance thresholds for industrial, commercial, and residential projects, final recommendations will be promulgated in 2009

4.4.3 THRESHOLDS OF SIGNIFICANCE

4.4.3.1 Criteria Pollutant Thresholds

Emissions that can adversely affect air quality originate from various activities. A project generates emissions both during the period of its construction and during ongoing daily operations. Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 4.4-8 are exceeded. This table includes both emissions and concentration related significance thresholds. Construction and non-RECLAIM source emissions (i.e., indirect source emissions) are compared to pollutant specific emissions thresholds to determine if the impact is significant.

Additionally, operational NO_x or SO_x emissions from stationary sources regulated under the RECLAIM program (SCAQMD Regulation XX) would be considered significant if they exceed a facility specific RECLAIM threshold. It should be noted, however, since electric utilities are exempt from the SO_x RECLAIM program (Rule 2001(i)(2)(A)), this criteria would only apply to NOx emissions from this project. This RECLAIM threshold is calculated based on the project's Initial 1994 RECLAIM Allocation plus non-tradable credits (NTCs), as listed in the RECLAIM Facility Permit. A project is considered significant if the project's operational emissions, plus the facility's Annual Allocation for the year the project becomes operational, including purchased RECLAIM trading credits (RTCs) for that year, are greater than this RECLAIM significance threshold. HnGS is a RECLAIM facility under SCAQMD jurisdiction (Facility ID: 800074).

The SCAB is currently designated by EPA as a nonattainment area for PM_{10} and $PM_{2.5}$. As a result, localized impacts for PM_{10} and $PM_{2.5}$ would be considered significant if they exceed the localized significance thresholds listed in Table 4.4-8. The localized significance thresholds for these nonattainment pollutants are based on the significant change in air quality concentration levels as they appear in Rule 1303, Table A-2.

The SCAB has been designated attainment under the CAAQS and NAAQS for NO_2 and CO. For this reason, localized NO_x and CO air quality impacts would be significant if the project's NO_2 and CO impacts plus background are above the CAAQS and/or the NAAQS. Because the SCAB has been designated attainment for both the CAAQS and NAAQS for SO_2 since the early 1980s, no significant change in air quality concentration has ever been identified for this pollutant for the purposes of permitting new or modified equipment.

Table 4.4-8
Air Quality Significance Thresholds

Pollutant	Construction	Operation	RECLAIM Sources[1]
Criteria Pollutants Mass Daily Thresholds			
NO_x	100 lbs/day	55 lbs/day	10,045 lbs/day
VOC	75 lbs/day	55 lbs/day	
PM_{10}	150 lbs/day	150 lbs/day	
PM2.5	55 lbs/day	55 lbs/day	
SO_x	150 lbs/day	150 lbs/day	Exempt
CO	550 lbs/day	550 lbs/day	
Lead	3 lbs/day	3 lbs/day	
TAC, AHM, and Odor Thresholds			
Toxic Air Contaminants (TACs)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment)		
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402		
Ambient Air Quality for Criteria Pollutants			
NO_2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm/339 µg/m^3 (state) 0.03 ppm/57 µg/m^3 (state)		
PM_{10} 24-hour average annual geometric mean	10.4 µg/m^3 (construction) & 2.5 µg/m^3 (operation) 1.0 µg/m^3		
$PM_{2.5}$ 24-hour average	10.4 µg/m^3 (construction) & 2.5 µg/m^3 (operation)		
Sulfate 24-hour average	1 µg/m^3		
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm/23 mg/m^3 (state) 9.0 ppm/10 mg/m^3 (state/federal)		

[1] The NO_x emissions significance threshold, in lbs/day, is based on the facility's Initial 1994 RECLAIM Allocation (3666443 lbs) divided by 365 days per year.

4.4.3.2 GHG Significance Thresholds

California Air Resources Board: Interim Significance Thresholds

In October, 2008, CARB released interim guidance on significance thresholds for industrial and residential projects. The draft proposal for industrial project lists the GHG threshold at 7,000 metric tons of CO_2 equivalent per year (MTCO2e/year) for operational emissions (excluding transportation), and performance standards for construction and transportation emissions. This threshold of significance will result in the vast majority (~90% statewide) of the GHG emissions from new industrial projects being subject to CEQA requirement to impose feasible mitigation.

Greenhouse Gas Significance Thresholds

On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is the lead agency. The SCAQMD interim significance thresholds are designed to reduce GHG emissions by 90 percent. The interim thresholds provide guidance to existing and future projects required to complete a GHG impact analysis. Formal methodologies for determining project significance are being developed. SCAQMD has published a five tiered draft GHG threshold approach with bifurcated screening levels. Based on the SCAQMD draft, the Tier 3 industrial development projects, such as the HnGS Units 5 and 6 Repowering Project, have a significance threshold of 10,000 metric tons per year of CO_2 equivalent. If the project exceeds the GHG screening significance threshold level and GHG emissions cannot be mitigated to less than the screening level, the project would move to Tier 4.

SCAQMD recommends mitigation for projects that cause a significant impact to minimize potentially adverse impacts per CEQA Guidelines §15126.4. Because GHG emissions contribute to global change, mitigation measures could be implemented locally, nationally, or internationally and provide global climate change benefits. Because reducing GHG emissions may provide co-benefits through concurrent reductions in criteria pollutants, when considering mitigation measures where the SCAQMD is the lead agency under CEQA, staff recommends mitigation measures that are real, quantifiable, verifiable, and surplus to be selected in the following order of preference.

- Incorporate GHG reduction features into the project design, e.g., increase a boiler's energy efficiency, use materials with a lower global warming potential than conventional materials, etc.
- Implement on-site measures that provide direct GHG emission reductions on site, e.g., replace on-site combustion equipment (boilers, heaters, steam generators, etc.) with more efficient combustion equipment, install solar panels on the roof, eliminate or minimize fugitive emissions, etc.
- Implement neighborhood mitigation measure projects that could include installing solar power, increasing energy efficiency through replacing low efficiency water heaters with

high efficiency water heaters, increasing building insulation, using fluorescent bulbs, replacing old inefficient refrigerators with efficient refrigerators using low global warming potential refrigerants, etc.

- Implement in-district mitigation measures such as any of the above identified GHG reduction measures; reducing vehicle miles traveled through greater rideshare incentives, transit improvements, etc.
- Implement in-state mitigation measures, which could include any of the above measures.
- Implement out-of-state mitigation measure projects, which may include purchasing offsets if other options are not feasible.

4.4.4 ENVIRONMENTAL IMPACTS

The construction and operation of the SCGS would result in emissions of criteria pollutants, TACs, and GHGs. This section provides an analysis of the air quality impacts associated with these emissions.

4.4.4.1 Project Construction

Construction of the proposed SCGS would result in emissions from a number of activities, including site preparation and grading, construction of equipment pads and foundations, paving of access roads and equipment maintenance areas, installation of SCGS and ancillary equipments, and turbine commissioning.

Construction equipment, manpower requirements, and hours of operations required for completion of each construction phase were estimated for use in the emissions analysis. Assumptions on the duration of each construction phase were made based on the anticipated schedule provided by LADWP. Please see Appendix B, Table 4.1-1, for assumptions about equipment use and total hours of operation and manpower requirements.

The construction activities are anticipated to require approximately 26 months, including mobilization, site preparation and foundation construction, component acquisition and fabrication, SCGS erection, and system startup and commissioning. Construction-related activities are normally anticipated to occur six days per week, Monday through Saturday, from 7:00 a.m. to 3:30 p.m. As noted in the Project Description section (Section 3), two shifts per day may be necessary at times during the construction period, and Sunday shifts may also be required at times. To provide conservative estimates for the operating schedule of construction equipment during each phase, it has been assumed that all construction equipment would be operated 6 hours per day and that on-site trucks, including pick-up trucks, water trucks, service trucks, and fuel/lube trucks, would be operated 4 hours per day.

Emissions associated with construction activities during the project would result from the following activities:

- Site preparation and earthwork;
- Pile driving and foundation preparation;
- General construction, erection, and assembly;
- SCGS commissioning.

Some of the construction activities listed above would occur simultaneously, particularly as one phase is ending and another is starting up at adjacent locations as the construction of the SCGS proceeds.

Impact AIR1 During project construction, less than significant amounts of criteria pollutants would be emitted from earthmoving, construction worker travel, and general construction activities.

The peak daily unmitigated criteria pollutant emissions generated during construction are provided in Table 4.4-9. The output details generated using the Urban Emissions software (URBEMIS) are presented in two formats - emission totals as a time slice and emission totals as a phase. Emission totals as a phase are slightly lower due to the spread of activity across a longer timeframe. The time slice represents peak daily emissions during simultaneous activities within the proposed phase schedule, typically lasting one month. Because the time slice represents peak daily emissions during activity overlap, these results were used in the analysis and are reflected in Table 4.4-9.

Table 4.4-9
Estimated Peak Daily Unmitigated Emissions

	VOCs (lbs/day)	NO_x (lbs/day)	CO (lbs/day)	SO_2 (lbs/day)	Total PM_{10} (lbs/day)	Total $PM_{2.5}$ (lbs/day)
Site Preparation and Earthwork (4/1/2010 - 7/30/2010)						
On site	10.38	90.87	38.39	--	84.28	20.64
Off site	0.15	0.28	4.72	0.01	0.04	0.02
Total	10.52	91.15	43.61	0.01	84.32	20.66
Pile Driving and Foundation Building (8/1/2010 – 12/30/2010)						
On site	7.36	77.58	24.87	0.00	2.67	2.45
Off site	0.16	0.68	4.36	0.01	0.06	0.04
Total	7.62	78.26	29.23	0.01	2.72	2.49

	VOCs (lbs/day)	NO_x (lbs/day)	CO (lbs/day)	SO_2 (lbs/day)	Total PM_{10} (lbs/day)	Total $PM_{2.5}$ (lbs/day)
General Construction (1/1/2011 – 7/30/2012)						
On site	12.69	93.83	45.65	--	5.85	5.38
Off site	1.08	4.75	28.23	0.04	0.41	0.26
Total	13.77	98.59	73.87	0.04	6.25	5.64
Commissioning (8/1/2012 – 10/30/2012)						
On site	0.98	10.36	3.69	--	0.38	0.35
Off site	0.03	0.06	1.13	--	0.01	0.01
Total	1.02	10.42	4.82	--	0.39	0.36

When compared to SCAQMD adopted significance criteria for construction, none of the daily significance thresholds would be exceeded. Thus, the impact of criteria pollutant emissions during construction is less than significant and no impact mitigation measures are required. The construction emissions are compared to impact criteria in Table 4.4-10 below.

Table 4.4-10
Peak Daily Unmitigated Emissions – CEQA Significance Threshold Comparison

	VOCs (lbs/day)	NO_x (lbs/day)	CO (lbs/day)	SO_2 (lbs/day)	Total PM_{10} (lbs/day)	Total $PM_{2.5}$ (lbs/day)
2010 Totals						
Total (Onsite & Offsite)	10.52	91.15	43.61	0.01	84.32	20.66
2011 Totals						
Total (Onsite & Offsite)	13.77	98.59	73.87	0.04	6.25	5.64
2012 Totals						
Total (Onsite & Offsite)	13.01	91.89	70.74	0.04	5.82	5.24
CEQA Significance Threshold (lbs/day)	75	100	550	150	150	55
Exceeds Significance Threshold? (Yes/No)	No	No	No	No	No	No

Regulatory Control Measures During Construction

The SCAQMD has adopted specific regulations geared towards mitigating emissions of VOCs and PM (fugitive dust) during construction activities. SCAQMD Rule 403 *Fugitive Dust,* states that any active operations including demolition, grading, and/or earthmoving activities shall include appropriate best control measures designed to control localized fugitive dust emissions. Best control measures shall include one of the following:

- Watering the site two-three times a day with a water track;
- Application of non-chemical soil stabilizers to unpaved roads or disturbed areas;
- Stabilizing equipment staging areas.

SCAQMD Rule 1113 *Architectural Coatings,* requires architectural coatings used during coating activities to meet a VOC limit requirement of 250 grams of VOC per liter. In order to maintain compliant operations during construction, best control measures for fugitive dust shall be implemented during relevant activities (i.e. demolition, grading, earth-moving) and regulated coatings shall be used during coating activities.

Impact AIR2 Construction traffic would generate less than significant localized CO hot spot impacts.

CO "hot spots," or areas where CO is concentrated, typically occur near congested intersections, parking garages, and other spaces where a substantial number of vehicles remain idle. Petroleum-powered vehicles emit CO, an unhealthy gas which disperses based on wind speed, temperature, traffic speeds, local topography, and other variables. As vehicles idle in traffic congestion or in enclosed spaces, CO can accumulate to create CO hot spots that can impact sensitive receptors.

Increases in traffic from a project might lead to impacts of CO emissions on sensitive receptors if the traffic increase worsens congestion on roadways or at intersections. An analysis of these impacts is required if:

- The project is anticipated to reduce the level of service (LOS) of an intersection rated at C or worse by one full level; or
- The project is anticipated to increase the volume-to-capacity (V/C) ratio of an intersection rated D or worse by 0.02.

A short-term increase in traffic to the facility would occur during the construction of the SCGS. The construction traffic analysis (Section 4.8, Traffic Study) conducted in support of this EIR analyzed 13 intersections in the vicinity of the project for *Year 2008 Existing Conditions, Year 2012 "No Project" Conditions*, and *2012 "With Project Construction" Condition*s.

The traffic study analysis showed that the project does not decrease the LOS of any intersection rated C or worse by one full level during the peak construction period or reduce the volume to capacity (V/C) ratio of any intersection rated LOS E or LOS F by more than 0.020. Consequently, the construction of the project would not have any CO impacts, as the project would not result in any significant traffic increases to the facility as detailed in the Traffic Study. LADWP expects to operate the new units using the existing staff employed at HnGS. Thus, no long-term CO impacts related to project operations would occur.

Since neither peak construction activity nor long-term project operations would significantly affect traffic in the area, the project has a less than significant impact on nearby receptors due to CO emissions.

Impact AIR3 The proposed project would have significant short-term impacts on air quality during SCGS testing and commissioning.

The commissioning of the turbines would involve all of the steps from the first fire of the CT through the completion of the CT certification. A maximum of three CTs would be commissioned during a month but only two CTs would be commissioned simultaneously during a month. The CT commissioning schedule was developed by LADWP in support of the SCAQMD *Application for Permit to Construct and Operate Haynes Generation Station Units 11 through 16* (PTC/PTO, LADWP, 2009a) through a review of manufacturer's information and the similar Sentinel Standby Power Project (Desert Hot Springs, CA) commissioning schedule. Accordingly, each CT would be commissioned in a total of 176 hours. The commissioning sequence is described in detail in Appendix B.

The commissioning emissions for CO, NO_x, and VOC were estimated by LADWP for the PTC/PTO application using the emission data provided by the equipment manufacturer. PM_{10} emissions were estimated using USEPA AP-42 emission factor of 0.6 lb/MMscf. SO_2 in the exhaust is converted to sulfur trioxide (SO_3) in the SCR/CO catalyst system. SO_3 then reacts with ammonia in the SCR system to become ammonium sulfate ($(NH_4)_2SO_4$), which is a particulate matter. This additional PM emission was included in the total PM_{10} emission factor for estimating PM_{10} emissions, where applicable.

Table 4.4-11 presents the commissioning emissions calculated by LADWP for permitting purposes. The emissions of NO_x is higher during commissioning than during normal operations due to the need to test and tune the CTs prior to installation of the SCR to control NO_x. Emissions of CO are also higher than during normal operations because combustor performance would not be optimized and the CO catalyst would not be installed.

Table 4.4-12 presents a summary of the estimated maximum daily emissions of criteria pollutants anticipated from turbine commissioning in comparison with the SCAQMD significance criteria for construction. It should be noted that the peak daily emissions presented in the table are calculated assuming two turbines undergoing simultaneous commissioning with the maximum hourly emissions occurring continuously for 12 hours. As shown in the table, emissions during commissioning would exceed the SCAQMD CEQA significance levels for all pollutants except SO_X, and they are considered significant adverse impacts (with the exception of SO_X). It is noted that the commissioning is a one-time, short-term event that does not represent the normal operation of the project.

Table 4.4-11
Commissioning Emission Rates per CT

Pollutant	Maximum Hourly Emissions (lb/hr)
NO_x	80.33
CO	197.33
PM_{10}	6.65
VOC	12.00
SO_x	0.61

Table 4.4-12
Peak Daily Emissions during Turbine Commissioning

	NO_x	CO	PM_{10}	VOC	SO_x
Maximum Daily Emissions (lbs/day)	1,928	4,736	160	288	14.64
CEQA Significance Threshold	100	550	150	55	150
Significant?	Yes	Yes	Yes	Yes	No
Note: Maximum daily emissions calculated as maximum hourly emissions multiplied by 12 for a worst-case estimate. The emissions shown are for two turbines assuming simultaneous commissioning.					

Localized air quality dispersion modeling using AERMOD, the United States Environmental Protection Agency (EPA) modeling system, was conducted to analyze if emissions during commissioning resulted in exceedance of the short-term ambient air quality standards. Detailed dispersion modeling of different commissioning scenarios was conducted by LADWP for short-term NO_x (1-hour) and CO (1-hour and 8-hour) in support of the PTC/PTO application to study the impact of turbine commissioning on local air quality. Table 4.4-13 presents the source parameters pertaining to the different commissioning phases. Based on a thorough review of the source parameters in Table 4.4-13, LADWP identified seven scenarios with the potential to result in high CO and NO_x emissions (phases 2, 5, 6.1, 6.7, 6.8, 6.9, and 6.10). Screening dispersion modeling analysis of these potential seven phases identified commissioning phase 2 to result in high 1-hour ground level CO concentrations and phase 4 to result in high 1-hour ground-level NO_x concentrations.

Table 4.4-13
Source Parameters for Various Phases of Commissioning (1-hour)

Commissioning Phase	Number of Turbines	CO Emission Rate (g/s)	NO_x Emission Rate (g/s)	Release Height (m)	Stack Temperature (K)	Exhaust Velocity (m/s)	Stack Diameter (m)
Phase 2	2	5.725	1.402	27.43	732.59	5.98	4.11
Phase 3	2	5.722	1.393	27.43	732.59	5.98	4.11
Phase 4	2	3.81	2.639	27.43	735.37	8.27	4.11
Phase 5	2	3.811	2.635	27.43	735.37	8.27	4.11
Phase 6.1	2	8.736	2.1	27.43	737.59	10.57	4.11
Phase 6.2	2	5.712	3.108	27.43	714.82	13.87	4.11
Phase 6.3	2	5.712	4.032	27.43	703.15	16.65	4.11
Phase 6.4	2	5.04	4.914	27.43	691.48	19.13	4.11
Phase 6.5	2	4.158	5.796	27.43	683.15	21.48	4.11
Phase 6.6	2	5.67	6.657	27.43	677.59	23.66	4.11
Phase 6.7	2	7.791	7.476	27.43	673.15	25.79	4.11
Phase 6.8	2	11.004	8.358	27.43	673.15	27.8	4.11
Phase 6.9	2	16.254	9.198	27.43	676.48	29.82	4.11
Phase 6.10	2	24.864	10.122	27.43	681.48	31.87	4.11
Phase 7	2	24.843	10.102	27.43	681.48	31.87	4.11
Phase 8	2	24.843	10.101	27.43	681.48	31.87	4.11
Phase 9	2	24.843	10.101	27.43	681.48	31.87	4.11

Table adapted from LADWP PTC/PTO Application to SCAQMD (LADWP 2009). Gas turbine exhaust parameters were based on fuel usage and other parameters provided by the manufacturer.

Based on the results of screening analysis, dispersion modeling was conducted using phase 2 emissions for 1-hour and 8-hour CO and phase 4 emissions for 1-hour NO_X. Table 4.4-14 shows the predicted concentrations from the dispersion modeling for the worst-case phases. The dispersion modeling results indicate that the worst-case scenario with two CTs operating in the same phase simultaneously do not result in exceedance of the short-term ambient air quality standards for CO and NO_x during the commissioning phases. Thus, turbine commissioning would not cause exceedance of any ambient air quality standards. Modeling files are provided in Attachment C of Appendix B of this EIR.

Table 4.4-14
Commissioning Modeling Results

Pollutant	Averaging Period	Ambient Air Quality Thresholds[1] (µg/m3)	Background Conc.[2] (mg/m^3)	Maximum Predicted Impact (mg/m^3)	Total Conc. (mg/m^3)	Significant?
NO_2[3]	1-hour	339	263.00	72.65	335.65	No
CO[4]	1-hour	23,000	4600.00	470.98	5070.98	No
	8-hour	10,000	4025.00	262.23	4287.23	No

[1] Ambient Air Quality Thresholds for Criteria Air Pollutants. For attainment pollutants (NO_x, and CO), the predicted results are added to the background concentrations and compared against the stringent of CAAQS or NAAQS. CAAQS is generally either the same or more stringent than NAAQS.

[2] Background concentrations obtained for the Source Receptor Area 4, South Coastal LA County 1, District Station ID 072 (North Long Beach Monitoring Station).

[3] 1-hour NO2 was modeled for two turbines simultaneously operating in Phase 4. Non-regulatory PVMRM option (NO_x to NO2 conversion) in AERMOD was selected; 2004 meteorological data produced worst-case concentrations.

[4] 1-hour and 8-hour CO was modeled for two turbines simultaneously operating in Phase 2. Meteorological data for 2006 produced the worst-case results for 1-hour, and meteorological data for 2003 produced worst-case results for 8-hour.

Impact AIR4 The proposed project would have less than significant GHG emissions during project construction.

CO_2 emissions during construction of the project were estimated using the URBEMIS model. The URBEMIS model quantifies CO_2 emissions from both direct and indirect sources during construction. Direct sources are produced directly at the site from equipment operation and motor vehicles. Indirect sources are produced offsite from worker commute trips, vendor trips, delivery trips, etc. Construction activities are scheduled to last approximately 26 months and emission impacts are anticipated to be short term. Table 4.4-15 presents the construction related CO_2 emissions. Construction GHG emissions are incorporated into the total project GHG emissions and compared to significance criteria as reflected in Impact AIR7 and Table 4.4-22.

Table 4.4-15
Greenhouse Gas Emissions during Construction

Emission Source	Annual CO_2 Emissions (tons/yr)		
	2010	**2011**	**2012**
Direct Emission Sources			
TOTAL	953	2,145	772
		Total Construction Emissions (tons/yr)	**3,870**
		Total Construction Emissions (MT/yr)	**3,510**

4.4.4.2 Project Operation

Criteria Pollutant Emissions

The operation of the proposed SCGS would result in emissions of criteria pollutants. Potential emission sources of criteria pollutants include the six combustion turbines, the two standby power generators, and the diesel fuel storage tanks. The criteria pollutant emissions from the operation of the SCGS are estimated and compared to emissions thresholds in this section. For the following discussions, the emissions of PM, PM_{10} and $PM_{2.5}$ are considered to be equivalent for the combustion equipment, which is a conservative assumption. Only PM_{10} is called out in the following discussion regarding operational emissions.

Emissions from the operation of the six proposed CTs are affected by several factors, most important being the mode of operation and the ambient meteorological conditions. The emissions from the CTs for different modes of operation, including start-up, normal, and shutdown, were calculated and compared against mass daily thresholds and ambient air quality criteria as listed in Table 4.4-7. Maximum daily emissions from the operation of the proposed project were calculated for comparison against the daily mass emissions thresholds for operation. Maximum 1-hour, 8-hour, 24-hour, and annual average emissions were estimated for dispersion modeling to assess localized operational impacts against the ambient air quality thresholds.

Impact AIR5 During operations, the proposed project would generate less than significant criteria pollutant emissions on a daily basis.

Peak daily emissions were estimated by assuming that the maximum emissions would occur on a day when all six CTs and both standby generators are operated. Though the two diesel generators would not be routinely tested on the same day, the analysis assumes both the diesel engines to operate for one-hour on the same day to establish a conservative daily emissions estimate. A reasonable worst-case day was defined by the LADWP as one with a total of 16 startups and shutdowns for the six combustion turbines, one CT with 6 startups (1 cold + 5 hot) and 6 shut downs, and the other 5 CTs with 2 startups (1 cold + 1 hot) and 2 shut downs.

A summary of the resulting net daily mass emissions associated with the project, including the decommissioning of existing Units 5 and 6, is shown in Table 4.4-16. This table presents a comparison of the emissions associated with a projected worst-case daily operation of the SCGS versus a worst-case daily operation of Units 5 and 6. Because Units 5 and 6 would be decommissioned and would no longer be operational, there is a net emissions reduction associated with the implementation of the proposed project. The table also compares the net daily mass operational emissions to the SCAQMD criteria pollutant significance thresholds listed in Table 4.4-7. Based on this comparison, the proposed project during a projected worst-case 24-hour operation would result in a reduction in emissions versus a worst-case 24-hour operation of Units 5 and 6 and thus would not result in significant criteria pollutant operational impact.

A summary of operational RECLAIM pollutant emissions (NO_x) is shown in Table 4.4-17. As discussed previously, the significance determination is based on whether direct NO_x emissions, when added to the RECLAIM Annual Allocation (2013), including purchased RTCs are greater than the Initial 1994 RECLAIM Allocation plus the non-tradable credits. Based on this comparison, the direct NOx emissions from the installation of the CTs would not result in significant NO_x emissions impact**.**

Table 4.4-16
Net Overall Daily Operational Emissions

Source	**Daily Mass Emissions (lbs/day)**				
	NO_x	**CO**	**PM_{10}**	**VOC**	**SO_x**
Combustion Turbine (6 CTs)[1]	1,069.31	1,873.73	643.64	301.57	59.59
IC Engines[2]	59.09	10.70	0.11	3.99	0.07
Decrease due to shutdown of Unit 5[3]	(779.74)	(6,505.82)	(588.62)	(425.98)	(46.47)
Decrease due to shutdown of Unit 6[3]	(449.40)	(5,040.00)	(456.00)	(330.00)	(36.00)
Total Decrease due to Units 5 & 6	***(1,229.14)***	***(11,545.82)***	***(1,044.62)***	***(755.98)***	***(82.47)***
Net Total[5]	**(100.75)**	**(9,661.39)**	**(400.87)**	**(450.41)**	**(22.81)**
CEQA Significance Threshold	55	550	150	55	150
RECLAIM Significance Threshold[4]	*10,045*	**--**	**--**	**--**	**--**
Significant? (Yes/No)	**No**	**No**	**No**	**No**	**No**

[1] Emissions are based on LADWP provided worst-case day operation including a total of 16 startups and shutdowns for all six CTs. One CT is assumed to have 6 startups (1 cold start and 1 hot start) and 6 shutdowns. The other 5 CTs are assumed to have 2 startups (1 cold start and 1 hot start) and 2 shutdowns each. The normal operation load is detailed in Tables 4.2-8 and 4.2-9 of Appendix B. For all pollutants except NO_x, cold start-up emissions are used. For NO_x, both cold start and hot start emissions as shown in Table 4.2-1 of Appendix B are used.

[2] Emissions from the operation of 2 diesel engines. One hour operation per engine in a day.

[3] CO, PM_{10}, VOC, and SO_x daily emissions are based on USEPA AP-42 emission factors. Peak daily emissions are calculated are based on a 24-hour period for a maximum permitted fuel use of 3240 MMBtu/hr for Unit 5, and 2510 MMBtu/hr for Unit 6. NO_x emissions are based on CEMS data as provided by LADWP (see Attachment B).

[4] NO_x threshold based on the original 1994 RTCs allocated to the facility (10,045 lbs/day).

Table 4.4-17
Project RECLAIM NO_x Peak Daily Emissions

Criteria	Emissions
RECLAIM NO_x Emissions (lbs/day)[1]	1,104
2013 RECLAIM NO_x Allocation (lbs/day)[2]	2,378
Total (lbs/day)	3,482
Significance Threshold (lbs/day)[3]	10,045
Significant? (Yes/No)	**No**
[1] Maximum worst-case day emissions from the proposed Project as shown in Table 4.2-8 of Appendix B.	
[2] The 2013 facility Allocation for NO_x includes purchased RTCs and is converted to pounds per day by dividing by 365 days per year. This value was taken from the Facility Permit to Operate for each site. The value from the column headed NO_x RTC Initially Allocated and NO_x RTC holding were selected.	
[3] The significance threshold is based on the original 1994 RTCs allocated to the facility (10,045 lbs/day).	

Localized Ambient Air Quality Impact

Criteria pollutant atmospheric modeling was performed to analyze potential localized ambient air quality impacts associated with the proposed project. The results of the dispersion modeling were compared against the Ambient Air Quality Thresholds discussed previously. Since the SCAB is in attainment for VOC and SO_x, modeling for these pollutants is not required.

The USEPA regulatory dispersion model AERMOD (version 07026) was used to model NO_x, PM_{10}, and CO emission impacts from the proposed project. The methodology used to conduct the modeling was in accordance with the generally accepted modeling practices and guidelines of both the USEPA and the SCAQMD. The model was run in the urban mode with the regulatory default options and building downwash for 1-hour and 8-hour averaging periods for CO; 24-hour and annual averaging periods for PM_{10}; and annual averaging period for NO_x. Maximum 1-hour NO_x was modeled under the non-regulatory options using NO_x to NO_2 conversion through the Plume Volume Molar Ratio Method (PVMRM). Additionally, the worst-case years for the pollutants were identified and were used in the modeling. The network of nested grid receptors that was used in the dispersion modeling is presented below:

- receptors along the perimeter of the HnGS with a spacing of approximately 50 meters,

- receptors spaced 100 meters apart extending from the previous receptors to approximately three kilometers from the property line, and

- receptors spaced 500 meters apart from the previous receptors to approximately two kilometers.

Thus, receptors up to about five kilometers from the facility boundary were selected for the localized impact modeling. No receptors were placed within the HnGS property. All coordinates for sources and receptors were specified in North American Datum (NAD) 83, Universal Transverse Mercator (UTM) Zone 11.

For the annual NO_x and PM_{10} modeling, for a worst-case analysis, the turbines were each assumed to operate 8760 hours per year, with 1476 start-ups and shutdown events and the remaining in normal operation. Each start-up event is 20 minutes in duration and each shutdown event is 10.3 minutes in duration. This represents an extremely conservative operating scenario as the turbines would not operate continuously for a full year. The diesel engines were assumed to operate a maximum of 50 hours per year each (Rule 1402 limit) though they would only be run 12-hours per year for routine testing and operation. Therefore, the predicted impacts from this modeling exercise will overestimate the air quality impacts; the impacts from actual operation of the SCGS would be lower than the predicted impact results presented here.

Table 4.4-18 presents the results of the air quality impact analysis. Maximum predicted impacts due to the SCGS operations were added to a representative background concentration for comparison against the CAAQS for attainment pollutants NO_x and CO. For non-attainment pollutant PM_{10}, the modeled concentrations were compared against the significant change threshold as shown discussed previously and Table 4.4-7. As shown in the table below, the emissions due to the operation of the proposed project would not cause or contribute to an exceedance of the AAQS or adopted thresholds.

Toxic Air Contaminant Emissions

TACs would be emitted during the short-term construction phase and the long-term operational phase of the SCGS from the burning of fuel in the construction equipment, the combustion sources, and the release of fugitive emissions from the fuel storage tanks. TAC emissions emitted from the construction equipment during construction of the project are not being quantified or evaluated due to the short-term nature of the construction activity. However, operation of facility would emit numerous TACs which may have a long-term impact on the public, and therefore the operational TAC emissions are quantified and evaluated in a Health Risk Assessment (HRA).

Table 4.4-18
Air Quality Impact Modeling Results

Pollutant	Averaging Period	California Ambient Air Quality Thresholds[2] ($\mu g/m^3$)	SCAQMD Significant Change Thresholds[3] ($\mu g/m^3$)	Background Conc.[1] ($\mu g/m^3$)	Maximum Predicted Impact ($\mu g/m^3$)	Total Conc. ($\mu g/m^3$)	Significant ?
NO_2	1-hour[3]	339	-	37.00	197.64	234.64	No
	Annual[4]	57	-	45.20	0.51	45.71	No
CO	1-hour	23,000	-	4600.00	147.39	4747.40	No
	8-hour	10,000	-	4025.00	10.91	4035.91	No
PM_{10}[5]	24-hour	50	2.5	78.00	0.95	-	No
	Annual	20	1	31.10	0.23	-	No

[1] Ambient Air Quality Thresholds for Criteria Air Pollutants. For attainment pollutants (NOx, and CO), the predicted results are added to the background concentrations and compared against the CAAQS; for non-attainment pollutants (PM_{10}), the predicted concentration is compared against the localized SCAQMD significance threshold. PM_{10} significance threshold of 2.5 ug/m^3 is for operations, not be exceeded at any receptor.

[2] Background concentrations obtained for the Source Receptor Area 4, South Coastal LA County 1, District Station ID 072 (North Long Beach Monitoring Station). The background concentration for 1-hr NO_x was taken for the worst-case day and hour for 1-hr predicted NO_x concentration of 114.29 (October 31, 2004 at 10 am).

[3] 1-hour NO_2 was modeled using the PVMRM option in AERMOD. The CI engine emissions were assigned full emission rate for hours between 8.00 am and 5.00 pm, with the remaining of the hours at zero emissions.

[4] The annual NO_x modeling was conducted without PVMRM option. The model predicted maximum annual NO_x concentration (0.65 ug/m^3) was multiplied by USEPA's ambient ratio method factor of 0.75, to obtain the maximum ground level NO_2 concentration of 0.51 ug/m^3.

[5] The background PM_{10} concentration exceeds CAAQS. The modeled 24-hr PM_{10} concentrations do not exceed SCAQMD localized significant change in air quality concentration of 2.5 ug/m^3 (operation) for 24-hr and 1 ug/m^3 for annual averaging period.

Potential operational sources of TAC emissions at the HnGS would include the six CTs, the two standby diesel-fueled power generators, and the diesel fuel storage tank. No TACs are expected to be emitted from the oil/water separators because TACs are not normally present in the products which may drain to the oil/water separator. The TAC emissions were estimated by LADWP for the PTC/PTO application in support of the PTC/PTO application to the SCAQMD (LADWP, 2009a).

TAC emissions from the CTs were estimated using emission factors from USEPA AP-42 (Table 4.4-7) for all TACs except formaldehyde, benzene, acrolein, and polycyclic aromatic hydrocarbons (PAHs). Formaldehyde, benzene, and acrolein emission factors are from the Section 3.1 of the Background Document for AP-42. PAH emission factors (speciated TACs) were obtained from the California Air Toxic Emission Factors database developed by CARB for natural gas-fired combustion turbines with CO/SCR catalysts.

Annual TAC emissions are conservatively based on 8,760 hours of operation (24 hours/day and 365 days/year) of the combustion turbines at annual average temperature of 65°F to vastly overestimate the potential health risk. Fuel consumption would be the highest at this temperature; thus, the TAC emission estimate is expected to be the maximum.

The project proposes to install two emergency standby diesel compression ignition (CI) engines (3622 break horsepower [bhp] each). Each engine would be operated approximately one hour per month for routine testing and maintenance. SCAQMD Rule 1470 (Requirements for Stationary Diesel Fueled Internal Combustion and Other Compression Ignition Engines) limits the non-emergency operation of new stationary emergency standby diesel fueled CI engines greater than 50 bhp to 50 hours per year.

The TACs present in the VOC emissions from the diesel fuel storage tank were calculated by LADWP for the PTC/PTO Application (LADWP, 2009a). The TACs were calculated using the weight percentage of specific TACs in diesel fuel vapor (IERA, 1999) and the total VOC emissions estimated from the EPA TANKS 4.09d software.

Impact AIR6 The proposed project would create less than significant public health impacts due to TAC emissions from the SCGS.

In order to determine the significance of health risk related to the operation of the SCGS and related equipment, an HRA has been performed. The HRA is a multi-pathway risk analysis performed using the Hot Spots Analysis Reporting Program (HARP) software package (Version 1.4a, July 2008) developed by the CARB for conducting health risk assessments in California under the Air Toxics Hot Spots Program. The HARP modeling system is a comprehensive health risk assessment tool that contains air emissions, dispersion and risk analysis modules. The methods used to assess potential human health risks are consistent with those prepared by The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2003) which describes algorithms, exposure methods, and cancer and non-cancer health values needed to perform a HRA under AB2588. This Guidance Manual is generally considered the best available reference for conducting human HRAs in California. The HARP software includes the USEPA Industrial Source Complex (ISCST3 version 99155) dispersion model and the latest OEHHA toxicity values.

Risk Definitions and Significance

<u>Cancer Risk</u>

Cancer risk is the probability or chance of contracting cancer over a human life span, which is assumed to be 70 years. Carcinogens are not assumed to have a threshold below which there would be no human health impact. In other words, any exposure to a carcinogen is assumed to have some probability of causing cancer; the lower the exposure, the lower the cancer risk (i.e., a linear, no-threshold model). In assessing public health impacts, cancer risk is the expected incremental increase in cancer cases based on an equally exposed population of individuals, typically expressed as excess cancer cases per million exposed individuals.

State and local regulations have developed cancer risk levels above which a project is considered to have a potentially significant impact on public health. California's AB2588 Air Toxic Hot Spots Program and California's Proposition 65, for example, have developed a significance level for incremental cancer risk of 10-in-one-million as the public notification level for TAC emissions from existing sources. The SCAQMD has also established cancer risk significance thresholds for permitting new stationary sources. SCAQMD Rule 1401 allows for an incremental risk of between one-in-one-million and 10-in-one-million, provided toxic best available control technology (T-BACT) is employed. For carcinogenic health impacts, the SCAQMD considers impacts to be significant if the incremental maximum individual cancer risk (MICR) is greater than or equal to 10-in-one-million. The MICR is the highest of either the maximum exposed individual resident (MEIR) or the maximum exposed individual worker (MEIW). Occupational exposures are calculated utilizing shorter exposure assumptions (40 versus 70 years).

Non-Cancer Health Hazard

Non-cancer health effects are characterized as either chronic or acute. In determining potential non-cancer health risks from TAC emissions, it is assumed that there is a dose of the chemical of concern below which there would be no impact on human health. The air concentration corresponding to this dose is called the reference exposure level (REL). Non-cancer health risks are measured in terms of an HI, which is the calculated exposure of each contaminant divided by its REL. HIs for those pollutants affecting the same target organ are typically summed, with the resulting totals expressed as HIs for each organ system.

Similar to cancer risk, non-cancer impacts also have determined significance thresholds based on the estimated HI for the project. RELs used in the HI calculations were those published in the California Air Pollution Control Officers Association (CAPCOA) AB2588 Risk Assessment Guidelines (CAPCOA, 1993), and as updated by the OEHHA in the Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values (OEHHA, 2009).

Chronic toxicity is defined as adverse health effects from prolonged chemical exposure. Chronic exposure is one which occurs over a period exceeding 12 percent of a 70-year lifetime. Because chemical accumulation to toxic levels typically occurs slowly, symptoms of chronic effects usually do not appear until long after exposure commences. The lowest no-effect chronic exposure level for a non-cancer TAC is the chronic REL. Below this threshold, the body is capable of eliminating or detoxifying the chemical rapidly enough to prevent its accumulation.
Acute toxicity is defined as adverse health effects caused by a short-term chemical exposure of less than or equal to one hour. For most chemicals, the multi-pathway exposure required to produce acute effects is higher than levels required to cause chronic effects because of the shorter exposure period. Because acute toxicity is predominantly manifested in the upper

respiratory system at threshold exposures, all hazard indices are typically summed to calculate the total acute HI.

State and local regulations have developed chronic and acute risk levels above which a project is considered to have a potential significant impact on public health. For non-carcinogenic health impacts, the SCAQMD considers impacts to be significant if incremental HI is greater than or equal to one.

Health Risk Assessment Methodology

The HRA contains three quantitative determinations: emission estimation, air dispersion analysis, and health risk characterization. Exposure calculations were performed using air dispersion modeling analysis to predict ground-level air concentrations by source. Results of the air modeling exposure predictions were applied to emission estimates along with the respective cancer health risk factors, and chronic and acute non-cancer reference exposure levels for each toxic substance, a health risk characterization was performed to quantify individual health risks associated with predicted levels of exposure.

Health Risk Factors

Chemical substances were evaluated in this analysis using health values that have been approved by OEHHA and CARB for use in facility HRAs conducted for the AB2588 Air Toxics Hot Spots Program (OEHHA, 2003). The chemical substances of concern that are addressed in this HRA are listed in Table 4.2-19, along with their respective published OEHHA health effect values. The table lists the OEHHA-adopted inhalation and oral cancer slope factors, non-cancer acute RELs, and inhalation and oral non-cancer chronic RELs. The cancer potency factors and RELs used are consistent with the current values as determined by OEHHA.

Table 4.4-19
Risk Assessment Health Values for TAC of Concern

Compound	Inhalation Unit Risk Factor $(\mu g/m^3)^{-1}$	Cancer Risk		Non-cancer Effects	
		Inhalation Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	Oral Slope Factor $(\mu g/m^3)^{-1}$	Chronic Inhalation REL $(\mu g/m^3)$	Acute Inhalation REL $(\mu g/m^3)$
Acetaldehyde	2.7E-06	1.0E-02	--	9.0E+00	--
Acrolein	--	--	--	6.0E-02	1.9E-01
Ammonia	--	--	--	2.0E+02	3.2E+03
Benzene	2.90E-05	1.0E-01	--	6.0E+01	1.3E+03
1,3-Butadiene	1.7E-04	6.0E-01	--	2.0E+01	--
Diesel Particulate Matter	--	1.1E+00	--	5.0 E+00	--

Compound	Inhalation Unit Risk Factor $(\mu g/m^3)^{-1}$	Cancer Risk		Non-cancer Effects	
		Inhalation Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	Oral Slope Factor $(\mu g/m^3)^{-1}$	Chronic Inhalation REL $(\mu g/m^3)$	Acute Inhalation REL $(\mu g/m^3)$
Ethylbenzene	2.5E-06	8.7E-03	--	2.0E+03	--
Formaldehyde	6.00E-06	2.1E-02	--	3.0E+00	9.4E+01
Hexane	--	--	--	7.0E+03	--
Naphthalene	3.40E-05	1.2E-01	3.4E-05	9.0E+00	--
Propylene oxide	3.7E-06	1.3E-02	--	3.0E+01	3.1E+0
Toluene	--	--	--	3.0E+02	3.7E+04
Xylenes	--	--	--	7.0E+02	2.2E+04
PAHs					
Benzo(a)anthracene	1.1E-04	3.9E-01	1.2E+00	--	--
Benzo(a)pyrene [B(a)P]	1.10E-03	3.9E+00	1.2E+01	--	--
Benzo(b)fluoranthene	1.1E-04	3.9E-01	1.2E+00	--	--
Benzo(k)fluoranthene	1.1E-04	3.9E-01	1.2E+00	--	--
Chrysene	1.1E-05	3.9E-02	1.2E-01	--	--
Dibenz(a,h)anthracene	1.2E-03	4.1E+00	4.1E+00	--	--
Indeno(1,2,3-cd) pyrene	1.1E-04	3.9E-01	1.2E+00	--	--
Source: Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values, OEHHA 2009.					

The potential TAC emission sources associated with this proposed SCGS include the combustion of natural gas in the six CTs; the combustion of diesel in the two standby diesel generators; and the fugitive emissions from the diesel storage tank. TAC emissions are higher during normal operations of the turbines than during start-up or shut down due to the increased fuel usage during normal operations. Consequently, the health risk impacts were modeled based on the emissions from normal operations. Emissions during commissioning of the turbines are also not modeled in the HRA as these emissions occur only for a short duration once in the lifetime of the facility. For a conservative health risk characterization, it was assumed that all six combustion turbines would operate throughout the year (8760 hours per year), a scenario that would be highly improbable.

Dispersion Modeling and Exposure Assessment

Concentrations of TAC in ambient air were estimated using the HARP software package (version 1.4a). HARP is a single integrated software package which integrates air dispersion modeling with risk analysis and mapping capabilities. (See Appendix B for details on the modeling methodology and inputs.)

Risk Characterization

Carcinogenic, chronic non-carcinogenic and acute health effects were assessed using the dispersion modeling described above and numerical values of toxicity provided by OEHHA.

The HRA evaluated cancer risk and non-cancer health hazards based on the annual average and peak 1-hour ground level concentrations predicted from the dispersion module. Carcinogenic risks and potential non-carcinogenic chronic health effects were calculated using the annual ground level concentrations while the acute non-cancer health hazards were determined using the predicted maximum 1-hour ground level concentrations. The latest OEHHA cancer potency factors, and chronic and acute RELs for each TAC were used (OEHHA, 2009). The approved health values are incorporated into HARP Version 1.4a. The HARP software performs the necessary risk calculations following the OEHHA risk assessment guidelines and the CARB Interim Risk Management Policy for risk management decisions (ARB 2003).

The following HARP modeling options were used for the risk analysis to estimate cancer and non-cancer impacts at the maximum exposed points.

- 70-year Resident Cancer Risk – Derived (Adjusted) Method
- 9-year (Child Resident) Cancer Risk – Derived (OEHHA) Method
- 40-year Worker Cancer Risk – Point Estimate
- Chronic Hazard Index – Derived (OEHHA) Method
- Acute Hazard Index – Simple Acute HI

The modeled exposure pathways consisted of all pathways recommended for an HRA. Exposure pathways that were enabled include homegrown produce (using urban default ingestion fractions), dermal absorption, soil ingestion, and mother’s milk in addition to the inhalation pathway. The off-site worker exposure duration assumed a standard work schedule since the facility would operate full time, per OEHHA guidance (OEHHA 2003). Long-term risks (i.e., cancer and chronic non-carcinogenic hazard index) and short-term risk (acute hazard index) were calculated at the property line as well as the offsite Cartesian grid and discrete receptor locations.

HRA Results

Table 4.2-20 presents the risk assessment results due to the operation of the proposed SCGS at HnGS. The HRA results show that the cancer and non-cancer impacts from the proposed permit units are below Rule 1401 significant risk thresholds adopted by the SCAQMD.

SCAQMD allows for an incremental cancer risk of between one-in-one-million and 10-in-one-million (with T-BACT). For evaluation of the health risks, the MICR for each exposure scenarios was assumed to be MEIR (70-year), and the MEIW (40-year). The maximum exposed individual sensitive (9-year) receptor was identified from a list of 13 sensitive receptors modeled. Digital modeling files are provided in Attachment D of Appendix B.

Since the cancer risks and non-cancer health effects estimated from the HRA using a 5 km x 5 km fine gird at 50-meter spacing showed insignificant health effects (cancer risk and non-cancer HI below 1), modeling for discrete locations of residential and worker receptors was not conducted. The maximum cancer risk was obtained for the 70-year residential exposure scenario. Therefore for evaluation purposes, the estimated maximum impact for each exposure scenario was assumed to be the MEIR or the MEIW, though the actual use of the location could be residential or commercial or sensitive. This presents the most conservative (absolute maximum) estimate of the health effects for each of the exposure scenario. The maximum individual cancer risk and chronic HI for the three exposure scenarios occurred approximately 4 km southeast of the facility and were driven by combustion turbine impacts. The acute HI occurred to the northeast of the facility.

Table 4.4-20
Maximum Predicted Health Risk Impacts

Receptor/Exposure	Cancer Risk [1] (Receptor ID)	Chronic HI (Receptor ID)	Acute HI (Receptor ID)
MEIR Residential Exposure (grid)	0.28 (8477)	0.0093 (8477)	0.03 (1418)
MEIW Worker Exposure (grid)	0.05 (8374)	0.0093 (8477)	0.03 (1418)
Child			
Child Exposure (grid)	0.07 (8476)	--	--
Child Exposure (discrete)	0.05 (10413)	--	--
Significance Thresholds	**10.0**	**1.0**	**1.0**
Significant (Yes/No)?	**No**	**No**	**No**
[1]Cancer risk is reported in additional cases per one million exposures.			

In conclusion, estimated cancer risks at all receptors in the health risk analysis were very low, with a worst-case cancer risk of 0.28-in-one-million for residential 70-year exposure scenario. This estimated cancer risk is significantly lower than the SCAQMD T-BACT threshold 10-in-one-million. The estimated health risks for all exposure scenarios were below the SCAQMD significance criterion of 10-in-one-million for cancer risk and an HI of one for non-cancer chronic and acute health impacts. Based on results of the HRA, the project poses an insignificant incremental cancer risk and non-cancer health risk impact, according to established regulatory guidelines.

4.4.4.3 GHG Emissions for Project Operations

Impact AIR7 During project operations, the project would emit less than significant amounts of GHG.

The operation of the six combustion turbines and the two standby diesel generator engines would result in emissions of GHGs including CO_2, CH_4, and nitrous oxide. The GHG emissions from the operation of the stationary combustion sources are calculated using the emission factors listed in California Climate Action Registry (CCAR) General Reporting Protocol (GRP, 2009) and the maximum usage of the units. The annual natural gas usage for the SCGS is estimated based on the predicted yearly operating hours (5,256) and maximum fuel consumption rate for the CTs. The annual diesel usage for each of the standby diesel generator engines are estimated based on fuel consumption rate and the non-emergency routine maintenance operation of 50 hours per year. GHG emissions are not estimated for emergency use of these engines. CO_2 equivalents (CO_2e) are calculated using the global warming potential (GWP) provided in Attachment C of the GRP (CCAR 2009). For example, the GWP of CH_4 is 21 times that of CO_2 and the GWP of N_2O is 310 times that of CO_2. SF_6 is utilized on site in electrical equipment such as circuit breakers and switchgear, but there are no air emissions of SF_6 related to these functions. A summary of the net total GHG emissions from the project, including decommissioning of existing boiler Units 5 and 6 is summarized in Table 4.4-21. Because Units 5 and 6 would be decommissioned and would no longer be operational, there is a net GHG emissions reduction associated with the proposed project. The GHG emissions from Units 5 and 6 were estimated for an annual operation equivalent to the operational limit of the SCGS specified in the PTO (5,256 hours per year). Detailed emission calculations are provided in Attachment B of Appendix B of this Draft EIR.

Table 4.4-22 summarizes the annual GHG emissions against the SCAQMD interim significance threshold of 10,000 MT per year of CO_2e for industrial projects. A project is considered to have an insignificant impact if the total annual GHG emissions from construction (amortized over 30 years) and operation are less than established threshold. As can be seen from the Table 4.4-22, the project would not have a significant GHG impact.

4.4.4.4 Project Consistency with Air Quality Management Plan

CEQA requires that any inconsistencies between the proposed project and applicable regional and local plans be addressed in the EIR (CEQA Guidelines Section 15125(d)). The 1997 AQMP and the 1999, 2003, and 2007 amendments to the AQMP demonstrate that the standards can be achieved within the required timeframes. The proposed project is being undertaken for several reasons, but the relevant reason as pertains to the AQMP is to comply with Regulation

XX - RECLAIM. Accordingly, projects that comply with SCAQMD rules and regulations are considered consistent with the AQMP.

Table 4.4-21
Summary of GHG Emissions during Operation

	Emissions (MT/yr)			
Source	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
CT Unit 11	252849	5	0	**253097**
CT Unit 12	252849	5	0	**253097**
CT Unit 13	252849	5	0	**253097**
CT Unit 14	252849	5	0	**253097**
CT Unit 15	252849	5	0	**253097**
CT Unit 16	252849	5	0	**253097**
Standby Generator 1	88	0	0	**88**
Standby Generator 2	88	0	0	**88**
Potential GHG Emission from Current Project	***1517270***	***29***	***3***	***1518758***
Boiler Unit 5	(903,582)	(17)	(2)	**(904,468)**
Boiler Unit 6	(699,997)	(13)	(1)	**(700,683)**
Decrease in GHG due to shutdown of Units 5 & 6	***(1,603,579)***	***(30)***	***(3)***	***(1,605,151)***
Net Total GHG Emissions	**(86,309)**	**(2)**	**(0)**	**(86,393)**

Table 4.4-22
GHG Impact Analysis

Source	**GHG Emissions (MT/yr)**
Amortized Construction GHG (over a 30 –year period)	117
Net Operational GHG	(86,393)
Total Project GHG	**(86,276)**
SCAQMD Interim GHG Threshold for Industrial Projects	***10,000***
Significant (Yes/No)?	**No**

4.4.5 CUMULATIVE IMPACTS

To properly evaluate the potential environmental impacts of the proposed project, other projects in the vicinity must also be taken into account to determine if the proposed project would contribute to any impact that may be considered cumulatively significant. Cumulative air quality impacts are impacts on the ambient air quality that could result from the incremental effects of the project added to the effects of past, present, and reasonably foreseeable projects in the project vicinity. Past and present projects are accounted for in the ambient background concentrations of pollutants measured in the project vicinity to the project's predicted impacts. As noted in Section 4.3, there are no relevant planned projects within or near to the study area that would contribute cumulatively to air quality impacts during the project construction period. The project would have no significant cumulative impacts.

4.4.6 MITIGATION MEASURES

Based on the analysis presented above, impacts related to turbine commissioning are significant and unavoidable, though short-term. No feasible mitigation measures are available to reduce this impact to less than significant. All other air pollutant impacts, including mass emissions, TCAs, HRA, and construction equipment and operations emissions associated with the SCGS and related equipment, would be less than significant and would not require specific mitigation. The SCGS is subject to SCAQMD permits, which include Authority to Construct and Authority to Operate processes and are subject to compliance with all federal, state, and local laws concerning air quality emissions and compliance.

4.4.7 SIGNIFICANCE OF IMPACT AFTER MITIGATION

The impacts related to turbine commissioning are significant and unavoidable, though short-term. All other impacts are less than significant.

4.5 MARINE RESOURCES (WATER QUALITY AND BIOLOGY)

Marine biological studies and hydrodynamic modeling of regional flow patterns and abiotic and biotic parameters were conducted to provide support to the effects analyses included in this section (MBC Special Studies 2009, Flow Science 2009) and are included as Appendix C of this EIR.

4.5.1 ENVIRONMENTAL SETTING

4.5.1.1 Background

The intake in Alamitos Bay and discharge in the San Gabriel River for the HnGS are located in what is a fossil estuary, meaning it is not currently maintained by the geologic and hydrodynamic forces that originally shaped it (IRC 1981). Many thousands of years ago, the San Gabriel River emptied into Alamitos Bay in several unstable channels which meandered east and west from one large storm to another (IRC 1981). During this period, the area received considerably more rain than today, and an estuarine environment existed in the San Pedro Bay. The change to a drier Mediterranean-type climate several thousand years ago ended that phase of the river's existence. Changes to a drier climate over geologic time limited the freshwater runoff to minor seasonal inputs (IRC 1981). With the climate change and subsequent reduction of average rainfall to about 13 inches per year, the bay lacked sufficient rainfall and the resultant salinity gradients that characterize a true estuary (Abbott et al. 1973). The habitat in what is now Alamitos Bay was a salt marsh in recent geologic time, principally influenced by the San Gabriel River (Reish and Winter 1954). The area surrounding San Gabriel River and Alamitos Bay is alluvial plain which was shaped and altered by meandering rivers. San Gabriel River migrated and at times joined Los Angeles River to the north and Santa Ana River to the south (McQuat 1951). Records of the area date back to 1858, when it was first surveyed, at which time the San Gabriel and Los Angeles Rivers shared a single stream course for about 8 kilometers (km) upstream of the current Los Angeles river mouth (Gumprecht 2000).

The flood of 1867-1868 caused the San Gabriel River to break over a river bank north of Long Beach, separating it from the Los Angeles River and forming a new course, essentially the same channel the river follows today (Troxell 1942, Gumprecht 2000). After the course change, the San Gabriel River emptied into Alamitos Bay, a natural bay surrounded by tidal saltwater marshes separated from the ocean by tidal spits (IRC 1981). During the early part of the twentieth century, San Gabriel River and Alamitos Bay shared a common exit to the ocean (Moffatt & Nichol, Inc. 1954). The development of Alamitos Bay began in the early part of the twentieth century. Naples district was laid out about 1908-1909 on a tidal flat which was built up with sediment dredged from the bay (Waller, personal communication to Don Reish, July 1952). The catastrophic floods of 1914 provided motivation to coordinate flood protection on a basin-wide scale. During the 1920s and 1930s, rivers in the Los Angeles basin, including the San Gabriel River, were substantially dammed and channelized to prevent flooding and also to recharge water bearing substrata (HEP 1976, Gumprecht 2000). Most of the flow percolated into the substrate to recharge groundwater - this essentially stopped even minor flows in the lower portion of the San Gabriel River. Construction of flood control dams in the San Gabriel Mountains further reduced the freshwater flow to the river, so that significant amounts of freshwater occurred in the lower reaches of the rivers only during periods of rainfall (Anderson et al. 1993). In the 1920s, the San Gabriel River was separated from its common exit with Alamitos Bay by a rock jetty, moving the river mouth to empty directly into San Pedro Bay (Reish and Winter 1954).

Although the entrance to the San Gabriel River and Alamitos Bay was separated by the jetty, a small channel still connected them. This connection was broken during the flood of March 1938; a small, blind ending channel remained until the marina development in the bay (Reish 1968). The marine stadium was dredged for the 1932 Los Angeles Olympics. Spectator stands were constructed along the ocean side of the marine stadium; these stands were still present in 1952, but apparently were removed when houses were built in the area after the completion of the bay in 1960. Colorado Lagoon was developed at this time with connection to the stadium by conduits under Colorado Street. Storm drains empty river runoff from streets into the Colorado Lagoon, and there are presently plans underway to minimize the impact of this runoff into the lagoon (Moffat and Nichols 2007).

The lower San Gabriel River was initially dredged in the 1940s for the purpose of controlling floods, but tidal waters did not enter the San Gabriel River because of a sand bar berm built up in front of the river mouth (Reish and Winter 1954). Most of the natural rivers in central and southern California exhibit the same characteristic, with berms that block tidal flow into and freshwater flow out of the river except during periods of heavy rain when the berms are typically breached by the combined effects of increased river flow and wave action. Because of sedimentation, the Los Angeles County Flood Control District again dredged the lower river late in 1952 and enlarged the San Gabriel River for about 6.5 km upstream of the river mouth.

During the period of the 1940s and 1950s, the only water input into the lower San Gabriel River during most of the year (other than during rainy periods) came from discharges from Santa Fe Springs Waste Disposal (mostly brine from oil well drilling), the Los Alamitos Naval Station, City of Seal Beach, and Dow Chemical sewer discharges (Reish 1956), which were all less than primary treated effluents. As there was not enough water volume to keep the river’s berm open except during the rainy season, these discharge waters, about 30 to 50 million gallons per day (mgd) tended to pond along the streambed and to percolate into the ground along the lower San Gabriel River.

In 1945, a levee was built to completely separate the river from the adjacent bay (Reish and Winter 1954). Construction on the Alamitos Bay Marina was completed in 1960 (IRC 1981).

4.5.1.2 Physical Characteristics

Alamitos Bay

Alamitos Bay is an inlet on the Pacific Ocean coast of Southern California, between the cities of Long Beach and Seal Beach, at the outlet of the San Gabriel River. Alamitos Bay is protected by both the natural sand spit peninsula at Belmont Shores and the Long Beach Breakwater. It is divided from the San Gabriel River and Seal Beach by a pair of jetties. The natural geography has been heavily altered by dredging and landfill subsequent to development. Currently, Alamitos Bay is a man-made, small vessel harbor constructed in what was once an estuary with tidal marshes and mud-flats. Within the bay, lie Naples (a collection of three islands), Colorado Lagoon, Marine Stadium, and several marinas, including Alamitos Bay Marina. Alamitos Bay is relatively shallow, with water depths throughout most of the bay from 3.6-5.5 meters (m) (12-18 feet) mean lower low water (MLLW). The bay is exposed to semidiurnal tides with a mean range of 1.1 m (3.6 ft).

Subtidal sediments in Alamitos Bay consist primarily of sand and mud, and waters are primarily saline (Allen and Horn 1975). Depths throughout most of the bay are shallow, ranging from 3.6-5.5 m (12-18 ft). Most of the shoreline is developed and consists of hard intertidal and subtidal substrates, such as concrete bulkheads and piers. Alamitos Bay Marina consists of numerous floating docks with pier pilings.

San Gabriel River

The San Gabriel River receives drainage from a 1,785-square-kilometer (689-square-mile) area of eastern Los Angeles County (CRWQCB-LA Region 2000). The river originates in the San Gabriel Mountains, and historically flowed to the Los Angeles River. In 1867, flooding altered the river's course, causing it to empty into Alamitos Bay. During the 1920s, 1930s, and 1940s, several rivers in the Los Angeles area, including the San Gabriel, were substantially dammed and channelized to prevent flooding and allow basin recharging. After this, most of the flow in the San Gabriel was reduced to the point that significant amounts of fresh water occurred in the lower reaches only during periods of rainfall.

The lower San Gabriel River flows through a concrete-lined channel as far as the 405 (San Diego) Freeway, below which the channel is soft-bottomed (sedimentary) and is lined with rock riprap on the banks. The mouth and lower river areas are strongly marine-influenced, with the tidal prism generally extending upstream to the 405 Freeway (MBC 2003a).

HnGS Intake Channel

Inland from the Pacific Coast Highway Bridge is the HnGS intake channel. It consists of an open, earth trapezoidal channel 2.4 km (1.5 miles) long and terminates at the generating station. Water is conveyed to this system from a marina bulkhead intake structure; to keep large debris from entering the intake bays, 0.9 cm (3/8 inch) by 7.6 cm (3 inches) vertical trash bars centered every 15.2 cm (6 inches) are located at the face of each intake bay. The intake is located in the southeast basin of Alamitos Bay Marina. Water passes through seven 2.44 m (8 ft) diameter closed conduits approximately 335 m (1,150 ft) long, which run under the San Gabriel River and Pacific Coast Highway. The normal depth of the marina at the site of the intake openings is 3 m (10 feet). There are seven intake openings in the marina's northwest facing bulkhead wall, below the gangways. The calculated intake velocity at the marina opening is 0.5 meter per second (m/s) (1.6 ft/s). Only six of the intake tunnels are used during normal operation. Flow to the seventh pipe is blocked with stop logs to eliminate any biofouling. The velocities through the intake conduit pipes are 1.5 m/s (5.0 ft/s). The calculated velocity of the intake channel is 1.0 m/s (3.2 ft/s). Water flows directly from Alamitos Bay; therefore, the system is entirely marine. Tides are muted within the river, and actual water velocity is dependent on the number of circulators withdrawing water from the intake channel and thus the volume of water discharged into the river (EQA/MBC 1973A, 1973B).

4.5.1.3 Description of the Site

Haynes Generating Station

HnGS, shown on Figure 4.5-1, uses a once-through cooling water system for five of its generating units. A total of 1,497.3 cubic feet per second (cfs) (672,000 gallons per minute [gpm]) of cooling water is withdrawn from Alamitos Bay when all units at HnGS are in operation.

Circulating water for the five units is withdrawn from a single cooling water intake structure, located in Alamitos Bay, about 2.4 kilometers (km) (1.5 miles) southeast of the facility and conveyed to the station via the HnGS intake channel (Figure 4.5-2).

The circulating water then flows through the man-made, earthen HnGS intake channel, which runs 2.4 km (1.5 miles) along the east bank of the San Gabriel River to the HnGS intake screens. The generating station units are aligned on the west side of the northern extent of the channel. Six individual screen structures are situated along the channel beginning with Unit 1, continuing in order to the Unit 6 intake structure near the end of the channel. The original Units 3 and 4 are decommissioned, but the cooling water intake structure remains operable, supporting Unit 8, which began operations on 25 January 2005.

After passing through the generating station's steam condensers, the heated ocean water is discharged into the San Gabriel River through six discharge pipes (two pipes each at three separate discharge locations), approximately 3.2 km upstream of the river mouth. In the river, this discharge is combined with the thermal ocean water effluent of the Alamitos Generating Station (located approximately 500 feet upstream and across the San Gabriel River from HnGS), freshwater river flow, and tidal ocean water flow through the mouth of the river.

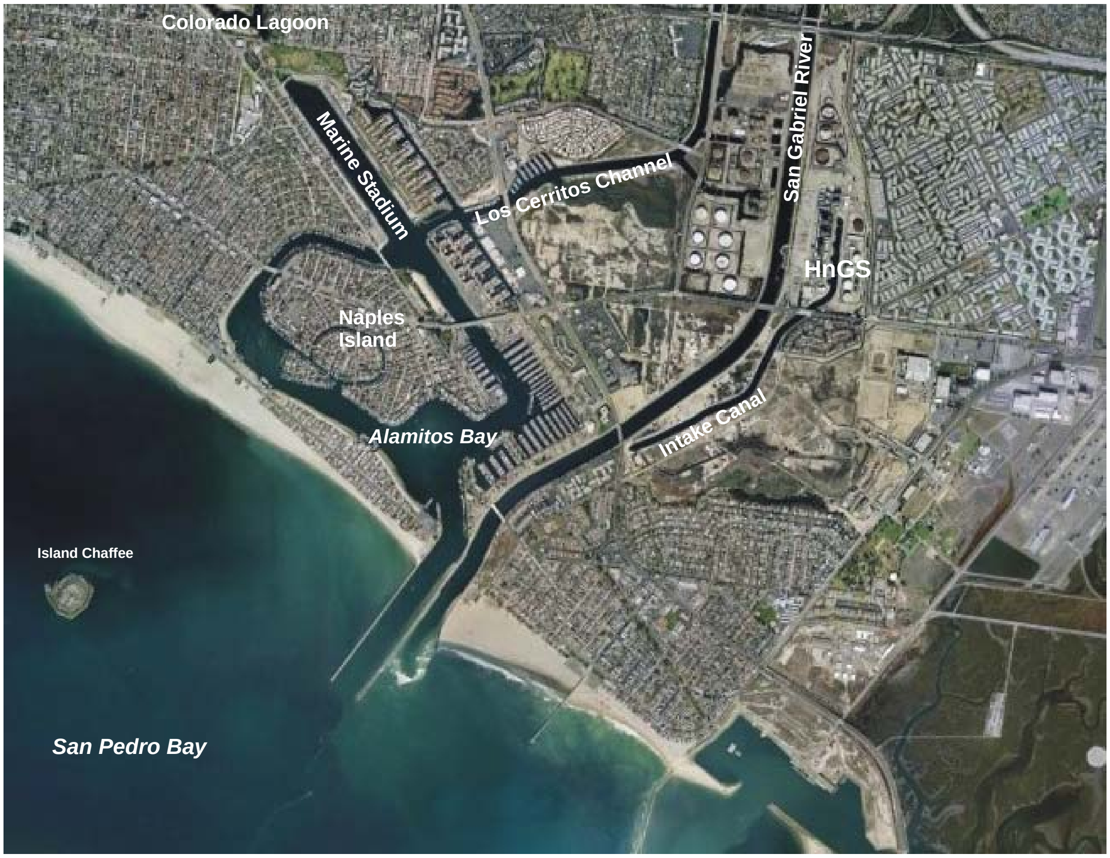

Figure 4.5-1. Aerial view of HnGS Generating Station and surrounding environment.

Alamitos Bay

Alamitos Bay has a surface area of approximately 1.2 km^2 (285 acres) (CSWRCB et al. 1998). Most of the shoreline is developed, and consists of hard intertidal and subtidal substrates, such as concrete bulkheads and piers, with numerous floating docks throughout the bay. Marinas within Alamitos Bay presently provide slips for approximately 4,000 boats.

Los Cerritos Channel is a flood control channel that connects with Alamitos Bay through the Marine Stadium. The tidal prism in the channel extends from Alamitos Bay to Anaheim Road. The channel was put on the USEPA 303(d) list of impaired water bodies by the Los Angeles RWQCB due to elevated ammonia, sediment contamination, and elevated coliform levels (CSWRCB et al. 1998). The AES Alamitos Generating Station withdraws cooling water from Los Cerritos Channel via two rock-lined channels. The Los Cerritos Wetlands are located at the point where Los Cerritos Channel joins Alamitos Bay. The wetlands currently consist of about 0.5 km^2 (130 acres) of wetlands, with nearly 3.2 km^2 (800 acres) of degraded wetland habitat proposed for restoration. Historically the wetlands consisted of about 9.7 km^2 (2,400 acres) and included what is now Alamitos Bay. Much of the site was modified due to development activities by oil companies. In 2006, the California Coastal Conservancy was one of several agencies that purchased 0.3 km^2 (66 acres) of the wetlands, and it hopes to acquire more.

Figure 4.5-2. View of Alamitos Bay and HnGS intake structure below the water surface along the concrete bulkhead.

HnGS Intake Channel

The HnGS intake channel is a rock lined earthen channel that runs 2.4 km (1.5 miles) along the east bank of the San Gabriel River to HnGS. The channel bottom is at an elevation of –5.8 m (19 ft) MLLW, and its upper banks rise to 2.4 m (8 ft) MLLW. The width of the channel bottom is 9.1 m (30 ft), and the distance between the opposing banks is 50.3 m (165 ft). Calculated velocity of the water in the HnGS intake channel is 1.0 m/s (3.2 ft/s).

San Gabriel River

South of the 7th Street Bridge, the San Gabriel River becomes increasingly marine. Prior to generating station discharge, tidal incursions could reach as far as 2,300 ft upriver of the Pacific Coast Highway Bridge (Reish 1956). Flow directions at the river mouth, prior to generating station discharge, cycled between inflow and outflow, corresponding to tidal fluctuations (EQA/MBC 1973A, B). Since the onset of operations at Alamitos Generating Station and HnGS, the net water flow is normally downriver due to generating station discharges, with short-term net flow into the river only occurring during the highest tides and only a short distance up river

(EQA/MBC 1973B). According to Caltrans (2005a), the current extent of the tidal prism in the San Gabriel River stretches from the river mouth to Marina Drive, or approximately 1,800 ft upriver from the mouth. The marine conditions currently found in the San Gabriel River are attributed to discharges from both HnGS and Alamitos Generating Station, which draw their cooling water from Alamitos Bay.

4.5.1.4 Circulation

Alamitos Bay

The design of Alamitos Bay was largely based on hydraulic modeling by Moffatt & Nichol et al. (1954 cited in IRC 1981). Based on their modeling, tidally-induced eddies formed within the bay, reversing with each change in tidal direction in the absence of the generating stations' withdrawals. This modeling predicted close to zero current velocities in the easternmost corner of Alamitos Bay, where HnGS currently withdraws water.

San Gabriel River

Although the tidal prism in the San Gabriel River reaches far upriver, cold ocean water from the harbor only penetrates a short distance up the river mouth (EQA/MBC 1973). The cooling water discharges from the Alamitos Generating Station and HnGS usually supply enough volume to maintain a net outflow to the ocean except on extreme high tides. As the tides rise in the ocean, it dams the water flowing from the river, slowing the water flowing out of the river and, at extreme high tides, temporarily reversing the flow, as determined with temperature profiles (IRC, 1981). However, little if any ocean water intrudes, even on high tides much past the Pacific Coast Highway Bridge. Flows from wastewater treatment plants and runoff into the San Gabriel River and Coyote Creek are negligible in comparison with either the average or the maximum potential cooling water discharges. The lower San Gabriel River empties into San Pedro Bay just downcoast, and adjacent to, the Alamitos Bay entrance jetty (Figure 4.5-1).

HnGS Intake Channel

The circulating water drawn from Alamitos Bay then flows through the man-made, earthen HnGS intake channel to the HnGS intake screens. After passing through the generating station's steam condenser, the ocean water, which has increased in temperature due to generator cooling operations, is discharged into the San Gabriel River through six discharge pipes (two pipes each at three separate discharge locations), approximately 3.2 km upstream of the river mouth. In the river, this discharge is combined with the thermal ocean water effluent of the Alamitos Generating Station, freshwater river flow, and tidal ocean water flow through the mouth of the river.

4.5.1.5 Water Quality

Temperature

Natural water temperatures fluctuate throughout the year in response to seasonal and diurnal variations in currents, meteorological conditions such as wind, air temperature, relative humidity, and cloud cover, and other parameters, such as ocean waves and turbulence. Natural temperature is defined by the California State Water Resources Control Board (SWRCB) as "the temperature of the receiving water at locations, depths, and times which represent conditions unaffected by any elevated temperature waste discharge" (SWRCB 1975).

Natural surface water temperatures may be expected to vary 1.0 to 2.0°C in summer and 0.3 to 1.0°C in winter, on average. Temperatures in the study area are usually several degrees warmer in the summer than during the winter, with bottom waters consistently cooler than surface waters. Weak winds, clear skies, and warm air temperatures contribute to rapid daytime warming of the sea surface. Conversely, overcast skies, moderate air temperatures, and the mixing of surface waters by winds and waves limit the daily warming.

When there is a large difference between surface and bottom water temperatures, a steep temperature gradient between adjacent water layers of different temperatures (a thermocline) may develop. Natural thermoclines are formed when absorption of solar radiation elevates the temperature of surface water, which then remains separated from the subsurface layer. Artificial thermoclines may result when warm water from a thermal discharge overlies cooler receiving waters. Off southern California, a reasonably sharp natural thermocline normally develops offshore during the summer months in the upper 30 m (98 ft) of the water column; winter thermoclines are weakly defined.

Alamitos Bay

Temperatures offshore of Alamitos Bay have been measured annually or semi-annually in San Pedro Bay since the late 1970s as part of the HnGS National Pollutant Discharge Elimination System (NPDES) Receiving Water Monitoring program since the late 1970s (MBC 2008 NPDES Report). Over this period, surface temperatures averaged 16.4°C in winter, ranging from 13.3 to 23.5°C, with highest temperatures commonly found at the monitoring station nearest the mouth of the San Gabriel River (MBC 1991-2008 NPDES Reports). Bottom temperatures between 1991 and 2008 ranged from 12.1 to 19.3°C and averaged 14.8°C. In summer monitoring over the same period, surface temperatures averaged 21.7°C, ranging from 18.1 to 29.0°C while bottom temperatures averaged 18.3°C with a range of 13.8 to 24.9 °C. Highest summer surface temperatures were also consistently found near the river mouth.

Temperatures within Alamitos Bay are similar to the seasonal offshore conditions, with temperatures ranging from about 13°C in winter to 25°C in summer (Allen and Horn 1975, IRC 1981, MBC and Tenera 2007 HnGS 316b study). In February 2009, surface water temperatures ranged from 14.1°C to 16.0°C (MBC 2009 Special Studies). Temperatures generally decreased from surface to bottom - bottom water temperatures in February ranged from 14.2°C to 15.3°C. No thermoclines were detected during any of the 2009 surveys in Alamitos Bay.

HnGS Intake Channel

The HnGS intake channel is not regularly sampled for temperature as part of annual monitoring programs; however, similar to the source water in Alamitos Bay, occasional sampling has found temperatures comparable to those reported seasonally in the bay. Temperatures in the HnGS intake channel recorded at the HnGS intake screens in 2006 averaged 13.2°C in winter, 16.7°C in spring and 20.8°C in summer (HnGS 2006 unpublished data Long-term temp).

In four surveys conducted at the HnGS intake channel in February and March 2009, surface water temperatures ranged from 14.6 to 16.7°C (MBC 2009 Special Studies). Temperatures generally decreased from surface to bottom - bottom water temperatures ranged from 14.3 to 16.6°C. No thermoclines were detected during any of the 2009 surveys in the HnGS intake channel.

San Gabriel River

Temperatures at three stations in the San Gabriel River have been measured annually or semi-annually as part of the HnGS NPDES Receiving Water Monitoring program since the late 1970s (MBC 2008 NPDES Report). Over this period, surface temperatures averaged 20.5°C in winter, ranging from 15.1 to 26.4°C (MBC 1991-2008 NPDES Reports). Winter bottom temperatures between 1991 and 2008 ranged from 14.3 to 26.3°C and averaged 20.2°C. In summer monitoring over the same period, surface temperatures averaged 27.0°C, ranging from 20.4 to 33.7°C while bottom temperatures averaged 26.9°C with a range of 20.1 to 33.9°C. Temperatures in the river reflect the influence of the thermal discharges from the generating stations, with average surface temperatures in the river 4°C higher in winter and 5°C higher in summer than found offshore

In three surveys conducted in the lower San Gabriel River in February 2009, surface water temperatures ranged from 14.6°C to 18.6°C (MBC 2009 Special Studies). Temperatures generally decreased from surface to bottom. Bottom water temperatures in February ranged from 13.9°C to 18.5°C. No thermoclines were detected during any of the 2009 surveys in the river.

Salinity

Salinity is a measure of the concentration of salts in water, which can be expressed as a weight of salts dissolved in a volume of water. Typically, the concentration of salts in the ocean is roughly 35 grams per kilogram of water and can be expressed as 35 parts per thousand (ppt), commonly reported as measured by remote instruments as practical salinity units (psu), which correlates one-to-one with ppt. Although salinity is relatively constant in the open ocean, it fluctuates in coastal zones as a result of the introduction of freshwater from storm runoff. Average salinity in the nearby Outer Harbor of the Los Angeles/Long Beach Harbors is 33.5 ppt (Dailey et al. 1993).

Alamitos Bay

Salinity offshore of Alamitos Bay has been measured semi-annually at nine stations in San Pedro Bay as part of the HnGS NPDES Receiving Water Monitoring program since 2001 (MBC 2008 NPDES Report). From 2001 to 2008, surface salinity averaged 30.1 psu in winter, ranging from 28.1 psu to 33.4 psu, (MBC 1991-2008 NPDES Reports). Bottom salinity in winter ranged from 31.9 psu to 33.9 psu and averaged 33.2 psu. In summer monitoring over the same period, surface salinity averaged 33.1 psu, ranging from 32.1 psu to 33.7 psu while bottom salinity averaged 33.5 psu with a range of 33.1 psu to 34.2 psu. Lowest salinities at the offshore stations were generally found at the monitoring station nearest the river, though usually only during one tide.

Salinity within Alamitos Bay is primarily marine, ranging from about 30 to 35 psu (Allen and Horn 1975, IRC 1981, MBC and Tenera 2007 HnGS 316b study). In four surveys conducted at Alamitos Bay in February 2009, surface water salinities ranged from 31.7 psu to 33.3 psu (MBC 2009 Special Studies). Salinity generally increased with depth and fluctuated slightly through the water column. Bottom salinities ranged from 32.3 to 33.5 psu during the four surveys.

HnGS Intake Channel

The HnGS intake channel is not regularly sampled as part of annual monitoring programs. In four surveys conducted at the HnGS intake channel in February and March 2009, surface salinity ranged narrowly from 33.0 psu to 33.4 psu (MBC 2009 Special Studies). Salinity generally increased or stayed the same with depth, with slight fluctuations throughout the water column during the surveys. Bottom salinities were very similar to surface values, ranging from 33.0 to 33.4.

San Gabriel River

Salinity at three stations in the San Gabriel River has been measured semi-annually as part of the HnGS NPDES Receiving Water Monitoring program since 2001 (MBC 2008 NPDES Report). From 2001 to 2008, surface salinity averaged 20.0 psu in winter, ranging from 1.1 psu to 33.6 psu, (MBC 1991-2008 NPDES Reports). Bottom salinity in winter ranged from 12.3 psu to 33.2 psu and averaged 27.4 psu. In summer monitoring over the same period, surface salinity averaged 26.3 psu, ranging from 2.9 psu to 34.2 psu while bottom salinity averaged 31.8 psu with a range of 21.5 psu to 34.2 psu. Lowest salinities are consistently found at the monitoring station upstream of the generating station discharges. Salinity at this station commonly indicates mixing of fresh and ocean water, as well as the presence of a salt-water wedge that moves up and down stream with the tidal stage. Salinity at the monitoring stations downstream of the generating station discharges are typically marine throughout the water column, though a fresh water lens of lower salinity water is occasionally reported at the surface.

In three surveys conducted in the lower San Gabriel River in February 2009, surface water salinities ranged from 27.6 psu to 32.8 psu (MBC 2009 Special Studies). Salinity generally increased with depth with near-bottom salinities ranging from 30.2 to 33.3 psu during the three surveys.

Dissolved Oxygen

The dissolved oxygen (DO) concentration of ocean water is affected by physical, chemical, and biological variables. High DO concentrations may be the result of cool water temperatures (solubility of oxygen in water increases as temperature decreases), active photosynthesis, and/or mixing at the air-water interface (Sverdrup et al. 1942). Conversely, low concentrations may result from high water temperatures, high rates of organic decomposition, and/or extensive mixing of surface waters with oxygen-poor subsurface waters. DO typically fluctuates in the nearshore temperate environment around 7.5 milligrams per liter (mg/l) (Kennish 2001), with the threshold of biological concern being 5 mg/l.

Alamitos Bay

DO concentrations have been measured annually or semi-annually at nine stations offshore of Alamitos Bay as part of the HnGS NPDES Receiving Water Monitoring program since the 1970s (MBC 2008 NPDES Report). In winter and summer from 1991 to 2008, surface DO averaged 8.9 mg/l in winter, ranging from 6.5 mg/l to 12.2 mg/l, (MBC 1991-2008 NPDES Reports). Bottom DO in winter ranged from 5.2 to 12.0 mg/l and averaged 8.2 mg/l. In summer monitoring over the same period, surface DO averaged 8.2 mg/l, ranging from 3.8 to 14.6 mg/l, while bottom DO averaged about 8.0 mg/l, with a range of 3.3 to 12.8 mg/l.

DO concentrations reported historically within Alamitos Bay have generally ranged from about 6 mg/l to more than 8 mg/l (Allen and Horn 1975, IRC 1981). In four surveys conducted at Alamitos Bay in February 2009, surface water DO ranged from 5.3 mg/l to 11.0 mg/l (MBC 2009 Special Studies). Near-bottom DO during the surveys ranged from 5.8 mg/l to 10.5 mg/l.

HnGS Intake Channel

The HnGS intake channel is not regularly sampled as part of annual monitoring programs. In four surveys conducted at the HnGS intake channel in February and March 2009, surface DO ranged from 5.6 to 8.6 mg/l (MBC 2009 Special Studies). DO concentrations generally decreased with depth, with near-bottom DO values ranging from 5.0 mg/l to 8.2 mg/l.

San Gabriel River

DO concentrations have been measured at three stations in the San Gabriel River semi-annually as part of the HnGS NPDES Receiving Water Monitoring program since the 1970s (MBC 2008 NPDES Report). In winter and summer from 1991 to 2008, surface DO averaged 6.8 mg/l in winter, ranging from 3.1 mg/l to 13.8 mg/l (MBC 1991-2008 NPDES Reports). Bottom DO in winter ranged from 4.1 to 10.1 mg/l and averaged 6.6 mg/l. In summer monitoring over the same period, surface DO averaged 6.0 mg/l, ranging from 2.0 to 11.5 mg/l, while bottom DO averaged 6.1 mg/l, with a range of 3.6 to 12.6 mg/l.

In three surveys conducted in the lower San Gabriel River in February 2009, surface water DO ranged from 6.2 mg/l to 7.9 mg/l (MBC 2009 Special Studies). Near-bottom DO during the surveys ranged from 6.4 mg/l to 7.9 mg/l.

4.5.1.6 Marine Biology

<u>Marine Biological Surveys</u>

Alamitos Bay

Subtidal sediments in Alamitos Bay consist primarily of sand and mud, and waters are primarily saline (Allen and Horn 1975). Alamitos Bay is made up of several sub-areas, including the Marine Stadium, the Long Beach Marina, a variety of public and private boat berths, and the Bay proper. The Bay and marina serve as fish nursery and bird foraging areas and have other beneficial uses including non-contact water recreation, commercial and sport fishing, and habitat for rare and endangered species (CSWRCB, 1998). As part of an entrainment/impingement study for HnGS, plankton and fish sampling were completed from November 1978 through September 1979 within Alamitos Bay (Intersea Research 1981). The study included trawl and plankton sampling at several monitoring stations throughout Alamitos Bay. As part of the characterization of marine sediments and water quality in southern California, CSWRCB sampled three stations within Alamitos Bay in 1992, including one station in the Long Beach Marina located immediately outboard of the docks that front the HnGS intakes. MBC initiated studies of the biology of Alamitos Bay in March 2009 which continued through May 2009. These studies were comprehensive and sampled the intertidal and subtidal plants and algae, intertidal fauna, subtidal epifauna and infauna, as well as ichthyoplankton and demersal fish species. Birds and sea turtles were also surveyed in the area (Figure 4.5-3).

San Gabriel River

The San Gabriel River has been surveyed for infaunal organisms for at least the past 10 years (MBC 1999-2008); however little was known about the demersal fish populations, intertidal invertebrates, or marine birds in the habitat until studies were conducted for an earlier proposed HnGS repowering project for Units 5 and 6 (EDAW-MBC 2004). MBC also initiated studies of the San Gabriel River in March 2009 to determine the biota within this habitat in support of the current EIR, which includes changing HnGS Units 5 and 6 from once through ocean cooling to dry cooling, thereby reducing the maximum amount of ocean water required for plant operations (MBC 2009 Special Studies). These studies were comprehensive and sampled the intertidal and subtidal plants and algae, intertidal fauna, subtidal epifauna and infauna, as well as ichthyoplankton and demersal fish species. Birds were also surveyed in the area, and a five day survey was conducted to determine the utilization of the San Gabriel River by sea turtles (MBC 2009 Special Studies).

HnGS Intake Channel

Informal creel surveys of fisherman at the PCH entrance to the channel had indicated that a wide variety of fish were found within the channel (M. Curtis, pers ob. 2003). MBC initiated studies of the biology of the intake channel in March 2009 which continued through May 2009. These studies were comprehensive and sampled the intertidal and subtidal plants and algae, intertidal fauna, subtidal epifauna and infauna, as well as ichthyoplankton and demersal fish species. Birds were also surveyed in the area (MBC 2009 Special Studies).

Marine Plants and Algae

Some marine plants such as eelgrass (*Zostera marina)* are sensitive species under federal and state law; therefore it was necessary to determine if the repowering project could have any potential impact on any plant resources that may exist in Alamitos Bay, the lower San Gabriel River, or within the HnGS intake channel. Eelgrass is protected under both state and federal laws, and guidelines have been promulgated to aid in the surveying and mitigation for disturbances to this species. These guidelines are described in the Southern California Eelgrass Mitigation Policy adopted by National Marine Fisheries Services (NMFS 1991), with later suggested revisions.

Alamitos Bay

Sensitive subtidal vegetation (eelgrass [*Zostera marina*]) is present at various locations in Alamitos Bay (Valle et al. 1999, CRM 2005). In Alamitos Bay, eelgrass is found along the Marine Stadium channel leading to Colorado Lagoon; in that area, eelgrass covered more than 5.75 acres (CRM 2005). In addition, eelgrass is found within the entrance channel, near the west end of Naples Island, and along the southwest shore of Alamitos Bay. A narrow strip of eelgrass is also found along the northeast shore of the bay from the launch ramp to the entrance to Marine Stadium and it is known to occur at other isolated locations within the harbor (Valle et al. 1999, CRM 2005). In 2005, a system wide sidescan survey for *Caulerpa taxifolia*, an algae species, in Alamitos Bay found no *Caulerpa*, but incidentally resulted in the survey of all existing eelgrass beds; they totaled 16.2 acres (M&A 2008).

San Gabriel River

Long-term studies in the San Gabriel River have documented that only green algae such as *Ulva* sp. and *Enteromorpha* sp. are found within the San Gabriel River with a few species of brown algae found near the river mouth; however, no eelgrass is found in the lower San Gabriel River (MBC 1991-2008, CRM 2005).

HnGS Intake Channel

As part of the EIR process for determining any potential impacts as a result of the plan to repower HnGS Units 5 and 6, it was necessary to determine the extent of any eelgrass that may exist in the HnGS intake channel. The channel was surveyed for eelgrass and other plants and algae on 19 March 2009. About 220 m downstream from where ocean water enters the channel from Alamitos Bay (the east side of the Pacific Coast Highway Bridge), eelgrass began and was more or less continuous to 2nd Street on both banks ranging in width from about 2 to 9 m (Figure 4.5-4). All eelgrass was found between Pacific Coast Highway and 2nd Street. In total, eelgrass covered 0.875 hectares (2.16 acres) of area along the channel banks. Eelgrass turion (shoot) densities in 20 survey quadrats (0.125 m^2 each) ranged from 5 to14 turions each and averaged 8 turions per quadrat or about 96 per m^2.

Fish Community

Fishes off Alamitos Bay have been studied regularly since the 1970s to determine potential effects from the thermal discharges of HnGS and the Alamitos Generating Station. Additional studies have been performed at irregular intervals within Alamitos Bay and the lower San Gabriel River. The role as a nursery ground for juveniles of coastal fish species is probably the most widely recognized and accepted function of bays and estuaries in their status as important fish habitats; bay and estuarine fish assemblages in California tend to be dominated in abundance by few (usually five or less) species and have low diversity even though many other species are typically encountered (Allen et al. 2006). Additional sampling was conducted in 2009 to document the fish and invertebrate composition within the HnGS intake channel, Alamitos Bay, and the lower San Gabriel River (MBC 2009 Special Studies).

Alamitos Bay

In a previous study of the Colorado Lagoon area of Alamitos Bay, four species comprised 99% of the total abundance of fish: northern anchovy (*Engraulis mordax*), topsmelt (*Atherinops affinis*), slough anchovy (*Anchoa delicatissima*), and shiner perch (*Cymatogaster aggregata*) (Allen and Horn 1975). Species diversity and abundance at Colorado Lagoon were highest during summer (May-September) and both were highly correlated with water temperature, which ranged between 12.8-25.0°C (55-77°F).

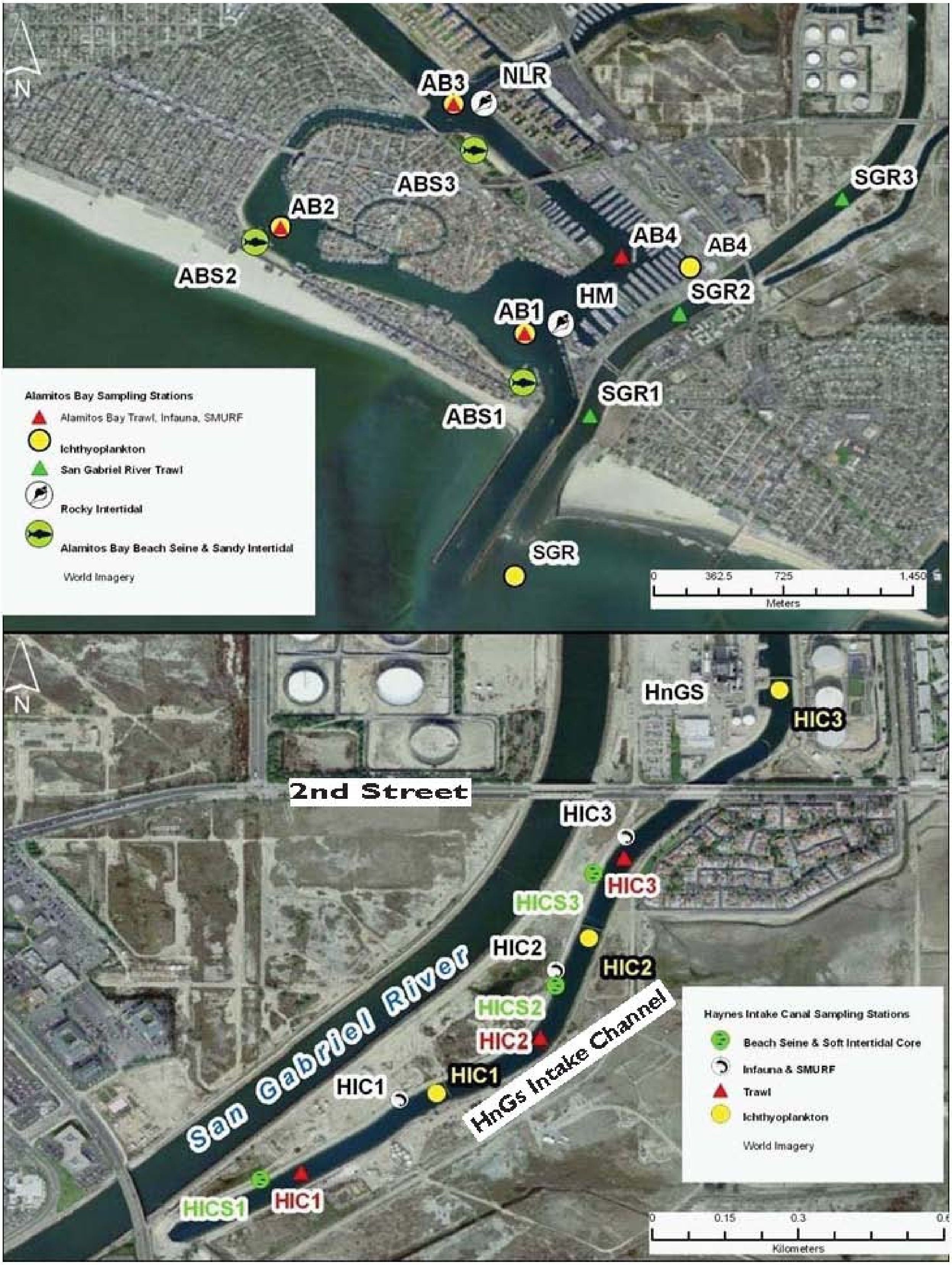

Figure 4.5-3. HnGS Special Studies Station Locations, 2009

Valle et al. (1999) sampled the juvenile fishes of Alamitos Bay from 1992 through 1995 with a 1.6 m (5.2 ft) beam trawl fitted with 3 mm (0.1 inch) mesh. Of the 46 taxa collected, the most abundant were unidentified gobies (Gobiidae), cheekspot goby (*Ilypnus gilberti*), bay pipefish (*Syngnathus leptorhynchus*), shiner perch, and topsmelt. The study concluded that shallow habitats, both vegetated with eelgrass and unvegetated, were especially important for juvenile fishes. Juvenile California halibut (*Paralichthys californicus*) inhabited unvegetated areas, while barred sand bass (*Paralabrax nebulifer*) inhabited eelgrass beds. The habitats nearest the bay mouth are particularly important for juveniles of these two species, whereas habitats further inside the bay are more important for most other fishes.

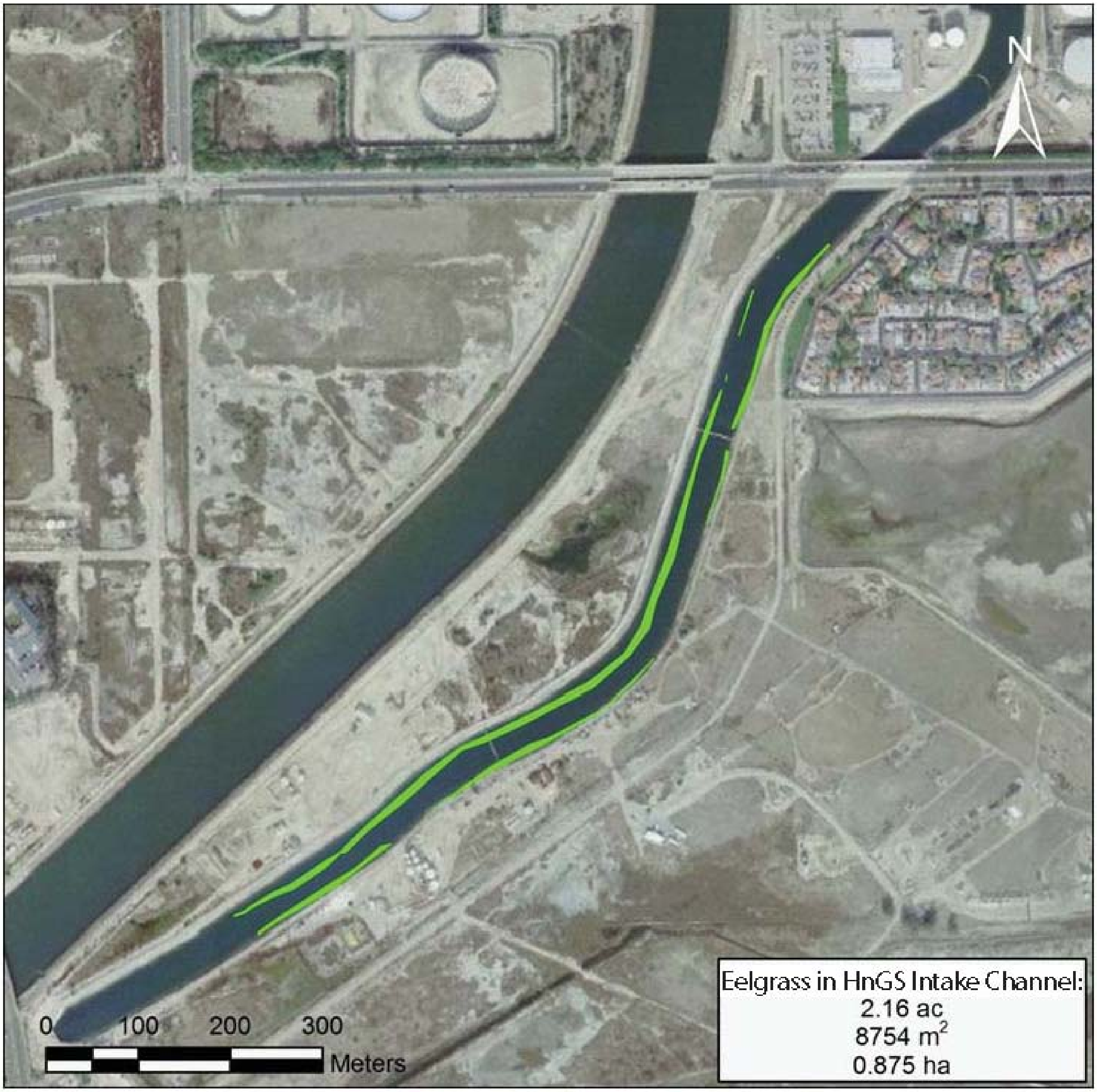

Figure 4.5-4. Position and size of identified eelgrass (*Zostera marina*) beds observed within the HnGS Intake Channel.

Demersal fish and macroinvertebrates were sampled at four sites in Alamitos Bay in February 2009 (Table 4.5-1). The total Alamitos Bay catch was 87 individuals, with 12 species, led by round stingray and California halibut abundances. California halibut was the only species taken at each of the four Alamitos Bay stations. Three of the four Alamitos Bay stations (AB1, AB2, and AB4) registered relatively similar catches (20 to 32 individuals), while sampling at Station AB3 recorded only two species and six fish. Species diversity was highest at Station AB4 (1.90) and lowest at Station AB3 (0.64).

Macroinvertebrates taken during trawl sampling of Alamitos Bay included, in order of abundance, three species, sea pen (*Acanthoptilum* spp.), Xantus swimming crab (*Portunus xantusii*), and California bubble (*Bulla gouldiana*), accounting for almost 87% of the abundance. Overall, Alamitos Bay collections of macroinvertebrates included 418 individuals and had 14 species.

Table 4.5-1. Demersal fish captured by otter trawl at Alamitos Bay, San Gabriel River, and HnGS Intake Channel on 26 February 2009.

	Alamitos Bay					San Gabriel River				HnGS Intake Canal				Survey	%	NPDES
Species	AB1	AB2	AB3	AB4	Total	SGR1	SGR2	SGR3	Total	HIC1	HIC2	HIC3	Total	Total	Total	Mean
round stingray	20	4	-	2	26	-	10	-	10	5	4	1	10	46	37	1
California halibut	11	6	4	1	22	-	1	-	1	-	-	1	1	24	19	8
bat ray	-	17	-	-	17	-	-	-	-	-	-	-	-	17	14	<1
shiner perch	-	-	-	7	7	-	-	-	-	-	-	-	-	7	6	<1
spotted sand bass	-	-	2	4	6	-	-	-	-	1	-	-	1	7	6	-
diamond turbot	1	-	-	1	2	1	-	1	2	1	-	1	2	6	5	1
kelp bass	-	-	-	2	2	-	-	-	-	3	-	-	3	5	4	-
Pacific staghorn sculpin	-	-	-	-	-	1	4	-	5	-	-	-	-	5	4	<1
barcheek pipefish	-	-	-	-	-	1	-	-	1	-	-	-	-	1	1	<1
California corbina	-	1	-	-	1	-	-	-	-	-	-	-	-	1	1	1
fantail sole	-	-	-	1	1	-	-	-	-	-	-	-	-	1	1	1
shovelnose guitarfish	-	1	-	-	1	-	-	-	-	-	-	-	-	1	1	<1
specklefin midshipman	-	-	-	-	-	-	-	1	1	-	-	-	-	1	1	<1
spotted turbot	-	-	-	1	1	-	-	-	-	-	-	-	-	1	1	1
yellowfin croaker	-	-	-	1	1	-	-	-	-	-	-	-	-	1	1	-
white croaker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
queenfish	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
speckled sanddab	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
thornback	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
California tonguefish	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
hornyhead turbot	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
kelp pipefish	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Pacific sardine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
California lizardfish	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
barred sand bass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
northern anchovy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
deepbody anchovy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
big skate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
California skate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
Total Abundance	32	29	6	20	87	3	15	2	20	10	4	3	17	124		82
Number of Species	3	5	2	9	12	3	3	2	6	4	1	3	5	15		26
Species Diversity	0.77	1.14	0.64	1.90	1.84	1.10	0.80	0.69	1.37	1.17	0.00	1.10	1.20	1.96		1.89

Midwater and surface shoreline fishes were also sampled using a 30 m x 2 m beach seine with 6 mm square mesh. Sampling was completed at three sites in Alamitos Bay (23 February 2009). Beach seine sampling at six sites recorded a total of 493 fish representing at least six species (Table 4.5-2). Sampling in Alamitos Bay recorded 357 topsmelt; all of the topsmelt taken were 70 mm standard length or less. Pacific staghorn sculpin (*Leptocottus armatus*) and a complex of arrow and cheekspot gobies (*Clevelandia ios and Ilypnus gilberti*) accounted for nearly all the remaining species recorded. Collections at Station ABS3 accounted for most of the total sampling; Station ABS2 resulted in the lowest catch in Alamitos Bay (Table 4.5-2).

A third type of sampling looking at fish recruitment patterns was also tested using Standard Monitoring Units for the Recruitment of Fish (SMURF; Valles et al. 2006). However, none collected anything but invertebrates. No fish recruited to the SMURFs at any of the three locations, but a variety of epibenthic macroinvertebrates were found, such as various brittle stars, shrimps, and crabs. Fine sediment had accumulated on the SMURFs in varying levels, dependent upon the length of deployment and location. Greater sedimentation was observed at Station AB1 than at Station AB4.

Table 4.5-2 Abundance of fish species taken by beach seine sampling in Alamitos Bay and the HnGS Intake Channel.

	Alamitos Bay				HnGS Intake Channel					
Species	ABS1	ABS2	ABS3	Total	HICS1	HICS2	HICS3	Total	Total	% Total
topsmelt	101	1	246	348	-	9	-	9	357	72
Pacific staghorn sculpin	7	25	64	96	-	2	-	2	98	20
arrow/cheekspot goby	-	10	17	27	-	-	-	-	27	5
arrow goby	-	-	-	-	-	5	1	6	6	1
diamond turbot	-	4	-	4	-	-	-	-	4	1
spotted turbot	-	-	1	1	-	-	-	-	1	<1
Total	108	40	328	476	-	16	1	17	493	
Number of Species	2	4	4	5	-	3	1	3	6	

Historically, all but three species taken during the special studies were previously recorded during the annual NPDES nearshore trawl surveys. Spotted sand bass (*Paralabrax maculatofasciatus*), kelp bass (*P. clathratus*) and yellowfin croaker (*Umbrina roncador*) have not been taken in the nearshore surveys (2004-2007). Fourteen species were unique to the nearshore sampling, including queenfish (*Seriphus politus*) and white croaker (*Genyonemus lineatus*), which rank as the first and second most abundant species taken. Overall, the Alamitos Bay area winter fish community recorded by the current study was relatively consistent with previous studies in the area.

San Gabriel River

The fish community of the lower San Gabriel River is subject to variations in water flow, salinity, and temperature extremes. Upstream from the 7th Street Bridge, the fish fauna is generally representative of freshwater and brackish communities, with dominant species such as mosquitofish (*Gambusia affinis*), California killifish (*Fundulus parvipinnis*), and tilapia (*Tilapia* sp.; Moyle 2002). Tilapia is an introduced species from Africa, and is capable of withstanding a wide range of physical conditions. Tilapia are occasionally caught by anglers from the Seal Beach Pier, demonstrating this species tolerance for saltwater. It was first discovered in Coyote

Creek in 1972 and later in the San Gabriel River in 1974 (Knaggs 1977). This species has been distributed world-wide as an aquarium fish and as part of the aquaculture industry.

Near the mouth of the San Gabriel River, the fish community is more representative of the marine environment. Recent, multi-gear sampling of the San Gabriel River below the 7th Street Bridge observed several fish species from varying depth strata. Otter trawl sampling within the river recorded the presence of California halibut, diamond turbot (*Pleuronichthys guttulatus*), and spotted turbot (*Pleuronichthys ritteri*; EDAW-MBC unpubl data 2004). Gillnet sampling resulted in the capture of six species including topsmelt, tilapia, yellowfin croaker, striped mullet (*Mugil cephalus*), gray smoothhound (*Mustelus californicus*), and yellowfin goby (*Acanthogobius flavimanus*) within the lower San Gabriel River (EDAW-MBC unpubl data 2004).

Offshore of the river, six trawl stations located on the 20 ft and 40 ft isobaths perpendicular to the river mouth, with one station crossing the river mouth along the 20 ft isobath, have been monitored over the last three decades (EQA/MBC 1973; MBC 1986, 1988, 1990-1992, 1994-1995, 1997, 1999-2002, 2003b, 2004a, 2005, 2006, 2007, 2008). The fish community offshore of the river is typical for southern California embayments and nearshore waters. More than 67 fish species were collected in 21 survey years. Trawl-caught fish abundance near the San Gabriel River mouth by site and station during winter 2004-2007 during NPDES trawls along the 6 m isobath is included for comparison (Table 4.5-1). Nearshore schooling species, such as white croaker, queenfish, and northern anchovy, were among the most common fish observed. Also common were bottom-dwellers such as California halibut, spotted turbot, speckled sand dab (*Citharichthys stigmaeus*), California tonguefish (*Symphurus atricaudus*), and fantail sole (*Xystreurys liolepis*). Other species present in the area but not captured in large numbers are those that utilize nearby structures for foraging and habitat (such as the Alamitos Bay jetties, the Seal Beach Pier, oil islands, artificial reefs, and bait receivers), and include barred sand bass, black perch (*Embiotoca jacksoni*), kelp bass, and pile perch (*Rhacochilus vacca*), white seaperch (*Phanerodon furcatus*), and hornyhead turbot (*Pleuronichthys verticalis*). All of these species are common in the sandy, inner shelf areas of southern California (Allen et al. 2002).

Demersal fish and macroinvertebrates were sampled at three stations in the San Gabriel River on 26 February 2009 (Table 4.5-1, MBC 2009 Special Studies). Fish were identified, measured, counted, and an aggregate weight was recorded by species, while macroinvertebrates were identified and counted, and an aggregate weight was recorded by species. Sampling in the San Gabriel River caught 20 fish, representing six species. Fifty percent of the San Gabriel River catch was contributed by round stingray (10), while Pacific staghorn sculpin contributed an additional 25% (5) of the total catch. No macroinvertebrates were taken in the San Gabriel River during this survey.

In the San Gabriel River, the current study (2009) recorded more than twice the number of fish collected by EDAW and MBC (2004) using similar trawl methods, and twice as many species

(MBC 2009 Special Studies). Seven of the 15 species taken in the current study were recorded by Valle et al. (1999), although the inconsistencies between the studies may be attributable to the differing sampling techniques: otter trawl versus hand-towed beam trawl. Valle et al. (1999) did not differentiate between months for the total fish community. Eleven of the 15 fish species taken in the current study were also recorded from nearby Anaheim Bay by Klingbeil et al. (1975). The high numbers of round stingray is consistent with previous studies by Hoisington and Lowe (2005) and Vaudo and Lowe (2006). Both studies found large aggregations of round stingray, predominantly near the mouth of the San Gabriel River. Vaudo and Lowe (2006) actively tracked round stingrays into Alamitos Bay, but no attempt was made to follow movements upriver. These authors suggested round stingrays preferred the area due to the warm water effluent from both HnGS and the Alamitos Generating Station. Their results found consistently higher abundances in the area exposed to the thermal effluent than at similar habitat outside the thermal field. They assumed the area served as preferential breeding habitat due to the elevated temperature.

HnGS Intake Channel

The species composition in the HnGS intake channel is similar (with some differences) to that reported for the NPDES sampling near the San Gabriel River mouth, even though the two areas are physically separated. The influence of the high-relief substrate pier pilings in the marina probably account for the abundant surfperch, a species not commonly collected in previous trawls offshore, where no high-relief features exist.

In 1980, an impingement survey was conducted at the HnGS intakes. An average of 83 fish per day were entrained/impinged by the HnGS facility at the end of the HnGS intake channel during the study period; flow rates during that one-year period ranged from 600 to 900 mgd (Intersea Research, 1981). The Intersea Research study in 1980 sampled organisms that had been impinged on pump and screen chambers at the HnGS site (at the end of the HnGS intake channel. The composition of the fish fauna collected on the screens differed somewhat from that collected in trawls. The species most commonly impinged and entrained were shiner perch, butterfish (*Peprilus simillimus*), white surfperch (*Phanerodon furcatus*), walleye surfperch (*Hyperprospon argenteus*), and topsmelt. Most of these species are pelagic (commonly found in the near-surface water), and the perch are generally associated with pilings and other high-relief substrate. The composition of the impinged/entrained community is consistent with the species expected around the habitat in which the intakes are located in the Long Beach Marina and strongly suggests that fish in close proximity to the docks are most commonly drawn into the intake system.

MBC conducted fish impingement studies during 40 HnGS heat treatment procedures and two normal-operation periods from August 2000 to September 2003. A total of 481 individuals (a mean of 12 fish per survey) representing 20 fish species were collected during the samplings of the traveling screens following each treatment (MBC 2000a-2003b). Juvenile queenfish were most abundant, accounting for 74 percent of the total, followed by deepbody anchovy (*Anchoa compressa*) (5 percent) and northern anchovy (4 percent). A total of 244 macroinvertebrates of 24 species were also impinged, for a mean of six individuals. Spiny cup-and-saucer (*Crucibulum spinosum*), tuberculate pear crab *(Pyromaia tuberculata*), and two-spot octopus (*Octopus bimaculoides*) were the most abundant, comprising 39 percent, 18 percent, and 15 percent of the individuals, respectively.

Demersal fish and macroinvertebrates were sampled at three sites in the HnGS intake channel on 19 March 2009 (Table 4.5-1, MBC 2009 Special Studies). Fish were identified, measured, counted, and an aggregate weight was recorded by species, while macroinvertebrates were identified and counted, and an aggregate weight was recorded by species. Otter trawl sampling in the HnGS intake channel recorded the lowest total catch, with 17 fish caught, of which 10 were round stingrays. Of the remaining four species, only diamond turbot and kelp bass were represented by more than one individual. Patterns in biomass were similar to that recorded for abundance, with bat ray and round stingray accounting for 89% of the total value (Table 4.5-8). Purple sea urchins (*Strongylocentrotus purpuratus*) were the most abundant species taken, representing 41% of the total catch, with 313 individuals, although all but three individuals were taken in the HnGS intake channel (MBC 2009 Special Studies).

Midwater and surface shoreline fishes were also sampled using a 30 m x 2 m beach seine with 6 mm square mesh. Sampling was completed at three sites in the HnGS intake channel (26 March 2009) (Table 4.5-2). In the HnGS intake channel, no fish were taken at Station HICS1, and one arrow goby was taken at Station HICS3. Fish were most abundant at Station HICS2, where 16 fish representing 3 species were taken, led by topsmelt.

Fish recruitment patterns in the HnGS intake channel were also examined using SMURFs (Valles et al. 2006). However, they were not successful at obtaining any recruiting fish, although several species of invertebrates were recovered. No fish recruited to the SMURFs at any of the three locations and two depths. A variety of epibenthic macroinvertebrates were found in the SMURF habitat, such as various brittle stars, shrimps, and crabs. Fine sediment had accumulated on the SMURFs in varying levels, dependent upon the length of deployment and location. The lack of recruitment documented by the SMURFs may simply be a seasonal artifact. Few common southern California fish species are known to recruit during the winter months (Cailliet et al. 2000). Of those species that do recruit during the winter months, few may be recruiting to the epibenthos or to rocky habitat. At least four storm fronts passed through the area resulting in measurable rain between 9 February and 19 March 2009. The effect of these storms and the subsequent influx of freshwater on recruitment patterns is not known.

Essential Fish Habitat

Coastal pelagic

Two coastal pelagics, northern anchovy and Pacific sardine (Sardinops sagax caerulea), are likely to occur in the vicinity of the proposed project. Larvae of both species were identified, although northern anchovy larvae may have been represented in the unknown Engraulidae taxonomic class identified by MBC et al. (2007). Seasonal peaks in engraulid larval abundance were recorded between March and July, 2007, as well as a lesser peak in October. Both northern anchovy and Pacific sardine are among the most abundant fish species in the greater San Pedro Bay area. Their pelagic schooling behavior results in extensive movement patterns utilizing the midwater habitat throughout the area. Juvenile and adult anchovies have consistently been collected during fish sampling near the proposed project site (MBC et al. 2007; MEC 2002). Northern anchovy are found from the surface to depths of 310 m (1,017 ft), though juveniles are generally more common inshore and in estuaries (Allen et al. 2002; Love et al. 2005). Three additional species, Pacific chub mackerel, jack mackerel, and market squid, have been recently taken in the area. All coastal pelagics are associated with the water column (as opposed to the seafloor, like many of the groundfish); however, female squid also lay egg masses on sandy bottoms during spawning at depths of about 5 to 55 m, with most occurring between 20 to 35 m (PFMC 1998).

Pacific Groundfish

None of the species covered under the Pacific Groundfish Fishery Management Plan (FMP) are considered common or abundant in the proposed project area (Table 4.5-14). Many are species with more northerly or deeper depth distributions (Love et al. 2005; PFMC 2008), uncommon in nearshore bay/estuary habitats, or are only present during juvenile stages (Allen et al. 2002). During 20 seasonal trawl surveys offshore of Alamitos Bay and the San Gabriel River mouth between 1978 and 2008, 20 California scorpionfish were collected during 11 of the surveys (MBC 2008).

The Essential Fish Habitat (EFH) Assessment analysis prepared for the Marina Drive Bridge Improvement Project by Coastal Resources Management (CRM) provides additional information on the ichthyofauna that would be expected in the lower portions of the San Gabriel River (CRM 2000). The fish community “in the immediate vicinity of the mouth of the San Gabriel River” was characterized as one that comprises common southern California nearshore species. Some of these species belong to federally-managed groupings of species such as Pacific Groundfish and Coastal Pelagics. Although varying seasonally, it is expected that many of the species commonly found at or near the river mouth would be present in the waters at and around the HnGS discharges, due to their ability to adapt to variable salinity and temperatures conditions.

Sea Turtles

Sea turtles have occasionally been observed in the lower San Gabriel River. Green sea turtles (*Chelonia mydas*) and two other turtle species, loggerhead sea turtle (*Caretta caretta*) and Pacific Ridley sea turtle (*Lepidochelys olivacea*), are Federally-listed as threatened, and leatherback sea turtle (*Dermochelys coriacea sechlegeli*) is Federally-listed as endangered. These four sea turtles have a low to moderate potential for occurring in the lower San Gabriel River (MBC 2000b). Sea turtles are air-breathing reptiles with streamlined bodies and large flippers, and they are well-adapted to life in the marine environment. They inhabit tropical and subtropical ocean waters throughout the world. Of the seven species of sea turtles, six are found in U.S. waters, and all six species are afforded protection under the Endangered Species Act of 1973. Green turtle, leatherback turtle*,* loggerhead turtle, and Pacific Ridley turtle are known to occur in southern California. Green sea turtles have been observed in Alamitos Bay and the lower San Gabriel River by MBC biologists for many years, and in 2008, a 17.2 kg (38 lb) green sea turtle was observed and captured by MBC biologists in the HnGS intake channel. This species is circumglobal in distribution, typically found in tropical waters, but to a certain extent also in subtropical waters with temperatures above 20°C (NMFS and USF&W 1998). Stranding reports indicate that the green sea turtle is a regular visitor in waters off the southwest coast of the United States, and a small colony of about 30 to 50 individuals reside in south San Diego Bay near the warm water discharge of a power plant (NMFS and USF&WS 1998). There is no known nesting that occurs on the west coast of the United States. The National Marine Fisheries Service (NMFS) and Aquarium of the Pacific have initiated a study to determine the estimated number of sea turtles in the lower San Gabriel River and to track their movements over time (D. Lawson pers. comm. 2008).

A survey was conducted for five days in March 2009 to document sea turtle abundance and distribution in the lower San Gabriel River. The lower San Gabriel River (downriver of the 7th St bridge), as well as the adjacent HnGS intake channel, were surveyed over the five day period for the presence of turtles. Segment 1 was from the river mouth to Marina Drive (SGR1), Segment 2 was from Marina Drive to Pacific Coast Highway (SGR2), Segment 3 was from Pacific Coast Highway to 2nd Street (SGR3) (Figure 4.5-3), and Segment 4 was from 2nd Street to 7th Street. Turtles were observed in the river each day during the five survey days. There were seven observations of turtles in Segment 4 over a period of four days, with two turtles observed at the same time on several occasions. Turtles were also sighted in Segment 3 (one sighting each of three separate days). No turtles were observed in Segments 1 or 2 further downriver, and none were observed in the HnGS intake channel. No more than three turtles were seen during any one day of observations. Based on observations, the number of turtles seen in the San Gabriel River during the survey week was at least three, as they were seen at widespread enough locations to be certain they were unique individuals. Most of the sightings were in the vicinity of the warm water discharges from HnGS and the Alamitos Generating

Station, or just down current, suggesting the turtles were attracted to the warmer waters at/or immediately down river of the discharges.

Technical Reports and EIR Appendices

Additional biotic and abiotic characteristics of the study area are addressed the technical reports prepared for this evaluation (MBC 2009). The technical report addresses abiotic parameters in the study area including pH, water density, and sediment characteristics. Biotic communities including intertidal, subtidal infauna, marine birds, and ichthyoplankton are addressed. These technical reports, prepared by MBC (2009) and Flow Science (2009), are included in this EIR as Appendices C and D.

4.5.2 REGULATORY FRAMEWORK

4.5.2.1 Federal Requirements

Federal Endangered Species Act

The Endangered Species Act (ESA) (16 USC 1531-1544, December 28, 1973, as amended 1976-1982, 1984 and 1988) requires federal agencies to ensure that their actions do not jeopardize endangered or threatened species or their critical habitats. The ESA provides broad protection for species of fish, wildlife, and plants listed as threatened or endangered in the United States or elsewhere. The ESA is administered by the USFWS and by the NMFS. The ESA defines procedures for listing species, designating critical habitat for listed species, and preparing recovery plans. The ESA also specifies prohibited actions and exceptions. Prohibited actions defined in Section 9 of the ESA include “take” of a listed species. Take is defined as any action that would harass, harm, wound, or kill a listed species. Section 10 of the ESA enables the USFWS to issue a permit to an applicant for incidental take (that is, unintentional take of a listed species resulting from otherwise legal activities).

Magnuson-Stevens Fisheries Act

The Amended Magnuson-Stevens Fishery Conservation and Management Act, also known as the Sustainable Fisheries Act (PL 104-297), requires all federal agencies to consult with the National Oceanic and Atmospheric Administration (NOAA) Fisheries on activities or proposed activities authorized, funded, or undertaken by that agency that may adversely affect EFH. The EFH provisions of the Sustainable Fisheries Act are designed to protect fisheries habitat necessary to fish for spawning, breeding, feeding, or growth to maturity from being lost due to disturbance and degradation (Magnuson-Stevens Act, 16 U.S.C. 1801 et seq.). Habitats include sediment, hard bottom, structures underlying waters, and associated biological communities (NMFS 2005). “Waters” include all aquatic areas and their associated biological, chemical, and physical properties that are used by fish and may include aquatic areas historically used by fish where appropriate. Under the Sustainable Fisheries Act, the federal government has jurisdiction to manage fisheries in the U.S. Exclusive Economic Zone (EEZ), which extends from the outer boundary of state waters (5.6 km from shore) to a distance of 370 km from shore. FMPs are designed for the promotion of an efficient and profitable fishery, achievement of optimal yield, provision of adequate forage for dependent species, prevention of overfishing, and development of long-term research plans (PFMC 1998, 2006). There are two FMPs that encompass the proposed project site: the Coastal Pelagics FMP (6 species), and the Pacific Groundfish FMP (89 species).

Coastal Pelagics FMP

Until 2008, the Coastal Pelagics FMP covered one invertebrate (market squid) and four fish species (northern anchovy, jack mackerel, Pacific [chub] mackerel, and Pacific sardine). EFH for Coastal Pelagics is defined as all marine and estuarine waters from the shoreline of the coasts of California, Oregon, and Washington, offshore to the limits of the EEZ and above the thermocline. The thermocline is the portion of the water column where water temperature changes rapidly, usually warmer surface waters transitioning to cooler subsurface waters. The habitat for the Coastal Pelagics is primarily above the thermocline.

Pacific Groundfish FMP

There are 89 fish species covered under the Pacific Groundfish FMP. EFH includes all waters off southern California between Mean Higher High Water (MHHW) and depths less than or equal to 3,500 m. It also considers EFH to include areas of the upriver extent of saltwater intrusion. Lastly, specific Habitat Areas of Particular Concern (HAPCs) have been identified as estuaries, canopy kelp, seagrass, rocky reefs, and other specific areas (such as seamounts).

4.5.2.2 State Requirements

Water Quality Control Boards

Water quality is regulated in the Los Angeles area and relevant sections can be found in the Water Quality Control Plan, Los Angeles Region, with associated amendments (Basin Plan) (LARWQCB 1994) and the California Ocean Plan (SWRCB 2006). The Basin Plan specifies that mean annual DO should not be below 6 mg/l, and no single measurement should be below 5 mg/l, while the California Ocean Plan specifies that no project should depress DO concentrations by more than 20 percent below ambient DO conditions.

No specifications exist for chlorophyll *a*, however higher chlorophyll *a* concentrations are related to algal blooms and increased turbidity. Higher chlorophyll *a* concentrations can also be a measure of the trophic state of an estuary - either oligotrophic (low nutrients and low turbidity with chlorophyll *a* concentrations less than 5 micrograms per liter [µg/l]), mesotrophic (between low and high trophic states with concentrations between 6 and 10 µg/l), or eutrophic (high nutrients and high turbidity with chlorophyll *a* concentrations greater than 10 µg/l) (Flow Science 2009).

4.5.3 THRESHOLDS OF SIGNIFICANCE

Significant impacts to water quality and/or marine biological resources would occur if the project:

- Affects special status species (i.e., rare, threatened, or endangered) or the critical habitat for those species to a degree that may diminish the chances for long-term survival of those species;
- Affects the essential habitat of managed fish species, such as those belonging to the Pacific Groundfish and Coastal Pelagics FMPs, through loss due to disturbance or degradation, pursuant to the Magnuson-Stevens Fishery Management and Conservation Act (as amended); or
- Reduces DO levels or increases pollutant levels that would result in conditions not considered conducive to a healthy biological community, as defined by the requirements of the Basin Plan and the Ocean Plan, or, in the case of chlorophyll *a*, in levels that result in a eutrophic condition.

4.5.4 ENVIRONMENTAL IMPACTS

4.5.4.1 Marine Water Quality

For this project, LADWP modeled the flow characteristics and water quality in the three water bodies that would be affected by the potential reduction in cooling water flow associated with the repowering of Units 5 and 6 (Flow Science 2009). The constituents of interest that were modeled included DO, chlorophyll *a*, and hydrogen ion concentration (pH). Modeling was conducted for Alamitos Bay, the San Gabriel River, and the HnGS intake channel for a “Base Case” flow of cooling water and the flow associated with “Normal Minimum Operations” that would occur after the implementation of the proposed project (see the Appendix D for an explanation of these modeling scenarios). Since the models are predicated on existing conditions, normal ambient conditions and high ambient conditions (which would typically result in increased DO depletion and algal growth) were input into the model to determine the resulting water quality. The Base Case modeled was based on actual 2005 flow rates at HnGS, which amounted to 778 mgd, while Normal Minimum Operations was defined as a flow rate of 311 mgd. In modeling the two cases, the nearby AES Alamitos Generating Station was assumed to be operating at a flow rate of 422 mgd.

As discussed below, the water quality modeling from all three water bodies concluded that there would be no significant adverse impacts on DO, pH, temperature, or chlorophyll *a* concentrations as a result of reducing the volume of ocean water taken into the generating station from Alamitos Bay through the HnGS intake channel related to the decommissioning of Units 5 and 6, and a concurrent decrease in the amount of ocean water discharged into the San Gabriel River. Based on the results of those studies, no significant adverse water quality impacts would occur.

Impact MWQ1 Discontinuation of cooling water flows associated with the decommissioning of Units 5 and 6 would not have an adverse impact on key water quality parameters in Alamitos Bay.

DO and chlorophyll *a* were modeled at five stations: the channel connecting to the ocean (Station 1), near the HnGS intake channel (Station 4), at the Second St. Bridge (Station 9), at the Marine Stadium (Station 11), and at Los Cerritos Channel (Station 12).

<u>Chlorophyll *a*</u>

For the Base Case at the five stations under moderate conditions, chlorophyll *a* average concentrations were expected to range from 2.56 (2.4 to 2.7 µg/l range at the five stations) to 10.56 µg/l (7.9 to 13.6 µg/l). At the maximum condition, the range was expected to be from 2.74 (2.6 to 2.9 µg/l) to 13.14 µg/l (8.7 to 21.4 µg/l). The highest annual average chlorophyll a concentrations for any place in the bay is predicted to be 4.1 µg/l for the Base Case; with moderate parameters the highest is predicted to be 3.4 µg/l.

For Normal Minimum Operations at the five stations under moderate conditions, chlorophyll *a* average concentrations were expected to range from 2.72 (2.5 to 2.9 µg/l range at the five stations) to 11.9 µg/l (8.9 to 14.6 µg/l). At the maximum condition, the range was expected to be from 2.94 (2.7 to 3.2 µg/l) to 14.56 µg/l (9.8 to 21.1 µg/l). Highest annual average chlorophyll a concentrations for any place in the bay is predicted to be 4.3 µg/l for the Normal Minimum Operations; with moderate parameters the highest is predicted to be 3.8 µg/l. Chlorophyll *a* was predicted to be highest during summer months and at the upstream end of Alamitos Bay, where the longest water residence time occurs. Increases in chlorophyll *a* concentrations between the Base Case and Normal Minimum Operations are predicted to be an order of magnitude smaller than average annual values and smaller than the range of values that span the trophic states. Based on the change in chlorophyll *a* concentration between the Base Case (pre-project) and Normal Minimum Operations (post-project), no significant impacts to water quality are expected.

Dissolved Oxygen

For the Base Case at the five stations under moderate conditions, DO average concentrations were expected to range from 8.66 (8.3 to 9.0 mg/l range at the five stations) to 7.54 mg/l (6.8 to 8.1 mg/l). At the maximum (lowest DO) condition, the range was expected to be from 8.24 (7.5 to 9.0 mg/l) to 6.66 mg/l (5.0 to 8.0 mg/l).

For Normal Minimum Operations at the five stations under moderate conditions, DO average concentrations were expected to range from 8.62 (8.3 to 9.0 mg/l range at the five stations) to 7.44 mg/l (6.6 to 8.1 mg/l). At the maximum (lowest DO) condition, the range was expected to be from 8.14 (7.4 to 9.0 mg/l) to 6.18 mg/l (4.2 to 8.0 mg/l). In general, DO concentrations were predicted to be slightly lower in Alamitos Bay under CEQA Normal Minimum Operations than under the Base Case scenario. Annual average DO concentrations are predicted to be greater than 6 mg/l for all scenarios modeled. Low DO concentrations would be expected to occur infrequently with total annual duration below 5.0 mg/l measured in days. The lowest DO concentrations are expected to occur in Marine Stadium and marinas near Los Cerritos Channel, as both areas have long water residence times. The largest depletion of DO will be from 0.5 to 1.0 mg/l during Normal Minimum Operations at locations north and south of the 2^{nd} St. Bridge. Based on the change in DO between the Base Case (pre-project) and Normal Minimum Operations (post-project), no significant impacts to water quality are expected.

Impact MWQ2 Discontinuation of cooling water flows associated with decommissioning Units 5 and 6 would not have an adverse impact on key water quality parameters in the HnGS intake channel.

In general, DO concentrations were predicted to vary only slightly in the HnGS intake channel under the Base Case and Normal Minimum Operations scenarios; however, chlorophyll *a* would be higher under the Normal Minimum Operations scenario. DO and chlorophyll *a* were modeled at four stations within the channel: HnGS intakes (Station 1), middle of the channel (Station 2), at entrance to the channel (Station 3), and at entrance to the siphons into the HnGS intake channel (Station 4).

Chlorophyll *a*

Chlorophyll *a* was predicted to be highest during summer months. Chlorophyll *a* highest annual average is expected to increase from 2.9 µg/l for the Base Case to 3.0-3.5 µg/l for Normal Minimum Operations. The highest maximum chlorophyll *a* concentrations are predicted to increase from 9.0-9.1 µg/l for the Base Case to 11.7-11.8 µg/l for Normal Minimum Operations. Increases in chlorophyll *a* concentrations between the Base Case and Normal Minimum Operations are predicted to be very small (ten times or an order of magnitude smaller than average annual values) and will have no affect on trophic state. Based on the change in chlorophyll *a* concentration between the Base Case (pre-project) and Normal Minimum Operations (post-project), no significant impacts to water quality are expected.

Dissolved Oxygen

At the four stations, the predicted DO concentrations do not vary greatly over the length of the channel or by depth in either scenario. Minimum DO concentrations are predicted to be 7.4 to 7.9 mg/l for the Base Case and 7.3 to 7.8 mg/l for Normal Minimum Operations. The lowest annual minimum DO concentration throughout the channel is predicted to be 7.3 mg/l. Therefore, the annual and average DO concentrations are expected to meet criteria set by the Basin Plan.

Impact MWQ3 Discontinuation of cooling water flows associated with the decommissioning of Units 5 and 6 would not have an adverse impact on key water quality parameters in the San Gabriel River.

The generating station outfalls contribute most of the ocean water to the lower San Gabriel River and, as such, generally prevent contact between the ocean water coming in on the tides and the freshwater flows coming from upstream, even when the generating stations are operating at relatively low capacity. The water temperatures in the majority of the lower San Gabriel River affected by generating station discharge flows is increased by less than one degree centigrade between the Base Case and Normal Minimum Operations. As most of the water in the lower San Gabriel River is saline, there is almost no change between the Base Case and Normal Minimum Operations, differences between the two typically being less than 1 psu (normal ocean water is about 33 psu). Because of the connection between the lower San Gabriel River and the water from the HnGS intake channel, chlorophyll *a* and DO changes are virtually the same as predicted between the Base Case and Normal Minimum Operations for the HnGS intake channel. Increases in chlorophyll *a* concentrations between the Base Case and Normal Minimal Operations in the lower San Gabriel River are predicted to be an order of magnitude smaller than average annual values and smaller than the range of values that span the trophic states. Annual average DO concentrations are predicted to be greater than 6 mg/l for all scenarios modeled.

4.5.4.2 Marine Biological Resources

Sensitive marine species found in the project waters include 1) eelgrass that is found in both Alamitos Bay and the HnGS intake channel, and 2) marine turtles that are found occasionally in Alamitos Bay and the San Gabriel River. No other sensitive marine species are known to inhabit or utilize the project waters. Some of the fish species found in these water bodies are managed by NMFS as part of the Pacific Groundfish and Coastal Pelagics FMPs. None of the fish found in any of the water bodies, including any of the members of the Pacific Groundfish and Coastal Pelagic FMPs, are potentially at risk from any aspect of the proposed project, as they are all part of the common Southern California Bight ichthyofauna found in the nearshore waters and embayments, and none of the changes proposed (reduction of the maximum potential water flow into HnGS and discharge into the lower San Gabriel River) at HnGS would impact these species. However, an EFH assessment will be completed if federal agency permits are required, pursuant to the Magnuson-Stevens Fishery Management and Conservation Act.

Impact MBIO1 No adverse impacts to eelgrass would occur due to changes in water quality and flow associated with the proposed project.

Eelgrass meadows that currently exist in Alamitos Bay and in the HnGS intake channel would be affected if certain water quality parameters were to increase significantly as a result of the project. The most important of these parameters are turbidity, which decreases light penetration for photosynthesis; current flow, which brings nutrients to the eelgrass (Fonseca et at. 1983, Fonseca and Kenworthy 1987); and temperature, which can be raised beyond the physiological limits of eelgrass (Bulthuis 1987, Marsh et al. 1986, Biebl and McRoy 1971). If any of these three parameters change significantly, there could potentially be impacts to the eelgrass beds.

Eelgrass distribution is highly dependent on the turbidity of the water, retreating to shallower water levels as turbidity increases. Eelgrass's ability to colonize an area decreases greatly when turbid water is present (Bulthuis 1987, Marsh et al. 1986). The proposed project would reduce the maximum potential amount of water withdrawn from Alamitos Bay through the HnGS intake channel. The concentration of chlorophyll *a* is a surrogate parameter that can be used for indicating water turbidity, and the resultant chlorophyll *a* levels predicted during two potential scenarios of flow from Alamitos Bay (the pre-project Base Case and the post-project Normal Minimum Operations) through the HnGS intake channel and into the San Gabriel River indicated that increases in annual average chlorophyll *a* concentrations would be an order of magnitude smaller than average annual modeled values in the water bodies and smaller than the ranges that span the trophic states from oligotrophic waters (those with low nutrients, low chlorophyll *a*, and high transparency or low turbidity) to eutrophic waters (those rich in nutrients, high chlorophyll *a*, and low transparency or high turbidity) (Flow Science 2009). Based on these findings, there would be no impact from turbidity on eelgrass as a result of the proposed changes in operations at HnGS.

Temperatures would not be increased under the proposed project Normal Minimum Operations and would, in all likelihood, decrease. Therefore, there would be no effects from temperature on the eelgrass in either the HnGS intake channel or Alamitos Bay (Bulthuis 1987, Marsh et al. 1986, Biebl and McRoy 1971).

Water flow within Alamitos Bay is restricted and cut off from normal oceanographic circulation and is greatly dependent upon tidal flow through the entrance channel and withdrawal of water from Cerritos Channel via the Alamitos Generating Station. In spite of the restricted water flow within Alamitos Bay, eelgrass continues to thrive within the Bay, suggesting that the tidal flows are sufficient to maintain the health and size of these extant eelgrass beds. Any decrease in cooling water flows withdrawn from the West Marina of Alamitos Bay will have very little to no impact on the eelgrass beds in Alamitos Bay. The nearest location of eelgrass beds in Alamitos Bay is sufficiently removed from the intake area in the West Marina to result in no measurable difference in flow speed as a result of the slight reduction in flow volume through the HnGS intake channel under Normal Minimum Operations (IRC 1981). The flow speed decrease would be within the range of normal tidal flow speed fluctuations in the area. This range of current speeds has allowed eelgrass to thrive within the channel, and it would continue to thrive with the proposed changes because current speeds would continue to be within this range. Therefore, no impacts to the eelgrass beds of the HnGS intake channel are predicted from the decrease in flow associated with the proposed project.

Impact MBIO2 No adverse impacts to marine turtles would occur due to changes in water quality and flow associated with the propose project.

Green sea turtles have been frequently sighted in both Alamitos Bay and the San Gabriel River, and one has been found within the HnGS intake channel. Although the green sea turtle is a circumglobal tropical species, it has been frequently sighted in southern California waters with a small colony residing in San Diego Bay near the warm water outfall from a power plant. Similarly, the area near the San Gabriel River is warmed by effluent from two power plants. More importantly, both in San Diego Bay and in Alamitos Bay, food sources exist (eelgrass as well as other species of algae) which may sustain the populations. As no nesting (and therefore young turtles) occurs any closer to the project site than 2,000 km (at beaches on islands offshore of the tip of southern Baja California), there would be no impact on turtle nesting grounds from any project conducted in or near Alamitos Bay (NMFS & USF&WS 1998). As turtles are air breathers, the only real water quality consideration for the green sea turtle is temperature. As the turtles are typically found in the tropics, temperatures in the San Gabriel River of 24 to 28°C are very similar to temperatures found in their native nesting areas. This temperature range is expected to continue under Normal Minimum Operations in the San Gabriel River based on the modeling conducted. At high flow/high heat load conditions, the range of temperatures is expected to be 24.2 to 28.7°C, and at low flow/low heat conditions, the range is expected to be 19.8 to 28.0°C. This range of temperatures falls within and is consistent with typical yearly averages of the San Gabriel River, which ranges from 3 to 4°C warmer in winter and 5 to 8°C warmer in summer than typical San Pedro Bay values, which range from 12.5 to 25.3°C annually. There are no current listed threats to the population on the west coast, as they are not native to the area; however, in their preferred habitat, threats to the seagrasses are listed as a prime concern. As discussed above, that there would be no threats to the eelgrass populations from the proposed project. Therefore, the green sea turtle population will not be affected by any aspects of the proposed project.

Impact MBIO3 No adverse impacts to Pacific Groundfish and Coastal Pelagics would occur due to changes in water quality and flow associated with the proposed project.

Although there are nearly 100 fish/invertebrate species covered under the Coastal Pelagics and Pacific Groundfish FMPs, not all occur near the proposed project site. Table 4.5-3 lists species that have been collected or observed during studies near the project site, including Alamitos Bay, San Pedro Bay, and the HnGS intake channel, from 1980 to 2009.

Coastal Pelagics

It is unlikely that populations of the coastal pelagics northern anchovy and sardine, Pacific chub mackerel, jack mackerel, and market squid (which have very large populations throughout the study area and are very abundant in the Southern California Bight) would be adversely affected by the project. The Harbor offshore of the mouth of Alamitos Bay and Alamitos Bay are viable, productive habitats for commercially and recreationally valuable species, but the vast amount of the spawning population for anchovy, sardine, jack mackerel, and Pacific mackerel is situated well offshore (CalCOFI 2001). Almost all of the market squid population is situated well offshore and is rarely found within the harbor confines, indicating that Alamitos Bay and associated habitats are not EFH for this species. Although most of their population is offshore, both northern anchovy and (increasingly) Pacific sardine are key components in the San Pedro Bay ecosystem and are major consumers of zooplankton and major forage food for fish of higher trophic levels. Like the anchovy and Pacific sardine, Pacific mackerel and jack mackerel are coastal fish species that also feed on planktonic organisms (Froese and Pauly 2005). Northern anchovy and Pacific sardine were common in Alamitos Bay (and the HnGS intake channel), while Pacific mackerel, and jack mackerel were relatively rare. As the overall populations for the two species dwarf that found not only in Alamitos Bay but in San Pedro Bay, and the other species are rare within Alamitos Bay, no EFH for their populations would be adversely affected by the project. As poor water quality can adversely affect larva, key parameters were modeled, and none of the projected changes in any of the three water bodies for the proposed project (a reduction in flow into the intake and out the discharge) would constitute an impact to any of these species. No Losses to EFH from the proposed project are anticipated, and there is the potential for there to be some increases in populations due to reductions in the maximum flow of water required for once-through cooling. This would result in fewer larva entrained and slightly cooler waters discharged into the San Gabriel River, marginally improving biological conditions.

Pacific Groundfish

As few of the Pacific groundfish are commonly found in the three water bodies affected by the project, it is unlikely that any aspect of the project modeled under Normal Minimum Operations would affect EFH for these species. There may be a slight positive impact to conditions for larva of these species, as the maximum flow of water required for once-through cooling would be decreased, resulting in fewer larva entrained and slightly cooler waters discharged into the San Gabriel River.

Table 4.5-3. Managed fish/invertebrate species potentially occurring in and around the source water and receiving water for HnGS based on past collections (1980-2009).

		Occurrence	
Common name	**Potential Habitat Use**	**Larval[1,2,3]**	**Juvenile/Adult[2,3,4,5]**
Coastal Pelagics			
northern anchovy	Open water.	Common	Abundant
Pacific sardine	Open water.	Common	Common
Pacific (chub) mackerel	Open water, juveniles off sandy beaches and around kelp beds.	N/T	Uncommon
jack mackerel	Open water, young fish over shallow banks and juveniles around kelp beds.	Rare	Uncommon
market squid	Open water. Rare near bays, estuaries, and river mouths.	Uncommon	Rare
Pacific Groundfish			
English sole	Soft bottom habitats.	Uncommon	Uncommon
Pacific sanddab	Soft bottom habitats.	Rare	Uncommon
Curlfin sole	Soft bottom habitats.	N/T	Rare
black rockfish	Along breakwater, near deep piers and pilings. Associated with kelp, eelgrass, and high relief reefs.	N/T	Rare
calico rockfish	Multiple habitat associations but prefer hard substrata and rocky interfaces.	N/T	Rare
kelp rockfish	Common on hard substrate, kelp; reported along breakwater.	N/T	Rare
black and yellow rockfish	Common on hard substrate; reported along breakwater	N/T	Rare
California scorpionfish	Benthic, on soft and hard bottoms, as well as around structures.	N/T	Uncommon
treefish	Common on hard substrate, kelp; reported along breakwater.	N/T	Rare
grass rockfish	Common on hard substrate, kelp, and eelgrass habitats.	N/T	Rare
vermilion rockfish	Juveniles over soft-bottom and kelp, adults associated with hard substrate.	N/T	Uncommon
lingcod	Multiple habitat associations but prefer hard substrata and rocky interfaces.	N/T	Rare
cabezon	Multiple habitat associations but prefer hard substrata and rocky interfaces.	Rare	Rare
Pacific hake	Common offshore, juveniles in open water.	Rare	N/T
leopard shark	Multiple habitat associations, including soft bottoms, and near structure, kelp, and eelgrass.	N/A	Rare
spiny dogfish	Pelagic and on muddy bottoms.	N/A	Rare
big skate	Soft bottom habitat.	N/A	Uncommon
California skate	Soft bottom habitat.	N/A	Uncommon

Sources: 1 – MBC et al. (2007), 2 – MEC (2002), 3 – MBC (2009), 4 – MBC (1994), 5 – Froeschke et al. (2005).
Occurrence: Abundant>Common>Uncommon>Rare. N/A = Not applicable, internal fertilization (no larval stage).
N/T = not taken in samples. Note - Most rockfish larvae are not identifiable to species.

Impact MBIO4 No adverse impacts to marine resources would occur during project construction.

No in-water construction would occur for the proposed project. Minor, short-term construction-related impacts to marine biological resources could occur from (1) dewatering activities associated with construction and (2) the discharge of contaminated sediments from onshore construction or accidentally spilled petroleum products from construction vehicles. In both instances, reasonable and normal precautions during construction will prevent impacts from these activities.

4.5.5 CUMULATIVE IMPACTS

No cumulative impacts to marine biological resources would occur from the construction or operation of the proposed project. After 30 years of comprehensive water monitoring associated with cumulative projects such as the discharges from the existing upstream wastewater treatment facilities, cooling water discharges from the nearby AES Alamitos Generating Station, and cooling water discharges from HnGS, beneficial uses of San Pedro Bay as fisheries habitat have been maintained and no significant impacts on marine resources have been observed. Because the only planned change to these discharges is a slight reduction in flow volumes of cooling water, no significant effects to marine biological resources would occur. Based on the results of the flow and water quality modeling studies, and the identification of the biological resources in each of the water bodies, no cumulative impacts would occur to any of the biota or habitat within Alamitos Bay, the San Gabriel River, or the HnGS intake channel.

4.5.6 MITIGATION MEASURES

Based on the results of the flow and water quality modeling studies and the identification of the marine biota that exists in the water bodies, no significant impacts would occur to any of the biota or habitat within Alamitos Bay, the San Gabriel River, or the HnGS intake channel. Therefore, no mitigation measures are necessary. HnGS will continue to comply with all current and future NPDES permit requirements, including Minimum Limits specified in the California Toxics Rule. Compliance with these water quality requirements will insure that the proposed project will not result in significant operational impacts on marine biological resources. No mitigation measures are necessary.

4.5.7 SIGNIFICANCE OF IMPACT AFTER MITIGATION

No significant impacts would occur to any of the biota within Alamitos Bay, the San Gabriel River, or the HnGS intake channel; therefore, no mitigation measures are necessary.

4.6 WATER RUNOFF, SUPPLY, AND TREATMENT

This section evaluates the impacts the implementation of the proposed project would have on surface drainage and storm water control at HnGS during project construction and during project operations (post-construction); water demand and supply for industrial processes, including the impacts of utilizing reclaimed versus potable water on industrial wastewater treatment; and wastewater treatment capacity. The water quality analysis is included as Appendix D of this EIR.

4.6.1 ENVIRONMENTAL SETTING

4.6.1.1 Storm Water

The 122-acre HnGS property is located immediately east of the San Gabriel River, less than two miles upstream of the river's mouth at San Pedro Bay. The site is nearly flat and consists of a variety of cover types. Most of the northern portion of the property (within the proposed project would be sited) is composed of pervious surfaces such as bare ground or maintained stone and gravel surfaces. The southern portion of the property is largely covered with asphalt paving, concrete paving, buildings, and other structures and equipment associated with the electrical generation functions of HnGS.

The site of the proposed SCGS and related facilities is primarily occupied by the three large abandoned storage tanks, each of which is surrounded by a containment berm. The tanks will be removed prior to project construction as part of an ongoing facilities management program at HnGS. Currently during significant rainfall events, catch basins within the tank containment berms capture runoff and convey it to skim ponds along the eastern periphery of the HnGS property, where the water passes through a multi-stage clarifier before being discharged to the adjacent Orange County flood control channel in accordance with the HnGS Tank Farm NPDES permit.

Rainwater that falls in areas occupied by existing generating facilities, generally west of the HnGS intake channel, is diverted to HnGS's on-site wastewater treatment system in the southeast portion of the site, which includes three settling basins (500,000 gallon capacity each), or to an on-site 500,000 gallon capacity retarding basin in the southwest portion of the property. Storm water in the retarding basin percolates, evaporates, or is transferred to the wastewater system for treatment prior to discharge into the San Gabriel River. Five additional storage tanks lie east of the intake channel. These tanks are also surrounded by containment berms and fall under the provisions of the Haynes Tank Farm NPDES permit. Rainwater that falls within these bermed areas percolates or is captured in catch basins, conveyed to skim ponds, and discharged to the flood control channel.

Storm water in the southeastern part of the plant, outside of the tank containment areas, either percolates into the ground or is captured in catch basins and discharged through six pipes directed to the Orange County flood control channel. These point source discharges are covered under the existing Statewide General Industrial Storm Water Permit for HnGS.

HnGS has a Spill Prevention Control and Countermeasures Plan (SPCCP) in place, as required by federal regulations. Along with the HnGS Integrated Emergency Response Plan, the SPCCP outlines emergency procedures, operating procedures, and engineering controls (secondary containment) necessary to prevent spills, overflows, or other incidents that may discharge hazardous materials to surface waters.

4.6.1.2 Water Supply

The HnGS facility utilizes potable water supplied by the Long Beach Water Department (LBWD) in the process of generating electricity in steam boilers, other industrial uses, and sanitary uses. Water use varies as the electrical output of the facility varies. For existing Units 5 and 6, the generation capacity of which would be replaced by the proposed SCGS, the water consumption rate is approximately 0.64 mgd when operating at the 60 percent capacity factor projected for the SCGS (LADWP, 2009b).

4.6.1.3 Wastewater Treatment

Water for the boiler systems undergoes physical and chemical treatment prior to use. Chemicals such as chlorine, acids, and caustics are used in the treatment process. Blowdown water from the boiler as well as water from generator floor drains, oil/water separators, sump overflow, and demineralizer storage tank overflow is diverted for treatment to the three 500,000 gallon wastewater settling basins in the southeast portion of the site. The wastewater is monitored for compliance with the NPDES permit conditions and discharged with other HnGS facility wastewater. Wastewater discharges to the San Gabriel River are comingled with the once-through cooling water prior to discharge in accordance with the HnGS NPDES permit that regulates river discharge volumes and constituent parameters. The permit sets maximum limits for temperature and various constituents (such as arsenic, cadmium, copper, nickel, residual chlorine) and establishes the maximum volume of wastewater at 565,000 gallons per day (excluding the once-through cooling water itself). This permit is presently under administrative status; the current permit limits are applicable to all existing and continuing operations at HnGS. The proposed project facilities are being designed to meet the discharge limitations in the existing permit. Sanitary wastes generated at HnGS are hauled off site for disposal.

4.6.2 REGULATORY FRAMEWORK

The following subsections discuss pertinent federal and state regulations related to storm water and wastewater at HnGS.

4.6.2.1 Federal Regulations

The quality of the nation’s water resources are protected by a number of laws, regulations, and plans. The Federal Water Pollution Control Act, otherwise known as the Clean Water Act (CWA), provides the framework for federal regulation. The objective of the CWA is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." In order to achieve this objective, the CWA regulates “priority” pollutants, which include various toxic pollutants; “conventional” pollutants, such as biochemical oxygen demand, total suspended solids, oil and grease, and pH; and “non-conventional” pollutants, which include any pollutant not identified as either priority or conventional.

Direct (point source) discharges into Waters of the US, such as those that occur at HnGS through discharge structures to the Orange County flood control channel or the San Gabriel River, are regulated by the NPDES program, as established under the CWA in 1972. Permits issued under this program contain discharge limits specific to certain industries and technologies. The permits may include additional water quality-based limits and establish pollution monitoring requirements.

In 1987, the CWA was amended to address storm water discharges, or indirect (non-point source) pollutants. In response, the EPA required an NPDES permit for construction projects that encompass five or more acres of soil disturbance. Since 1999, General NPDES storm water permits are required for projects that disturb between one and five acres of land. These permits emphasize controlling pollutants at their source through the preparation of a Storm Water Pollution Prevention Plan (SWPPP), which implements best management practices (BMPs) that minimize soil erosion and transport of pollutants off site through runoff.

4.6.2.2 State Regulations

The Los Angeles RWQCB sets guidelines for storm water, wastewater, and industrial discharges and implements the NPDES program established by the CWA. California is an authorized state of the federal NPDES program. California follows both the Porter Cologne Act (state) and the CWA (federal). The California SWRCB sets the guidelines and policies for the storm water program. The SWRCB has nine Regional Boards throughout the state; Region 4 is the Los Angeles Region, within which HnGS is located. The California Toxics Rule sets limits for pollutants, such as metals, and temperature for discharges to inland surface waters and estuaries.

4.6.3 THRESHOLDS OF SIGNIFICANCE

An impact related to wastewater or water supply at HnGS would be considered significant if federal or state-established objectives or criteria were exceeded. These situations are summarized below.

- The project causes degradation or depletion of surface or groundwater which would substantially affect current or future uses
- The project results in a violation of the plant's NPDES permit issued for proposed construction activities
- The project results in discharges that exceed the plant's current NPDES wastewater discharge limits, as specified in Permit No. CA0000353, CI-2769, and as amended via Order No. R4-2004-0089
- The capacities of existing or proposed industrial wastewater treatment facilities would not be sufficient to meet the needs of the project

4.6.4 ENVIRONMENTAL IMPACTS

Impact WATER1 Construction and operation of the proposed project would not create significant impacts related to the alternation of on-site surface drainage patterns.

Proposed construction activities would result in changes to existing on-site drainage patterns and the storm water conveyance system. The proposed SCGS facilities would be constructed in the northern portion of HnGS, which currently includes three large fuel oil tanks surrounded by earthen containment berms. During storm events, runoff from the SCGS area would no longer be directed to existing skim ponds that are located along the eastern edge of the property and discharged to the Orange County flood control channel.

Upon construction of the proposed project, runoff would be collected by a new system of catch basins located within the project site, where it would be conveyed to a lift station at the south end of the CT generators. From this point, storm water would be pumped to existing Tank E, in the east-central portion of the HnGS property, where it would be stored and tested before being discharged to the flood control channel under the provisions of the existing HnGS General Industrial Storm Water NPDES permit. A permit-designated discharge structure near Tank E would be utilized for discharge to the flood control channel.

LADWP (2009b) has determined the peak volume of runoff generated from the proposed site using a 28-acre drainage area. It was determined that a 50-year, 24-hour rainfall event of 4.80 inches (per LA County Department of Public Works Hydrology Manual, 2006) would generate 485,433 cubic feet of runoff per day, which would be directed to Tank E. Although such an event would be an unlikely occurrence, Tank E has nearly three times the capacity (1.3 million cubic feet) to accommodate the runoff generated. The tank provides sufficient capacity to capture and release the design rainfall event runoff.

Proposed construction activities would impact a total of approximately 16 acres at the HnGS facility. A WDID for an NPDES storm water related construction activities permit (issued by the SWRCB) would be required for earth disturbance activities associated with project construction. As required by the permit, a SWPPP would be prepared that specifies BMPs to eliminate or reduce pollutants from entering nearby surface waters. Storm water flowing from the site during construction activities would be controlled, tested, filtered, and detained as necessary prior to release pursuant to the SWPPP. Implementation of the SWPPP and utilization of BMPs would insure that no on- or off-site erosion, siltation, flooding, or additional sources of polluted runoff leave the site. The SWPPP would also insure that sufficient storage capacity exists to contain storm water runoff during project construction. The impact is less than significant due to preventive measures contained in a statutorily required SWPPP.

Impact WATER2 The proposed project would not create a significant impact related to an increased requirement for water resources.

Upon completion of the proposed SCGS, water would be required for generation equipment, the cooling process, and other industrial processes. It is estimated that 0.61 mgd (693 acre feet/year) of water would be required based on the 60 percent capacity factor projected for the SCGS. At a 60 percent capacity factor, approximately 0.64 mgd of potable water from the LBWD is used for the operation of existing Units 5 and 6, the generation capacity of which would be replaced by the proposed SCGS (LADWP, 2009b). This represents an incremental reduction in water demand associated with the implementation of the proposed project, and there would be no impact related to water resources.

In addition, to minimize the amount of potable water required by the proposed project and thereby conserve potable water supplies, LADWP is proposing to use reclaimed water for some industrial processes and cooling needs for the SCGS. The reclaimed water would be provided to HnGS via an extension of an existing reclaimed water line from the Long Beach Water Reclamation Plant (LBWRP), which would be constructed by the LBWD separate from the proposed project. It is anticipated that the reclaimed water supply line would be completed prior to initiating operations of the proposed SCGS. Even given the availability of reclaimed water, approximately 0.17 mgd of potable water would still be required for certain uses related to the SCGS. However, this would nonetheless represent a 0.47 mgd (or approximately 73 percent) reduction in the use of potable water compared to existing Units 5 and 6. It would also represent a 0.44 mgd (or approximately 72 percent) reduction in potable water use compared to operating the proposed SCGS without reclaimed water. After the installation of the reclaimed water line, there may still be periodic, temporary outages or shortages of tertiary treated water. Potable water supplies would be needed during these periods to meet the full requirement for the SCGS. However, even during these temporary periods when potable water would be required to meet the full operational demand of the SCGS, as discussed above, this would nonetheless represent a reduction of 0.03 mgd (or approximately 5 percent) in use when compared to the operation of Units 5 and 6.

Impact WATER3 The proposed project would not create a significant impact related to quantity of wastewater generated and discharged to the San Gabriel River from on-site treatment facilities.

In an analysis conducted by LADWP (2009b), comparisons were made between the amount of wastewater flows generated by the existing HnGS Units 5 and 6, which would be removed from service under the proposed project, and the amount of wastewater estimated from the proposed SCGS under similar operating scenarios. The analysis indicated that based on an equivalent 60 percent generation capacity factor, existing Units 5 and 6 generate approximately 0.38 mgd of industrial waste that is eventually discharged to the San Gabriel River and that the proposed SCGS units would generate approximately 0.24 mgd of wastewater that would be discharged to the river. This would represent an overall reduction of 0.14 mgd (or approximately 37 percent) in wastewater generation under the proposed project compared to Units 5 and 6, and no impact would occur.

Impact WATER4 The use of reclaimed water would not create a significant water quality impact related to the discharge of wastewater generated by the proposed project.

LADWP examined if utilizing reclaimed water would adversely affect water quality of the waste stream discharged to the San Gabriel River in association with the operation of the SCGS and lead to violations of NPDES discharge limits. The investigation examined copper concentrations in the plant's discharge to the river as a means of gauging potential impact. The study concluded that the use of reclaimed water in industrial processes for the SCGS would not result in a violation of the HnGS NPDES permit limit for monthly average copper concentrations in discharges to the river (7.50 µg/l) because background copper concentrations in reclaimed water are significantly less (2.98 µg/l maximum) than the background concentrations in the potable water currently used at HnGS (140 µg/l maximum). This background value does not, however, take into account the increased concentration that would be present in the wastewater after it has been utilized in industrial processes, which could be as high as 16 µg/l. Copper in the industrial waste stream at HnGS is diluted by once-through cooling water discharges. When Units 5 and 6 are eliminated, only three units would continue to discharge cooling water, reducing the maximum amount of water available to dilute the copper. However, the large volumes of cooling water anticipated during even normal minimum operations at HnGS after implementation of the proposed project in relation to the predicted volume of the SCGS industrial wastewater stream (approximately 311 mgd compared to 0.24 mgd, respectively – a ratio of nearly 1,300 to 1) would sufficiently dilute the copper concentration at the San Gabriel River discharge to essentially within permitted levels.

Impact WATER5 The proposed project would not adversely affect the capacity of industrial wastewater treatment facilities at HnGS.

The existing NPDES permit authorizes that 565,000 gallons per day of industrial wastewater (for the entire facility, excluding once-through cooling water) may be discharged to the San Gabriel River. This daily amount includes all sources that generate waste loads on site, including boiler blowdown, storm water runoff, demineralizer regeneration, floor drains, filter polish regeneration, laboratory drains, boiler wash water, boiler acid cleaning rinse, and reverse osmosis membrane reject. The wastewater system occasionally experiences exceedance of up to 35,000 gallons per day above authorized levels. The predicted maximum daily flow of wastewater from the proposed SCGS would be 240,000 gallons per day. When compared to the existing wastewater flows from HnGS Units 5 and 6 (about 380,000 gallons per day), the proposed project would result in a net reduction in wastewater flow of about 140,000 gallons per day. Therefore, the proposed project would not have a significant adverse impact on wastewater flows and would actually benefit the wastewater operation by reducing treatment demand.

4.6.5 CUMLATIVE IMPACTS

No cumulative impacts to nearby surface waters or impacts to the local water supply would occur from the construction or operation of other projects since no specific cumulative projects have been identified by local agencies surrounding HnGS. After nearly 25 years of comprehensive water monitoring associated with the cumulative effects of discharges from numerous facilities, including upstream wastewater treatment facilities, the AES Alamitos Generating Station, and HnGS, the beneficial uses of San Pedro Bay as a fishery habitat have been maintained, and no significant impacts on water quality have been observed. The facility's NPDES discharge permit prevents degradation of surface waters from facility discharges, and an NPDES storm water construction activities permit would ensure that degradation does not occur during construction of the proposed project. It is also expected that the project would require less potable water from the local public water utility over the long term through the use of reclaimed water.

4.6.6 MITIGATION MEASURES

No significant impacts from project construction or operation would occur in relation to surface water runoff, water supply, industrial wastewater generation and treatment, or wastewater discharge, and no mitigation measures are required.

4.6.7 SIGNIFICANCE OF IMPACT AFTER MITIGATION

The proposed project would generate no significant impacts, and no mitigation measures are required.

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4.7 NOISE & VIBRATION

This section evaluates noise and vibration impacts associated with the implementation of the proposed project. The noise and vibration analysis in this section assesses the following: existing noise and vibration conditions at the project site and in its vicinity, as well as short-term construction and long-term operational noise and vibration impacts associated with the project. Mitigation measures for potentially significant impacts are proposed, where appropriate. A Noise and Vibration technical report is contained in Appendix E of this EIR.

4.7.1 ENVIRONMENTAL SETTING

4.7.1.1 Noise Characteristics

Characteristics of Sound

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The “A-weighted scale,” abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. Figure 4.7-1 provides examples of A-weighted noise levels from common sounds.

Equivalent Noise Level

This noise analysis discusses sound levels in terms of the Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Effects of Noise

Noise is generally defined as unwanted sound. The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, and the nature of work or human activity that is exposed to the noise source

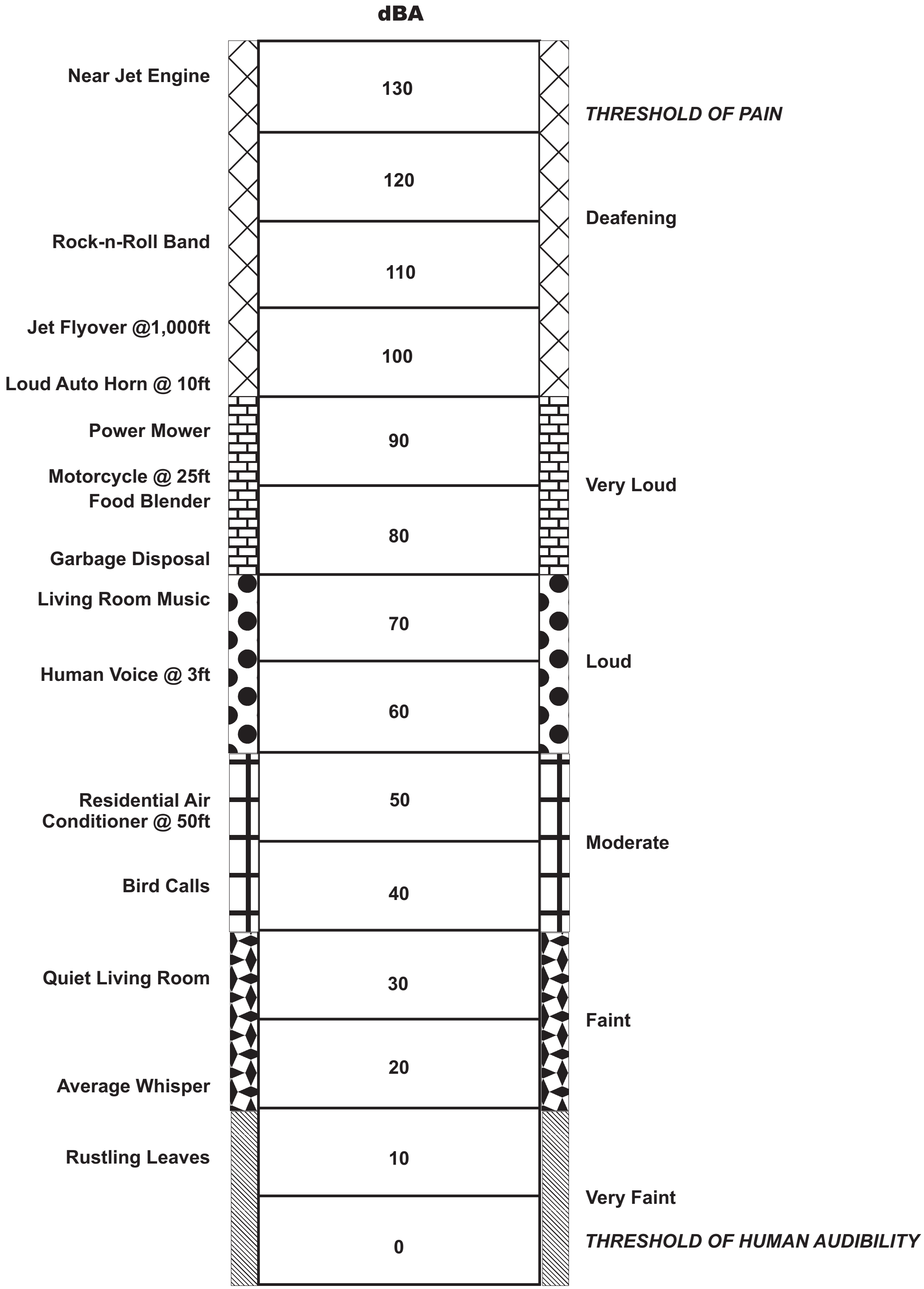


Figure 4.7-1
A-Weighted Decibel Scale

Audible Noise Changes

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and would likely evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would cause a community response.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or “point source,” will decrease by approximately 6 dBA over hard surfaces and 7.5 dBA over soft surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source over a hard surface, 77 dBA at a distance of 200 feet, and so on. Noise generated by a mobile source will decrease by approximately 3 dBA over hard surfaces and 4.5 dBA over soft surfaces for each doubling of the distance.

Generally, noise is most audible when traveling by direct line-of-sight. Barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier (diffraction). Sound barriers can reduce sound levels by up to 20 dBA. However, if a barrier is not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

4.7.1.2 Vibration Characteristics

Characteristics of Vibration

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

Effects of Vibration

High levels of vibration may cause physical personal injury or damage to buildings. However, ground-borne vibration levels rarely affect human health. Instead, most people consider ground-borne vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of ground-borne vibration may damage fragile buildings or interfere with equipment that is highly sensitive to ground-borne vibration (e.g., electron microscopes). To counter the effects of ground-borne vibration, the Federal Railway Administration (FRA) has published guidance relative to vibration impacts. According to the FRA, fragile buildings can be exposed to ground-borne vibration levels of 0.5 inches per second without experiencing structural damage.

Perceptible Vibration Changes

In contrast to noise, ground-borne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 Vdb or lower, well below the threshold of perception for humans, which is around 65 Vdb. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

4.7.1.3 Existing Noise Environment

HnGS is bounded by an Orange County flood control channel and the City of Long Beach/City of Seal Beach boundary line to the east; the San Gabriel River to the west; the 22 Freeway to the north; and 2nd Street to the south. The proposed project is located entirely within Noise District Four in the City of Long Beach. The district is bounded on the east by the Long Beach City limit, on the north by the 22 Freeway/7th Street, on the west by Studebaker Road, and on the south by 2nd Street. It encompasses the HnGS property that lies within the Long Beach City limits (all but the northeastern corner of HnGS), the AES Alamitos Generating Station west of HnGS, and the portion of the San Gabriel River located between the two generating stations. The existing noise environment of is characterized by noises typical to an industrial land use. The onsite generators are the primary source of noise in the project vicinity.

Sound measurements were taken using a SoundPro DL Sound Level Meter for a 24-hour period on January 27, 2009, and short-term measurements were taken on January 28, 2009, between the hours of 2:00 p.m. and 10:00 p.m. to determine existing ambient daytime and nighttime noise levels in the project vicinity. These readings were used to establish existing ambient noise conditions and to provide a baseline for evaluating operational noise impacts. Noise monitoring locations are shown in Figure 4.7-2. Table 4.7-1 shows the existing ambient sound levels for both the 24-hour and short-term noise measurements and the distance from the noise source to the sound level meter.

Additional noise measurements were taken on September 4, 2008, at the HnGS facility during peak operation of the existing generators. Operational noise peaked at approximately 61.5 dBA at 250 feet, within line-of-site to Units 1 and 2, which were running near maximum capacity.

Table 4.7-1
Existing Noise Levels

Key to Figure 4.7.2	Time/Duration	Distance from Noise Source (Feet)/a/	Sound Level (dBA, L_{eq})
24-Hour Noise Measurement at Haynes Generating Station Facility /b/			
1 – Daytime	7:00 a.m. to 7:00 p.m.	240	54.3 /c/
1 – Nighttime	7:00 p.m. to 7:00 a.m.	240	55.8 /d/
Short-Term Noise Measurements Near Island Village Residences /e/			
2	2:10 p.m. to 2:25 p.m.	10	66.9
2	4:01 p.m. to 4:16 p.m.	10	70.7
2	6:12 p.m. to 6:27 p.m.	10	71.4
2	8:05 p.m. to 8:20 p.m.	10	65.8
2	10:01 p.m. to 10:16 p.m.	10	58.6
Short-Term Noise Measurements at Haynes Generating Station Facility /f/			
3	5 minutes	95	57.8
4	13 minutes	1,600	53.6
5	11 minutes	750	54.0
6	5 minutes	575	54.4
7	4 minutes	790	53.3
8	4 minutes	1,000	51.6
9	2 minutes	250	61.5

/a/ This column represents the distance between the sound level meter and the nearest significant noise source. The nearest noise source was not necessarily HnGS facilities. For example, the nearest noise source to Noise Measurement Location 3 was the 22 Freeway.
/b/The 24-hour noise measurement was completed on January 27, 2009 to January 28, 2009. Noise sources included generator equipment on the project site.
/c/ Lowest ambient daytime noise level was logged at 3:35 p.m. on January 27, 2009.
/d/ Lowest ambient nighttime noise level was logged at 12:30 a.m. and 2:00 a.m. on January 28, 2009.
/e/ 15-minute noise measurements taken near the Island Village housing tract on the south side of 2nd Street. Noise sources included traffic on Second Street and mechanical noise on the project site.
/f/ Noise measurements taken at the HnGS facility. Durations listed for these measurements indicate the length of time it took for the noise meter to stabilize based on the ambient noise levels at each location. Location No. 9 is the most representative of maximum operational generator noise, as there was an unobstructed view to units 1 and 2 (which were operating at near full capacity).
Source: TAHA 2009.

LEGEND:

Noise Monitoring Locations

N.T.S.

Figure 4.7-2
Noise Monitoring Locations

4.7.1.4 Existing Vibration Environment

Similar to the environmental setting for noise, the vibration environment is dominated by generator operation on the project site. Existing generators do not create perceptible vibration levels at nearby sensitive receptors.

4.7.1.5 Sensitive Receptors

Noise and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise and vibration-sensitive and may warrant unique measures for protection from intruding noise. Sensitive receptors near the project site include the following:

- Leisure World, located approximately 400 feet east of the project site
- Island Village residential community, located approximately 2,400 feet south of the project site

4.7.2 REGULATORY FRAMEWORK

4.7.2.1 Applicable Noise Regulations

Long Beach Municipal Code

The Long Beach Municipal Code (LBMC) has identified several policies on noise and acceptable noise levels. These policies address unnecessary, excessive and annoying noise levels and sources, such as vehicles, construction, special sources (e.g., radios, musical instrument, animals, etc.), and stationary sources (e.g., heating and cooling systems, mechanical rooms, etc.). To implement these policies, the City adopted a Noise Ordinance, as discussed below.

The City of Long Beach has not adopted construction noise level standards. Instead, the City regulates construction noise by limiting activity to the hours identified in the LBMC. Section 8.80.202 defines the hours where construction activity may not take place:

- **Weekdays and federal holidays**. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of 7:00 p.m. and 7:00 a.m. the following day on weekdays, except for emergency work authorized by the building official. For purposes of this section, a federal holiday shall be considered a weekday.

- **Saturdays**. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of 7:00 p.m. on Friday and 9:00 a.m. on Saturday, and after 6:00 p.m. on Saturday, except for emergency work authorized by the building official.

- **Sundays**. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity at any time on Sunday, except for emergency work authorized by the building official or except for work authorized by permit issued by the noise control officer.

The LBMC prohibits any unnecessary, excessive, or annoying noise in the City. Properties within the City are assigned a noise district based on their corresponding zoning district and uses. Predominantly residential districts are designated as Noise District One; predominately commercial districts are designated Noise District Two; and predominately manufacturing or industrial districts are designated as Noise Districts Three and Four; airports, freeways and waterways regulated by other agencies are designated Noise District Five. Table 4.7-2 shows the allowable noise levels and corresponding times of day for each of the five identified noise zones. The project site lies within District Four. As described above, the Noise District Four boundaries encompass most of HnGS, the AES generating station, and the San Gabriel River between the two stations. Section 8.80.150 subsection (B) of the Noise Ordinance specifies that no person shall operate or cause to be operated any source of sound at any location within the incorporated limits of the City or allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measured from any other property, either incorporated or unincorporated, to exceed:

1. The noise standard for a land use district as specified in Table 4.7-2 for a cumulative period of more than thirty minutes in any hour;
2. The noise standard plus five decibels for a cumulative period of more than fifteen minutes in any hour;
3. The noise standard plus ten decibels for a cumulative period of more than five minutes in any hour;
4. The noise standard plus fifteen decibels for a cumulative period of more than one minute in any hour; or
5. The noise standard plus twenty decibels or the maximum measured ambient, for any period of time.

Subsection C of Section 8.80.150 states, “If the measured ambient level exceeds that permissible within any of the first four noise limit categories in subsection B (listed above) of this section, the allowable noise exposure standard shall be increased in five decibels increments in each category as appropriate to encompass or reflect the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category in subsection B of this section, (listed above) the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.”

Table 4.7-2
City of Long Beach Exterior Noise Standards

Noise District	Time Interval	Allowable dBA L_{eq}				
		Standard	15 Mins/Hr	5 Mins/Hr	1 Min/Hr	Any Period
One	10:00 p.m. to 7:00 a.m.	45	50	55	60	65
	7:00 a.m. to 10:00 p.m.	50	55	60	65	70
Two	10:00 p.m. to 7:00 a.m.	55	60	65	70	75
	7:00 a.m. to 10:00 p.m.	60	65	70	75	80
Three /a/	Anytime	65	70	75	80	85
Four /a/	Anytime	70	75	80	85	90
Five	*Regulated by Other Agencies or Laws*					

Note: The proposed project is located within Noise District Four.
/a/ Limits for Noise Districts Three and Four are intended for use on the boundaries of those districts, and not for noise control within the districts.
Source: City of Long Beach Municipal Code, Section 8.80.160, accessed November 4, 2008.

Section 8.80.160 defines exterior noise level limits and any correction factors to be applied due to the nature or content of the sound. If a sound is a steady, audible tone (such as the HnGS facility), or is repetitive, or contains music or speech conveying information, the standard limits identified in Table 4.7-2 should be reduced by 5 dBA. For steady, audible noise (such as that generated by the proposed project) the allowable operational noise level for the proposed project would be 65 dBA L_{eq}. Section 8.80.160 states that the limits for Noise Districts Three and Four are for use at the boundaries of those districts and not for noise control within those districts. The LBMC also limits noise from mechanical equipment. Section 8.80.200 states that any motor, machinery, or pump shall be sufficiently enclosed or muffled and maintained so as not to create a noise disturbance.

Seal Beach Municipal Code

While the proposed project would not be required to adhere to noise regulations in the Seal Beach Municipal Code (SBMC), the analysis requires the acknowledgement of noise regulations contained in the SBMC. The City of Seal Beach Noise Ordinance is contained in Chapter 7.15 of the SBMC. The SBMC uses three noise zones which are based on land uses including residential, commercial, and industrial. Similar to the LBMC, noise level limits in the residential areas are time dependent. Between the hours of 10:00 p.m. and 7:00 a.m., noise limits are set 5 dBA lower than between the hours of 7:00 a.m. and 10:00 p.m. Section 7.15.025 (E) exempts noise generated by construction activity occurring between the hours of 7:00 a.m. and 8:00 p.m. on weekdays, and 8:00 a.m. and 8:00 p.m. on Saturdays.

4.7.2.2 Applicable Vibration Regulations

There are no adopted City of Long Beach standards for construction ground-borne vibration. For operational activity, Section 8.80.200 of the LBMC prohibits operating any device that creates vibration that is above the perception threshold of an individual at or beyond the property boundary of the source if on private property or at 150 feet from the source if on a public space or right-of-way. The vibration perception threshold is defined as the minimum ground or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects.

4.7.3 METHODOLOGY AND SIGNIFICANCE CRITERIA

4.7.3.1 Methodology

The noise analysis considers construction, operational, and vibration sources. Construction noise levels are based on information obtained from the USEPA's *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*. The noise level during the construction period at each receptor location was calculated by (1) making a distance adjustment to the construction source sound level; and (2), logarithmically adding the adjusted construction noise source level to the ambient noise level. To provide a conservative basis for determining potential noise impacts, it was assumed that noise generated by existing and proposed HnGS facilities would travel over hard surfaces and therefore decrease by approximately 6 dBA for each doubling of the distance from the source (as opposed to a 7.5 dBA reduction for noise traveling over soft surfaces). In addition, construction noise levels were adjusted for intervening objects such as walls and other structures. General construction, pile driving, and construction delivery truck activity were calculated as separate phases utilizing equipment use estimates and other information provided by LADWP.

The proposed project would involve the development of several new stationary noise sources on the project site, including six CT generators (arranged in pairs from north to south) and six cooling units (grouped together north of the CT generators). The noise analysis assumes that all six CT generators (and thus all six cooling units) would be running simultaneously at full load. While this may occur on rare occasion, it is a generally conservative assumption for determining potential noise impacts from the proposed project. Operational noise levels for the proposed generators, cooling units, and gas compressors were provided by ATCO Noise Management. Vibration levels were estimated based on information provided by the FTA on construction equipment vibration.

4.7.3.2 Significance Criteria

The City of Long Beach has not adopted construction noise level standards. Instead, the City of Long Beach regulates construction noise by limiting activity to the hours identified in the municipal code. CEQA requires that project impacts be analyzed relative to the change in existing conditions. Compliance with a municipal code alone does not constitute a comparison to existing conditions. Based on noise studies, an increase of 10 dBA from existing conditions would cause a community response.

Construction Phase Significance Criteria

A significant construction noise impact would result if:

- Construction activity would conflict with the LBMC; and/or
- Construction activity would exceed existing ambient noise levels by 10 dBA or more at a noise sensitive land use because a 10-dBA change would be loud enough to cause a community response.

Operational Phase Significance Criteria

A significant operational noise impact would result if:

- The proposed project causes the ambient noise level measured at the boundary line of Noise District Four to exceed the 65-dBA threshold defined in the LBMC.

Ground-borne Vibration Significance Criteria

There are no adopted State or City of Long Beach ground-borne vibration standards. Based on federal guidelines, the proposed project would result in a significant construction or operational vibration impact if:

- Construction activity would expose buildings to the FRA building damage threshold level of 0.5 inches per second;
- Operational activity generates perceptible vibration at or beyond the boundary line of the property which contains the vibration source in accordance with the LBMC.

4.7.4 ENVIRONMENTAL IMPACTS

4.7.4.1 Noise Impacts

Construction Noise Impacts

Impact N1 Significant short-term noise impacts would result from general construction activities.

Construction of the proposed project would result in temporary increases in ambient noise levels in the project area on an intermittent basis. The increase in noise would occur during the 26-month construction schedule. Noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers.

Construction activities typically require the use of numerous pieces of noise generating equipment, such as jackhammers, pneumatic impact equipment, saws, and tractors. Typical noise levels from various types of equipment that may be used during construction are listed in Table 4.7-3. The table shows noise levels at distances of 50 and 100 feet from the construction noise source.

Table 4.7-3
Maximum Noise Levels of Common Construction Machines

Noise Source	Noise Level (dBA) /a/	
	50 Feet	100 Feet
Backhoe	83	77
Concrete Mixers	88	82
Concrete Pumps	86	80
Crane	88	82
Front-end Loader	79	73
Idling Haul Truck	72	66
Jackhammer	82	76
Pile Driving	101	95
Pumps	73	67
Welders	70	64

/a/ Assumes a 6-dBA drop-off rate for noise generated by a “point source” and traveling over hard surfaces.
Source: USEPA, *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*, PM 206717, 1971; FHWA Roadway Construction Model, December 8, 2008; TAHA, 2009.

Whereas Table 4.7-3 shows the noise level of various pieces of equipment, the noise levels shown in Table 4.7-4 take into account the likelihood that more than one piece of construction equipment would be in operation at the same time and lists the typical overall noise levels that would be expected for each phase of construction. These noise levels are based on surveys conducted by the USEPA in the early 1970s. Since 1970, regulations have been enforced to improve noise generated by certain types of construction equipment to meet worker noise exposure standards. However, many older pieces of equipment are still in use. Thus, the construction phase noise levels indicated in Table 4.7-4 represent worst-case conditions. As the table shows, the highest noise levels are expected to occur during the grading/excavation and finishing phases of construction. A typical piece of equipment is assumed to be active for 40 percent of the eight-hour workday (consistent with the USEPA studies of construction noise), generating a maximum noise level of 89 dBA at a reference distance of 50 feet.

Table 4.7-4
Outdoor Construction Noise Levels

Construction Phase	Noise Level at 50 Feet (dBA)
Ground Clearing	84
Grading/Excavation	89
Foundations	78
Structural	85
Finishing	89
Source: USEPA, *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*, PM 206717, 1971.	

General Construction Noise Impacts

The noise level during the construction period at each receptor location was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level. The majority of the noise created by construction activity would originate from the engines powering the heavy equipment on the construction site. Heavy equipment engines would be located at ground-level (e.g., cranes, bulldozers), and thus subject to noise attenuation from intervening objects and noise attenuating materials (e.g., walls).

The estimated construction noise levels at sensitive receptors are shown in Table 4.7-5. Regarding Leisure World, daytime construction noise levels would exceed the 10-dBA threshold of significance, and would result in a significant impact without mitigation. Nighttime construction activity would include welding activity and other low noise activities. Nighttime activity was assumed to consist of six welders operating concurrently on the project site generating a noise level of 78 dBA at 50 feet. Nighttime wielding activity would not exceed the 10-dBA threshold of significance at Leisure World, and would result in a less-than-significant impact. Regarding the Island Village residential community, neither daytime nor nighttime construction noise levels would exceed the 10-dBA threshold of significance, resulting in a less-than-significant impact.

Impact N2 Construction noise generation that is not consistent with the Long Beach Municipal Code may lead to significant construction impacts.

Construction activity is scheduled to begin during the third quarter of 2010 and continue to completion in the last quarter of 2012. Most daily construction activities would occur between the hours of 7:00 a.m. to 7:00 p.m., Monday through Saturday. However, the construction schedule specifies that some activities may continue throughout nighttime hours and for extended periods on the weekends. Construction activities that would occur any time Saturday or Sunday and during nighttime hours would consist of activities that generate less noise than the 89-dBA at 50 feet assumed for analysis purposes. The proposed project includes construction activity that would conflict with the LBMC. This may result in a significant impact without mitigation.

Table 4.7-5
General Construction Noise Impacts – Unmitigated

Sensitive Receptor	Distance (feet) /a/	Maximum Construction Noise Level (dBA) /b/	Existing Ambient (dBA, L_{eq}) /c/	New Ambient (dBA, L_{eq}) /d/	Increase /e/
Leisure World					
Daytime	400	65.9	48.9	66.0	17.1
Nighttime – Welding Activity	400	59.9	52.0	60.6	8.6
Island Village Residences					
Daytime	2,400	47.9	61.9	62.1	0.2
Nighttime – Welding Activity	2,400	44.4	53.6	54.1	0.5

/a/ Distance of noise source from receptor.
/b/ Construction noise source's sound level at receptor location, with distance and building adjustment. Leisure World includes a 5-dBA reduction for an existing wall which blocks line of sight to the HnGS. Island Village Residences includes a 7.5-dBA reduction for intervening existing generators and an existing wall.
/c/ Pre-construction activity ambient sound levels at Leisure World were attenuated for distance from the 24-hour noise measurement location (see Table 4.7-1, 24-Hour Noise Measurement at Haynes Generating Station Facility). Noise levels were attenuated from the 24-hour noise measurement location (240 feet from nearest noise source) to the Leisure World property line (400 feet). This lowered the levels of both daytime and nighttime existing ambient noise measures from 54.3 to 48.9 dBA for daytime levels, and from 55.8 to 52.0 dBA for nighttime levels.
/d/ New sound level at receptor location during the construction period, including noise from construction activity.
/e/ An incremental noise level increase of 10 dBA or more would result in a significant impact.
Source: TAHA, 2009.

Impact N3 Short-term significant noise impacts will result from construction pile driving.

Construction of the proposed project will require the driving of up to 3,000 piles up to 80 feet into the ground. Pile driving activity at the project site will include two impact hammer pile drivers, one hydraulic crane, and several other pieces of equipment. The combined noise levels from all equipment present would produce a noise level of approximately 104 dBA at 50 feet. Table 4.7-6 presents noise levels for pile driving activity at sensitive receptors. Regarding Leisure World, pile driving activity noise levels would exceed the 10-dBA threshold of significance and would result in a significant impact without mitigation. Regarding the Island Village residential community, pile driving activity noise levels would not exceed the 10-dBA threshold of significance, and would result in a less-than-significant impact. Pile driving activity would take place during day time hours only, and would not occur during nighttime hours.

Impact N4 A less than significant short-term noise impact would result from construction delivery trucks.

On-Road Delivery Trucks

Construction of the proposed project will require materials to be delivered to the construction site on a daily basis. Truck trips would average 25 loads per day during peak construction material delivery periods. As shown in Table 4.7-7, noise generated by construction delivery truck activity would not exceed the 10-dBA significance threshold for construction noise.

Table 4.7-6
Pile Driving Noise Impacts – Unmitigated

Sensitive Receptor	Distance (feet) /a/	Maximum Construction Noise Level (dBA) /b/	Existing Ambient (dBA, L_{eq}) /c/	New Ambient (dBA, L_{eq}) /d/	Increase /e/
Leisure World	400	80.9	48.9	80.9	32.0
Island Village Residences	2,400	62.9	61.9	65.4	3.5

/a/ Distance of noise source from receptor.
/b/ Construction noise source's sound level at receptor location, with distance and building adjustment. Leisure World includes a 5-dBA reduction for an existing wall which blocks line of sight to the HnGS. Island Village Residences includes a 7.5-dBA reduction for intervening existing generators and an existing wall.
/c/ Pre-construction activity ambient sound level at receptor location attenuated for distance from 24-hour and short-term noise measurement locations.
/d/ New sound level at receptor location during the construction period, including noise from construction activity.
/e/ An incremental noise level increase of 10 dBA or more would result in a significant impact.
Source: TAHA, 2009.

Table 4.7-7
Estimated Equivalent Noise Level with Construction Delivery Trucks /a/

Roadway Segment	Estimated dBA L_{eq}		
	Existing	During Construction	Increase /a/
2nd Street between Studebaker Road and Project Entrance	75.6	76.6	1.0
2nd Street between Project Entrance and Seal Beach Blvd.	75.9	76.9	1.0

/a/ An incremental noise level increase of 10 dBA or more would result in a significant impact.
Source: TAHA, 2009.

On-site Truck Idling Noise Impacts

Delivery trucks may idle on site for short periods of time while loading and unloading materials. Typical truck idling generates approximately 72 dBA at a distance of 50 feet. During the short time where delivery trucks would idle on site, construction noise levels would increase by approximately 1.0 dBA. Truck idling would not substantially increase general construction and noise, and would result in a less-than-significant impact.

<u>Operations Noise Impacts</u>

Impact N5 Long-term noise impacts resulting from new stationary noise sources would be less than significant.

The proposed project would involve the development of several new stationary noise sources on the project site, including six CT generators (arranged in pairs from north to south), six cooling units (grouped together north of the CT generators) and a bank of six gas compressors (grouped together east of the combustion turbine generators). The proposed project would include design features to reduce noise levels. These include exhaust silencing and other noise dampening features to the CT generators, low-noise fans for the cooling units, and an acoustic enclosure for the gas compressors.

The proposed CT generators would generate a noise level of approximately 65.4 dBA L_{eq} at 100 feet for a single generator. The analysis was based on a composite noise level for each pair of generators (north, middle, and south) of approximately 68.4 dBA L_{eq} at 100 feet. The proposed cooling units on the northern portion of the project site would generate a composite noise level of approximately 71 dBA at 100 feet. The proposed gas compressors on the eastern portion of the project site would generate a composite noise level of approximately 62 dBA at 100 feet. Based on short-term noise measurements taken at the project site on September 4, 2008, the existing HnGS facility generates a noise level of 69.5 dBA L_{eq} at 100 feet.

Operational noise is analyzed in relation to both the proposed cooling units and the proposed SCGS (CT generator) facility, which represent the potentially loudest elements of the proposed project. Tables 4.7-8 and 4.7-9 show the existing facilities and proposed project facilities combined noise levels at each of the borders (north, south, east, and west) of the Noise District Four, within which HnGS is located. Table 4.7-8 shows the operational noise at the loudest point along the Noise District Four boundary relative to the proposed SCGS facility. Table 4.7-9 shows operational noise at the loudest point along the district boundary relative to the proposed cooling units.

Noise levels were calculated by determining a point along the north, south, east, and west boundaries of the designated Noise District Four where the proposed project and existing facility noise sources would combine to be the loudest at that boundary line. The distances listed in Tables 4.7-8 and 4.7-9 represent the closest (and therefore loudest) point along the boundary of Noise District Four from the SCGS and the cooling units, respectively. However, the distances do not necessarily represent the closest point along the boundaries from existing HnGS noise sources. For example, the existing HnGS generator facilities are approximately 460 feet from the eastern boundary line at their closest point. However, as shown in Table 4.7-8, the point along the eastern boundary line where the sum of noise levels from all three noise sources (proposed SCGS facility, proposed cooling units, and existing HnGS facility) would be highest is approximately 1,100 feet to the north of the existing HnGS generators. Operational noise vector lines for both the proposed SCGS facility and proposed cooling units are shown in Figures 4.7-3 and 4.7-4, respectively.

Proposed SCGS Facility

The proposed SCGS facility would generate a noise level of approximately 68.4 dBA L_{eq} at 100 feet for each pair of generators. As shown in Table 4.7-8, noise levels associated with the proposed SCGS facility would be 44.8 dBA L_{eq} at the northern boundary, 43.3 dBA L_{eq} at the southern boundary, 60.0 dBA L_{eq} at the eastern boundary, and 43.2 dBA L_{eq} at the western boundary. As shown in Table 4.7-9, noise levels associated with the proposed SCGS facility would be 44.8 dBA L_{eq} at the northern boundary, 43.3 dBA L_{eq} at the southern boundary, 56.6 dBA L_{eq} at the eastern boundary, and 43.2 dBA L_{eq} at the western boundary.

Proposed Cooling Units

The proposed cooling units would also generate a noise level of approximately 71.0 dBA L_{eq} at 100 feet. As shown in Table 4.7-8, noise levels associated with the proposed cooling units would be 47.7 dBA L_{eq} at the northern boundary, 40.4 dBA L_{eq} at the southern boundary, 55.5 dBA L_{eq} at the eastern boundary, and 42.1 dBA L_{eq} at the western boundary. As shown in Table 4.7-9, noise levels associated with the proposed cooling units would be 47.6 dBA L_{eq} at the northern boundary, 40.5 dBA L_{eq} at the southern boundary, 59.5 dBA L_{eq} at the eastern boundary, and 42.1 dBA L_{eq} at the western boundary.

Proposed Gas Compressors

The proposed gas compressors would generate a noise level of approximately 62.0 dBA L_{eq} at 100 feet. As shown in Table 4.7-8, noise levels associated with the proposed gas compressors would be 35.1 dBA L_{eq} at the northern boundary, 29.8 dBA L_{eq} at the southern boundary, 52.0 dBA L_{eq} at the eastern boundary, and 31.3 dBA L_{eq} at the western boundary. As shown in Table 4.7-9, noise levels associated with the proposed gas compressors would be 35.1 dBA L_{eq} at the northern boundary, 29.7 dBA L_{eq} at the southern boundary, 45.6 dBA L_{eq} at the eastern boundary, and 31.3 dBA L_{eq} at the western boundary.

Existing HnGS Facility

The existing HnGS facility generates a noise level of approximately 69.5 dBA L_{eq} at 100 feet. As shown in Table 4.7-8, noise levels at each boundary line associated with the existing HnGS facility would be 39.8 dBA L_{eq} at the northern boundary, 54.7 dBA L_{eq} at the southern boundary, 48.7 dBA L_{eq} at the eastern boundary, and 38.8 dBA L_{eq} at the western boundary. As shown in Table 4.7-9, noise levels associated with the existing HnGS facility would be 39.8 dBA L_{eq} at the northern boundary, 54.4 dBA L_{eq} at the southern boundary, 45.8 dBA L_{eq} at the eastern boundary, and 38.7 dBA L_{eq} at the western boundary.

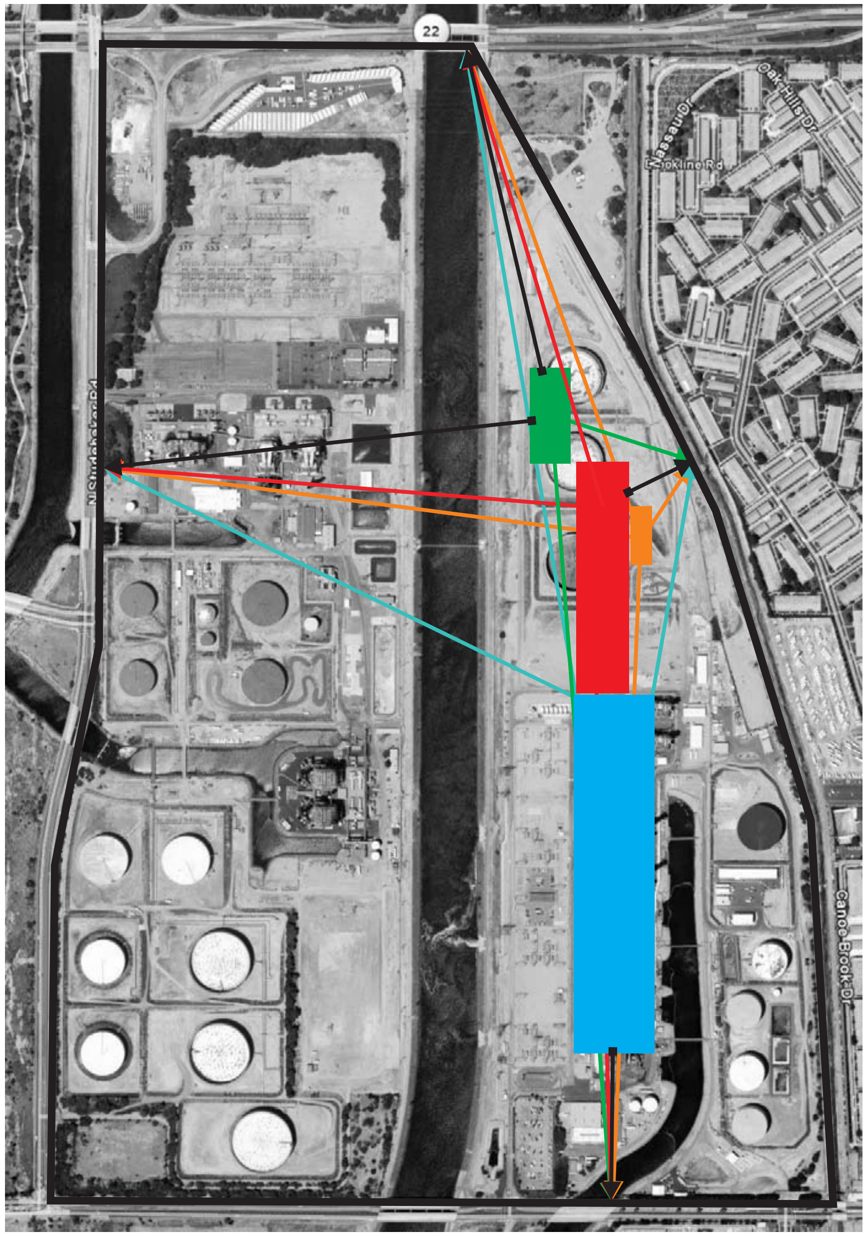
Total Operational Noise Levels

As shown in Table 4.7-8, noise levels associated with operation of the proposed project in relation to the SCGS facility would be 50.1 dBA L_{eq} at the northern boundary, 55.2 dBA L_{eq} at the southern boundary, 62.0 dBA L_{eq} at the eastern boundary, and 46.6 dBA L_{eq} at the western boundary. As shown in Table 4.7-9, noise levels associated with operation of the proposed project in relation to the cooling units would be 50.0 dBA L_{eq} at the northern boundary, 54.9 dBA L_{eq} at the southern boundary, 61.5 dBA L_{eq} at the eastern boundary, and 46.6 dBA L_{eq} at the western boundary. Noise at the boundaries of Noise District Four would be less than the 65-dBA threshold. Operational noise would result in a less than significant impact.

Table 4.7-8
Operational Noise Relative to the Proposed SCGS Facility

Sensitive Receptor	Distance from Noise Source to Boundary Line (feet) /a, b/	Noise Level at Boundary Line (dBA)
Proposed SCGS Facility Noise Levels /c/		
Northern Boundary	1,955	44.8
Southern Boundary	2,310	43.3
Eastern Boundary	335	60.0
Western Boundary	2,180 /d/	43.2
Proposed Cooling Units Noise Levels		
Northern Boundary	1,470	47.7
Southern Boundary	3,370	40.4
Eastern Boundary	595	55.5
Western Boundary	1,975 /d/	42.1
Proposed Gas Compressors		
Northern Boundary	2,210	35.1
Southern Boundary	2,880	29.8
Eastern Boundary	315	52.0
Western Boundary	2,430 /d/	31.3
Existing HnGS Facility Noise Levels		
Northern Boundary	3,055	39.8
Southern Boundary	550	54.7
Eastern Boundary	1,100	48.7
Western Boundary	2,430 /d/	38.8
TOTAL NOISE LEVELS /e/		
Northern Boundary	-	50.1
Southern Boundary	-	55.2
Eastern Boundary	-	62.0
Western Boundary	-	46.6

/a/ It should be noted that distances are not representative of the shortest distance between noise sources and boundary lines but to the point at which all proposed project and existing facility noise sources would combine to be the loudest at that boundary line.
/b/ Distance from noise source to boundary line of Noise District Four as defined in the LBMC.
/c/ The 'noise level at the boundary' is a composite of all six SCGS generators running simultaneously, attenuated from each pair of generators to the point along the boundaries where the loudest operation noise levels would occur. The distance listed is the shortest distance between that loudest point of operational noise and the nearest pair of generators.
/d/ Based on the Long Beach Municipal Code, the western boundary extends to the edge of Noise District Four. The western boundary of Noise District Four is along Studebaker Road.
/e/ To determine the noise level for each boundary, the composite noise levels were measured from a point on each boundary that yielded the most conservative (loudest) operational noise level.
SOURCE: TAHA, 2009.



LEGEND:

Long Beach Municipal Code Noise District Four

Proposed Cooling Units (71.0 dBA @ 100 ft)

Proposed SCGS Facility (68.4 dBA @ 100 ft)

Proposed Gas Compressors (62.0 dBA @ 100 ft)

Existing HnGS Facility (69.5 dBA @ 100 ft)

Loudest Noise Source Vector
Additive Noise from Proposed Cooling Units
Additive Noise from Proposed SCGS Facility
Additive Noise from Existing HnGS Facility
Additive Noise from Proposed Gas Compressors

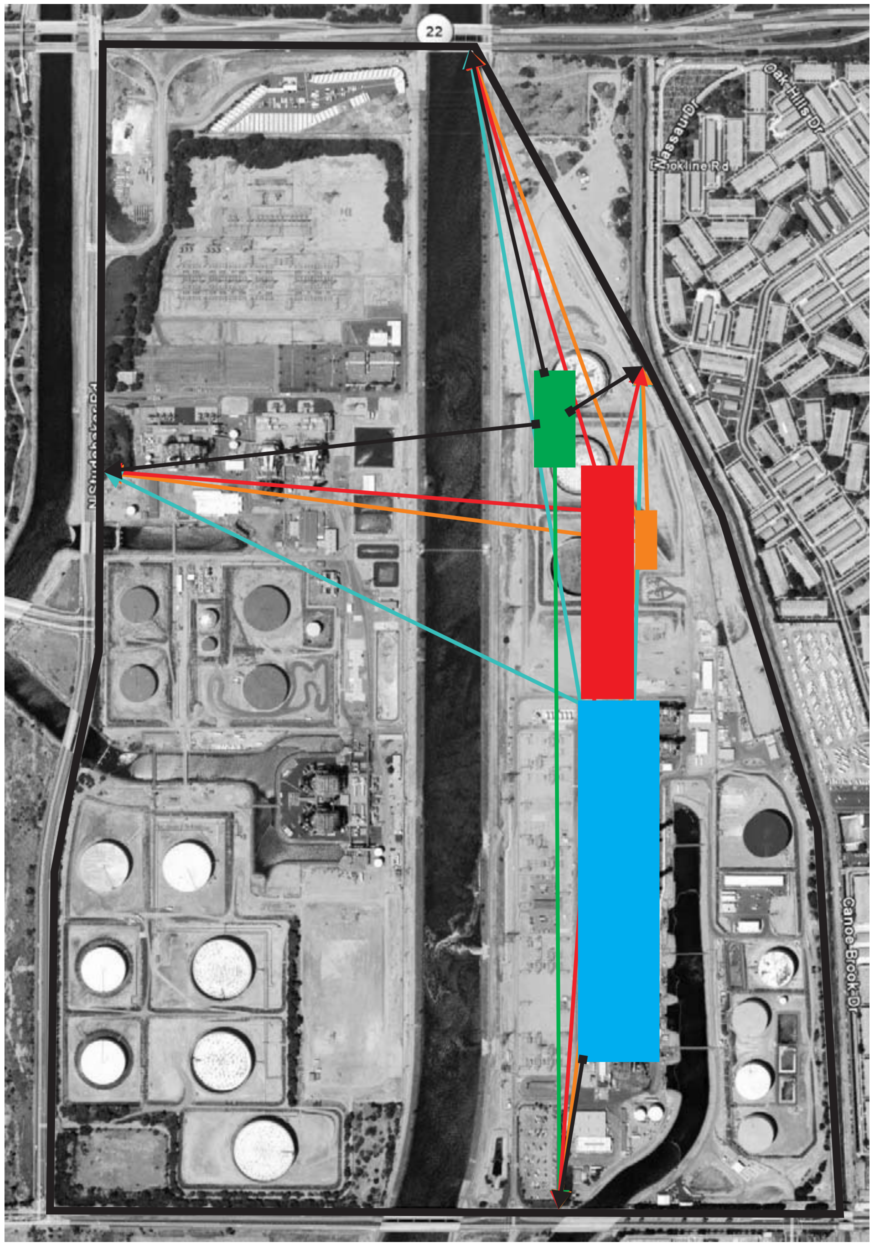
N.T.S.

Figure 4.7-3
Operational Noise Vectors Relevant to the Proposed SCGS Facility

Table 4.7-9
Operation Noise Relative to the Proposed Cooling Units

Sensitive Receptor	Distance from Noise Source to Boundary Line (feet) /a, b/	Noise Level at Boundary Line (dBA)
Proposed SCGS Facility Noise Levels /c/		
Northern Boundary	1,955	44.8
Southern Boundary	2,310	43.3
Eastern Boundary	480	56.6
Western Boundary	2,180 /d/	43.2
Proposed Cooling Units Noise Levels		
Northern Boundary	1,475	47.6
Southern Boundary	3,365	40.5
Eastern Boundary	375	59.5
Western Boundary	1,970 /d/	42.1
Proposed Gas Compressors		
Northern Boundary	2,215	35.1
Southern Boundary	2,905	29.7
Eastern Boundary	660	45.6
Western Boundary	2,430 /d/	31.3
Existing HnGS Facility Noise Levels		
Northern Boundary	3,055	39.8
Southern Boundary	570	54.4
Eastern Boundary	1,530	45.8
Western Boundary	2,465 /d/	38.7
TOTAL NOISE LEVELS /e/		
Northern Boundary	-	50.0
Southern Boundary	-	54.9
Eastern Boundary	-	61.5
Western Boundary	-	46.6

/a/ It should be noted that distances are not representative of the shortest distance between noise sources and boundary lines but to the point at which all proposed project and existing facility noise sources would combine to be the loudest at that boundary line.
/b/ Distance from noise source to boundary line of Noise District Four as defined in the LBMC.
/c/ The 'noise level at the boundary' is a composite of all six SCGS generators running simultaneously, attenuated from each pair of generators to the point along the boundaries where the loudest operation noise levels would occur. The distance listed is the shortest distance between that loudest point of operational noise and the nearest pair of generators.
/d/ Based on the Long Beach Municipal Code, the western boundary extends to the edge of Noise District Four. The western boundary of Noise District Four is along Studebaker Road
/e/ To determine the noise level at the eastern boundary, the composite noise levels were measured from a point on the each boundary that yielded the most conservative (loudest) operational noise level.
SOURCE: TAHA, 2009.



LEGEND:

Long Beach Municipal Code Noise District Four

Proposed Cooling Units (71.0 dBA @ 100 ft)

Proposed SCGS Facility (68.4 dBA @ 100 ft)

Proposed Gas Compressors (62.0 dBA @ 100 ft)

Existing HnGS Facility (69.5 dBA @ 100 ft)

Loudest Noise Source Vector

Additive Noise from Proposed Cooling Units

Additive Noise from Proposed SCGS Facility

Additive Noise from Existing HnGS Facility

Additive Noise from Proposed Gas Compressors

N.T.S.

Figure 4.7-4

Operational Noise Vectors Relevant to the Proposed Cooling Units

4.7.4.2 Ground-borne Vibration Impacts

Construction Vibration Impacts

Impact N6 Short-term ground-borne vibration impacts from construction activity would be less than significant.

Construction Equipment

As shown in Table 4.7-10, use of heavy equipment (e.g., a large bulldozer) generates vibration levels of 0.089 inches per second PPV at a distance of 25 feet. The nearest residential structures to the project site would be approximately 400 feet from occasional heavy equipment activity and could experience vibration levels of 0.001 inches per second PPV. Vibration levels at these receptors would be perceptible but would not exceed the potential building damage threshold of 0.5 inches per second PPV. The proposed project would result in a less-than-significant construction vibration impact due to equipment.

Pile Driving

The proposed project would require driven piles. Impact pile driving would generate a vibration level of 0.010 inches per second PPV at the nearest sensitive receptor, which would not exceed the potential building damage threshold of 0.5 inches per second PPV. The proposed project would result in a less-than-significant construction vibration impact due to pile driving.

Table 4.7-10
Vibration Velocities for Construction Equipment

Equipment	PPV at 25 feet (Inches / Second) /a/
Large Bulldozer	0.089
Loaded Trucks	0.076
Pile Driving (Impact)	0.644
Pile Driving (Sonic)	0.170

/a/ Fragile buildings can be exposed to ground-borne vibration levels of 0.5 inches per second PPV without experiencing structural damage.
Source: Federal Transit Authority, *Transit Noise and Vibration Impact Assessment*, May 2006.

Operations Ground-borne Vibration Impacts

The proposed project would not include significant stationary sources of ground-borne vibration, such as heavy equipment operations. The proposed SCGS would not generate any perceptible vibration. Vibration related to operational activity would not be perceptible at or beyond the property boundary, which would comply with Section 8.80.200 of the LBMC. Operational vibration would result in a less-than-significant impact.

4.7.4.3 Cumulative Impacts

Cumulative impacts related to noise and vibration would result if the proposed project, in conjunction with other projects in the area, would contribute to a significant increase in ambient noise and vibration levels at nearby sensitive receptors.

Cumulative Construction Noise Impacts

The City of Long Beach Department of Development Services' website does not list any projects within a one-mile radius of the project site. As there are no construction projects near to the project site, a cumulative increase in construction noise levels would not occur. This would result in a less-than-significant cumulative construction noise impact.

Cumulative Operational Noise Impacts

The primary source of operational noise at the project site would be the proposed project operating in concert with the existing HnGS generators. As discussed previously, operational noise levels, including both the proposed project and existing facilities, would not exceed the levels codified in the LBMC at the property boundary. In addition, the proposed project would not add any additional trips to the roadway system and, therefore, would not increase mobile noise in the region. This would result in a less-than-significant cumulative operational noise impact.

Cumulative Ground-borne Vibration Impacts – Construction and Operations

The predominant vibration source at the project site would be construction activity and operation of the SCGS and existing generator facilities. As discussed in Section 3.4.3 of this report, the proposed project would not exceed the significance thresholds for vibration past the property line during either the construction or operational phases of the SCGS facility. In addition, since the City of Long Beach does not list any upcoming projects within one-mile, no cumulative increase in vibration levels is anticipated. This would result in a less-than-significant cumulative ground-borne vibration impact.

4.7.5 MITIGATION MEASURES

Construction Noise Mitigation Measures

The following measures are provided to mitigate the significant noise impact of general construction activities (Impact N1).

N1-1 All construction equipment shall be properly maintained and equipped with mufflers and other suitable noise attenuation devices.

N1-2 A solid physical barrier shall be used on the perimeter of construction sites to block the line-of-sight from receptor to source, when feasible and necessary, to minimize noise to nearby noise-sensitive receptors. This perimeter fencing shall not have perforations or gaps.

N1-3 Grading and construction contractors shall endeavor to use quieter equipment as opposed to noisier equipment (such as rubber-tired equipment rather than track equipment).

N1-4 A public liaison for project construction shall be identified who shall be responsible for addressing public concerns about construction activities, including excessive noise. The liaison shall determine the cause of the concern (e.g., starting too early, bad muffler, etc.) and shall be authorized to implement reasonable measures to address the concern.

N1-5 Leisure World residential community, which may potentially be affected by construction activity, shall be sent a notice regarding the construction schedule of the proposed project. The notice shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register concerns.

N1-6 The construction contractor shall ensure that all stockpiling and vehicle staging areas are located away from noise-sensitive receivers, to the extent feasible.

The following measure is provided to ensure that general construction activities are consistent with the Long Beach Municipal Code (Impact N2).

N2-1 The construction contractor shall plan work such that activities that generate high noise levels will not be started during the hours codified in the LBMC, and all reasonable efforts to conclude work in progress prior to the hours codified in the LBMC will be taken by the construction contractor.

4.7.6 SIGNIFICANCE OF IMPACTS AFTER MITIGATION

4.7.6.1 Noise

General Construction Noise Impacts after Mitigation

Mitigation Measure N1-1 would reduce noise levels by approximately 3 dBA. Mitigation Measure N1-2 would reduce noise levels by at least 5 dBA. Mitigation Measures N3 through N6 would further assist in attenuating construction noise levels. Table 4.7-11 shows mitigated construction noise levels. Mitigated construction noise levels would not exceed the 10-dBA significance threshold at Leisure World, resulting in a less-than-significant impact. General construction noise would remain inaudible at the Island Village residential community, and would not result in a significant impact.

Table 4.7-11
General Construction Noise Impacts – Mitigated

Sensitive Receptor	Distance (feet) /a/	Maximum Construction Noise Level (dBA) /b/	Existing Ambient (dBA, Leq) /c/	New Ambient (dBA, Leq) /d/	Increase /e/
Leisure World					
Daytime	400	57.9	48.9	58.4	9.5
Nighttime	400	57.9	52.0	58.9	6.9
Nighttime – Welding Activity	400	45.4	52.0	52.9	0.9
Island Village Residences					
Daytime	2,400	39.9	61.9	61.9	<0.1
Nighttime	2,400	39.9	53.6	53.8	0.2
Nighttime – Welding Activity	2,400	20.9	53.6	53.6	<0.1

/a/ Distance of noise source from receptor.
/b/ Construction noise source's sound level at receptor location, with distance and building adjustment. Leisure World includes a 5-dBA reduction for an existing wall which blocks line of sight to the HnGS. Island Village Residences includes a 7.5-dBA reduction for intervening existing generators and an existing wall. This also includes mitigation measures which reduce construction noise by an additional 8 dBA.
/c/ Pre-construction activity ambient sound levels at Leisure World were attenuated for distance from the 24-hour noise measurement location (see Table 4.7-1, 24-Hour Noise Measurement at Haynes Generating Station Facility). Noise levels were attenuated from the 24-hour noise measurement location (240 feet from nearest noise source) to the Leisure World property line (400 feet). This lowered the levels of both daytime and nighttime existing ambient noise measures from 54.3 to 48.9 dBA for daytime levels, and from 55.8 to 52.0 dBA for nighttime levels.
/d/ New sound level at receptor location during the construction period, including noise from construction activity.
/e/ An incremental noise level increase of 10 dBA or more would result in a significant impact.
Source: TAHA, 2009.

<u>Pile Driving Noise Impacts after Mitigation</u>

Mitigation Measure N1-1 would reduce noise levels by approximately 3 dBA. Mitigation Measure N1-2 would reduce noise levels by at least 5 dBA. Mitigation Measures N1-4 and N1-5 would further assist in attenuating pile driving noise levels. Table 4.7-12 shows mitigated pile driving noise levels. Regarding Leisure World, mitigated pile driving noise levels would still exceed the 10-dBA significance threshold, and would result in a significant and unavoidable impact. Regarding the Island Village residential community, mitigated pile driving noise would not be discernible, and would result in a less-than-significant impact.

Table 4.7-12
Pile Driving Noise Impacts – Mitigated

Sensitive Receptor	Distance (feet) /a/	Maximum Construction Noise Level (dBA) /b/	Existing Ambient (dBA, L_{eq}) /c/	New Ambient (dBA, L_{eq}) /d/	Increase /e/
Leisure World	400	72.9	48.9	73.0	24.1
Island Village Residences	2,400	57.4	61.9	62.7	0.8

/a/ Distance of noise source from receptor.
/b/ Construction noise source's sound level at receptor location, with distance and building adjustment.
/c/ Pre-construction activity ambient sound level at receptor location attenuated for distance from 24-hour and short-term noise measurement locations. Leisure World includes a 5-dBA reduction for an existing wall which blocks line of sight to the HnGS. Island Village Residences includes a 7.5-dBA reduction for intervening existing generators and an existing wall. This also includes mitigation measures which reduce construction noise by an additional 8 dBA.
/d/ New sound level at receptor location during the construction period, including noise from construction activity.
/e/ An incremental noise level increase of 10 dBA or more would result in a significant impact.
Source: TAHA, 2009.

Long Beach Municipal Code Impacts after Mitigation

Mitigation Measure N2-1 would require the construction contractor to use all reasonable efforts to comply with the LBMC. To the extent feasible, activities that generate high noise levels would not be started outside of the hours deemed acceptable in the Code. Based on this mitigation measure, the proposed project would result in a less-than-significant impact regarding the LBMC.

Operational Phase Noise Mitigation Measures

Based upon the design parameters of the proposed project, including the proposed use of noise attenuation packages and equipment on the SCGS, cooling units, and gas compressors, the resulting impacts would be less than significant, and no mitigation measures are required.

4.7.6.2 Vibration

The project-related construction and operational ground-borne vibration impacts were determined to be less than significant, and no mitigation measures are required.

4.8 TRANSPORTATION AND TRAFFIC

The purpose of this traffic section is to assess the impacts on the surrounding roadway system of proposed construction activities related to development of the SCGS at the HnGS. Once the SCGS project is completed, the trip generation from the project site is expected to return to existing levels. All potential traffic impacts from this proposed project are expected to occur during project construction. A complete traffic study is included as Appendix F.

The study quantitatively assessed project impacts on weekday AM and PM peak hour operations at 13 key intersections near the project site. All major signalized intersections along employee vehicle and construction truck routes to and from the project site were included in the study area. The list below provides the locations of the thirteen study intersections:

1. Studebaker Rd/SR-22 Westbound Ramps*
2. Studebaker Rd/SR-22 Eastbound Ramps*
3. Studebaker Rd/AES Plant Driveway
4. Studebaker Rd/Loynes Dr
5. Studebaker Rd/2nd St
6. PCH/7th St*+
7. PCH/Bellflower Blvd*
8. PCH/Loynes Dr*
9. PCH/2nd St*+
10. PCH/Studebaker Rd*
11. Loynes Dr/Bixby Village Dr
12. Seal Beach Blvd/Westminster Ave
13. 2nd St/Project Entrance

* State (Caltrans) Facility
\+ CMP Monitoring Intersection for Los Angeles County

The traffic study was prepared in conformance with traffic study guidelines set forth by the City of Long Beach, for those intersections within the City. The City of Seal Beach does not have published traffic impact study guidelines but rather recognizes the Orange County Congestion Management Plan (CMP) traffic impact guidelines defined by the County of Orange. CMP impact guidelines for Orange County were considered in the impact analysis for the Seal Beach study intersections. Section 4.8.2 of this EIR details Orange County CMP requirements and conformance for this study intersection.

In the sections that follow, the project-only and cumulative impacts of this development on study area roadways and intersections are discussed. Two separate future-period traffic analysis timeframes are reviewed for this project, as shown below:

- Year 2008 Existing Conditions
- Year 2012 “No Project” Conditions
- Year 2012 “With Project Construction” Conditions

Project construction is anticipated to be completed in the year 2012. The Year 2012 was selected for the future analysis year in order to provide a conservative estimate of area annual traffic growth during the construction year. The use of the year 2012, therefore, for the future analysis period is conservative in terms of the definition of future baseline volumes.

4.8.1 ENVIRONMENTAL SETTING

4.8.1.1 Existing Conditions

This section documents the existing conditions in the study area. The discussion presented here is limited to major roadways and intersections in the project study area. Figure 4.8-1 illustrates the lane configurations and intersection control at the study intersections.

Existing Traffic Circulation Network

Interstate 405, the San Diego Freeway, is generally a north-south freeway that connects to Interstate 5 to the north of the project site. North of the project site, Interstate 405 serves as the primary Interstate freeway through the western portion of the Los Angeles Metropolitan Area. Project traffic may utilize freeway ramps located on Westminster Avenue at Interstate 405 to access the project site and connect to the regional transportation network to the south.

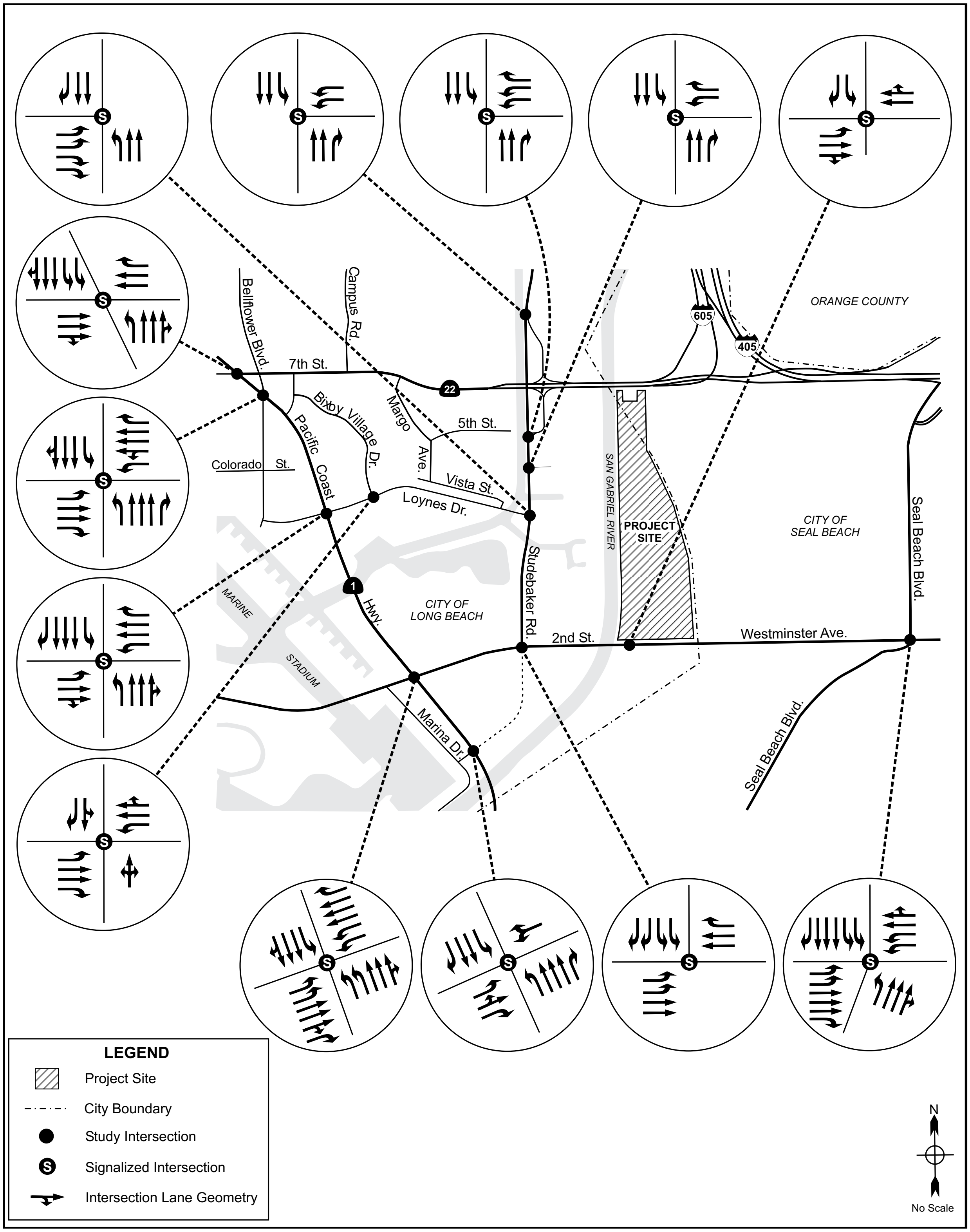
State Route 22 (SR-22) is located to the northeast of the project site. This extension of 7th Street becomes a State Route at Pacific Coast Highway (PCH) and extends east-west through the western half of Orange County. Access to the project site from the SR-22 Freeway is provided via eastbound and westbound on/off ramps at Studebaker Road. SR-22 is also classified as a State Freeway in the Los Angeles County CMP.

PCH is located west of the project site and is a Regional Corridor that extends throughout Los Angeles and Orange Counties. Access to the project site from PCH is provided via 2nd Street and Loynes Drive. This arterial is classified as a Regional Corridor in the City's Transportation Element. PCH is also classified as a State Highway (Arterial) in the Los Angeles County CMP. Long Beach Transit and the Orange County Transportation Authority (OCTA) run various lines along PCH in the project vicinity.

Studebaker Road is a four-lane north-south roadway located adjacent to the project site and parallel to the Los Cerritos Channel. Orange County Transportation Authority (OCTA) bus stops are located along northbound and southbound Studebaker Road. This road is served by OCTA Routes 1 and 60. Studebaker Road is classified as a Major Arterial.

Loynes Drive is a four-lane east-west roadway located to the west of the project site. This roadway terminates at Studebaker Road, west of the project site. Loynes Drive is classified as a Collector Street.

2nd Street is a four-lane east-west arterial located to the south of the project site. 2nd Street is classified as a Major Arterial (Scenic Route) in the City limits. This arterial is named Westminster Avenue to the east of the Orange County line.



Source: KOA Corporation

Figure 4.8-1
2008 Intersection Geometrics and Control

7th Street is a six-lane east-west arterial located to the northwest of the project site. This arterial transitions into SR-22 at PCH. 7th Street is classified as a Major Arterial.

Bellflower Boulevard is a six-lane north-south arterial located northwest of the project site. This roadway is classified as a Major Arterial in the City's Transportation element.

Seal Beach Boulevard is a six-lane north-south arterial roadway to the east of the project site.

Year 2008 Existing Conditions

Traffic volume data was collected on Tuesday, December 2, 2008 and on Thursday, December 4, 2008. Figures 4.8-2 and 4.8-3 illustrate the existing AM and PM peak hour traffic volumes at the study intersections.

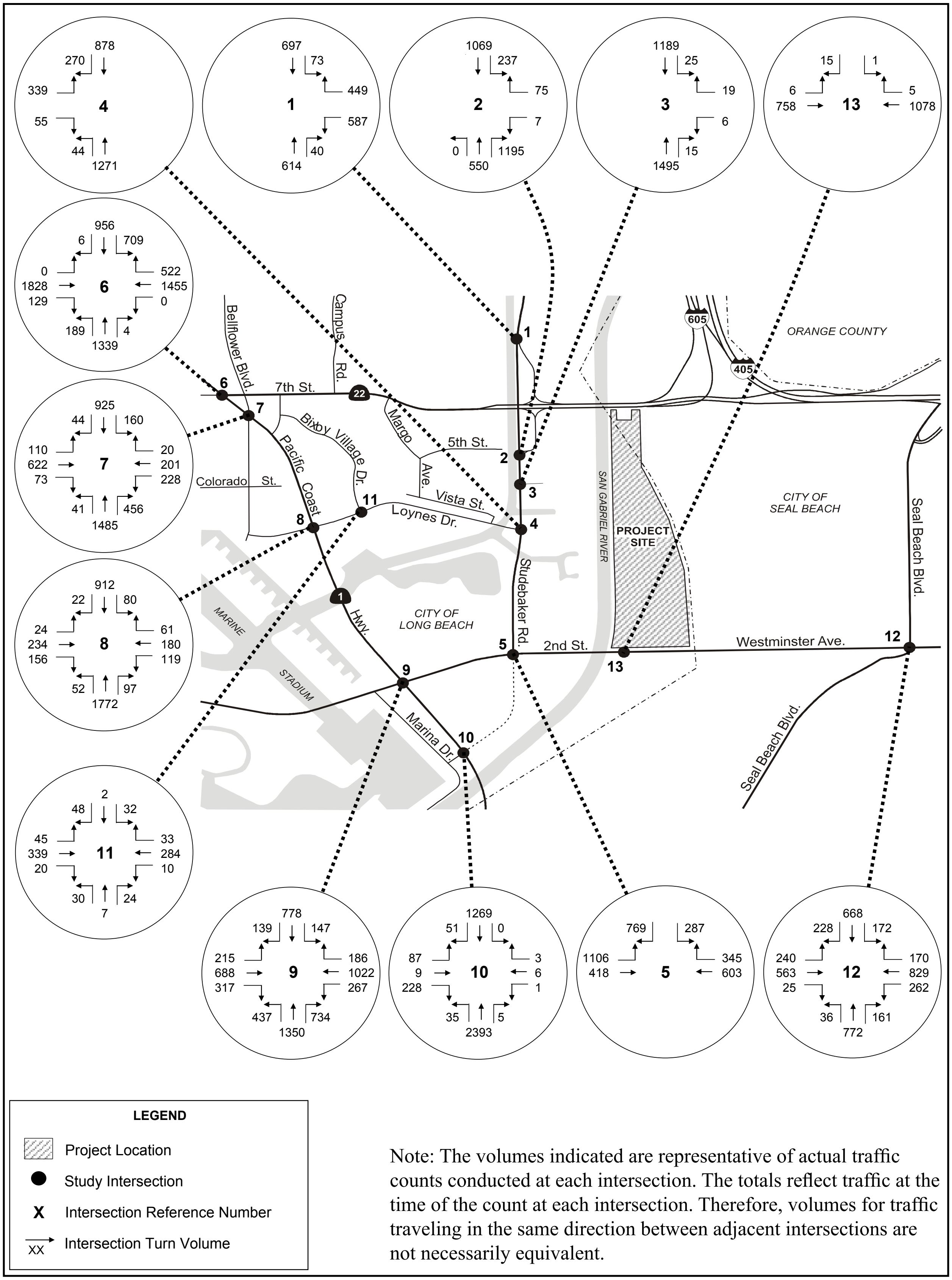
LOS calculations were performed to document existing peak period intersection performance. Table 4.8-1 shows the results of this analysis.

Table 4.8-1
LOS Calculations for Year 2008 Existing Conditions

Intersections		Weekday AM Peak		Weekday PM Peak	
		V/C	LOS	V/C	LOS
1.	Studebaker Rd & SR-22 Westbound Ramps*	0.571	A	0.889	D
2.	Studebaker Rd & SR-22 Eastbound Ramps*	0.486	A	0.802	D
3.	Studebaker Rd & AES Plant Driveway	0.645	B	0.743	C
4.	Studebaker Rd & Loynes Dr	0.665	B	0.718	C
5.	Studebaker Rd & 2nd St	0.963	E	1.068	F
6.	PCH & 7th St*+	1.131	F	1.102	F
7.	PCH & Bellflower Blvd*	0.833	D	0.758	C
8.	PCH & Loynes Dr*	0.786	C	0.835	D
9.	PCH & 2nd St*+	1.018	F	1.015	F
10.	PCH & Studebaker Rd*	0.805	D	1.052	F
11.	Bixby Village Dr & Loynes Dr	0.285	A	0.370	A
12.	Seal Beach Blvd & Westminster Ave	0.648	B	0.718	C
13.	2nd St & Project Entrance	0.502	A	0.591	A

** State (Caltrans) Facility*
+ CMP Monitoring Intersection

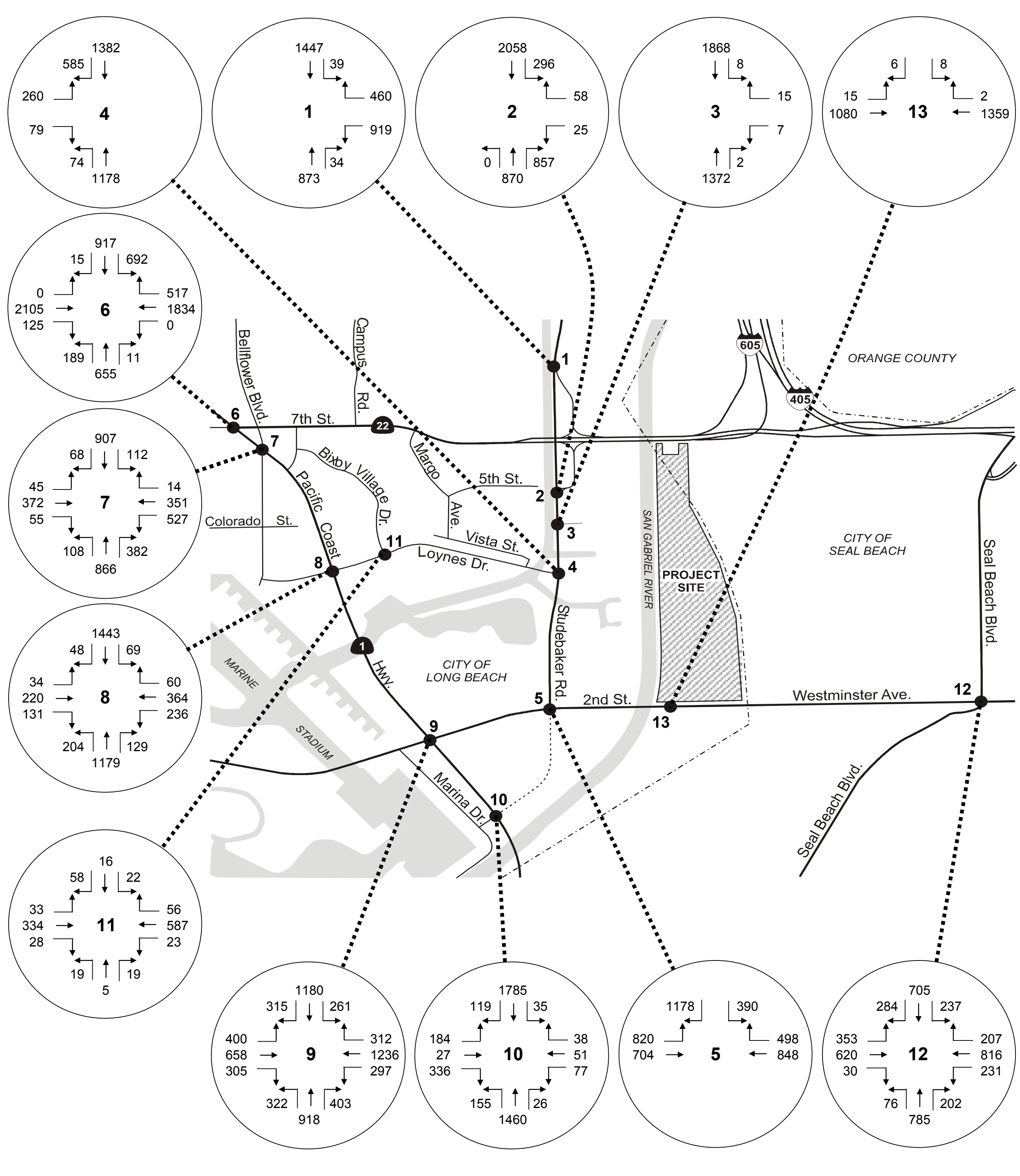
As shown on Table 4.8-1, the Studebaker Road/2nd Street, PCH/7th Street, and PCH/2nd Street intersections operate at poor levels of service (LOS E or F) during both the AM and PM peak hours. The PCH/Studebaker Road intersection operates LOS F (poor) during the PM peak hour.



Note: The volumes indicated are representative of actual traffic counts conducted at each intersection. The totals reflect traffic at the time of the count at each intersection. Therefore, volumes for traffic traveling in the same direction between adjacent intersections are not necessarily equivalent.

Source: KOA Corporation

Figure 4.8-2
Year 2008 Existing AM Peak Hour Traffic Volumes



LEGEND

- Project Location
- Study Intersection
- X Intersection Reference Number
- XX Intersection Turn Volume

Note: The volumes indicated are representative of actual traffic counts conducted at each intersection. The totals reflect traffic at the time of the count at each intersection. Therefore, volumes for traffic traveling in the same direction between adjacent intersections are not necessarily equivalent.

Source: KOA Corporation

Figure 4.8-3
Year 2008 Existing PM Peak Hour Trafic Volumes

Year 2012 "No Project" Conditions

Year 2012 Baseline Traffic Volume Forecast

In order to forecast Year 2012 baseline traffic volumes, Year 2008 peak hour volumes were increased by an ambient growth rate of 2 percent per year (8 percent). This methodology is consistent with data provided in the Los Angeles County CMP. The City of Long Beach and the City of Seal Beach were contacted to determine if any planned development projects should be included in the future pre-project analysis. Based on the published City of Long Beach pending projects list and conversations with planning staff at the City of Seal Beach, it was determined that there would not be any planned projects within or near to the study area. The results of the Year 2012 baseline "no project" AM and PM peak hour traffic volumes are provided on Figures 4.8-4 and 4.8-5.

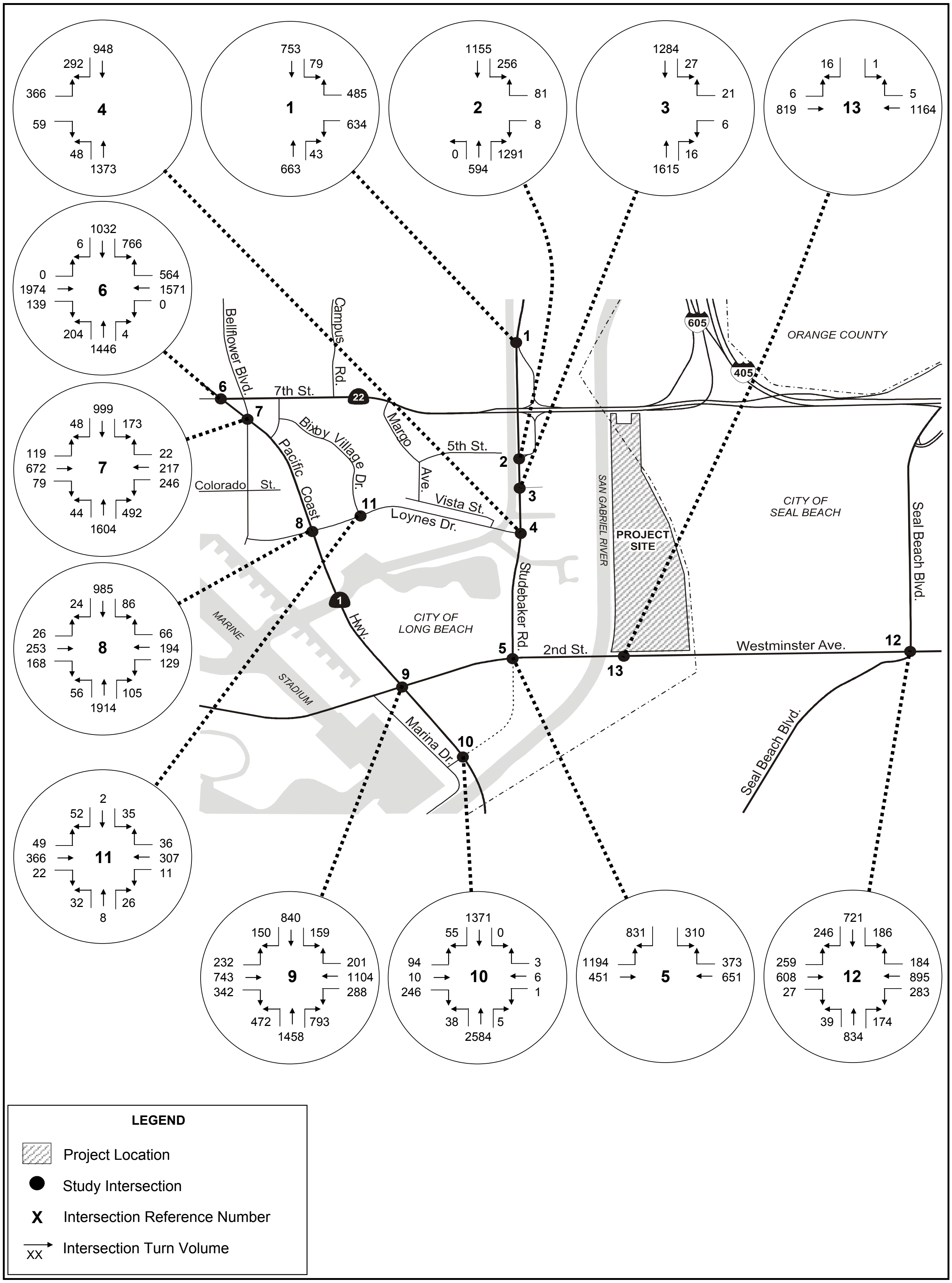
Level of Service Analysis for Year 2012 "No Project" Conditions

LOS calculations were performed to assess forecast Year 2012 "no project" peak hour conditions. Table 4.8-2 provides the results of this analysis.

Table 4.8-2
LOS Calculations for Year 2012 "No Project" Conditions

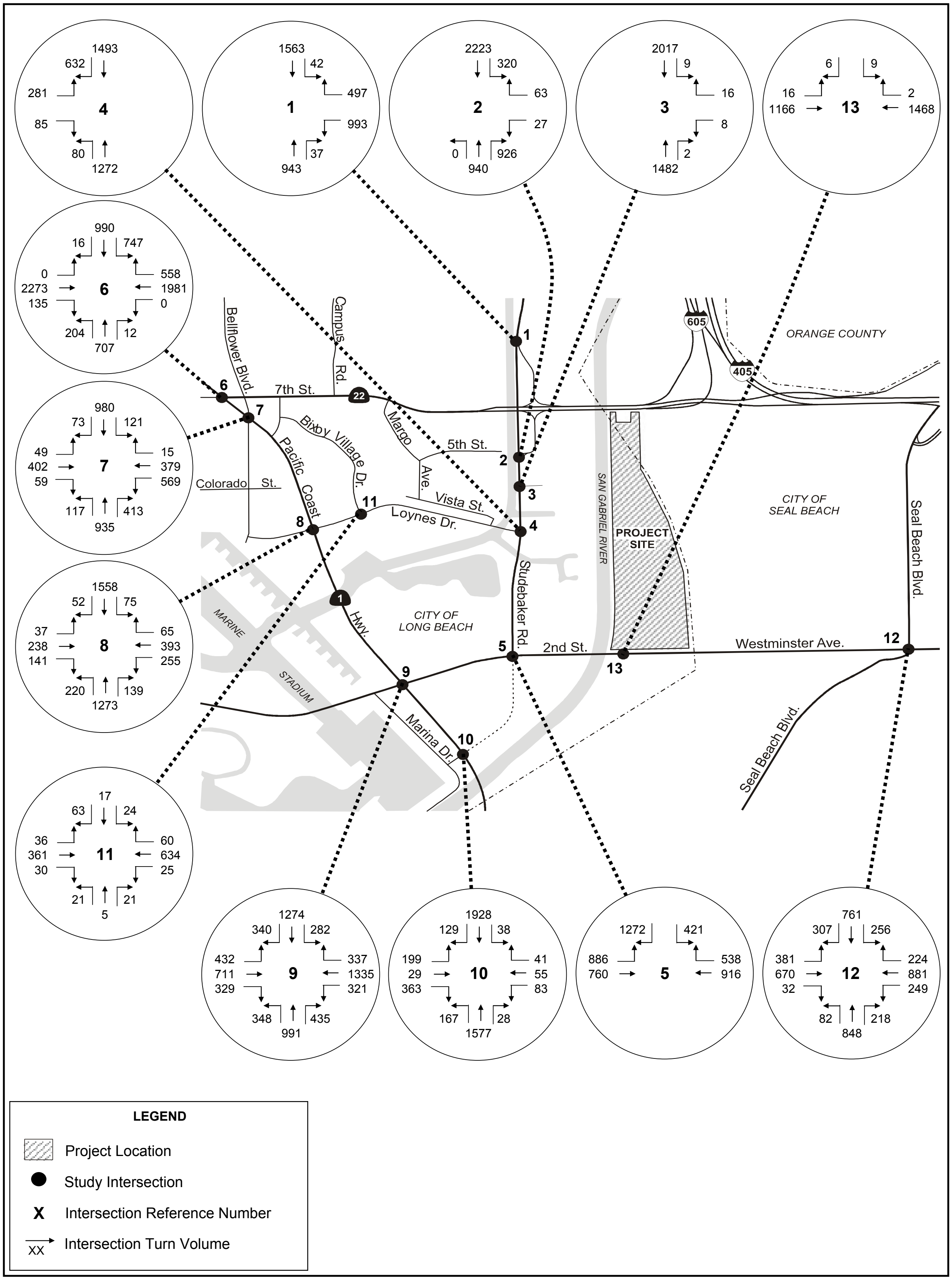
	Intersections	Weekday AM Peak		Weekday PM Peak	
		V/C	LOS	V/C	LOS
1.	Studebaker Rd & SR-22 Westbound Ramps*	0.605	B	0.949	E
2.	Studebaker Rd & SR-22 Eastbound Ramps*	0.513	A	0.854	D
3.	Studebaker Rd & AES Plant Driveway	0.684	B	0.791	C
4.	Studebaker Rd & Loynes Dr	0.706	C	0.764	C
5.	Studebaker Rd & 2nd St	1.028	F	1.141	F
6.	PCH & 7th St*+	1.209	F	1.178	F
7.	PCH & Bellflower Blvd*	0.888	D	0.807	D
8.	PCH & Loynes Dr*	0.836	D	0.890	D
9.	PCH & 2nd St*+	1.085	F	1.081	F
10.	PCH & Studebaker Rd*	0.855	D	1.121	F
11.	Bixby Village Dr & Loynes Dr	0.300	A	0.391	A
12.	Seal Beach Blvd & Westminster Ave	0.696	B	0.771	C
13.	2nd St & Project Entrance	0.530	A	0.626	B

** State (Caltrans) Facility*
+ CMP Monitoring Intersection for County of Los Angeles



Source: KOA Corporation

Figure 4.8-4
Year 2012 “No Project” AM Peak Hour Traffic Volumes



Source: KOA Corporation

Figure 4.8-5
Year 2012 “No Project” PM Peak Hour Traffic Volumes

As shown on Table 4.8-2, the Studebaker Road/2nd Street, PCH/7th Street and PCH/2nd Street intersections are forecast to operate at poor levels of service (LOS E or F) during both the AM and PM peak hours. The Studebaker Road/SR-22 Westbound Ramps and PCH/Studebaker Road intersections are forecast to operate at a poor level of service during the PM peak hour.

4.8.2 REGULATORY FRAMEWORK

City of Long Beach

For the analysis of the selected study area intersections, the City of Long Beach requires that the Intersection Capacity Utilization (ICU) procedure be used. This procedure evaluates major intersections in terms of the level of service (LOS), which is based on comparing the predicted volume of traffic that would be experienced at an intersection to the design capacity of the intersection. In this way, intersections can be graded by performance (see below), and proposed projects or other actions can be assessed in relation to their impact on the performance.

LEVEL OF SERVICE DEFINITIONS FOR SIGNALIZED INTERSECTIONS

(Source: County of Los Angeles Traffic Studies Policies and Procedures, November 1993)

Level of Service	Volume/Capacity Ratio	Definition
A	0.000 - 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601 - 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally, drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions Of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.900 – 1.00	POOR. Represents the most vehicles that intersection approaches can accommodate; May be long lines of waiting vehicles through several signal cycles.
F	Greater than 1.000	FAILURE. Backups from nearby intersections or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Congestion Management Program

The CMP was created statewide because of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (LACMTA) and the OCTA.

County of Los Angeles CMP Conformance

The CMP for Los Angeles County requires that the traffic impact of individual development projects of potentially regional significance be analyzed. Per CMP Transportation Impact Analysis (TIA) Guidelines, a traffic impact analysis is conducted where:

- At CMP arterial monitoring intersections, including freeway on- or off-ramps, where the proposed project will add 50 or more trips during either AM or PM weekday peak hours.
- At CMP mainline freeway-monitoring locations, where the project will add 150 or more trips, in either direction, during either the AM or PM weekday peak hours.

County of Orange CMP Conformance

The Orange County CMP states the following:

> *The TIA process recommendation is to require a TIA for any project generating 2,400 or more daily trips. This number is based on the desire to analyze any impacts which will be 3% or more of the existing capacity. Since most CMP Highway System will be four lanes or more, the capacity used to derive the threshold is a generalized capacity of 40,000 vehicles/day. The calculations are as follows:*
>
> > *40,000 vehicles/day x 3% = 1,200 vehicles/day*
> > *Assuming 50/50 distribution of project traffic on a CMP link*
> > *1,200 x 2 = 2,400 vehicles/day total generation*
>
> *As can be seen, a project which will generate 2,400 trips/day will have an expected maximum link impact on the CMP system of 1,200 trips/day based on a reasonably balanced distribution of project traffic. On a peak-hour basis, the 3% level of impact would be 120 peak-hour trips. For intersections, a 3% level of impact applied to the sum of critical volume (1,700 vehicles/hr) would be 51 vehicles per hour.*

The OCTA CMP also states that the following projects are exempt from CMP TIA:

> *Any development application generating vehicular trips below the Average Daily Trip (ADT) threshold for CMP Traffic Impact Analysis, specifically, any project generating less than 2,400 ADT total, or any project generating less than 1,600 ADT directly onto the CMPHS.*

4.8.3 THRESHOLDS OF SIGNIFICANCE

Based on City of Long Beach guidelines, an intersection is generally considered impacted when the resulting LOS is E or F and project generated traffic caused the v/c ratio to increase by 0.020 or higher, or the project traffic causes the intersection to deteriorate from LOS D to LOS E or F. An impact may also be significant where specific traffic safety issues have been identified.

CMP guidelines for the County of Orange were applied at the Seal Beach Boulevard/Westminster Avenue intersection, based on traffic impact analysis policies of the City of Seal Beach. Orange County CMP impact standards are based on traffic volume increases that would increase the V/C ration of the intersection by 0.030 or more.

4.8.4 ENVIRONMENTAL IMPACTS

4.8.4.1 Construction Project Trip Generation Forecast

Prior to initiating construction, a detailed construction plan will be developed by the plant operator to identify necessary resources and to define the construction supervisory and technical field organization and staffing levels required for the project. The methods and procedures for sequencing and implementing construction operations will also be detailed in the construction plan. In addition, a project safety program will be developed by the operator, consistent with federal and state requirements. This is a standard LADWP requirement.

Empirical data for use in calculation peak hour and daily trip generation rates for construction sites is not generally available. Therefore, the methodology provided below is intended to develop trip generation forecasts that represent a worst-case scenario. The maximum number of employees on site per day during the peak construction (lasting several months) would be 270 employees. The maximum truck trip activity would also occur during this time, with 25 round trip truck loads per day (25 inbound and 25 outbound truck trips).

In the trip generation discussion that follows, it is assumed that daily construction activities will occur in a single 8-hour shift that begins at 7:00 a.m. Depending on the hours utilized for a second shift, there may or may not be additional traffic generated during the AM and PM peak hours of adjacent street traffic. Operation of a second shift would not change the total number of workers on site per day, but would change the directional split during the PM peak hour, as some workers arrive on site and some workers depart during that period. However, assuming a single shift of up to 270 employees establishes a conservative basis from which to determine potential impacts to traffic from the proposed project.

The peak-hour construction trip generation forecast methodology was based on the number of employees that would generate peak-hour trips to and from the HnGS repowering site. Truck trips were included in the daily trip generation totals, but excluded from the peak-hour totals due to negligible number of truck trips that would overlap the peak hours, versus the entire day of construction.

AM Trip Generation for the Project

The AM peak hour of the project is expected to occur primarily before the traditional peak period of adjacent street traffic (generally a period within the 7:00 a.m. to 9:00 a.m. timeframe), since the construction day will start at 7:00 a.m. Most construction workers would be expected to arrive prior to 7:00 a.m. However, to conservatively estimate the potential impacts to traffic from project construction activities, it has been assumed that 50 percent of workers would still be on the road during the AM peak period.

In calculating AM peak hour trips for the project, it was assumed that employees arrive by vehicles with an average vehicle occupancy of 1.2 passengers. This is a conservative rate that assumes that approximately one out of every six employees would carpool or use alternative modes of transport to reach the project site. It would be likely that some employees would also be dropped off, thereby creating one vehicle trip arriving at the site and one vehicle trip departing. In addition, construction activities generate trips during both peak and off-peak periods that are the result of direct construction activities, rather than the result of employee commuting.

The number of vehicles departing the site during the AM peak hour was estimated using the inbound/outbound vehicle split from the *Institute of Transportation Engineers Trip Generation Manual* for a General Office Building (Land Use 710) where 88 percent of the trips during the AM Peak Hour are inbound trips and 12 percent of the trips are outbound trips. The General Office Building land use was selected since most trips during peak periods would tend to be commuter-generated.

Using this methodology, including the assumption that 50 percent of the employee trips would occur during the AM peak period, employee commuters would generate 113 inbound trips (135/1.2) and 15 outbound trips ((113/0.88)-113). The inbound calculations include all estimated employee vehicles trips inbound to the construction site based on the vehicle occupancy assumptions of 1.2. The outbound calculations include the 12 percent outbound trips based on a factored total of inbound and outbound trips.

Typical non-employee trip generation during the AM peak hour would be the result of activities such as movement by supervisory personnel, delivery of supplies, and the movement of equipment. As deliveries and equipment movement will occur both throughout the day and could be scheduled to avoid peak periods, the additional trips generated by such activities are anticipated to be negligible and were accounted for in the conservative method that was used to calculate employee commuter trips. For purposes of analysis it was assumed that truck trips would be scheduled during off-peak hours.

PM Trip Generation for the Project

While construction activity on the proposed project would normally cease at 3:30 PM, as discussed in Chapter 3.0 (Project Description), work may periodically continue beyond this time. Therefore, to conservatively estimate the potential impacts to traffic from project construction, it has been assumed that all workers during the peak of construction activity (up to 270 personnel) may be on the road during the PM peak hour of the adjacent street traffic (generally a period within the 4:00 p.m. to 6:00 p.m. timeframe). Similar to the AM peak period analysis, it was assumed that employees depart the site by vehicles with an average occupancy of 1.2 passengers to reasonably account for carpooling. Again, it would be likely that some employees would also be picked up, thereby creating one vehicle trip arriving at the site and one vehicle trip departing. Vehicle trip generation activity may differ between the morning peak period and the afternoon peak period, as it would for a typical office use or any job work site. The number of vehicles departing the site during the PM peak hour was estimated using the inbound/outbound vehicle split from the *Institute of Transportation Engineers Trip Generation Manual* for a General Office Building (Land Use 710) where 83 percent of the trips during the PM Peak Hour are outbound trips and 17 percent of the trips are inbound trips. The General Office Building land use was selected since most trips during peak periods would tend to be commuter-generated.

Using this methodology, employee commuters generate 225 (270/1.2) outbound and 46 inbound trips ((250/0.83)-225).

Similar to the AM peak hour, the additional trips generated during the PM peak hour for non-commuter activities are expected to be minimal and accounted for in the conservative methodology used to calculate commuter trips.

Table 4.8-3 summarizes the forecast AM and PM peak hour trip generation for the project construction activities.

Table 4.8-3
Peak Hour Construction-Related Trip Generation Forecast

Generator	AM Peak Hour		PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound
Construction Activities	113	15	46	225

Daily Trip Generation

Daily trips include trips made during the day by employees in the performance of the construction effort including lunch-hour and other mid-day trips and those made by construction trucks for delivery of equipment and goods to the construction site.

Truck Trips

During peak construction periods, the project is expected to generate 25 two-way daily truck trips. Assuming all trucks were of the larger type (articulated, double-unit), a passenger car equivalent (PCE) factor of 3.0 was used to calculate the daily truck trip PCE as shown below:

25 trucks trips x 2 (to account for in and out trips) x 3.0 = 150 daily PCE trips.

Employee Midday Trips (Lunch)

Construction workers tend to bring lunches to work and remain on site. However, it would be expected that some employees would leave the site for lunch. Assuming 20 percent of the employees leave and then return to the site for lunch, employee midday trips would be as shown below:

20 percent of 270 employees x 2 trips (inbound/outbound) = 108 trips.

Total Daily Trips

The total number of forecast daily trips is summarized in Table 4.8-4 below and includes the conversion of truck trips to PCE trips:

Table 4.8-4
Forecast Daily Trips (One Shift)

Trip Type	Trips
AM Peak Hour Trips	128
PM Peak Hour Trips	271
Truck Trips	150
Employee Midday Trips (Lunch)	108
Total Daily Trips	**657**

4.8.4.2 Project Trip Distribution

Since, for the purposes of traffic impact analysis, the project is the actual construction of improvements to the HnGS, it is assumed that the pool of employees working at the site and the deliveries made to the site would utilize the regional freeway network. Construction employees, unlike office employees, would not generally live near the site. Since the entrance to the site is currently signalized, construction traffic will be able to make direct turning movements to and from the east or west.

The expected project trip distribution illustrated in Figure 4.8-6. The trip distribution was based on travel patterns observed during the peak-hour counts and local area knowledge. Figures 4.8-7 and 4.8-8 show the project-related trips on adjacent streets for the AM and PM peak hours, respectively.

4.8.4.3 Year 2012 “With Project Construction” Impacts

Impact TT1 The proposed project would have less than significant impact relative to construction traffic.

The Year 2012 “With Project Construction” traffic volumes were derived by adding the project trips to the Year 2012 “No Project” Condition traffic volumes. Figures 4.8-9 and 4.8-10 illustrate the resulting peak-hour volumes.

<u>Peak Hour Intersection Level of Service</u>

Table 4.8-5 summarizes the results of the LOS analysis for the future conditions with the project. The addition of project traffic further degrades the LOS at the study intersections identified to operate at poor LOS for future Year 2012 “no project” conditions (the Studebaker Road/2nd Street, PCH/7th Street and PCH/2nd Street intersections during both the AM and PM peak hours and the PCH/Studebaker Road and Studebaker Road/SR-22 Westbound Ramps intersections during the PM peak hour). The addition of project construction traffic does not result in any intersection changing during one or both peak hours from good LOS (LOS A, B, C, and D) to poor LOS (LOS E and F).

Table 4.8-5
LOS Calculation for Year 2012 "With Project Construction" Conditions

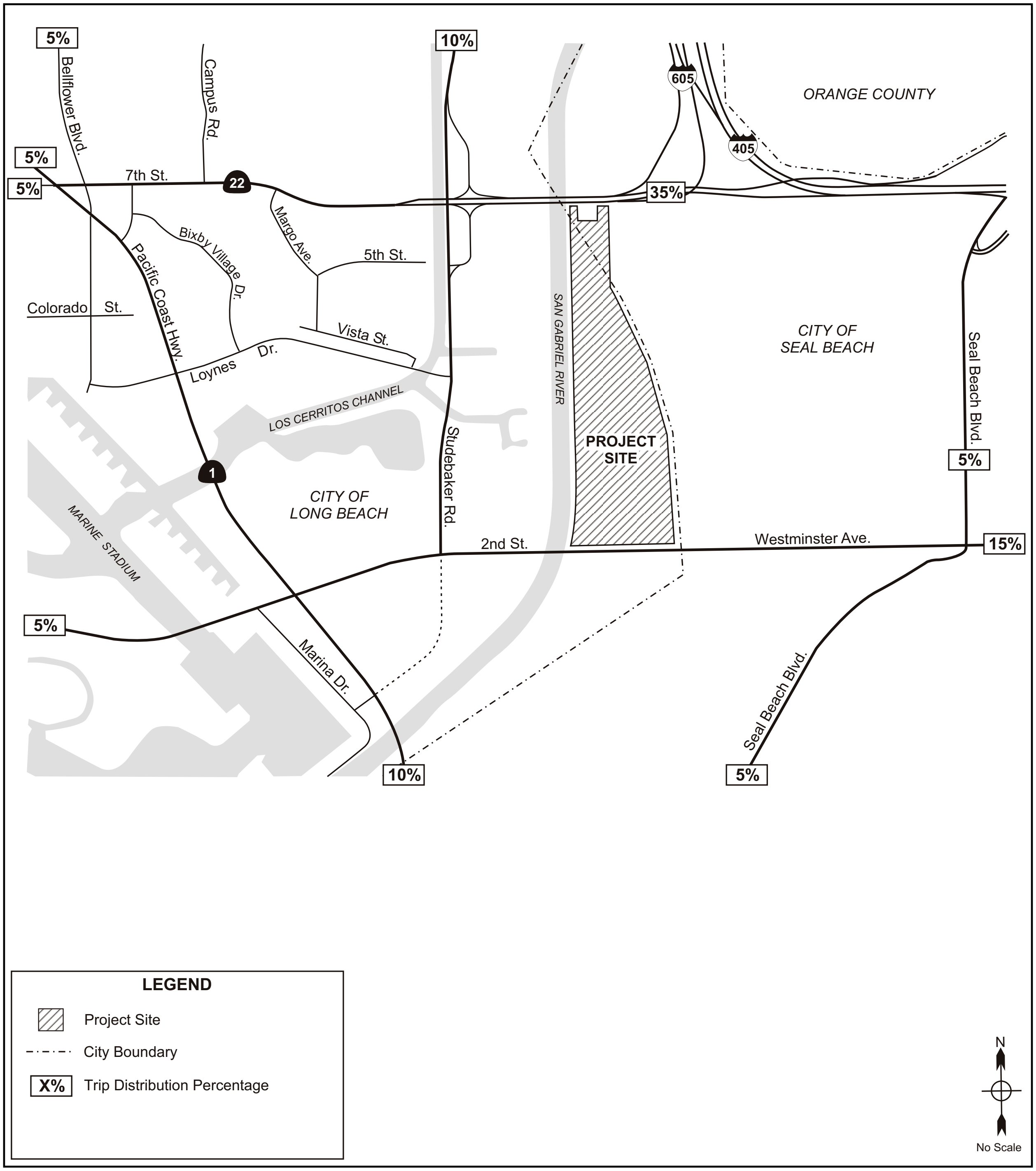
Intersections		Weekday AM Peak		Weekday PM Peak	
		V/C	LOS	V/C	LOS
1.	Studebaker Rd & SR-22 Westbound Ramps*	0.618	B	0.955	E
2.	Studebaker Rd & SR-22 Eastbound Ramps*	0.532	A	0.862	D
3.	Studebaker Rd & AES Plant Driveway	0.687	B	0.798	C
4.	Studebaker Rd & Loynes Dr	0.709	C	0.771	C
5.	Studebaker Rd & 2nd St	1.029	F	1.157	F
6.	PCH & 7th St*+	1.210	F	1.182	F
7.	PCH & Bellflower Blvd*	0.891	D	0.808	D
8.	PCH & Loynes Dr*	0.837	D	0.891	D
9.	PCH & 2nd St*+	1.097	F	1.087	F
10.	PCH & Studebaker Rd*	0.858	D	1.128	F
11.	Bixby Village Dr & Loynes Dr	0.300	A	0.391	A
12.	Seal Beach Blvd & Westminster Ave	0.701	C	0.777	C
13.	2nd St & Project Entrance	0.598	A	0.756	C

** State (Caltrans) Facility*
+ CMP Monitoring Intersection

Table 4.8-6 displays a comparison of the study scenarios. Traffic impacts created by the project can be calculated by comparing the Year 2012 "no project" conditions to the Year 2012 "with project construction" conditions.

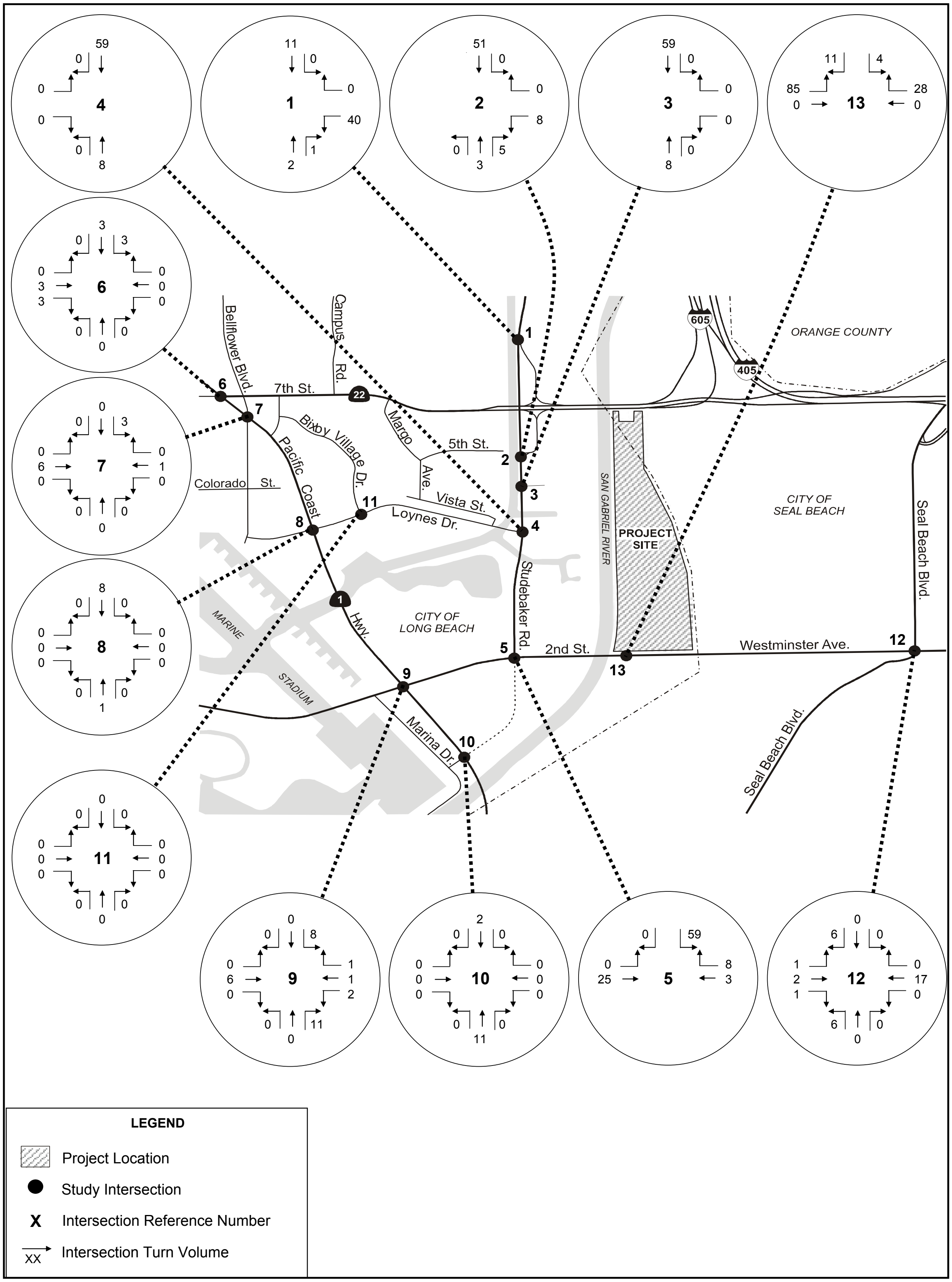
As shown in Table 4.8-6, the project would not create any significant impacts during the AM and PM peak hours. At the study intersection within the City of Seal Beach, Seal Beach Boulevard at Westminster Avenue, the project construction was determined not to have an impact based on the County of Orange CMP criteria.

The proposed project would not generate more additional traffic once the project construction is completed. And therefore, the proposed project would not have long-term traffic impacts.



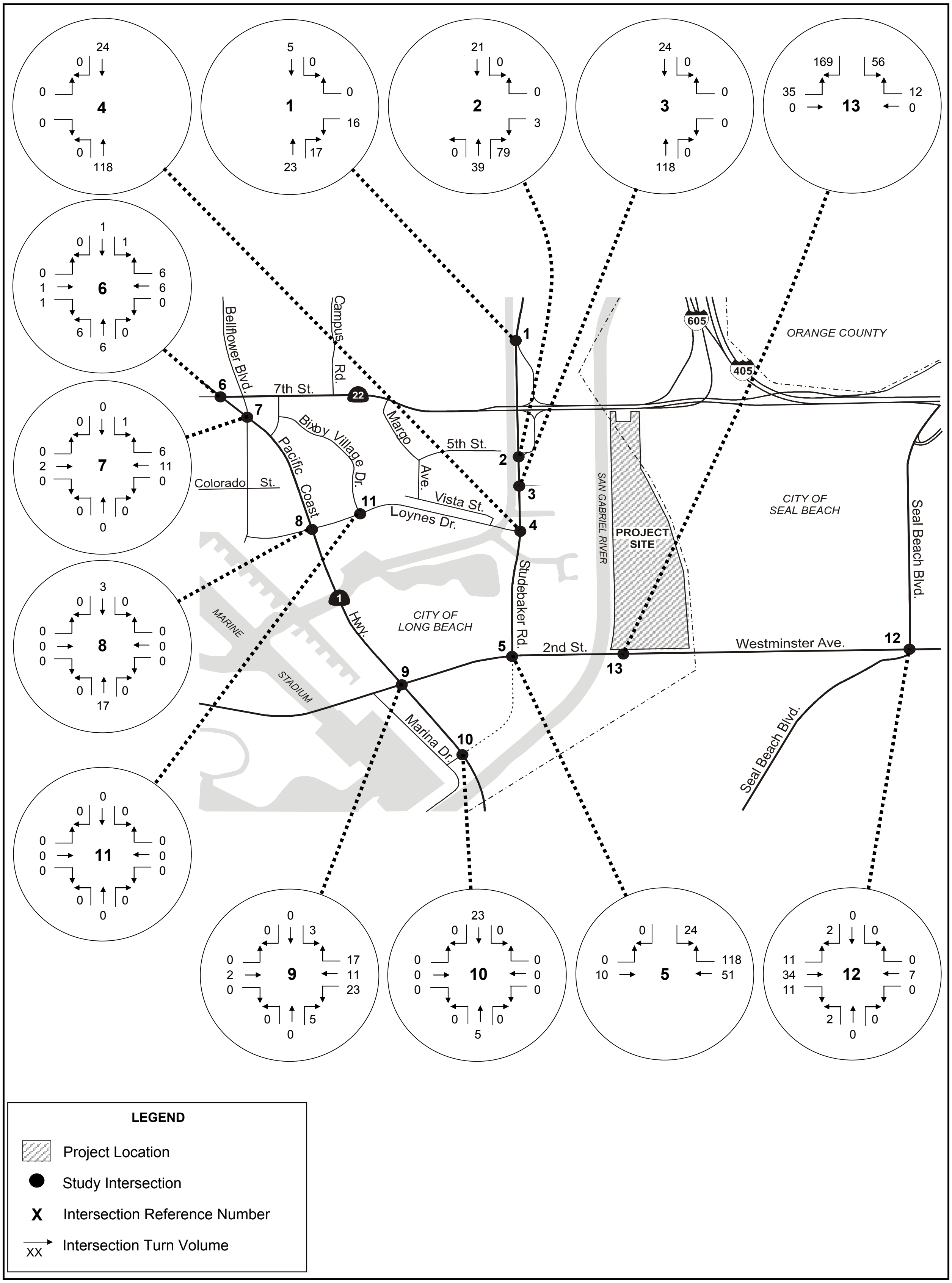
Source: KOA Corporation

Figure 4.8-6
Construction Project Trip Distribution



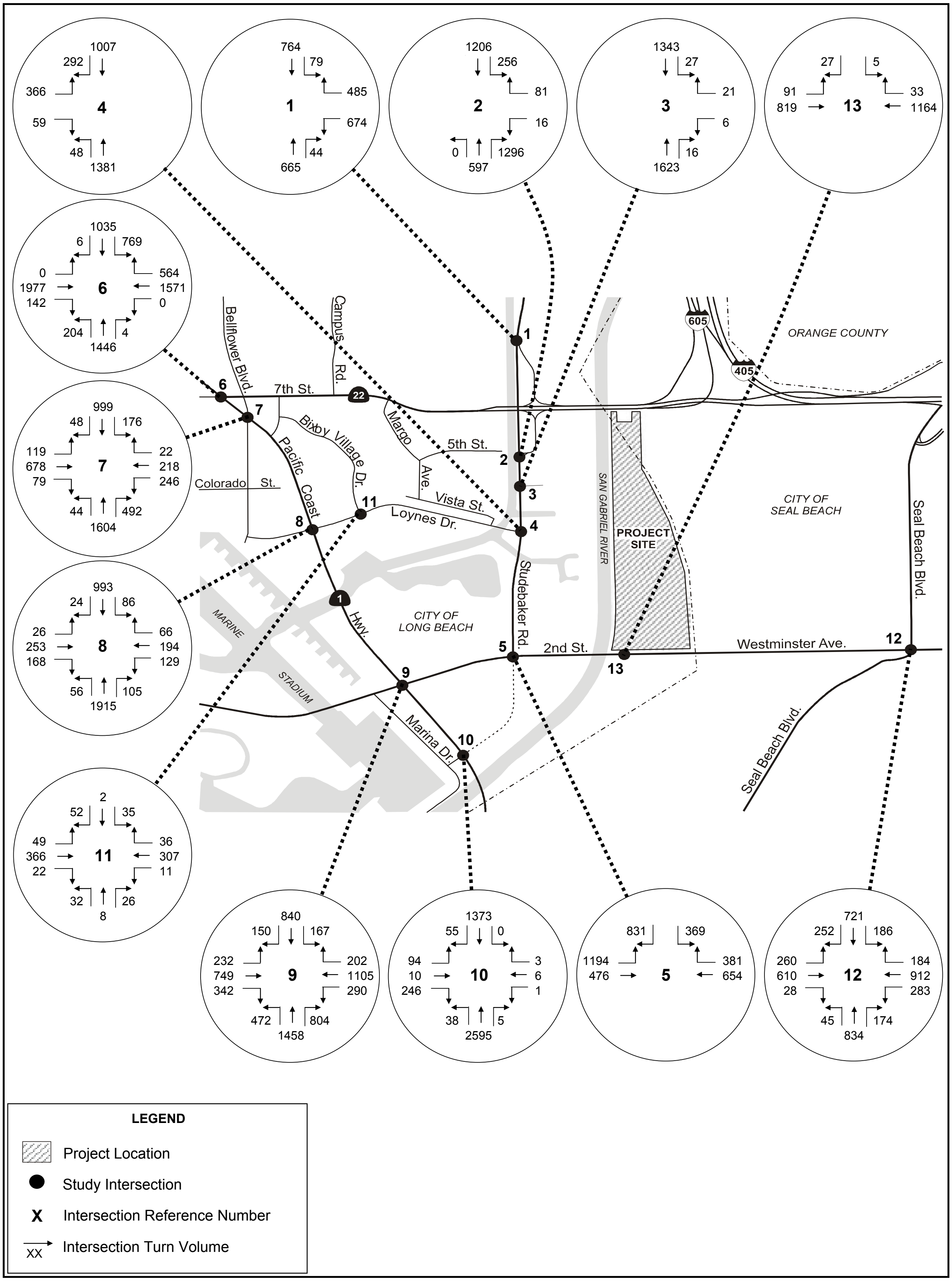
Source: KOA Corporation

Figure 4.8-7
AM Peak Hour Project Volumes



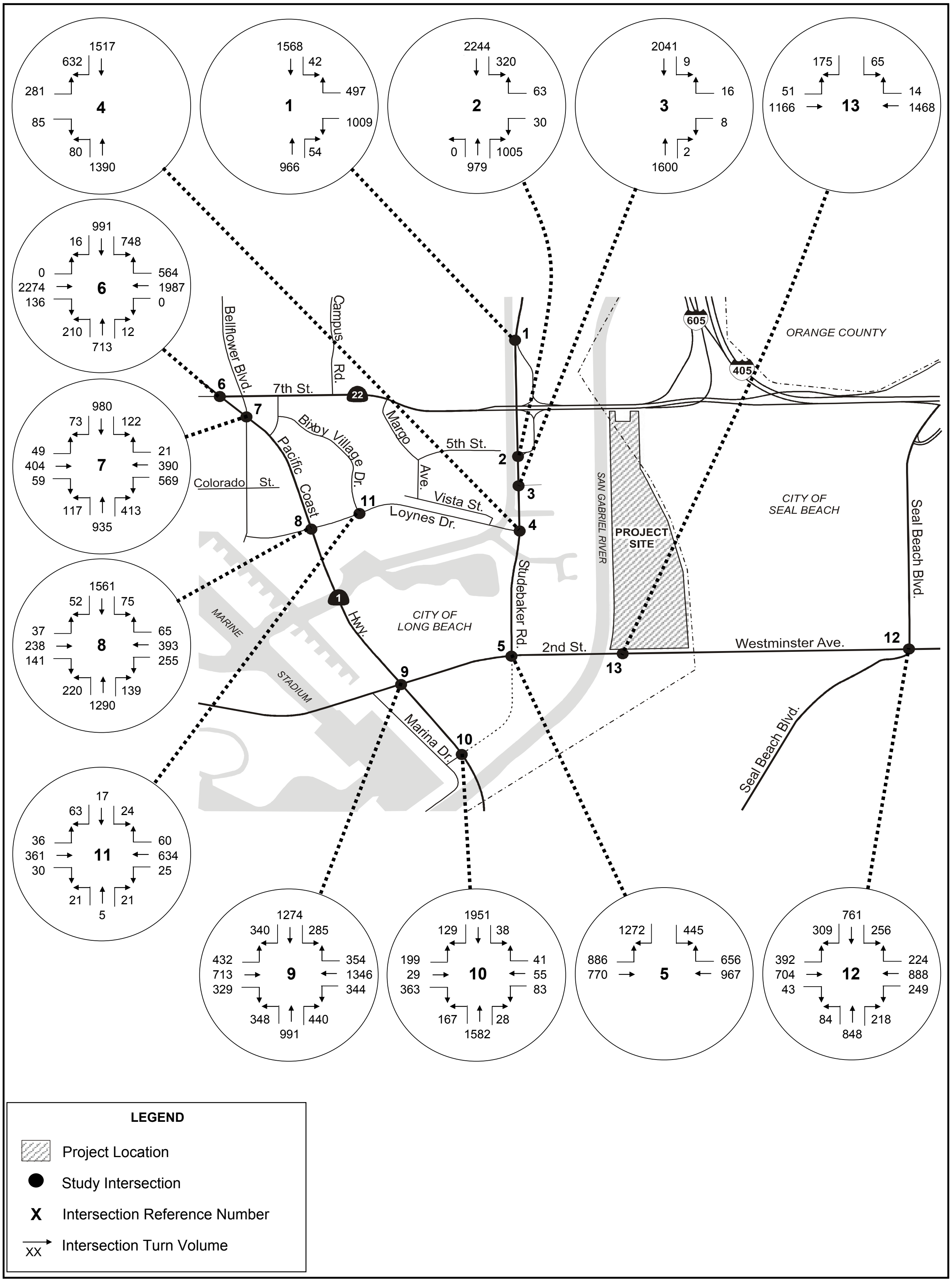
Source: KOA Corporation

Figure 4.8-6
Construction Project Trip Distribution



Source: KOA Corporation

Figure 4.8-9
Year 2012 “With Project Construction” AM Peak Hour Traffic Volumes



Source: KOA Corporation

Figure 4.8-10
Year 2012 “With Project Construction” PM Peak Hour Traffic Volumes

Table 4.8-6
AM/PM Peak Hour Significant Traffic Impact Determination

Weekday AM Peak Hour Intersection Conditions									
		Existing (2008) Conditions		Future (2012) Pre-Project Conditions		Future (2012) Post-Project Conditions			
ID#	Intersection	V/C	LOS	V/C	LOS	V/C	LOS	Diff. vs. Pre-Project	Signif?
1	Studebaker Rd & SR-22 Westbound Ramps*	0.571	A	0.605	B	0.618	B	0.013	No
2	Studebaker Rd & SR-22 Eastbound Ramps*	0.486	A	0.513	A	0.532	A	0.019	No
3	Studebaker Rd & AES Plant Driveway	0.645	B	0.684	B	0.687	B	0.003	No
4	Studebaker Rd & Loynes Dr	0.665	B	0.706	C	0.709	C	0.003	No
5	Studebaker Rd & 2nd St	0.963	E	1.028	F	1.029	F	0.001	No
6	PCH & 7th St*+	1.131	F	1.209	F	1.210	F	0.001	No
7	PCH & Bellflower Blvd*	0.833	D	0.888	D	0.891	D	0.003	No
8	PCH & Loynes Dr*	0.786	C	0.836	D	0.837	D	0.001	No
9	PCH & 2nd St*+	1.018	F	1.085	F	1.097	F	0.012	No
10	PCH & Studebaker Rd*	0.805	D	0.855	D	0.858	D	0.003	No
11	Bixby Village Dr & Loynes Dr	0.285	A	0.300	A	0.300	A	0.000	No
12	Seal Beach Blvd & Westminster Ave	0.648	B	0.696	B	0.701	C	0.005	No
13	2nd St & Project Entrance	0.502	A	0.530	A	0.598	A	0.068	No
Weekday PM Peak Hour Intersection Conditions									
		Existing (2008) Conditions		Future (2012) Pre-Project Conditions		Future (2012) Post-Project Conditions			
ID#	Intersection	V/C	LOS	V/C	LOS	V/C	LOS	Diff. vs. Pre-Project	Signif?
1	Studebaker Rd & SR-22 Westbound Ramps*	0.889	D	0.949	E	0.955	E	0.006	No
2	Studebaker Rd & SR-22 Eastbound Ramps*	0.802	D	0.854	D	0.862	D	0.008	No
3	Studebaker Rd & AES Plant Driveway	0.743	C	0.791	C	0.798	C	0.007	No
4	Studebaker Rd & Loynes Dr	0.718	C	0.764	C	0.771	C	0.007	No
5	Studebaker Rd & 2nd St	1.068	F	1.141	F	1.157	F	0.016	No
6	PCH & 7th St*+	1.102	F	1.178	F	1.182	F	0.004	No
7	PCH & Bellflower Blvd*	0.758	C	0.807	D	0.808	D	0.001	No
8	PCH & Loynes Dr*	0.835	D	0.890	D	0.891	D	0.001	No
9	PCH & 2nd St*+	1.015	F	1.081	F	1.087	F	0.006	No
10	PCH & Studebaker Rd*	1.052	F	1.121	F	1.128	F	0.007	No
11	Bixby Village Dr & Loynes Dr	0.370	A	0.391	A	0.391	A	0.000	No
12	Seal Beach Blvd & Westminster Ave	0.718	C	0.771	C	0.777	C	0.006	No
13	2nd St & Project Entrance	0.591	A	0.626	B	0.756	C	0.130	No

** State (Caltrans) Facility*
+ CMP Monitoring Intersection

4.8.4.4 Congestion Management Plan Conformance

Impact TT2 The proposed project is consistent with the Los Angeles County and Orange County CMPs.

<u>County of Los Angeles CMP Conformance</u>

The intersection of PCH/2^{nd} Street and PCH/7^{th} Street are CMP intersections. It is anticipated that the project would add less than 50 peak hour trips to each intersection. There would be no Los Angeles County freeway monitoring locations in the project vicinity.

<u>County of Orange CMP Conformance</u>

There are no CMP intersections within the City of Seal Beach. The project will add 33 AM and 78 PM peak hour trips at the Seal Beach Boulevard/Westminster Avenue intersection during peak construction periods. Adjusted as a sum of the critical intersection volumes, these volumes would fall below the significant impact threshold.

Due to the project's peak daily trip generation forecast, the project is exempt from further analysis that the County of Orange CMP would otherwise require for roadway segments or freeway segments.

4.8.5 CUMULATIVE IMPACTS

The City of Long Beach and the City of Seal Beach were contacted to determine if any planned development projects should be included in the future pre-project analysis. Based on the published City of Long Beach pending projects list and conversations with planning staff at the City of Seal Beach, it was determined that there would not be any planned projects within or near to the study area that would contribute cumulative to traffic during the project construction period. The project would have no significant cumulative traffic impacts.

4.8.6 MITIGATION MEASURES

Based on the City of Long Beach and County of Orange significance criteria, the project will not create significant traffic impacts at any of the study intersections during construction, and no mitigation measures are required.

4.8.7 SIGNIFICANCE OF IMPACT AFTER MITIGATION

No mitigation measures are required.

CHAPTER 5.0
ALTERNATIVES TO THE PROPOSED PROJECT

5.1 INTRODUCTION

In accordance with the CEQA Guidelines, alternatives to the proposed project have been considered to foster informed decision making and public participation. According to the CEQA Guidelines Section 15126.6(a), “an EIR shall describe a range of reasonable alternatives to the proposed project, or to the location of the proposed project, which would feasibly attain most of the basic objectives of the proposed project, but would avoid or substantially lessen any of the significant effects of the proposed project, and evaluate the comparative merits of the alternatives.” The CEQA Guidelines state that an EIR need not consider every conceivable alternative or consider alternatives that are infeasible. An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote or speculative. The alternatives analysis must also include a comparative evaluation of the No Project Alternative per Section 15126.6(e) of the CEQA Guidelines. Through evaluation of alternatives, the advantages and disadvantages of each alternative compared with the proposed project can be determined.

The proposed project was found to cause temporary significant impacts related to air quality during the initial commissioning of the CTs and related to noise resulting from pile driving during construction and from other general construction activity. The following alternatives were developed to provide a range of reasonable options to the proposed project that might address these environmental impacts. The discussion of each alternative provides:

- A brief description of the alternative and its purpose
- A determination of whether the alternative is feasible
- A determination of whether feasible alternatives would attain most of the basic objectives of the project
- An analysis of feasible alternatives relative to reducing significant impacts that would be created by the proposed project
- An identification of any additional impacts that would be created by feasible alternatives and that would not be created by the proposed project

The objectives of the proposed project, which establish the basis for identifying potential project alternatives, are as follows:

- Achieve a net reduction in air pollutant emissions at HnGS by repowering pursuant to the 2003 Settlement Agreement between LADWP and SCAQMD
- Reduce the consumption of natural gas and, as a result, the production of GHGs
- Facilitate the integration of wind power resources into the LADWP generation system
- Provide for the energy demands of the City of Los Angeles

- Increase the reliability of the electrical power generation system
- Eliminate the need to use ocean water for cooling on this project and reduce the use of ocean water cooling at HnGS

The alternatives to the proposed project discussed below include one that proposes that no project be implemented (Alternative 1); one that proposes to relocate the SCGS within the HnGS property (Alternative 2); one that proposes modifications to existing generator Units 5 and 6 (Alternative 3); one that proposes project development at an alternative location (Alternative 4); and two that develop or acquire energy from other sources to replace the generation capacity of HnGS Units 5 and 6 (Alternatives 5 and 6).

5.2 ALTERNATIVE 1: NO PROJECT

As discussed above, an evaluation of a No Project Alternative is required under CEQA. Under this alternative, the proposed project would not be implemented. The SCGS would not be constructed, and existing HnGS generator Units 5 and 6 would remain in service with no modifications.

The No Project Alternative is a technically feasible alternative to the proposed project. However, because the No Project Alternative would leave Units 5 and 6 in operation with no modifications, it would be in direct violation of the formal Settlement Agreement between LADWP and SCAQMD, which stipulates repowering of the generator units at HnGS. In addition, while it would continue to help meet the energy demands of the City of Los Angeles (since Units 5 and 6 would remain in operation at their existing generating capacities), this alternative would not meet any of the other objectives identified for the project. The No Project Alternative would not attain the objective of achieving a net reduction in air pollutant emissions because Units 5 and 6 (as opposed to the more efficient SCGS proposed under the project) would remain in operation. The No Project Alternative would not attain the objective of reducing fuel consumption and the production of GHGs since Units 5 and 6 (as opposed to the more efficient SCGS) would remain in service and continue to consume the same amount of fuel per kWh of generation as they currently do. Because of the operational characteristics of Units 5 and 6 (as described in Chapter 3 of the EIR), the No Project Alternative would not facilitate the integration of wind power resources into the LADWP generation system. The No Project Alternative would not attain the objective of increasing the electrical power system reliability, since Units 5 and 6 are 43 and 42 years old, respectively, and, as they age further, the rate of forced outages would be expected to increase. In this sense, the No Project Alternative would also decrease the dependable capacity of electrical generation available in the LADWP system. Since no modifications to Units 5 and 6 would occur under the No Project Alternative, there would be no reduction in the use of ocean water for generator cooling at HnGS.

The No Project Alternative would avoid the significant temporary impacts to air quality and noise associated with the proposed project. Since no construction activities for the proposed project would occur at HnGS, no related impacts would occur. However, long-term impacts related to higher levels of air pollutant emissions and lower fuel efficiency (and the associated production of GHGs) related to the continued operation of Units 5 and 6 when compared to the proposed project would remain.

5.3 ALTERNATIVE 2: RELOCATE THE SCGS WITHIN THE HNGS PROPERTY

Under Alternative 2, the SCGS would still be constructed, and existing generator Units 5 and 6 would be removed from service; however, the SCGS would be relocated to another site within the HnGS property to help reduce potential impacts to adjacent areas from the noise created by construction activities. Because the SCGS would still undergo commissioning procedures, Alternative 2 would not reduce the temporary significant impacts to air quality associated with the proposed project.

The area at the north end of the HnGS property (north of the proposed project site) would generally be large enough to accommodate the SCGS. Construction of the SCGS in this location would require the acquisition of approximately 2.5 acres of Southern California Edison Company (SCE) property as well as the relocation of several existing facilities, including five SCE high-voltage transmission towers, a Southern California Gas Company pressure regulating station, and underground gas lines. However, this alternative location would not reduce the impacts related to noise because relative to the proposed project, it would place construction activities closer to sensitive receptors east of HnGS.

The majority of the remainder of the HnGS property (south of the proposed project site) is dedicated to existing generator units and related support functions. Existing Units 3 and 4 were disabled and permanently removed from service in 2004 after completion of the CCGS (Units 8, 9, and 10). Units 3 and 4 are located farther than the proposed project site from sensitive receptors east of HnGS, which would help reduce potential impacts related to construction noise if the site could be utilized for the SCGS. Existing large aboveground storage tanks located in the southeast quadrant of HnGS may also help to partially block construction noise to some residences located to the east. Building on this site would require the demolition of Units 3 and 4, involving not only aboveground elements but the underground foundation structure, including an extensive network of deep-set piles.

Nonetheless, the site currently occupied by Units 3 and 4 is not large enough to accommodate the SCGS, which would require area approximately equal to that occupied by Units 3, 4, 5, and 6. However, in order to continue to meet the demand for power, Units 5 and 6 would need to remain in service until the proposed SCGS was operational, and they, therefore, could not be demolished to accommodate the construction of the SCGS. Even if Units 5 and 6 could be retired prior to construction of the SCGS, the demolition of the existing units (3, 4, 5, and 6) to make way for the SCGS would require significant time (up to 4 years), which would jeopardize the December 2013 completion date for the HnGS repowering stipulated in the formal

Settlement Agreement between LADWP and the SCAQMD. Furthermore, since the demolition activity required under Alternative 2 would significantly expand the scope of project construction and lengthen the period of construction, it would in itself create additional impacts, including those related to noise, traffic, and air quality.

5.4 ALTERNATIVE 3: MODIFY EXISTING UNITS 5 AND 6

Under Alternative 3, the SCGS, as described in the proposed project, would not be constructed. Instead, Units 5 and 6 would be left in place but modified to help achieve the reductions in air pollutant emissions, fuel consumption, and the production of GHGs that would be attained by the project. Units 5 and 6 have been maintained and upgraded since their original construction in the mid-1960s to increase efficiency and reduce air emissions. This includes a conversion from fuel oil to natural gas for combustion in the steam boilers and the installation of SCRs and other BACT to control air pollutant emissions. However, since Units 5 and 6 rely on outdated steam boiler technology (as opposed to the modern CT technology of the SCGS), significant additional improvements to generator operations are limited. Given the age of the units (each over 40 years), further upgrades or modifications that would markedly increase efficiency and reduce emissions are effectively infeasible. Major improvements would involve retrofitting that would require the demolition of large portions of, if not essentially the entire generator units. The benefits expected from such a retrofit would be minimal in comparison to the environmental and economic benefits that would be attained by the proposed project. Furthermore, as discussed under Alternative 2, demolition activities would require significant time that may jeopardize the completion date for the HnGS repowering stipulated in the formal Settlement Agreement between LADWP and SCAQMD. Given the nature of steam boiler operations (which require significantly greater cooling than the CTs in the SCGS), the alteration of the existing cooling system for Units 5 and 6 to eliminate once-through ocean water cooling would likewise be infeasible due to insufficient area necessary to accommodate cooling towers, which would need to be significantly larger than those required for the proposed SCGS.

5.5 ALTERNATIVE 4: CONSTRUCT SCGS AT ALTERNATIVE LOCATION

Under Alternative 4, the SCGS would not be constructed at HnGS. However, a SCGS, as described in the proposed project, would be constructed at another location. Analysis of alternative locations is intended to determine if development of the project at a different site could reduce the significant impacts associated with development at the proposed project site. This differs from alternative development scenarios at the proposed project site in that it focuses on issues that may be related to the character of the site and its surroundings rather than the character of the project per se.

The purpose of the proposed project is to remove existing inefficient and aging electrical generator units from service and replace their generation capacity with an efficient, flexible, and reliable SCGS. As a possible locational alternative to the proposed project, this general purpose could be achieved by repowering (i.e., replacing existing generator units with a SCGS) at an LADWP generating station other than HnGS, thereby potentially avoiding the impacts associated with construction at HnGS. However, the formal Settlement Agreement between LADWP and SCAQMD (May 2003) specifies that Units 5 and 6 shall be repowered at HnGS. In addition, based on a comprehensive program to repower the LADWP in-basin generation system, no locational alternatives to HnGS for repowering existing generator units are available. In addition to the HnGS, LADWP owns and operates three generating stations in the Los Angeles basin: Harbor Generating Station (HGS), Valley Generating Station (VGS), and Scattergood Generating Station (SGS). HGS was repowered with a CCGS in 1994, and VGS was repowered in 2003. While SGS has not yet been repowered, in accordance with the Settlement Agreement, the steam generators at SGS must also be repowered by 2014, making the station essentially unavailable as an alternative site for the proposed project.

A locational alternative to the proposed project would therefore need to involve the development of a new SCGS on property outside an existing LADWP generating station in conjunction with the removal from service of HnGS Units 5 and 6. The acquisition of new property for this purpose, while technically feasible, may be cost prohibitive in comparison to the proposed project, which is located on property owned and controlled by LADWP. Furthermore, while the environmental setting at an existing electrical generating station such as HnGS (including facilities such as generator units, cooling systems, ammonia storage, and infrastructure for fuel delivery and power transmission) would minimize significant impacts associated with the construction and operation of a new SCGS, a SCGS constructed at an alternative location not within the boundaries of an existing electrical generating station would involve issues related to the existing setting that would likely result in potentially significant impacts beyond those created by the proposed project. Such impacts would include those related to the visual environment of the surrounding area based on the relative scale and appearance of the SCGS; noise generated by the operation of the SCGS; hazards generated by the storage of aqueous ammonia for use in the CT units; the need for additional emergency response services in the vicinity; and impacts associated with the provision of new infrastructure required for the SCGS, including cooling systems, fuel delivery systems, and electrical transmission systems to deliver the power generated at the SCGS, which would likely extend potential impacts beyond the boundaries of the new station.

Such impacts would be particularly evident in urban settings within the Los Angeles basin. In less developed areas outside the basin, additional impacts would also be expected in relation to the construction of new and potentially lengthy high-voltage transmission lines that would be necessary to deliver power to the LADWP service area. The increased distance between the power generation source and centers of demand (as would occur with a new out-of-basin SCGS) would also tend to decrease system capacity due to transmission loss and system reliability related to the potential for temporary outages of transmission. There may also be long-term impacts from construction and operations of a new SCGS in a location outside an existing generation station related to other environmental factors (e.g., biological resources, cultural resources, traffic, and localized air quality) that cannot be accurately predicted at this time.

Alternative 4 is technically feasible, but may be cost prohibitive because of the expense associated with property acquisition for the generator site itself as well as right of way acquisition for new or expanded transmission facilities. However, as stated above, the Settlement Agreement specifies that Units 5 and 6 shall be repowered at HnGS, which would not be achieved under this alternative. Because it would remove existing HnGS Units 5 and 6 from service and replace their generation capacity with a SCGS similar to that in the proposed project, this alternative would attain most of the objectives of the proposed project. While Alternative 4 would eliminate the short-term impacts directly associated with construction at HnGS, similar or greater construction-related impacts may be expected at an alternative location. In addition, because of issues inherent with the construction and operation of a SCGS outside the boundaries of an existing generating station, Alternative 4 would likely result in significant long-term impacts not caused by the proposed project, including impacts that would extend beyond the boundary of the new generation station itself.

5.6 ALTERNATIVE 5: DEVELOP ALTERNATIVE ENERGY SOURCES

Under Alternative 5, existing HnGS generator Units 5 and 6 would be removed from service, but the SCGS, as described in the proposed project, would not be constructed. Instead, the generation capacity of Units 5 and 6 would be replaced through the development of alternative sources of energy that could also achieve reductions in air pollutant emissions, fuel consumption, and the production of GHGs. Alternative energy sources include both conservation of energy and generation methods other than traditional fossil fuel-fired central generating plants. LADWP is currently involved in an aggressive alternative energy program, which includes the following.

Demand side management (DSM) programs are aimed at both a reduction in energy consumption for specific end uses (customer energy efficiency) and load management (a shifting of load to off-peak hours). To implement these programs, LADWP considered the unique energy use characteristics for both residential and non-residential customers. Partnering with area contractors, manufacturers, and customers, LADWP’s efficiency programs provide cash incentives for the replacement of older, energy-wasting equipment with new energy efficient equipment, including heating, ventilating, and air conditioning (HVAC) systems; chillers; and commercial lighting. LADWP energy efficiency programs also offer incentives and guidelines for new construction and renovations that contribute to LEED (Leadership in Energy and Environmental Design) certified buildings as well as free energy audits to provide commercial customers recommendations and strategies to reduce energy consumption.

In 2002, LADWP launched the Residential Consumer Rebate program to provide cash incentives for customers who purchase and install qualifying high-efficiency equipment, including air conditioning equipment, appliances, and high-efficiency pool pumps. The program has received wide support and has effectively promoted energy efficiency in the residential sector. Additionally, the program has contributed to uniform utility rebates throughout California while promoting the use of high-efficiency equipment and appliances in the LADWP service territory. LADWP has proposed aggressive but achievable DSM goals that are projected to reduce energy use by 10 percent between 2007 and 2017, including an annual reduction in 53 MW of capacity and an annual savings of 252 gigawatt-hours (GWh) of energy consumption.

Distributed generation (DG) places small electric generators of various types at or near the point of demand. This provides energy to customers with reduced losses when compared to traditional central generation station and distribution systems. DG systems include fuel cells, solar photovoltaics, and microturbines and other engines. Currently, DG technology is more expensive than central station generation, but it is anticipated that costs will decline in the future. According to the LADWP IRP (2007), it is estimated that the DG programs, both customer installed and LADWP installed, will reduce required system capacity by over 300 MW and energy use by over 1,800 GWh annually by 2017.

In November 2008, the City initiated a new solar energy plan entitled Solar LA that establishes a goal of developing 1,280 MW of solar energy by 2020, enough to serve about 10 percent of Los Angeles' electrical needs. Solar LA consists of several program areas, including customer programs, LADWP in-City solar projects, and large-scale solar projects outside the City boundaries. LADWP manages the country's most successful municipal utility customer incentive program, encouraging over 1,400 customers to install over 13 MW of solar installations in Los Angeles since 2000. To date, LADWP has installed 17 solar projects throughout the City, totaling about 1 MW. LADWP is also continuing to negotiate contracts for the development of several large-scale solar plants in the desert southwest. LADWP's solar photovoltaic incentive program provides a payment to LADWP customers that purchase and install their own solar power systems. Customers installing solar power systems are also eligible for LADWP's Net Energy Metering program, which allows customers whose solar power systems generate more electricity than they use to receive an energy credit toward future energy use. LADWP's solar incentive program includes a goal of encouraging an additional 270 MW of customer installed solar photovoltaic systems by 2016, with a budget of $313 million over 10 years.

LADWP has proposed an RPS intended to increase the amount of energy it produces from renewable energy sources. The goal of the RPS is to improve air quality, reduce GHGs, and provide a sustainable energy resource by lessening dependence on fossil fuels to generate power. The RPS has established an objective for LADWP to increase the amount of energy it generates from renewable power sources to 20 percent of its energy sales to retail customers by 2010 and to 35 percent by 2020. As required by the state legislature, these objectives are consistent with the RPS objectives mandated by the legislature for investor-owned utilities in California. Renewable resources under development or consideration by LADWP include small hydroelectric, biomass, digester gas, waste gas, landfill gas, solar thermal, geothermal, solar photovoltaics, fuel cells with renewable fuels, ocean wave technologies, wind, and other sources. These may include both capital improvement projects to develop renewable resources and procurement of renewable energy on the open market.

Although such programs as described above are technically feasible and represent a means of achieving objectives similar to those of the proposed project, they do not represent a feasible alternative to the project because their implementation has already been accounted for in the assessment of the need for the project. Programs such as DSM, DG, and renewable energy are complementary to the proposed project and will continue as planned whether or not the project is implemented. Furthermore, a specific objective of the proposed SCGS is to integrate intermittent and unpredictable wind power generation sources into the LADWP generation system to more effectively utilize wind resources and reduce overall dependency on fossil fuel resources. The proposed repowering project is in fact a component of, not supplemental to, the alternative energy programs discussed above.

5.7 ALTERNATIVE 6: PURCHASE ADDITIONAL ENERGY

Under Alternative 6, existing HnGS generator Units 5 and 6 would be removed from service, but the SCGS, as described in the proposed project, would not be constructed. Instead, the generation capacity of Units 5 and 6 would be replaced through the purchase of additional energy from outside (non-LADWP) sources.

Purchasing additional energy from outside sources is a technically feasible alternative to the proposed project. Because it would replace the generating capacity of HnGS Units 5 and 6 with energy produced by outside entities, this alternative would attain the objective of continuing to provide for the energy demands of the City of Los Angeles. However, because the outside market for energy is extremely volatile, the availability and affordability of future energy purchases are considered highly unpredictable. Therefore, Alternative 6 would not attain the objective of increasing the electrical system reliability. In this sense, this alternative would also decrease the dependable capacity of generation available. In addition, Alternative 6 may not attain the objectives of reducing air pollutant emissions or increasing fuel efficiency depending on the original source of the energy purchased.

Alternative 6 would avoid the significant temporary impacts to air quality and noise associated with the proposed project. Since no construction activities for the proposed project would occur at HnGS, no related impacts would occur. Alternative 6 may result in environmental impacts similar to or in addition to those created by the proposed project because of the effects related to outside sources of energy production and transmission. However, any such impacts cannot be accurately predicted or quantified at this time.

Alternative 6 is technically feasible, but it would only partially attain the proposed project objectives. It would eliminate the significant short-term impacts resulting from the proposed project. However, it may result in other currently unpredictable and nonquantifiable environmental impacts related to the production and transmission of the purchased energy.

5.8 SUMMARY

Alternatives 2, 3, and 5 are considered infeasible. Alternatives 1, 4, and 6 are technically feasible, but Alternative 1 would violate the formal Settlement Agreement between LADWP and SCAQMD, and Alternative 4 could be cost prohibitive and may also violate the Settlement Agreement. Of the feasible alternatives, only Alternative 4 would attain most of the basic objectives of the project. Alternatives 1, 4, and 6 would eliminate the significant short-term construction-related environmental impacts at HnGS. However, Alternative 4 may create similar or greater short-term construction-related impacts at an alternative location. Furthermore, Alternatives 1 and 4 would likely result in additional significant long-term impacts not created by the proposed project, and Alternative 6 may result in additional but currently unpredictable and nonquantifiable impacts not created by the proposed project. In comparison to the feasible alternatives, the proposed project best achieves the identified objectives and avoids or reduces long-term environmental impacts. Table 5-1 provides a summary of the alternatives to the proposed projects.

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TABLE 5-1
SUMMARY OF ALTERNATIVES

Alt.	Description	Feasibility	Attainment of Proposed Project Objectives	Elimination/Substantial Reduction of Proposed Project Impacts	Additional Impacts
1	No Project	Technically feasible, but would violate SCAQMD Settlement Agreement	• Would not achieve a net reduction in air pollutant emissions • Would not reduce the consumption of natural gas or the production of GHGs • Would not facilitate integration of wind power resources into LADWP generation system • Would provide for the energy demands of the City of Los Angeles • Would not increase the reliability of the electrical power generation system • Would not reduce the use of ocean water cooling at HnGS	• Would eliminate short-term construction impacts to air quality at HnGS • Would eliminate short-term construction impacts related to noise at HnGS	• Would result in greater long-term impacts to air quality • Would result in greater long-term impacts related to fuel consumption and GHGs
2	Relocate the SCGS within the HnGS Property	Infeasible	• Not applicable due to infeasibility	• Not applicable due to infeasibility	• Not applicable due to infeasibility
3	Modify Units 5 & 6	Infeasible	• Not applicable due to infeasibility	• Not applicable due to infeasibility	• Not applicable due to infeasibility
4	Construct SCGS at an alternative location (outside HnGS)	Technically feasible, but potentially cost prohibitive and may violate SCAQMD Settlement Agreement	• Would achieve a net reduction in air pollutant emissions • Would reduce the consumption of natural gas and the production of GHGs • Would facilitate integration of wind power resources into LADWP generation system • Would provide for the energy demands of the City of Los Angeles • May not increase the reliability of the electrical power generation system • Would reduce the use of ocean water cooling at HnGS	• Would eliminate short-term construction impacts to air quality at HnGS • Would eliminate short-term construction impacts related to noise at HnGS	• May result in similar or greater short-term construction-related impacts at alternative location • Would likely result in significant long-term impacts to aesthetics, noise, safety. • May result in other long-term impacts to resources (biological, cultural, traffic, localized air quality) that cannot be accurately predicted.

Alt.	Description	Feasibility	Attainment of Proposed Project Objectives	Elimination/Substantial Reduction of Proposed Project Impacts	Additional Impacts
5	Develop Alternative Energy Sources	Infeasible	• Not applicable due to infeasibility	• Not applicable due to infeasibility	• Not applicable due to infeasibility
6	Purchase Additional Energy from Outside Sources	Feasible	• May not achieve a net reduction in air pollutant emissions • May not reduce the consumption of natural gas and the production of GHGs • Would not facilitate integration of wind power resources into LADWP generation system • Would partially provide for the energy demands of the City of Los Angeles • Would not increase the reliability of the electrical power generation system • Would reduce the use of ocean water cooling at HnGS	• Would eliminate short-term construction impacts to air quality at HnGS • Would eliminate short-term construction impacts related to noise at HnGS	• May result in additional but currently unpredictable and nonquantifiable impacts not created by the proposed project related to the production and transmission of purchased energy

CHAPTER 6.0
IRREVERSIBLE ENVIRONMENTAL CHANGES

Public Resources Code section 21100(b)(2)(B) and section 15126.2(c) of the CEQA Guidelines require that an EIR analyze the extent to which the proposed project's primary and secondary effects would impact the environment and commit nonrenewable resources to uses that future generations would not be able to reverse. This section discusses the commitments of resources required by the proposed project in general terms. All of these effects have been discussed in greater detail in previous sections of this EIR.

The proposed project satisfies several objectives that serve to reduce the amount of natural resources committed over the long term. The proposed project would be constructed within the existing HnGS, so no new land is required for project implementation. The majority of the infrastructure that would be necessary for operation of the SCGS is already in place.

Natural gas fuel would power the SCGS; however, the amount of fuel used per kWh of energy produced would be less than is currently required by existing HnGS generator Units 5 and 6 (which would be removed from service under the proposed project). With reduced fuel use, the amount of GHG emissions from the HnGS would be reduced as well. Additionally, the SCGS will be much more efficient to operate than the existing units it replaces. The CTs' fast start and shut down capabilities would further contribute to reduced fuel consumption and allow for greater integration into the LADWP power generation system of energy produced from renewable sources such as wind.

Water would be consumed by the SCGS for process needs and in the cooling system. LADWP proposes to use reclaimed water to meet most of the water demand for the SCGS. Availability of reclaimed supplies has been confirmed by the City of Long Beach. Therefore, fresh water would only be used intermittently in the future during periods when reclaimed water is temporarily unavailable. The use of reclaimed water for the SCGS will substantially reduce the amount of freshwater used at the HnGS facility.

The proposed construction and operation of the SCGS will have various environmental impacts as presented in Chapter 4 of this EIR. The only significant impacts identified are the short-term construction noise impacts associated with pile driving and other general construction activities and the short-term air quality impacts associated with commissioning and testing of the SCGS. None of the impacts identified are significant or irreversible over the long term. The impacts are briefly summarized below:

Air Quality

The air quality impacts associated with construction-related activities were determined to be less than significant; however, the SCGS commissioning and testing phase would result in emissions exceeding SCAQMD daily thresholds and are significant for the short-term. Units 5 and 6 will be decommissioned and will no longer be operational. The operation of the SCGS would result in a net reduction in criteria pollutants, including NO_x. Further, the SCGS would not result in significant toxic air contaminants and presents a less than significant impact from the standpoint of health risk of receptors.

Marine Water Quality and Biology

The proposed SCGS would be air cooled and thus would not rely on the HnGS once through ocean water cooling system. With the decommissioning of existing HnGS Units 5 and 6, the maximum draw of ocean water to the station for cooling would be decreased by up to 40 percent. Ocean water flow and water quality studies were conducted to determine if such changes in flow would have significant water quality impacts in Alamitos Bay, the HnGS intake channel, or the San Gabriel River. Studies were also undertaken to determine if changes in flow would have significant impacts on marine organisms and populations. All impacts were determined to be less than significant, and no significant irretrievable commitments of resources would result.

Water Runoff, Supply, and Treatment

The proposed SCGS was shown to have less than significant impact on water runoff, water supply, and water treatment. Wastewater produced from the SCGS is less than the quantity produced by the existing Units 5 and 6, which will be decommissioned. No irreversible or irretrievable commitments of resources would be made.

Noise

After mitigation, construction of the SCGS will create less than significant noise impacts from general construction, except that the activity of pile driving will create immitigable short-term significant impacts. The SCGS represents a new noise source at the site. Based on LADWP's commitment to use noise attenuation packages on both the SCGS and cooling units, operational noise would not exceed the 65 dBA threshold at the boundaries of the City of Long Beach Noise District Four.

Traffic

Potential transportation and traffic impacts associated with the construction phase of the proposed project were determined to be less than significant during the AM and PM peak hours at all 13 intersections evaluated in the EIR. There would be no increase in operations traffic at the facility.

Based on the above discussion, the proposed project would not result in irreversible environmental changes or a significant irretrievable commitment of resources.

CHAPTER 7.0
GROWTH INDUCING IMPACTS

CEQA defines growth-inducing impacts as those impacts of a proposed project that "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this definition are projects which would remove obstacles to population growth" (CEQA Guidelines Section 15126.2(d)).

The proposed project would aid LADWP in providing reliable, flexible, and efficient electrical power while achieving a net reduction in air pollutant emissions, fossil fuel consumption, and the production of GHGs.

The proposed project involves the construction of a new electrical SCGS and removal from service of two existing steam boiler electrical generating units with a total generation capacity of 600 MW (net). The total net generating capacity of the HnGS facility (1,619 MW) would remain the same after the completion of the proposed project. Therefore, the project would not indirectly induce population growth in the area because it would provide no additional electrical supply to the region. The proposed project would not require the hiring of additional LADWP personnel to operate HnGS. The project construction workers would be hired primarily from the existing labor pool in Southern California; therefore, a significant number of new workers, new services, infrastructure, or housing would not occur relative to project construction and operation.

No significant growth-inducing impacts are foreseen from the proposed project, and no mitigation measures are proposed for growth-inducing impacts.

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CHAPTER 8.0
ORGANIZATIONS AND PERSONS CONSULTED

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CHAPTER 9.0
LIST OF ACRONYMS AND ABBREVIATIONS

ADT	average daily trip
AMSL	above mean sea level
AQMP	Air Quality Management Plan
BACT	best available control technology
bhp	break horsepower
BMPs	best management practices
BTU	British thermal unit
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAR	California Climate Action Registry
CCGS	combined cycle generating system
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CH_4	methane
CI	compression ignition
CMP	Congestion Management Plan
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRM	Coastal Resources Management
CT	combustion turbine
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DG	distributed generation
DO	dissolved oxygen
DPM	diesel particulate matter
DSM	demand side management
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
ESA	Endangered Species Act
°F	Degrees Fahrenheit
FMP	Fishery Management Plan
FRA	Federal Railway Administration
GHG	greenhouse gas
gpm	gallons per minute
GRP	General Reporting Protocol
GWh	gigawatt-hour
GWP	global warming potential
HGS	Harbor Generating Station
HAPC	habitat areas of particular concern

HI	hazard index
HnGS	Haynes Generating Station
HRA	Health Risk Assessment
HRSG	heat recovery steam generator
HVAC	heating, ventilating, and air conditioning
ICU	Intersection Capacity Utilization
IWMP	Integrated Waste Management Plan
JFTB	Joint Forces Training Base (Los Alamitos)
km	kilometer
kWh	Kilowatt-hour
L_{eq}	equivalent noise level
LADWP	City of Los Angeles Department of Water and Power
lb/hr	Pounds per hour
LBMC	Long Beach Municipal Code
LBWD	Long Beach Water Department
LBWRP	Long Beach Water Reclamation Plant
LEED	Leadership in Energy and Environmental Design
LOS	level of service
LSGR	lower San Gabriel River
MATES	multiple air toxics exposure study
MDAB	Mojave Desert Air Basin
MEIR	maximum exposed individual resident
MEIW	maximum exposed individual worker
mgd	million gallons per day
mg/l	milligrams per liter
µg/l	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
MHHW	mean higher high water
MICR	maximum individual cancer risk
MLLW	mean lower low water
MHHW	mean higher high water
MMRP	Mitigation Monitoring and Reporting Program
MW	megawatt
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standard
NAD	North American Datum
NMFS	National Marine Fisheries Service
NO_X	nitrogen oxides
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NTCs	non-tradeable credits
O_3	ozone
OCTA	Orange County Transportation Authority
OEHHA	(California) Office of Environmental Health Hazard Assessment
PAHs	polycyclic aromatic hydrocarbons
Pb	lead
PCE	passenger car equivalent

PCH	Pacific Coast Highway
PD	planned development
PM	particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppm	parts per million
ppt	parts per thousand
PPV	peak particle velocity
PTC	permit to construct
PTO	permit to operate
psu	practical salinity unit
PVMRM	Plume Volume Molar Ratio Method
RECLAIM	Regional Clean Air Incentives Market
RELs	reference exposure levels
RMS	root mean square
RPS	renewable portfolio standard
RTCs	RECLAIM trading credits
RWQCB	Regional Water Quality Control Board
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCGS	simple cycle generating system
SCR	selective catalytic reduction
SEADIP	Southeast Area Development and Improvement Plan
SF_6	sulfur hexafluoride
SGS	Scattergood Generating Station
SMURF	standard monitoring units for the recruitment of fish
SO_x	sulfur oxides
SO_2	sulfur dioxide
SO_3	sulfur trioxide
SPCCP	Spill Prevention Control and Countermeasures Plan
SR 22	State Route 22
SSAB	Salton Sea Air Basin
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	(California) State Water Resources Control Board
TAC	toxic air contaminants
URBEMIS	urban emissions software
USEPA	US Environmental Protection Agency
UTM	Universal Transverse Mercator
V/C	volume-to-capacity
VGS	Valley Generating Station
VOC	volatile organic compound

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CHAPTER 10.0
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APPENDIX A

NOTICE OF PREPARATION, INITIAL STUDY, AND RESPONSE TO NOTICE OF PREPARATION

April 6, 2009

To: State Clearinghouse, Responsible and Trustee Agencies, and Interested Individuals and Organizations

Subject: Notice of Preparation of a Draft Environmental Impact Report for the Haynes Generating Station Units 5 and 6 Repowering Project

Project Title: Haynes Generating Station Units 5 and 6 Repowering Project

The City of Los Angeles Department of Water and Power (LADWP) will be the Lead Agency pursuant to the California Environmental Quality Act (CEQA) and will prepare an Environmental Impact Report (EIR) for the Haynes Generating Station (HnGS) Units 5 and 6 Repowering Project. LADWP is requesting the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. To the extent that your agency has authority to issue permits or take other actions related to the project, your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project. LADWP is also requesting comments regarding environmental issues associated with the proposed project from interested individuals and organizations.

Project Location:
HnGS is located at 6801 East 2nd Street in the City of Long Beach, immediately south of State Route 22 (Garden Grove Freeway) and approximately one mile east of State Route 1 (Pacific Coast Highway). Access to HnGS is provided from 2nd Street, which forms the southern property boundary. Seventh Street (State Route 22) serves as the northern site boundary; only emergency access is provided from this street. Figure 1 shows HnGS in relation to the region.

Project Description:
LADWP proposes to construct a 600-megawatt (MW) electrical simple cycle generating system (SCGS) at the existing HnGS in Long Beach, California. The proposed SCGS would include six natural gas-fired combustion turbines (CTs), at 100 MW each, associated cooling and pollution control systems, and other ancillary facilities. The new generation units would be designated as Units 11, 12, 13, 14, 15, and 16. The proposed project includes decommissioning two existing steam boiler generators (Units 5 and 6) that also have a total generation capacity of 600 MW.

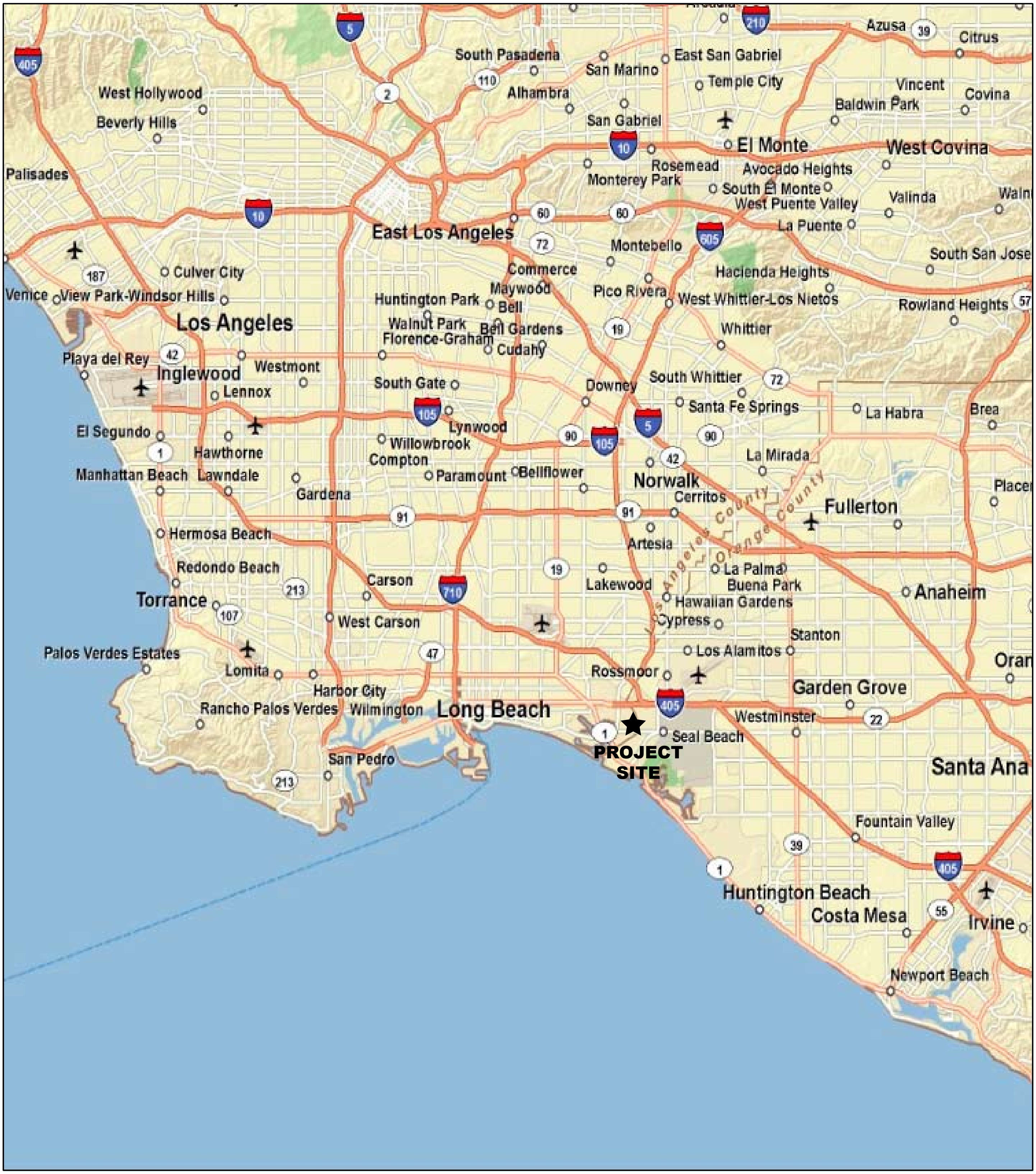

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Figure 1
Regional Location

Potential Environmental Effects:
The potential environmental effects of the proposed project to be addressed in the Draft EIR will include, but may not be limited to, the following:

- Air Quality
- Biological Resources
- Hydrology/Water Quality
- Noise
- Transportation/Traffic
- Utilities/Service Systems
- Mandatory Findings of Significance

Public Comment Period:
The 30-day public comment period for this NOP will commence on April 16, 2009 and conclude on May 15, 2009. Copies of the Initial Study will be available for review at the following locations:

- Bay Shore Neighborhood Library, 195 Bay Shore Avenue, Long Beach, CA 90803 – (562) 570-1039
- Leisure World Library, 1121 Northwood Road, Seal Beach, CA 90740 – (562) 598-2431

A copy of the document will also be posted online at http://www.ladwp.com/ladwp/cms/ladwp004156.jsp. Please submit comments in writing to the address provided below. Comment letters must be received by 5:00 p.m. on May 18, 2009.

Department of Water and Power
City of Los Angeles
111 North Hope Street, Room 1044
Los Angeles, CA 90012
Contact: Tom Dailor
Fax: (213) 367-4710

If there are any questions regarding this Notice of Preparation, please contact Mr. Tom Dailor at (213) 367-0221.

Public Meetings:
A public meeting will be held during the public comment period to solicit input from interested parties on the proposed content of the Draft EIR. The meeting time and location will be announced via mail and the Los Angeles Times. For more information, please contact Mr. Dailor at the phone number listed above.

Date: April 6, 2009 Signature: Charles C. Holloway

Initial Study

Haynes Generating Station
Units 5 and 6 Repowering Project

Los Angeles Department of Water and Power
Environmental Services
111 North Hope Street, Room 1044
Los Angeles, California 90012

April 6, 2009

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SECTION 1
PROJECT DESCRIPTION

1.1 Overview of the Project

The Los Angeles Department of Water and Power (LADWP) proposes to construct a 600-megawatt (MW) electrical simple cycle generating system (SCGS) at its existing Haynes Generating Station (HnGS) in Long Beach, California. The proposed SCGS would include six natural gas-fired combustion turbines (CTs), at 100 MW each, associated cooling and pollution control systems, and other ancillary facilities. The new generation units would be designated Units 11, 12, 13, 14, 15, and 16 and would provide a total net generating capacity of 592 MW. The proposed project includes decommissioning of two existing steam boiler generators (Units 5 and 6) that have a total generation capacity of 600 MW. The proposed project is being implemented in part pursuant to a formal Settlement Agreement between LADWP and the South Coast Air Quality Management District (SCAQMD) related to air pollutant emissions from stationary sources under the Regional Clean Air Incentives Market program. The proposed SCGS would substantially improve the LADWP generation system efficiency, reliability and flexibility compared to the existing steam boiler units it would replace.

1.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA) applies to proposed projects initiated by, funded by, or requiring discretionary approvals from State or local government agencies. The proposed construction and operation of the SCGS constitutes a project as defined by CEQA (California Public Resources Code §§21000 et seq.). Where a project requires approvals from more than one public agency, CEQA requires one of these public agencies to serve as the "lead agency." LADWP is the lead agency because pursuant to CEQA Guidelines §15367, "'Lead Agency' means the public agency which has the principal responsibility for carrying out or approving a project." Pursuant to the Warren-Alquist Act, the California Energy Commission would not be the lead agency for this project because it would result in no net increase in generating capacity at the facility.

As a lead agency, LADWP must complete an environmental review to determine if the proposed project could create significant adverse environmental impacts. To fulfill the purpose and intent of CEQA, this Initial Study has been prepared to assist in making that determination. Based on the nature and scope of the proposed project, the evaluations contained in the Initial Study environmental checklist (included herein), and the comments received from agencies and members of the public during review of the Notice of Preparation (NOP) of an Environmental Impact Report (EIR), factors that have potential to involve significant adverse environmental impacts will be determined. Such factors will become the focus of more detailed analyses in an EIR to determine the nature and extent of any potential environmental impacts and establish appropriate mitigations for those impacts determined to be significant. Based on the Initial Study analysis and NOP review, factors for which no significant adverse environmental impacts are expected to occur will be eliminated from further evaluation in the EIR. A preliminary evaluation of the potentially affected factors is included in the Initial Study checklist in Section 2.

1.3 Project Location

HnGS is located at 6801 East 2nd Street in the City of Long Beach, immediately south of State Route 22 (Garden Grove Freeway) and approximately one mile east of State Route 1 (Pacific Coast Highway). Access to HnGS is provided from 2nd Street, which forms the southern property boundary. Seventh Street (State Route 22) serves as the northern site boundary; only emergency access is provided from this street. Figure 1-1 shows HnGS in relation to the region.

1.4 Historical Perspective and Current Operations at HnGS

The site of HnGS was acquired by LADWP in 1957 for the purpose of constructing a generating facility to replace the Seal Beach Steam Generating Plant, which had been operating in the area since the 1920s. Units 1 and 2 at HnGS were placed into operation in 1962 and 1963, respectively; Units 3 and 4 were placed into operation in 1964 and 1965, respectively; and Units 5 and 6 were placed into operation in 1966 and 1967, respectively. Unit 7 (a 2 MW emergency backup power generator) was added in 1970. In 2004, a Combined Cycle Generating System (CCGS; Units 8, 9, and 10) with a rated capacity of 575 MW replaced the generation capacity of steam boiler Units 3 and 4, which were decommissioned. As part of the CCGS project, Unit 6 was also physically altered to reduce its generating capacity from 341 MW to 259 MW. Currently, the installed total net generating capacity at HnGS is 1,619 MW. The former and current net capacities for generators at HnGS are summarized below (excluding the emergency generator):

Original Generating Capacity:

Unit 1	222	MW
Unit 2	222	MW
Unit 3	222	MW
Unit 4	222	MW
Unit 5	341	MW
Unit 6	341	MW
Total	1570	MW

Changes resulting from Units 3 and 4 Repowering (2004):

Unit 3	- 222	MW (permanently disabled)
Unit 4	-222	MW (permanently disabled)
Unit 6	-82	MW (permanently derated)
CCGS	575	MW (total of Units 8, 9, and 10)
Total	1619	MW (49 MW net gain for HnGS)

1.5 Existing Site Description

HnGS is an electric power generating facility that supplies power to the LADWP power distribution grid. HnGS is a largely developed industrial property consisting of approximately 122 acres, the majority of which is located in the City of Long Beach, County of Los Angeles. Approximately 7.5 acres in the northeast corner of the HnGS property are located in the City of Seal Beach, County of Orange. The proposed project would be located in the northern portion of the HnGS property, within the City of Long Beach.

Uses surrounding HnGS consist primarily of industrial, commercial, and residential uses, including the Leisure World residential community along the entire eastern boundary of HnGS; light industrial functions (including office, research and development, and manufacturing) in the Boeing Integrated Defense Systems Specific Plan Area to the southeast; the Island Village residential community to the south; vacant land to the southwest; the Alamitos Generating

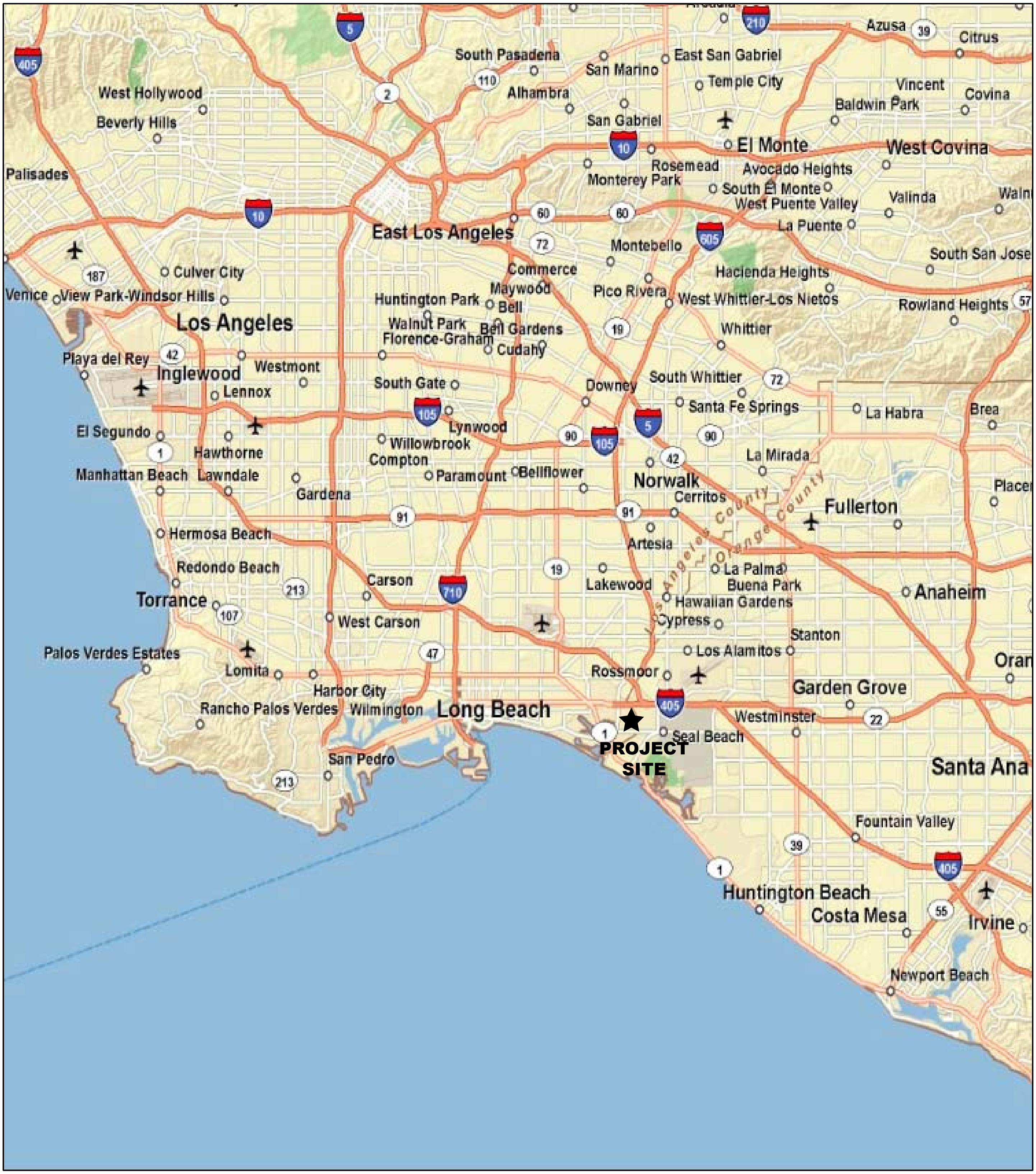

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Figure 1-1
Regional Location

Station (an electrical generating station operated by the AES Corporation) along the entire western boundary, across the San Gabriel River; residential areas to the northwest; and a community park and residential areas to the north. Most of the eastern station boundary is also the boundary between Los Angeles and Orange counties. A regional bike trail runs along the upper bank of the San Gabriel River, adjacent to HnGS. The general setting of the site and surrounding areas are shown on Figure 1-2.

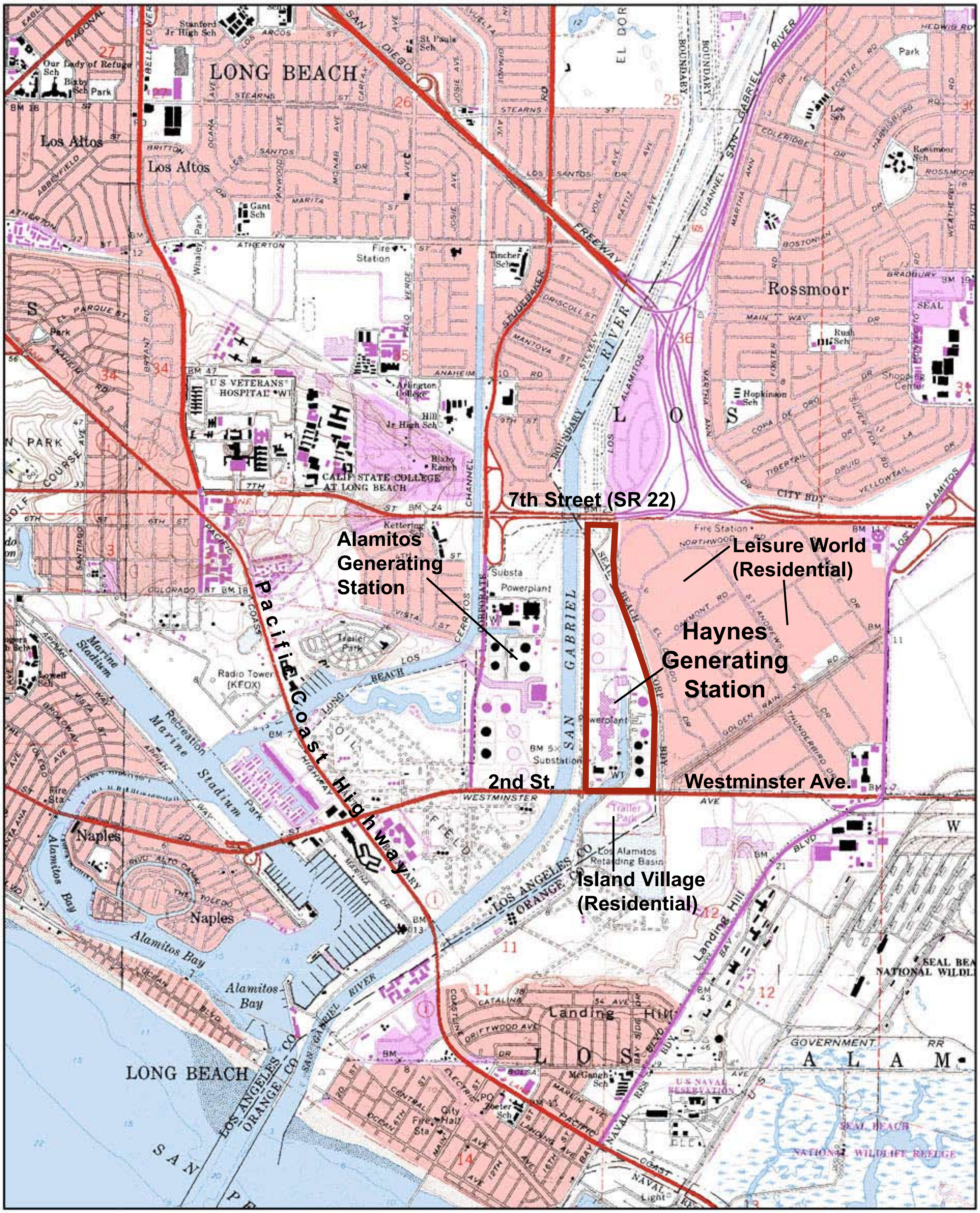
Operating generators at the facility include four steam boilers units (Units 1, 2, 5, and 6) and a CCGS, consisting of one steam generating turbine (Unit 8) and two natural-gas fired CT generators (Units 9 and 10) fitted with Heat Recovery Steam Generator (HRSG) systems. The existing generator units range in height from approximately 75 feet (the CCGS) to approximately 150 feet for the six older units (including decommissioned Units 3 and 4). In addition to the primary structures, the generator exhaust stacks range in height from approximately 150 feet (Units 9 and 10 of the CCGS) to approximately 250 feet for the six older units. All the generator units are located in roughly the southwest quadrant of the HnGS property. The operating and decommissioned generator units themselves occupy approximately 15 acres of the site.

A circulating water channel provides ocean water for cooling the Haynes steam boiler units. The channel extends southwestward from the HnGS property for approximately one mile, roughly paralleling the San Gabriel River between 2nd Street and State Highway 1. Near the highway, water is drawn into the channel through a system of pipes that cross under the San Gabriel River and connect to an intake structure in the Alamitos Bay Marina. At HnGS, water is drawn from the channel through separate pump and screen chambers for generator Units 1, 2, 5, and 6, and the CCGS. The cooling water is released through three discharge structures (one for Units 1 and 2, one for Units 5 and 6, and one for the CCGS (formerly used by decommissioned Units 3 and 4) located in the bank of the San Gabriel River, to the west of HnGS.

To the west of the generator units, are the electrical switchyards that are fed by the existing generators and connect to an electrical transmission line that runs along the western edge of HnGS and supplies electrical power to the LADWP distribution grid. Existing generator Units 1, 2, 5, 6, 9, and 10 run on natural gas that is supplied by continuous feed from a line that enters the HnGS property from the north. A small compressor station in the central part of the property boosts the natural gas pressure for use in Units 9 and 10.

Near the northern end of the HnGS property are three large, unused aboveground tanks formerly used to store fuel oil prior to the conversion of the original HnGS to natural gas fuel. These tanks are approximately 200 feet in diameter and 56 feet in height. As part of the ongoing facilities management program, these tanks are being cleaned and certified free of hazardous wastes and will be dismantled prior to the beginning of the proposed project construction.

There are five additional aboveground fuel oil storage tanks in the southeastern quadrant of the HnGS property. One tank is used to store distillate oil as a backup fuel for the CCGS in emergency situations when natural gas may not be available. The other tanks are not in use and are essentially empty. The northernmost of the five tanks is approximately 200 feet in diameter and 43 feet in height. Each of the other tanks is approximately 160 feet in diameter and 43 feet in height. Each tank is located within a separate spill containment area surrounded by an approximately 4-foot high earthen dike. Three 500,000-gallon settling basins, used to process industrial wastewater and surface runoff at HnGS, are also located in the southeastern quadrant of the property. A site plan of the existing HnGS is provided in Figure 1-3.



Source: gis.ca.gov
USGS 7.5 Minute Digital Raster Graphic

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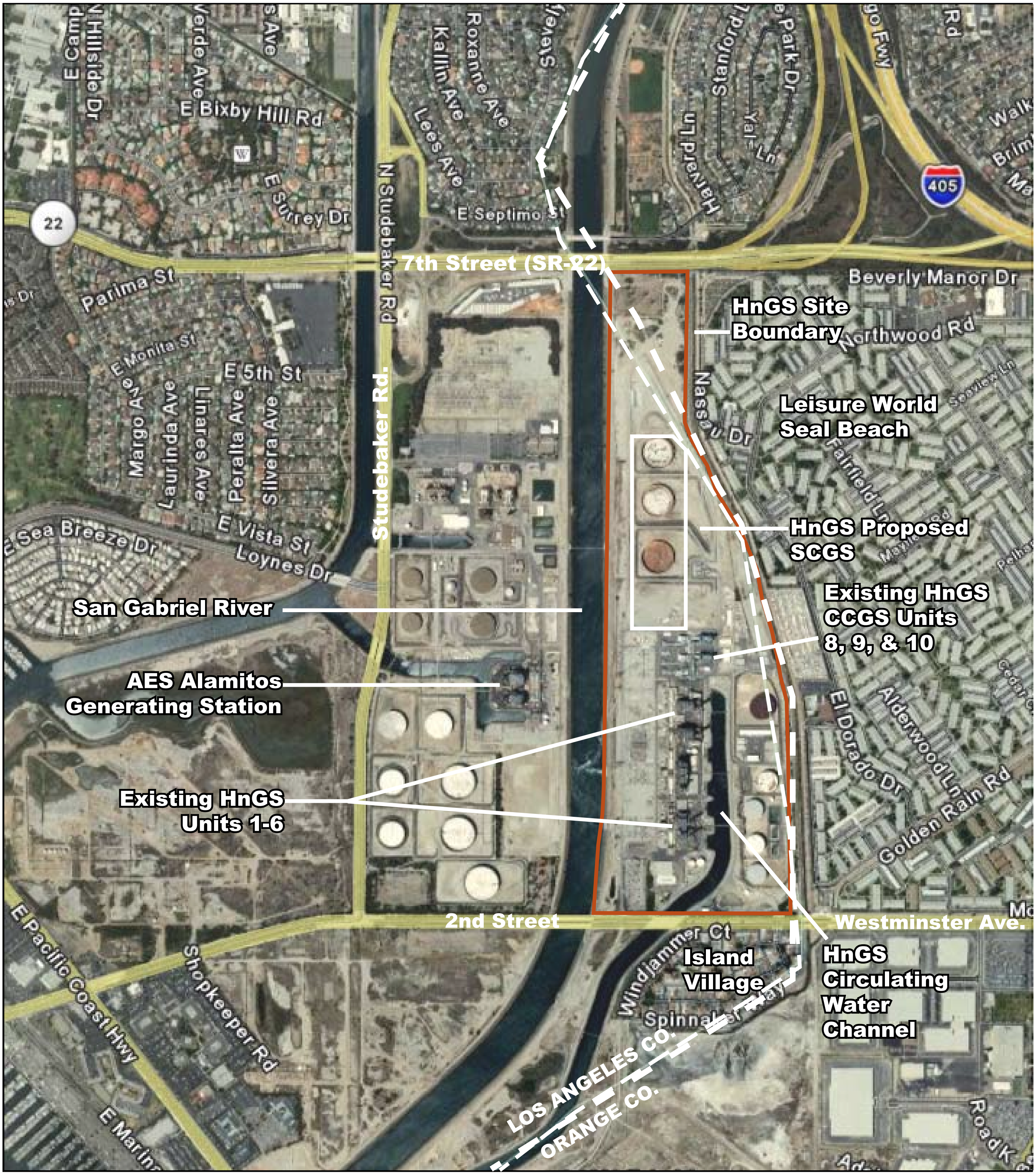
Figure 1-2
Vicinity Map



Source: Google Earth, 2008

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Figure 1-3
Existing Site

1.6 Project Facilities and Construction

Facilities

The proposed SCGS for the HnGS Units 5 and 6 Repowering Project includes six natural gas-fired CTs and associated cooling and pollution control systems. The new generation units would be designated as Units 11, 12, 13, 14, 15, and 16. A standby power generator of up to 4-MW capacity would also be provided. The actual net generating capacity of the proposed SCGS would be 592 MW. The proposed project also includes decommissioning existing steam boiler generation Units 5 and 6. Units 5 and 6 currently have a net capacity of 341 MW and 259 MW, respectively (600 MW total). The total net generating capacity of the HnGS facility after the completion of the proposed project would be about 1611 MW, which is 8 MW less than the current capacity of the facility. The existing and proposed units, with expected generating capacities, are summarized as follows:

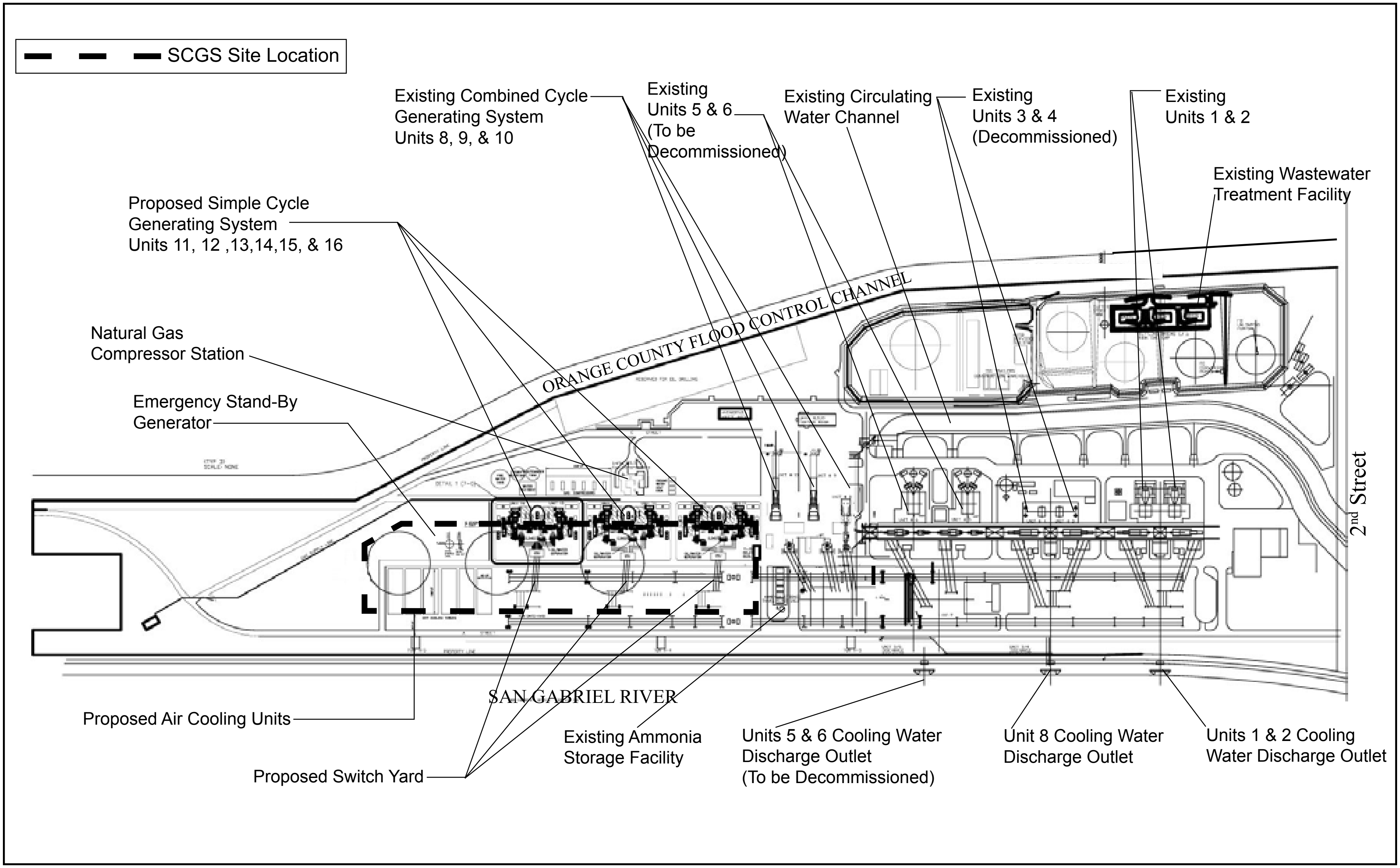
Unit 1	222	MW
Unit 2	222	MW
CCGS	575	MW (total of Units 8, 9, and 10)
SCGS	592	MW (proposed project)
Total	1,611	MW (8 MW less than current capacity)

The proposed project would also require the installation of ancillary facilities and equipment, such as gas compressors; electrical transformers and switching equipment; and a water treatment system required to purify water for use in the SCGS. The three large unused aboveground fuel storage tanks at the north end of HnGS would be dismantled under the proposed project to make room for the SCGS and the dry cooling system. A conceptual site plan showing proposed facilities is provided in Figure 1-4.

Construction

Construction of the proposed project is scheduled to begin the second quarter of 2010 and continue to completion at the end of June, 2012. The duration of construction activities would be approximately 26 months and would normally take place six days per week, Monday through Saturday. To insure that construction activities stay on schedule, Sunday shifts may be required at times during the construction period, and two shifts per day may also be necessary at times. During peak project construction periods, a total of approximately 300 workers could be present at the site on the same day (although not at the same time), in either one or two shifts.

Construction activities for the proposed project would include grading and site preparation, construction of access roads and equipment foundations, driving of piles for the SCGS and support equipment, construction of the CTs (with selective catalytic reduction [SCR] equipment and exhaust stacks), construction of the dry cooling towers, extension of the existing electrical switch yard, and turbine commissioning (testing and calibration of SCGS prior to operations). All required construction staging, storage, and laydown areas related to project construction would be located within the existing HnGS boundaries. New generating equipment would be brought to the site on trucks, and oversize loads are anticipated. In addition, contractors would require temporary trailers on site for construction planning and management activities.



Source: LADWP, 2008

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Figure 1-4
Site Plan

1.7 Project Operations

Power Generating Equipment

The SCGS would include six simple cycle CTs. The equipment would be designed to provide a net load capacity of 592 MW. The SCGS would be fired by natural gas. The CTs would produce thermal energy through the combustion of the natural gas, and the thermal energy would be converted into mechanical energy required to drive the turbines and generators, which produce electricity. Natural gas would be obtained through the site's existing gas supply lines. Air would be supplied to the CTs through an inlet air filter and evaporative coolers via an air inlet duct. Fuel (natural gas) would be supplied at approximately 920 pounds per square inch gauge pressure by gas compressors at full operating load. This mixture of fuel and air would be ignited and burned, producing high-temperature pressurized gas to drive the turbine and electric generator.

The new CTs would use a combination of processes to control air pollutant emissions. The combustors in the CTs would use water injection to reduce nitrogen oxides (NOx) emissions. An SCR system also would be provided for the CTs that would use a catalyst to facilitate a reaction between NOx and aqueous ammonia to reduce NOx emissions and produce nitrogen and water. The aqueous ammonia would be atomized with air and vaporized with an electric heater. The ammonia/air mixture would be blended within a static mixer and injected into the flue gas ahead of the catalyst bed via an injection grid. A CO catalyst would also be installed to comply with the South Coast Air Quality Management District's (SCAQMD's) New Source Review and Best Available Control Technology requirements.

Each CT section would include a weatherproof enclosure, and lighting, as well as fire and gas detection equipment, would be provided in each compartment.

There would be three step-up transformers. Two CT generators would share and feed a single step-up transformer, which would be connected by pole-mounted electrical lines to a new switchyard. Power would be transmitted off site through existing transmission lines.

Water that is used in the SCGS must be first treated to remove undesirable constituents that could foul the cooling or pollution control equipment. This water purification process generates a wastewater that would be collected and discharged to the waste treatment ponds in the southeast corner of HnGS. Here, the wastewater would be treated and discharged with other HnGS facility wastewaters.

Cooling System

The proposed SCGS would be cooled by dry cooling towers utilizing a closed-loop water system to transfer heat from the CTs to the towers. Each CT would have an intercooler in the compression section of the turbine, in which warm air, discharged from the low pressure compressor, would be sent to an air-to-water heat exchanger for cooling before returning to the high-pressure compressor section. This inter-stage cooling provides cooler flow to the high-pressure compressor and increases overall efficiency and power output. The warm water from the heat exchanger would be sent to one of six dry cooling towers (one for each CT). The water would be cooled by fans that would draw cooler air over the tubes containing the warmer water, and the cooled water would then be pumped back to the heat exchangers. The dry cooling towers would be located on the HnGS site northwest of the CTs.

The proposed project would result in the decommissioning of the portion of the plant's existing once-through cooling water circulation system that is currently utilized for Units 5 and 6. However, no physical modifications to this system would occur within either the circulating water channel (located east of the existing generating units) or the San Gabriel River. The plant's existing once-through cooling water circulation system would continue to serve Units 1 and 2, and the CCGS. The proposed project would not require construction activity within either the cooling water channel or the San Gabriel River.

Ammonia Handling and Storage

Aqueous ammonia (ammonium hydroxide at 29.5 percent concentration by weight) is presently used in the SCR systems in existing HnGS Units 1, 2, 5, 6, 9, and 10 to reduce NOx emissions. Aqueous ammonia would also be used in the proposed SCGS that would replace Units 5 and 6. The ammonia for the existing and new units would continue to be delivered to HnGS by truck and stored at the site's existing aqueous ammonia tank facility. The existing ammonia storage consists of six cylindrical aboveground storage tanks, with a total capacity of 225,000 gallons (37,500 gallons in each tank). No new ammonia storage or deliveries would be required for the proposed project since ammonia used for the SCGS would be generally offset by the removal from service of existing Units 5 and 6.

Removal from Service of Units 5 and 6

Within 90 days of completion of the commissioning of the proposed SCGS, Units 5 and 6 would be permanently removed from service.

Operating Personnel Requirements

Once constructed, the proposed project would not require additional personnel beyond those currently employed at HnGS to support site operations. The facility would be capable of operating 24 hours per day, seven days per week.

Project Termination and Decommissioning

The estimated life of the new simple-cycle equipment at HnGS is expected to be more than 25 years. Equipment that is no longer effective may then be shut down and/or decommissioned, replaced, or modified in accordance with applicable regulations, market conditions, and technology prevailing at the time of termination. Decommissioning of the new units in the future may involve a combination of salvage or disposal in accordance with applicable federal, state, and local regulations.

1.8 Land Use Consistency

A portion of HnGS is located within the City of Long Beach's Local Coastal Plan area, which is zoned PD-1 (Planned Development). The majority of the proposed project facilities would fall outside the local coastal zone, but the three southernmost CTs would fall within the zone. The City of Long Beach has issued a categorical exclusion for HnGS from Local Coastal Plan permitting pursuant to the California Government Code (section 53091 et seq.), which exempts municipally owned electrical generation facilities from local regulation. Nonetheless, the existing and proposed industrial use at HnGS is consistent with the PD-1 zone and the specific provisions of the Local Coastal Plan.

1.9 Environmental Safeguards

HnGS operates under various local, state, and federal laws and in accordance with various permits and conditions issued by government agencies. Based on these permits and conditions, it is anticipated that the proposed SCGS would be operated in accordance with all government regulations and industry standards, providing adequate safeguards to adjacent populations and the environment.

1.10 Required Permits and Approvals

Prior to construction, the proposed project would require regulatory permits and approvals, most of which would come from the SCAQMD. Pursuant to the Clean Water Act, minor changes to the HnGS waste and surface water discharge may require modification or re-issuance of the site's National Pollutant Discharge Elimination System (NPDES) permit from the California Regional Water Quality Control Board (RWQCB).

The project would operate under various federal and state laws, some of which could require regulatory action by governmental agencies. For example, use of oversize loads on trucks and transportation of hazardous/flammable materials requires a transportation permit from California Department of Transportation (Caltrans). Use and storage of hazardous materials on the site requires compliance with the Resource Conservation and Recovery Act under state and federal Environmental Protection Agencies. Under the Clean Water Act, discharges of storm water for construction projects in excess of one acre are regulated under a General Storm Water Construction Activities Permit issued by California State Water Resources Control Board with oversight by the RWQCB.

For the proposed project, SCAQMD and the RWQCB are considered responsible agencies under CEQA. A Responsible Agency means "a public agency which proposes to approve a project for which a lead agency is preparing an EIR." (CEQA Guidelines §15381). Potential permits and approvals are as follows:

City of Los Angeles Department of Water and Power

- Certification by the Board of Commissioners that the EIR was prepared in accordance with CEQA and other applicable codes and guidelines
- Approval by the Board of Commissioners of the proposed project

South Coast Air Quality Management District

- Authority to Construct
- Permit to Operate

State of California Los Angeles Regional Water Quality Control Board

- Discharge Permit for construction dewatering and hydrostatic test water discharge in storm system and channel
- National Pollution Discharge Elimination System (NPDES) Permit for Construction Dewatering
- NPDES Permit for Hydrostatic Test Water Discharge
- Storm Water Pollution Control Permit

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SECTION 2
INITIAL STUDY CHECKLIST

The following discussion of potential environmental effects was completed in accordance with §15063(d) (3) of the *CEQA Guidelines* (2008) to determine if the project may have a significant effect on the environment.

An explanation is provided for all determinations in Section 3, *Environmental Impact Assessment*, of this document. A "No Impact" or "Less than Significant Impact" determination is made when the proposed project would not have any impact or would not have a significant effect on the environment for that issue area based on project-specific circumstances.

Project Title:

Haynes Generating Station Units 5 and 6 Repowering Project

Lead Agency Name and Address:

Los Angeles Department of Water and Power
Environmental Services
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Contact Person and Phone Number:

Tom Dailor
Environmental Supervisor
Los Angeles Department of Water and Power
(213) 367-0221

Project Sponsor's Name and Address:

Los Angeles Department of Water and Power
Power Systems Services
111 North Hope Street
Los Angeles, CA 90012

Project Location:

The proposed project is located at 6801 East 2nd Street in the City of Long Beach, California, and is situated adjacent to the San Gabriel River and south of State Route 22 (7th Street). The HnGS property is primarily within the County of Los Angeles; however, the northeastern corner of the station is within the County of Orange.

General Plan Designation:

The proposed project site is designated as PD-1 (Planned Development) under the City of Long Beach General Plan and is located in the South East Area Development and Improvement Plan District.

Zoning:

PD-1

Description of Project:

LADWP proposes to construct a 600-MW electrical SCGS at the existing HnGS in Long Beach, California. The proposed SCGS would include six natural gas-fired CTs, at 100 MW each, associated cooling and pollution control systems, and other ancillary facilities. The new generation units would be designated Units 11, 12, 13, 14, 15 and 16. The proposed project includes permanently removing from service two existing steam boiler generators (Units 5 and 6) that have a total generation capacity of 600 MW.

Surrounding Land Uses and Setting:

Uses surrounding HnGS consist primarily of industrial, commercial, and residential uses, including the Leisure World residential community along the entire eastern boundary of HnGS; light industrial functions (including office, research and development, and manufacturing) in the Boeing Integrated Defense Systems Specific Plan Area to the southeast; the Island Village residential community to the south; vacant land to the southwest; the Alamitos Generating Station (an electrical generating station operated by the AES company) along the entire western boundary, across the San Gabriel River; residential areas to the northwest; and a community park and residential areas to the north. Most of the eastern station boundary is also the boundary between Los Angeles and Orange counties. A regional bike trail runs along the upper bank of the San Gabriel River, adjacent to HnGS.

Agencies That May Have an Interest in the Proposed Project:

CEQA Lead Agency

- Los Angeles Department of Water and Power

Responsible/Trustee Agencies

- Los Angeles Regional Water Quality Control Board
- South Coast Air Quality Management District

Reviewing Agencies

- California Department of Transportation

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the Environmental Impacts discussion in Section 3.

☐ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Hazards & Hazardous Materials	☒ Hydrology/Water Quality	☐ Land Use Planning
☐ Mineral Resources	☒ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☒ Transportation/Traffic
☒ Utilities/Service Systems	☒ Mandatory Findings of Significance	

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an environmental impact report is required.

☐ I find that the proposed project may have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Charles C. Holloway — April 6, 2009

Signature — Date

Charles Holloway
Manager of Environmental Assessment
Los Angeles Department of Water and Power

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
I.	**AESTHETICS**. Would the project:				
a.	Have a substantial adverse effect on a scenic vista?				X
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?			X	
e.	Create a new source of substantial shade or shadow that would adversely affect daytime views in the area?				X
II.	**AGRICULTURE RESOURCES**. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b.	Conflict with existing zoning for agricultural use, or a Williamson act contract?				X
c.	Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X
III.	**AIR QUALITY**. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a.	Conflict with or obstruct implementation of the applicable air quality plan?	X			
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	X			
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	X			
d.	Expose sensitive receptors to substantial pollutant concentrations?	X			
e.	Create objectionable odors affecting a substantial number of people?			X	

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
IV.	**BIOLOGICAL RESOURCES**. Would the project:				
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	X			
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				X
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	X			
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X
V.	**CULTURAL RESOURCES**. Would the project:				
a.	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?				X
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?			X	
c.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X
d.	Disturb any human remains, including those interred outside of formal cemeteries?			X	

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
VI.	**GEOLOGY AND SOILS**. Would the project:				
a.	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
	ii) Strong seismic ground shaking?			X	
	iii) Seismic-related ground failure, including liquefaction?			X	
	iv) Landslides?				X
b.	Result in substantial soil erosion, loss of topsoil, or changes in topography or unstable soil conditions from excavation, grading, or fill?			X	
c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X
VII.	**HAZARDS AND HAZARDOUS MATERIALS**: Would the project:				
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d.	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
h.	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X
VIII.	**HYDROLOGY AND WATER QUALITY**. Would the project:				
a.	Violate any water quality standards or waste discharge requirements?	X			
b.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner that would result in substantial erosion or siltation on or off site?	X			
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site?	X			
e.	Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?			X	
f.	Otherwise substantially degrade water quality?				X
g.	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h.	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				X

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
i.	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j.	Inundation by seiche, tsunami, or mudflow?				X
IX.	**LAND USE AND PLANNING**. Would the project:				
a.	Physically divide an established community?				X
b.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
X.	**MINERAL RESOURCES**. Would the project:				
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
XI.	**NOISE**. Would the project result in:				
a.	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	X			
b.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	X			
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	X			
d.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	X			
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
XII.	**POPULATION AND HOUSING**. Would the project:				
a.	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				**X**
b.	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				**X**
c.	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				**X**
XIII.	**PUBLIC SERVICES**.				
a.	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
	i) Fire protection?				**X**
	ii) Police protection?				**X**
	iii) Schools?				**X**
	iv) Parks?				**X**
	v) Other public facilities?				**X**
XIV.	**RECREATION**. Would the project:				
a.	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				**X**
b.	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				**X**
XV.	**TRANSPORTATION/TRAFFIC**. Would the project:				
a.	Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	**X**			
b.	Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	**X**			
c.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				**X**

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
d.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	X			
e.	Result in inadequate emergency access?				X
f.	Result in inadequate parking capacity?				X
g.	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				X
XVI.	**UTILITIES AND SERVICE SYSTEMS**. Would the project:				
a.	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			X	
b.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
c.	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
d.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	X			
e.	Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
f.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
g.	Comply with federal, state, and local statutes and regulations related to solid waste?				X
XVII.	**MANDATORY FINDINGS OF SIGNIFICANCE**.				
a.	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	X			
b.	Does the project have impacts that are individually limited, but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.	X			
c.	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	X			

SECTION 3
ENVIRONMENTAL IMPACT ASSESSMENT

INTRODUCTION

The following discussion addresses impacts to various environmental resources per the Initial Study checklist questions contained in Appendix G of the *CEQA Guidelines*, as summarized above in Section 2.0, *Initial Study Checklist*. It was prepared in accordance with §15070 and §15071 of the *CEQA Guidelines* (2008).

I. AESTHETICS

Would the project:

a) Have a substantial adverse effect on a scenic vista?

No Impact. The proposed project would be located in the interior of the existing 122-acre HnGS, a fully developed industrial complex that began operations in the early 1960s and consists of large generator units, fuel tanks, and other facilities related to electrical power generation. The proposed project would be located adjacent to these facilities and generally on the site of several existing large aboveground storage tanks, which will be dismantled prior to construction of the proposed project. Elements of the proposed project may be partially or largely visible from certain viewpoints within adjacent residential areas (Leisure World, Seal Beach, to the east), along public roads that border HnGS (2nd Street to the south and 7th Street to the north), and along the San Gabriel River Trail, a bike path located along the western edge of HnGS. However, based on the nature of the proposed project in relation to the existing setting of HnGS and its surroundings (including the 150-acre AES Alamitos Generating Station located across the San Gabriel River from HnGS), there would be no adverse effects on existing scenic vistas. No impact would occur, and no further study of this issue is required.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. The proposed project would not require the removal of, or impact views, of any scenic resources such as trees, rock outcroppings, or historic buildings within a state scenic highway. State Route 1 (Pacific Coast Highway), is an eligible (although not officially designated) state scenic highway (*Caltrans Scenic Highway Program*). It is located approximately one mile west of the proposed project site. There are no other scenic highways in the vicinity of the proposed project. The project facilities would be located within an existing fully developed industrial site and, from viewpoints along State Route 1, would either be screened by or blend in with existing larger generator units and other facilities within HnGS and the AES Alamitos Generating Station (located between HnGS and State Route 1). Therefore, the proposed project would not damage any scenic resources within a state scenic highway. No impact would occur, and no further study of this issue is required.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less Than Significant Impact. HnGS, a fully developed industrial site that began operations in the early 1960s, is located in an area that includes residential, commercial, and other large industrial uses. HnGS includes nine existing generator units, numerous large aboveground storage tanks, and other facilities associated with electrical power generation. The 150-acre Alamitos Generating Station, which also includes numerous existing generator units and aboveground storage tanks, is located immediately west of HnGS, across the San Gabriel River.

The proposed project would be located in the interior of HnGS, adjacent to existing facilities and generally on the site of several existing large aboveground storage tanks, which will be dismantled prior to construction of the proposed project. The proposed facilities would be generally equal to or smaller in scale than existing facilities on site. Elements of the proposed project may be partially or largely visible from certain viewpoints within adjacent residential areas (Leisure World, Seal Beach, to the east), along public roads that border HnGS (2nd Street to the south and 7th Street to the north), and along the San Gabriel River Trail. However, based on the nature and scale of the proposed project in relation to the existing setting of HnGS and its surroundings, there would be no significant adverse effects on the existing visual character or quality of the site and its surroundings. The impact would be less than significant, and no further study of this issue is required.

d) Create new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Less Than Significant Impact. The proposed generator units and dry cooling structures would require light fixtures similar to those on the existing facilities at HnGS. The lighting is needed to provide for the safety of workers that are working at the facility at night, and to provide for security of the installation. Based on the existing level of lighting at the station and the scale of the proposed units compared with the existing facilities, this new source of light would not be expected to adversely affect nighttime views in the area. The materials used in the construction of the new generator units would not be expected to add a new source of glare at the facility.

Lighting related to nighttime construction of the project, if required, would create a new source of light. This impact would be temporary, related to only the construction phase of the proposed project. Based on the distance of the construction from residences adjacent to HnGS and on the ability to direct light away from the residential areas, construction related lighting would not be expected to create a significant adverse effect. The impact would be less than significant, and no further study of this issue is required.

e) Create a new source of substantial shade or shadow that would adversely affect day views in the area?

No Impact. The proposed generator units and dry cooling structures would be similar in mass and height to existing HnGS facilities, including several that would be replaced by the proposed project. The proposed project would be sufficiently set back from property lines so as to not result in substantial shadows being cast on the surrounding properties. No impact would occur, and no further study of this issue is required.

II. AGRICULTURE RESOURCES

Would the project:

a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The proposed project would be located within an existing fully developed industrial site that does not meet the definition of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance in the State of California or of Farmland of Local Importance in the County of Los Angeles as defined in the Farmland Mapping and Monitoring Program (*California Department of Conservation Publication FM 94-02*). No impact would occur, and no further study of this issue is required.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The proposed project would be located within the existing HnGS property, which is industrially developed and zoned PD-1 (Planned Development). Based on the existing and historical uses at the HnGS property, the proposed project site is not subject to a Williamson Act contract. No impact would occur, and no further study of this issue is required.

c) Involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland, to non-agricultural use?

No Impact. There is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) on or in the vicinity of the proposed project site. The proposed project would be located within an existing industrially developed property and would involve the removal from service of two existing power generator units and the construction of a new SCGS within the property boundaries. It would not involve other changes in the existing environment that could result in the conversion of Farmland, either directly or indirectly, outside the property boundaries to non-agricultural use. No impact would occur, and no further study of this issue is required.

III. AIR QUALITY

Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan (e.g., the SCAQMD Plan or Congestion Management Plan)?

Potentially Significant Impact. The SCAQMD and the Southern California Association of Governments (SCAG) have responsibility for preparing an Air Quality Management Plan (AQMP), which addresses federal and state Clean Air Act (CAA) requirements. The proposed project site is located within the South Coast Air Basin (SCAB), which is managed by the SCAQMD. SCAB has a history of recorded air quality violations and is an area where both state and federal ambient air quality standards are exceeded. Currently, the entire basin is a non-attainment area for the following pollutants: 8-hour ozone (O_3); particulate matter less than 10 microns in diameter (PM_{10}); particulate matter less than 2.5 microns in diameter $PM_{2.5}$; and is a federal maintenance area for carbon monoxide (CO) and NOx. The AQMP analyzes air quality on a regional level and identifies region-wide attenuation methods to achieve the air quality standards, including regulations for stationary-source polluters; facilitation of new transportation technologies, such as low-emission vehicles; and capital improvements, such as park-and-ride facilities and public transit improvements. The most recently adopted plan is the 2007 AQMP, adopted on June 11, 2007. This plan is the SCAQMD's portion of the State Implementation Plan.

During operations, the proposed project would result in emissions of NOx, CO, volatile organic compounds (VOCs), and PM_{10} that are anticipated to be below SCAQMD significance thresholds when considering the net impact of decommissioning Units 5 and 6. The proposed SCGS also would emit other pollutants whose concentrations in the vicinity must be modeled and evaluated. While the proposed project is likely to be shown consistent with the AQMP on the basis of net emissions, an air quality impact analysis and health risk assessment will be conducted to substantiate the extent of air quality impacts. A consistency analysis will be included with the air quality evaluation in the EIR.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Potentially Significant Impact. Operation-related activities associated with the proposed project would result in emissions of NOx, CO, VOCs, and PM_{10} that are anticipated to be below SCAQMD significance thresholds when considering the net impact of decommissioning Units 5 and 6. The proposed project would construct a 600-MW electrical SCGS consisting of six natural gas-fired CTs and generators and associated equipment, and would emit substantial emissions. While the proposed project is not likely to contribute substantially to an existing air quality violation, the actual emissions and air quality effects will be analyzed and quantified in the EIR. Other considerations such as stack height plume dispersion and potential health risk factors will be addressed as required for purposes of substantiating permit compliance and consistency with air quality standards and regulations.

Construction activities are anticipated to include mobilization, component acquisition and fabrication, site preparation, SCGS and cooling tower erection, and system startup and commissioning. The construction-related air emissions generated during the scheduled 26-month construction period (e.g., from operation of on-site heavy-duty construction equipment, on-site worker activities, worker commute trips, and construction material transport trips) would potentially exceed SCAQMD construction air emissions significance criteria. Construction activities would be short-term in nature and would not add to long-term air quality degradation. However, these emissions may exceed the SCAQMD daily emissions thresholds. Temporary construction emissions would, therefore, be considered potentially significant and will be analyzed further in the EIR.

The proposed project would be required to comply with all relevant federal, state, and local air quality regulations, including acquisition of a permit to construct and permit to operate from SCAQMD. Compliance with air quality rules and regulations will be discussed in the EIR.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Potentially Significant Impact. The project site is located in the SCAB, which is a non-attainment area for 8-hour O_3, PM_{10}, and $PM_{2.5}$, and a federal maintenance area for CO and NOx. While operation of the proposed project is not anticipated to exceed the SCAQMD daily emissions thresholds or contribute substantially to an existing air quality violation, the combustion emissions generated from operation will be analyzed in the EIR in conjunction with the removal from service of Units 5 and 6 to determine whether the project's net emissions would in fact create potential significant adverse air quality impacts. The EIR will analyze project emissions in conjunction with the removal from service of Units 5 and 6 and with other proposed and/or reasonably foreseeable future projects in the vicinity to determine if it could result in a cumulative considerable net increase in criteria pollutants for which the project region is a non-attainment area. This issue will be analyzed as a potentially significant cumulative impact in the EIR.

Construction activities for the proposed project would contribute to an increase in air quality emissions for which the region is non-attainment. As such, air quality impacts from construction will be evaluated using the thresholds of significance established by the SCAQMD. Construction activities associated with implementation of the proposed project could result in increases in air pollutant emissions, which individually or cumulatively, would exceed established thresholds for these criteria pollutants. The impact is potentially significant and will be analyzed in the EIR.

The combustion of natural gas in the proposed SCGS will produce several air contaminants that meet the definition of a greenhouse gas. The quantities of greenhouse gases emitted from the project will be estimated and the significance of those emissions evaluated in the EIR using the latest SCAQMD and State of California guidance.

d) Expose sensitive receptors to substantial pollutant concentrations?

Potentially Significant Impact. Exhaust gases will be emitted from the stacks of the SCGS and will disperse in the atmosphere in the vicinity of the site. In order to ensure that the emissions from the proposed project do not expose local residents, worker populations, and other sensitive receptors to air pollutants at levels that could cause a health risk, the EIR will include a health risk assessment (HRA). The HRA will quantify the concentration of pollutants to which receptors in the project vicinity could be exposed.

e) Create objectionable odors affecting a substantial number of people?

Less than Significant Impact. Any odors (e.g., odors from construction vehicle emissions) would be controlled in accordance with SCAQMD Rule 402 (Nuisance Emissions). Byproducts from the combustion of natural gas are not known to produce objectionable odors. Since the HnGS converted primarily to natural gas as a fuel source, complaints about odors emanating from the plant are virtually non-existent. Diesel fuel is presently stored on site and is used as a fuel for the existing emergency generator, as an emergency fuel for units 9 and 10, and for cleaning fuel oil lines. Diesel fuel would be used for the emergency generator that will part of the proposed project. Low sulfur/low nitrogen distillate oil would continue to be stored on site and used to fuel the site's existing power generators if there was an emergency and the natural gas supply to the site was cut off. However, the use of this oil would be extremely infrequent. Ammonia is also stored on site in an approved storage system with an operational spill monitoring system in place. Except in the event of an unforeseen occurrence, the potential for odors is low and would not affect a substantial number of people.

Other than construction vehicle operation, no activities are anticipated to occur that would have the potential to cause odor impacts during the construction of the proposed project. Because use of construction vehicles would be temporary and no objectionable odors would remain after project construction, impacts would be less than significant, and no further analysis of this issue is required.

IV. BIOLOGICAL RESOURCES

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Potentially Significant Impact. The potential for occurrence of important biological resources at the site has been evaluated by qualified biologists in relation to previous projects at HnGS (*Biological Survey Report for the Haynes Generating Station Units 5 and 6 Repowering Project by EDAW, Inc., November, 2003*).

The proposed project would have no impact on sensitive terrestrial plant species known to occur in the region because habitat or other favorable conditions for such species do not exist on the project site. The proposed project would be located entirely within the boundaries of the existing HnGS, which is a fully developed industrial site that has been used continuously for electrical generation for over 40 years. In addition, a large portion of the site, including areas that would be involved in the proposed project construction and operation, has been disturbed by construction activities associated with the CCGS for the HnGS Units 3 and 4 Repowering Project. This continuous operations, maintenance, and construction activity at HnGS has prevented the establishment of extensive areas of vegetation, which exist in only relatively small disturbed patches along the eastern and western fringes of the station. The project site essentially consists of paved, graveled, or dirt surfaces with no vegetation. The non-paved surfaces are regularly controlled for weeds and are subject to other periodic site maintenance.

The lack of vegetative habitat and the activity associated with power generation make the site of low interest to terrestrial wildlife. During previous surveys, rodent activity was apparent in the electrical transmission line alignment adjacent to the San Gabriel River, along the western perimeter of the site, although positive identification of type of rodents inhabiting the site was not made. The project site is within the historic range of two sensitive species of rodents, the Pacific pocket mouse and the Los Angeles pocket mouse. Currently, the only known populations of these species occur at a great distance from the project site. Based on the distant location of the known populations and site habitat characteristics, the probability is extremely remote for occurrence of either sensitive rodent species at HnGS. Therefore, no impacts to these species would occur.

Raptors have been known to rest and perch on metal walks, railings, and stairs of the exhaust stacks and fuel storage tanks at HnGS. Station personnel have reported past nesting on site by peregrine falcons. Red tail hawks also visit the site regularly. In any event, the proposed SCGS would not adversely affect the use of the site by raptors because they have adapted to the activity and high-noise environment.

In the past, burrowing owls have nested in pipes in a storage yard and in berms on the site. However, the site has undergone significant construction in the past five years, including current activity to clean the large storage tanks on the northwestern portion of the site. Based on the level of activity and disturbance associated with construction and current operations at the station, burrowing owls are not anticipated at the site, and no impacts to this species would occur.

A number of sensitive bird species have been observed in water channels on and adjacent to the station, including California brown pelicans (a federal and state endangered species) flying over the San Gabriel River, and snowy egrets (a California species of special concern) at the circulating water channel. No construction activities related to the proposed project would occur in either the circulating water channel or the San Gabriel River. No adverse impacts to sensitive bird species that inhabit these water channels are anticipated.

From existing literature sources, there are a number of common fish species that inhabit the San Gabriel River in the reach between the HnGS site. Recently, several green sea turtles (*Chelonia mydas*) were seen in the San Gabriel River just downstream of the facility's discharge outfall. Green sea turtles have been seen occasionally in the lower reach of the river since 1998 and are thought to be drawn by favorable habitat conditions that are enhanced by the warm water discharges (MBC, July 2005). As a result of the recent sightings, the Aquarium of the Pacific and National Marine Fisheries Service are cooperating to study the turtles at this location (Long Beach Press Telegram, September 2, 2008). The U.S. Fish and Wildlife Service lists the green sea turtle as threatened, except for the breeding populations in Florida and the Pacific Coast of Mexico, which are endangered (U.S. Fish and Wildlife Service website).

No construction activity related to the proposed project would take place in either the San Gabriel River or the circulating water channel located in the south-central part of HnGS. However, since the proposed project would remove from service that portion of the once-through cooling water system associated with existing Units 5 and 6 and change the volume of ocean water used at HnGS for cooling generators, the effects of this change on marine biota will be analyzed in the EIR.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

No Impact. Previous surveys at HnGS by qualified biologists *(Biological Survey Report for the Haynes Generating Station Units 5 and 6 Repowering Project by EDAW, Inc., November, 2003*) have determined that there are no sensitive natural communities at HnGS. The project site has been regularly maintained and is essentially free of any vegetation. Areas that would be involved in the construction of the proposed project have been recently disturbed by activities associated with the construction of the CCGS and recent tank cleaning projects. Based on the previous survey, there are no portions of the proposed construction areas that could be considered riparian habitat. No portions of the circulating water channel contain riparian vegetation because the manufactured banks of the channel are regularly maintained. The adjacent San Gabriel River provides very marginal riparian habitat in the vicinity of the site, as the river's banks are rip-rapped and contain little vegetation. No construction activity related to the proposed project would take place in either the circulating water channel or the San Gabriel River. No impact would occur, and no further study of this issue is required.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. The proposed project would not adversely affect federal wetlands. The proposed construction areas were previously surveyed by qualified biologists to determine whether conditions that meet the definition of wetlands under Section 404 of the Clean Water Act are present. The project site is regularly maintained and is essentially free of any natural habitat areas. Based on the survey, there are no portions of the proposed construction areas that meet the definition of wetlands. No construction would occur in either the circulating water channel or the San Gabriel River channel. No impact would occur, and no further study of this issue is required.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery/breeding sites?

Potentially Significant Impact. Based on the previous biological survey of the proposed project site (November 2003) and a review of relevant literature; and considering the historic use of HnGS, the site is not used by any native resident or migratory wildlife species as a migratory corridor nor does the site contain a wildlife nursery.

No construction activity related to the proposed project would take place in the San Gabriel River. However, the proposed project would remove from service that portion of the once-through cooling water system associated with existing Units 5 and 6, reducing intake volumes at HnGS and discharge volumes at the river channel. Therefore, the proposed project could interfere with the movement of resident native fish species within the river, and the issue will be analyzed further in the EIR.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (e.g., oak trees or California walnut woodlands)?

No Impact. The project would not conflict with any local policies or ordinances relative to biological resources. The primary vegetation on site consists of perimeter trees and shrubs along the east property line, and there are no oak trees, heritage trees, or other unique tree specimens. No impact would occur, and no further study of this issue is required.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The proposed project site is not part of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No impacts would occur, and no further study of this issue is required.

V. CULTURAL RESOURCES

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations Section 15064.5?

No Impact. According to a records search for the HnGS property conducted for a previous project (*Archaeological Survey Report for the Haynes Generating Station Repowering Project*, November 2001), and a November 14, 2003, site survey *(Archaeological Survey Report for the Haynes Generating Station Units 5 and 6 Repowering Project by EDAW, Inc., 2003)*, no resources on the proposed project site are currently listed in the National Register of Historic Places, the California Register of Historical Resources, or any local register of historical resources. HnGS facilities began operations in the mid-1960s and are not old enough to be of historic significance. No impact would occur, and no further study of this issue is required.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to California Code of Regulations Section 15064.5?

Less Than Significant Impact. According to the previous archaeological records search for the HnGS property (*Archaeological Survey Report for the Haynes Generating Station Repowering Project*, November 2001) and a November 14, 2003, site survey *(Archaeological Survey Report for the Haynes Generating Station Units 5 and 6 Repowering Project, EDAW, Inc., 2003)*, no known archaeological resources exist on the project site. The records search revealed that multiple small archaeological sites exist in the vicinity of the HnGS, one of which included human remains. Due to the extensive amount of construction and ground disturbing activity that has taken place on the property in the past, it is unlikely that undisturbed cultural resources would be encountered during construction. However, the possibility cannot be entirely ruled out. A measure employed by LADWP at other facilities with low potential of encountering resources during construction is to inform and train grading contractors to be aware that resources may be encountered and to establish a procedure to divert construction so that any unexpected discovery can be investigated. These measures will be incorporated in the grading specifications. The impact would be less than significant, and no further study of this issue is required.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No Impact. There are no unique geologic features located at the proposed project site. Soils and geologic structure at the site are derived from alluvium deposited by the San Gabriel River.

Based on consultations with the San Diego Natural History Museum for the previous project (*Haynes Generation Station Repowering Project Initial Study*; November 2001), no known paleontological resources exist at the HnGS. The site is not likely to contain scientific resources due to the predominance of river deposited alluvium. This conclusion is based on review of resource maps and review of preliminary geologic and soils information. Accordingly, the project would not destroy unique or important paleontological resources, and no further study of this issue is required.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact. There are no known human interment sites on the proposed project site. Should human remains be unearthed during construction, appropriate procedures, including halting of construction activities in the area of the remains and contacting the Los Angeles County Coroner, shall be followed. These procedures follow state law and are not discretionary. The impact would be less than significant, and no further study of this issue is required.

VI. GEOLOGY AND SOILS

Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No Impact. Two major active earthquake faults are located within the vicinity of the HnGS. The Palos Verdes Fault is located approximately eight miles southwest of the station at its nearest point. The Newport-Inglewood Fault is located approximately 0.4 mile southwest of the station. Portions of the Newport-Inglewood Fault, including the section nearest to Haynes, are contained in an Alquist-Priolo Earthquake Fault Zone. However, no fault is known to pass through the station property, and fault rupture at the station is not anticipated (*Los Angeles Department of Water and Power Risk Management Plan, Ammonia Storage and Supply System, Haynes Generating Station, June 1999*). No impact would occur, and no further study of this issue is required.

ii) Strong seismic ground shaking?

Less Than Significant Impact. The HnGS is located within the seismically active Southern California region, and, like all locations within the area, is potentially subject to strong seismic ground shaking. Two major active earthquake faults are located within the vicinity of the HnGS. The Palos Verdes Fault is located approximately eight miles southwest of the station at its nearest point, and the Newport-Inglewood Fault is located approximately 0.4 mile southwest of the station. Numerous other active faults are located within a fifty-mile radius of the proposed project site (*Los Angeles Department of Water and Power, Risk Management Plan, Ammonia Storage and Supply System, Haynes Generating Station, June 1999*). The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries. Strong seismic ground shaking would not increase the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death. The proposed project would conform to the latest version of the California Building Code, the Uniform Building Code, and all other applicable federal, state, and local codes relative to seismic design. The impact would be less than significant, and no further study of this issue is required.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. The HnGS property is subject to seismic-related ground failures related to liquefaction. The soil at the site consists of marine tidal deposits and alluvial deposits. These include layers of sands and silts below the groundwater table, which is at approximately 12 feet below the ground surface in some locations. Analysis has indicated that liquefaction may occur in the saturated silt and sand layers during a maximum credible earthquake event at the site (*Los Angeles Department of Water and Power, Risk Management Plan, Ammonia Storage and Supply System, Haynes Generating Station, June 1999*). However, the proposed removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries would not increase the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure. Construction plans for the SCGS incorporate the use of driven foundation piles, which is an approved method of mitigating liquefaction hazards. The proposed project also would conform to the latest version of the California Building Code, the Uniform Building Code, and all other applicable federal, state, and local codes relative to liquefaction conditions. The impact would be less than significant, and no further study of this issue is required.

iv) Landslides?

No Impact. The proposed project site and surroundings are essentially flat, and the potential for landslides does not exist. No impact would occur, and no further study of this issue is required.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. Construction of the proposed project would result in ground surface disturbance during excavation and grading that could create the potential for erosion to occur. However, the site is relatively flat and has been previously graded. Storm Water General Construction Permit Best Management Practices (BMPs) would be employed to control any potential erosion or sedimentation impacts related to the proposed project or its construction. Therefore, project construction will not result in substantial soil erosion or the loss of topsoil. The impact would be less than significant, and no further study of this issue is required.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact. The HnGS property is subject to seismic-related ground failures related to liquefaction. The soil at the site consists of marine tidal deposits and alluvial deposits. These include layers of sands and silts below the groundwater table, which is at approximately 12 feet below the ground surface in some locations. Analysis has indicated that liquefaction may occur in the saturated silt and sand layers during a maximum credible earthquake event at the site (*Los Angeles Department of Water and Power, Risk Management Plan, Ammonia Storage and Supply System, Haynes Generating Station, June 1999*). As a result of liquefaction, settlement and lateral spreading of soils may also occur. Construction plans for the SCGS incorporate the use of driven foundation piles, which is an approved method of mitigating liquefaction hazards. The proposed project would also conform to the latest version of the California Building Code, the Uniform Building Code, and all other applicable federal, state, and local codes relative to unstable soil conditions. The proposed project site and surroundings are relatively flat, and the potential for landslides does not exist. The impact would be less than significant, and no further study of this issue is required.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

No Impact. Based on soil formations at HnGS, the proposed project would not encounter expansive soils. No impact would occur, and no further study of this issue is required.

e) Have soils incapable of adequately supporting use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The HnGS is currently served by an on-site sewage treatment facility for wastewater disposal. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries. It would not increase the number of personnel on site or require an expansion of the existing wastewater treatment facility for sanitary waste purposes. No septic tanks or alternative wastewater disposal system would be included. No impact would occur, and no further study of this issue is required.

VII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. See discussion under item *b*, below.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact. Although construction of the proposed project may involve the transport, storage, and use of some hazardous materials (e.g., on-site fueling and servicing of construction equipment), such construction-related activities would be temporary in nature and would not be expected to create a significant hazard to workers or the community either from routine use of the materials or a reasonably foreseeable accident. All construction activities involving hazardous materials would be subject to federal, state, and local health and safety requirements involving transport, use, storage, and disposal.

The operation of the proposed project would involve the use of potentially hazardous materials, including natural gas to fuel the CT units and aqueous ammonia and catalysts used in the SCR systems of the CT units to reduce air pollutant emissions. All of these materials are currently used at HnGS related to the operation of the existing generator units. Relative to the transport, use, and, when necessary, disposal of these materials during operations, they would be handled and contained in accordance with government regulations and industry standards, including the LADWP Risk Management Plan for HnGS.

The proposed SCGS would consist of six individual 100-MW CT generator units that would be fueled with natural gas. As is the case with the existing generator units at HnGS, natural gas would be supplied to the proposed units by continuous feed from existing gas company lines. There would be no storage of natural gas on site. The natural gas used for the proposed generator units would replace that currently used for existing Units 5 and 6, which have a combined generating capacity of 600 MW and which would be removed from service as part of the proposed project. Therefore, under the proposed project, there would be no increased hazard to the public or the environment resulting either from routine use or a reasonably foreseeable accident involving natural gas.

The proposed project would employ catalysts in the SCR systems to reduce air emissions. These catalysts would be vanadium-based on a titanium support matrix. They are a toxic solid but would not be in a form that could catch fire, be introduced into the storm water system, or be dispersed by the wind, limiting the potential for off-site impacts. Spent SCR catalysts would be recycled or disposed of properly, and no significant hazard to the public or the environment resulting either from routine use or a reasonably foreseeable accident involving the catalyst material is anticipated.

The proposed CT units would each employ a SCR system to reduce NOx air emissions. The SCR systems would utilize aqueous ammonia (a solution consisting of 29.5% ammonia and 70.5% water) for this purpose. A release of toxic gas could occur from vapors that would emanate from an accidental spill of the ammonia solution. Aqueous ammonia is currently stored at HnGS site for use in SCR systems associated with the existing steam boiler units (Units 1, 2, 5, and 6) and the CCGS (in the HRSGs associated with Units 9 and 10). The ammonia is currently stored in five 37,500-gallon aboveground storage tanks. A sixth 37,500-gallon tank is kept unfilled in the event that one of the other tanks must be emptied. These tanks would remain in the same location and continue to operate after completion of the proposed project. It is estimated that under similar operating parameters, the proposed SCGS (Units 11 through 16) would use an equal or lesser amount of ammonia than the existing steam generators (Units 5 and 6) it would replace. No increase in the existing storage capacity or the rate of use or delivery of ammonia would be required for the proposed project. Therefore, there would be no increased hazard to the public or environment resulting either from routine use or a reasonably foreseeable accident involving the transport, storage, and use of ammonia.

The proposed project does not create an increased hazard to the public or the environment related to the routine use or reasonably foreseeable accident involving hazardous materials. The impact would be less than significant, and no further study of this issue is required.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?

No Impact. The nearest schools to HnGS are Kettering Elementary School (Long Beach Unified School District), which is approximately 0.4 miles to the west; Hill Middle School (Long Beach Unified School District), which is approximately 0.5 miles to the northwest; and Hopkinson Elementary School (Los Alamitos Unified School District), which is approximately 0.6 miles to the northeast. No schools are located within one-quarter mile of HnGS. No impact would occur, and no further study of this issue is required.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. Government Code Section 65962.5 refers to a list of facilities that may be subject to the Resource Conservation and Recovery Act (RCRA) corrective action program. HnGS is listed on the database (*Environmental Protection Agency Envirofacts Data Warehouse, RCRAInfo Database*) because the facility is a generator of hazardous waste. HnGS is not on a list of known contaminated sites nor is it subject to corrective action. Hazardous wastes from the facility are managed in accordance with applicable federal, state, and local rules and regulations. The hazardous waste generated from proposed project activities would consist primarily of spent catalyst, which is not expected to present a significant risk to human health or the environment. The catalyst would be disposed or recycled at an approved facility. No impact would occur, and no further study of this issue is required.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. See discussion under item *f*, below.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The proposed project is not located within an airport land use plan area or within two miles of a public airport or public use airport. There are no general aviation airports or airstrips in the vicinity of HnGS. Long Beach Municipal Airport (LGB) is located approximately 3 miles to the northwest of HnGS. HnGS is located beneath the general approach pattern for Runway 30 and the departure pattern for Runway 12 at LGB. However, the approach/departure elevations for aircraft are well above HnGS such that the proposed project facilities would not represent a potential obstruction to air navigation. The Joint Forces Training Base (JFTB), Los Alamitos, (a non-public use airport) is located approximately 2 miles to the northeast of HnGS. However, the departure pattern for Runway 22L and the approach pattern for Runway 4R at the JTFB takes aircraft at least 1 mile east of HnGS. The proposed project would not interfere with air navigation or contribute to an increased safety hazard for HnGS personnel related to local air operations. No impact would occur, and no further study of this issue is required.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The proposed project would be located in the interior of the existing HnGS site. It would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan for any area outside the station. Procedures for emergency response and evacuation are provided to all LADWP employees at the station. These procedures would be updated as necessary in the Risk Management Plan for HnGS to account for the proposed generator units and associated facilities. All personnel involved in the construction of the proposed project would also receive training regarding emergency response and evacuation measures at the station during the construction phase of the proposed project. The impact would be less than significant, and no further study of this issue is required.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. The proposed project site is located in an urbanized area, surrounded primarily by existing industrial and residential development, and is not subject to risk from wildland fires. No impact would occur, and no further study of this issue is required.

VIII. HYDROLOGY AND WATER QUALITY

Would the project:

a) Violate any water quality standards or waste discharge requirements?

Potentially Significant Impact. Construction activities would comply with applicable requirements of the RWQCB, including compliance with NPDES permit regulations. BMPs would be employed during project construction to control any potential erosion or siltation impacts related to construction activities. Compliance with NPDES requirements would ensure that construction impacts are less than significant and no further study is required.

The handling of all wastewater generated during operations at HnGS is governed by the facility's NPDES discharge permit. The RWQCB issued Haynes NPDES permit (CA0000353, CI-2769), specifying waste discharge requirements for the period June 29, 2000 through May 10, 2005 (RWQCB 2000). In June 2004, the RWQCB amended the Haynes permit (via Order No. R4-2004-0089), to provide for the changes in discharge associated with the operation of the CCGS (Unit 8 uses once-through cooling) and the cessation of discharge from decommissioned Units 3 and 4. The amended permit also addresses several anticipated changes in regulations potentially affecting the plant's discharge, primarily related to the reclassification of the lower reach of the San Gabriel River adjacent to HnGS as an estuary (the existing permit's discharge limits are based on State Water Resources Control Board Ocean Plan standards for an enclosed bay). A timeframe was established for collecting new information that would be used to substantiate compliance with revised regulations or, in some cases justify modification of the established discharge parameters. As provided in the amended permit, LADWP continues to operate under the requirements of permit CA0000353 during the period that new information is developed and reviewed by RWQCB.

The permit for the HnGS related to discharge to the San Gabriel River is a complex instrument that regulates all parameters of the discharge including numeric limits on treated industrial waste constituents, storm water constituents and quantities, marine once-through cooling water flows, temperature of cooling water discharges, and other process related constituents such as chlorine and heavy metals. In addition, the permit is the regulatory instrument that implements the laws and requirements relating to entrainment and impingement of sea life on the plant's ocean water intake structures. The classification of the lower San Gabriel River as an estuary presents a number of issues to the plant's operational discharge that LADWP is currently addressing in consultation with RWQCB. This process is taking place concurrently with the proposed project but is on a separate time line.

The proposed SCGS would not utilize ocean water for cooling, but instead would utilize an air cooling system. Upon shutdown of Units 5 & 6, ocean water would cease to be drawn through the intake structures and discharged through the outlet structures of these units, and the maximum volume of ocean water required for cooling at HnGS would be reduced. Since the flow of ocean water associated with HnGS operations would change both in terms of intake from Alamitos Bay and discharge into the San Gabriel River, the impacts related to this change will be addressed in the EIR.

While the proposed SCGS would not utilize ocean water cooling, the existing Units 1, 2, and 8 would continue to rely on once-through ocean water cooling. As noted, waste discharge standards for the HnGS facility are in the amendment process, and LADWP is working with the RWQCB to develop appropriate technical data and renew the permit on a separate timetable. In that the proposed project represents a move away from once-through cooling and the permit considerations related to Units 1, 2 and 8 are on a separate time table, the EIR for the SCGS will not address the facility's waste discharge permit amendment or speculate about future changes in operations associated with the regulatory process. Consequently, the impact assessment for the proposed project in relation to the termination of the Units 5 & 6 cooling water system will focus on a comparative analysis of actual conditions in the marine environment surrounding HnGS before and after the implementation of the project, and the revised waste discharge regulations for the HnGS per se will not be addressed in the EIR.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

No Impact. The proposed project would involve the construction of new generator units that would cover a relatively small surface area in HnGS. The proposed project would not require groundwater supplies or substantially interfere with groundwater recharge. No impact would occur, and no further study of this issue is required.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site?

Potentially Significant Impact. See discussion under item *e*, below. The storm water drainage and control system for the site would be redesigned and will be evaluated in the EIR relative to the potential increase in erosion and siltation from surface runoff.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increasing the rate or amount of surface runoff, in a manner which would result in flooding on or off site?

Potentially Significant Impact. See discussion under item *e*, below. The storm water drainage and control system for the site would be redesigned and will be evaluated in the EIR relative to the potential increase in the rate or amount of surface runoff.

e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Less Than Significant Impact. The proposed project would involve the construction of new generator units and associated facilities that would cover a relatively small surface area in a location in the interior of the HnGS. The proposed SCGS and other project facilities would be located primarily in an area of HnGS that is currently surrounded by earthen containment dikes, from which runoff is directed through subsurface drainage structures to the Orange County flood control channel located along the eastern boundary of HnGS. The dikes would be removed as a result of project construction, and surface runoff would no longer be contained and directed to the existing subsurface drainage facilities. Under the proposed project, storm water runoff would be collected at new catchment devices and directed to a holding tank or basin in the east-central part of HnGS. The captured storm water would be detained, tested, treated as necessary, and released to the flood control channel at a controlled rate through existing discharge structures. The total surface area related to the proposed project contributing runoff to the flood control channel would not generally exceed the area that currently drains to the channel. The project would not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. The impact would be less than significant, and no further study of this issue is required.

Construction activities would comply with applicable requirements of the RWQCB, including compliance with NPDES permit regulations. BMP’s would be employed during project construction to control any potential erosion or siltation impacts related to construction activities. Compliance with NPDES requirements would ensure a less than significant impact, and no further study of this issue related to construction is required.

f) Otherwise substantially degrade water quality?

No Impact. The proposed project would remove from service that portion of the once-through cooling water system associated with existing Units 5 and 6, the impacts of which will be addressed in the EIR as noted in item *a*, above. No other impacts that could substantially degrade water quality would occur and no further study of this issue is required.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The HnGS, within which the proposed project would be located, is not located within a 100-year flood hazard area as indicated on Federal Emergency Management Agency (FEMA) Flood Insurance zone maps for Los Angeles County (*LACDA Overflow Map, May 14, 2001*). The proposed project would not provide any new housing nor would it increase the risk related to flood hazard for existing housing in the vicinity currently located outside the 100-year flood hazard area. No impact would occur, and no further study of this issue is required.

h) Place within a 100-year flood area structures to impede or redirect flood flows?

No Impact. The HnGS, within which the proposed project would be located, is not located within a 100-year flood hazard area as indicated on FEMA Flood Insurance zone maps for Los Angeles County (*LACDA Overflow Map, May 14, 2001*). No impact would occur, and no further study of this issue is required.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

No Impact. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries. It would not increase the risk of loss, injury, or death involving flooding on the site or in the vicinity. No impact would occur, and no further study of this issue is required.

j) Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?

No Impact. The proposed project would not increase the risk associated with seiche, tsunami, or mudflow at the site. It is considered unlikely that the HnGS would be significantly affected by tsunamis because the facility is located approximately two miles upstream from the point where the San Gabriel River enters San Pedro Bay. The facility is also protected by the dikes along the San Gabriel River and by its elevation (approximately ten feet) above the cooling water channel. The HnGS is not subject to seiche or mudflows. No impact would occur, and no further study of this issue is required.

IX. LAND USE AND PLANNING

Would the project:

a) Physically divide an established community?

No Impact. The proposed project would be located in the interior of an existing fully developed industrial site and would not physically divide any established community. No impact would occur, and no further study of this issue is required.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. HnGS, along with the Alamitos Generating Station, located across the San Gabriel River, forms Subarea 19 of the Southeast Area Development and Improvement Plan (SEADIP) of the City of Long Beach Local Coastal Plan. According to the SEADIP ordinance, Subarea 19 is a completely developed site of industrial use and is zoned PD-1 (Planned Development). The existing industrial use of the site is consistent with the PD-1 ordinance. In addition, the City of Long Beach has issued a categorical exclusion for HnGS from Local Coastal Plan permitting pursuant to the California Government Code (section 53091 et seq.), which exempts municipally owned electrical generation facilities from local regulation. No impact would occur, and no further study of this issue is required.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. The proposed project would be located in the interior of an existing fully developed industrial site that is not part of a habitat conservation plan or natural community conservation plan. No impact would occur, and no further study of this issue is required.

X. MINERAL RESOURCES

Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. No mineral resources are known to exist on the project site that would be affected by the proposed project. No impact would occur, and no further study of this issue is required.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. The proposed project would not result in the loss of a locally important mineral resource. The project site is not located on significant mineral or energy deposits as mapped by the City of Long Beach or the state. No impact would occur, and no further study of this issue is required.

XI. NOISE

Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of applicable standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Potentially Significant Impact. The proposed project would be located in the interior of an existing industrial site. However, the residential community of Leisure World, Seal Beach, is located along the eastern boundary of the HnGS. Although it is anticipated that the proposed generator units would run more quietly than the existing Units 5 and 6 that they would replace, the proposed project may expose persons to noise levels in excess of standards established in the local general plan or noise ordinance. Further evaluation of potentially significant impacts related to noise generated by the proposed project will be conducted in the EIR.

In addition, noise levels during construction could potentially expose nearby sensitive receptors (i.e., residential uses) to noise levels above established standards. Although this activity would be temporary, related to only the construction phase of the project, it may still be considered significant. Further evaluation of potentially significant impacts during the project construction phase will be conducted in the EIR.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Potentially Significant Impact. The operation of the proposed project is not expected to expose persons to excessive groundborne vibration or groundborne noise levels. However, certain activities during project construction, including the use of pile drivers, may expose persons to excessive groundborne noise levels. Although this impact would be temporary, related to only the construction phase of the proposed project, it may still be considered significant. Further evaluation of potentially significant impacts related to groundborne noise generated by construction activities for the proposed project will be conducted in the EIR.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Potentially Significant Impact. The proposed project would be located in the interior of an existing industrial site. However, the residential community of Leisure World, Seal Beach, is located along the eastern boundary of the HnGS. Although it is anticipated that the proposed generator units would run more quietly than the existing Units 5 and 6 that they would replace, the proposed project would add some additional sources of operational noise (e.g., the air cooling system). As a result, there may be a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Further evaluation of potentially significant impacts related to noise generated by the proposed project will be conducted in the EIR.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Potentially Significant Impact. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project may occur related to project construction. Although this impact would be related to only the construction phase of the proposed project, it may still be considered significant. Further evaluation of potentially significant impacts related to noise generated by construction activities for the proposed project will be conducted in the EIR.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The proposed project is not located within an airport land use plan area or within two miles of a public airport or public use airport. HnGS is located approximately two miles from the JFTB, Los Alamitos. Based on the approach-departure flight tracks of aircraft using the base, the proposed project site is well outside the 60 Community Noise Level Equivalent contour, and people working in the project area would not be exposed to excessive noise levels related to aircraft operations at the base. No impact would occur, and no further study of this issue is required.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The proposed project is not located within the vicinity of a private airstrip. No impact would occur, and no further study of this issue is required.

XII. POPULATION AND HOUSING

Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. The proposed project would provide no new homes or businesses. The project would not increase the power generating capacity at the station, and therefore, the project would not indirectly induce population growth in the area in the context of total power generation and demand for the Southern California region. No impact would occur, and no further study of this issue is required.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed project is located within a fully developed industrial site owned by the LADWP and would not displace any existing housing. No impact would occur, and no further study of this issue is required.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed project is located within a fully developed industrial site owned by the LADWP and would not displace any people. No impact would occur, and no further study of this issue is required.

XIII. PUBLIC SERVICES

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

i) Fire protection?

No Impact. Fire protection for the HnGS is provided by the City of Long Beach Fire Department. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the current HnGS property boundaries, and no new or expanded fire protection services would be required at the site. No impact would occur, and no further study of this issue is required.

ii) Police protection?

No Impact. Police protection for the HnGS is provided by the City of Long Beach Police Department and LADWP security personnel. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the current HnGS property boundaries, and no new or expanded police protection services would be required at the site. No impact would occur, and no further study of this issue is required.

iii) Schools?

No Impact. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries. It would not result in demand for new or expanded schools. No impact would occur, and no further study of this issue is required.

iv) Parks?

No Impact. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries. It would not result in demand for new or expanded parks. No impact would occur, and no further study of this issue is required.

v) Other public facilities?

No Impact. The proposed project would not increase the need for other new or expanded government facilities. No impact would occur, and no further study of this issue is required.

XIV. RECREATION

Would the project:

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries. It would not increase the use of existing neighborhood or regional parks or other recreational facilities. No impact would occur, and no further study of this issue is required.

b) Include recreational facilities or require construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries. It does not include recreational facilities or require the construction or expansion of recreational facilities. No impact would occur, and no further study of this issue is required.

XV. TRANSPORTATION/TRAFFIC

Would the project:

a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?

Potentially Significant Impact. The proposed project would construct a 600-MW electrical SCGS, which includes six natural gas-fired CTs and appurtenant facilities. Operation of the proposed project would not cause any increase in traffic in relation to the existing traffic load and capacity of the street system because it would not significantly increase beyond current levels the number of workers or vehicles required to operate facilities at the station. Currently, on a normal day shift, there are approximately 125 employees on site at HnGS.

Construction of the proposed project would require a large workforce and the delivery of large quantities of material and equipment to the site. This condition would be temporary, related to only the construction phase of the proposed project. However, project construction may cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. Further evaluation of potentially significant impacts related to traffic generated by construction activities for the proposed project will be conducted in the EIR.

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Potentially Significant Impact. Operation of the proposed project would not substantially increase the amount of daily traffic visiting the HnGS facility or exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways. No further analysis of this issue related to project construction is required.

Construction of the proposed project would require a large workforce and the delivery of large quantities of material and equipment to the site. This condition would be temporary, related to only the construction phase of the proposed project. However, construction traffic may exceed a level of service standard established by the county congestion management agency for designated roads or highways. Further evaluation of potentially significant impacts related to traffic generated by construction activities for the proposed project will be conducted in the EIR.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The proposed project would include exhaust stacks on the new SCGS units; however, these stacks would be considerably lower than any of the existing stacks on the site and would not create significant hazards to navigation or require changes in approach patterns at Long Beach Airport. No impact would occur, and no further analysis of this issue is required.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Potentially Significant Impact. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries. There would be no construction of new off-site roads or modifications to existing off-site roads. No incompatible uses on off-site roads would result from the proposed project. However, trucks turning into and out of the site during construction could create a hazard to through traffic because of large loads and slow speeds. Further evaluation of potentially significant impacts related to hazards due to incompatible uses during project construction will be conducted in the EIR.

e) Result in inadequate emergency access?

No Impact. The proposed project would not result in inadequate emergency access. Construction activities would take place within the existing HnGS property boundaries, and would not impact existing emergency access to the station or to locations outside the station. During project operation, no changes would occur at HnGS that would significantly affect emergency access to the site. No impact would occur, and no further study of this issue is required.

f) Result in inadequate parking capacity?

No Impact. Operation of the proposed project would not result in inadequate parking capacity because it would not significantly increase beyond current levels the number of workers or vehicles required to operate facilities at the station, which currently has adequate parking area to accommodate personnel and operations vehicles. All construction-related vehicles and equipment and construction worker vehicles would be stored within the boundaries of the HnGS and would not impact off-site parking. No impact would occur, and no further study of this issue is required.

g) Would the project conflict with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

No Impact. The proposed project would not conflict with adopted policies, plans, or programs supporting alternative transportation. Construction activities would take place entirely within the boundaries of the HnGS and would not require the removal or relocation of alternative transportation facilities (i.e., bus stops and bike lanes). Accordingly, no impacts to alternative transportation would occur, and no further study of this issue is required.

XVI. UTILITIES AND SERVICE SYSTEMS

Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Less Than Significant Impact. See discussion under item *b*, below.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. The proposed project provides for the removal from service of two existing steam generators (Units 5 and 6, with a combined total of 600 MW generating capacity) and the construction of a new 600-MW SCGS within the existing HnGS property boundaries. It would not result in a significant increase in the number of personnel at the station during project operations; therefore, no significant increase in sanitary wastewater is anticipated.

The SCGS would generate industrial wastewater, primarily related to reject water from treatment processes necessary to provide purified water that would be injected into the gas turbine combustors to help control NOx emissions and from the SCGS evaporative cooler. The SCGS wastewater would be routed to on-site wastewater treatment facilities, and, after appropriate treatment, eventually discharged at a controlled rate to the San Gabriel River through the existing HnGS cooling water circulation system. This would not represent a significant change from existing operations at HnGS. Industrial wastewater generated by existing Units 1, 2, 5, 6, 8, 9, and 10 is currently treated on site and discharged through the cooling water circulation system. Because Units 5 and 6 would cease operations after completion of the proposed project, the existing on-site wastewater treatment system, in its current configuration or with appropriate modification, would adequately accommodate wastewater flows from the proposed SCGS. No new off-site water or wastewater treatment facilities or expansion of existing off-site facilities would be required. The impact would be less than significant, and no further study of this issue is required.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. The proposed SCGS would be located primarily in an area of HnGS that is currently surrounded by earthen containment dikes, from which runoff is directed through subsurface drainage structures to the Orange County flood control channel located along the eastern boundary of HnGS. The dikes would be removed as a result of project construction, and surface runoff would no longer be contained and directed to the existing subsurface drainage facilities. Under the proposed project, storm water runoff would be collected at new catchment devices and directed to a holding tank or basin in the east-central part of HnGS. The captured storm water would be detained, tested, treated as necessary, and released to the flood control channel at a controlled rate through existing discharge structures. The total surface area related to the proposed project contributing runoff to the flood control channel would not generally exceed the area that currently drains to the channel. No new off-site storm water drainage facilities or expansion of existing off-site facilities would be required. The impact would be less than significant, and no further study of this issue is required.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Potentially Significant Impact. The SCGS would require water primarily for injection into the gas turbine combustor to help control NOx emissions and for air inlet evaporator cooling during hot weather conditions to enhance the turbine output and performance. The estimated instantaneous water flow requirement for all six units of the SCGS is 1,040 gallons per minute. The project annual usage is estimated at 503 acre-feet based on a 30% annual capacity factor for the SCGS up to 1,006 acre-feet based on a 60% annual capacity factor. A portion of the water imported to HnGS for the project would be lost as reject related to water treatment processes necessary to provide purified water for use in the SCGS. It is currently anticipated that project water would be supplied from City of Long Beach reclaimed water sources. However, these reclaimed sources may not be available during the initial operating period for the proposed project. Furthermore, backup supplies of water would be required in the event that the reclaimed water source was temporarily unavailable. Although water supplies have been preliminarily identified to accommodate project needs, and although these needs are anticipated to be generally equivalent to those for existing generation Units 5 and 6 (which would be removed from service by the proposed project), new or expanded entitlements may be required. The impacts related to water supply are potentially significant, and this issue will be examined further in the EIR.

e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less Than Significant Impact. HnGS is not served by a municipal or other wastewater treatment provider. All wastewater is treated on site. The proposed project provides for the removal from service of two existing steam generators (Units 5 and 6, with a combined total of 600 MW generating capacity) and the construction of a new 600-MW SCGS within the existing HnGS property boundaries. It would not result in a significant increase in the number of personnel at the station during project operations; therefore, no significant increase in sanitary wastewater is anticipated.

The SCGS would generate industrial wastewater, primarily related to reject from water treatment processes necessary to provide purified water that would be injected into the gas turbine combustors to help control NOx emissions and from the SCGS evaporative cooler. The SCGS wastewater would be routed to the on-site wastewater treatment facility, and, after appropriate treatment, eventually discharged at a controlled rate to the San Gabriel River through the existing HnGS cooling water circulation system. This would not represent a significant change from existing operations at HnGS. Industrial wastewater generated by existing Units 1, 2, 5, 6, 8, 9, and 10 is currently treated on site and discharged through the cooling water circulation system. Because Units 5 and 6 would cease operations after completion of the proposed project, the existing on-site wastewater treatment system, in its current configuration or with appropriate modification, would adequately accommodate wastewater flows from the proposed SCGS. The proposed project would not increase the current wastewater treatment requirements for the station such that the service of a wastewater treatment provider would be required. The impact would be less than significant, and no further study of this issue is required.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less Than Significant Impact. The proposed project provides for the removal from service of two existing power generator units and the construction of a new SCGS within the existing HnGS property boundaries. Its operation would not significantly increase the solid waste disposal needs for HnGS such that the landfill that serves the site would exceed its permitted capacity. Small amounts of hazardous waste would be generated during proposed project operations. Over time, the catalyst material used in the SCR process loses its effectiveness and must be replaced. The spent catalyst would be recycled, or it would be transported by a licensed hazardous waste transporter to a permitting hazardous waste treatment, storage, or disposal facility. There are currently three Class I (hazardous waste) landfills located in California, and hazardous wastes can also be transported to permitted facilities outside California. The relatively small amount of hazardous waste generated by the proposed project would not contribute significant quantities of material to these facilities.

The construction of the proposed project would temporarily generate increased solid waste at the site. Construction debris would be recycled or transported to a landfill site and disposed of appropriately. In accordance with AB 939, LADWP's construction contractor would ensure that source reduction techniques and recycling measures are incorporated into project construction. The amount of debris generated during project construction is not expected to significantly impact landfill capacities. The impact would be less than significant, and no further analysis of this issue is required.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. The proposed project would be located within the existing HnGS property boundaries. Solid wastes at the station are currently accumulated, handled, and disposed in accordance with federal, state, and local regulations. Since the proposed project is a modification to this existing facility, solid wastes would continue to be managed in accordance with these regulations.

During construction and operation of the proposed project, LADWP would comply with all City and state solid waste diversion, reduction, and recycling mandates, including compliance with the County-wide Integrated Waste Management Plan. No impact would occur, and no further study of this issue is required.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Potentially Significant Impact. The proposed project would be located entirely within the boundaries of the existing HnGS, which is a fully developed industrial site. As discussed in

Section IV, habitat or other favorable conditions for sensitive terrestrial plant species do not exist on the project site. The lack of vegetative habitat and the noise created by power generation equipment make the site of low interest to wildlife.

However, while no construction activities related to the proposed project would occur in either the circulating water channel or the San Gabriel River, as discussed in Sections IV and VIII, the proposed SCGS would not utilize the existing once-through cooling water system and that portion of the once-through cooling water system associated with existing Units 5 and 6 would be removed from service, reducing intake volumes at HnGS and discharge volumes at the river channel. This reduced flow of ocean water in the HnGS cooling water system could result in potentially significant adverse impacts to common and sensitive marine biota, and the issue will be analyzed further in the EIR.

b) Does the project have environmental effects that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Potentially Significant Impact. The proposed project may have impacts that have been identified in the Initial Study as individually limited, but may be cumulatively considerable, depending on other current or probable future projects in the vicinity. The EIR will evaluate potential project-related cumulative impacts.

As discussed Section II, the proposed project could contribute to cumulative air quality impacts within a region that is non-attainment for O_3, PM_{10}, and $PM_{2.5}$. The production of GHG related to project construction and operations could result in cumulative impacts that contribute to global warming. Cumulative noise and traffic impacts could also occur during project construction. These impacts are potentially significant and will be discussed further in the EIR.

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

Potentially Significant Impact. As discussed in Sections III, XI, and XV, environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly, may occur from implementation of the proposed project. Further evaluation of potentially significant impacts will be conducted in the EIR relative to air quality (related to project operation and project construction); noise (related to project operation and project construction); and transportation/traffic (related to project construction).

SECTION 4
LIST OF PREPARERS, ACRONYMS, AND REFERENCES

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Jeff Fenner, Senior Planner (Fenner Associates)
Sheryl Del Rosario, Environmental Analyst

ACRONYMS

AQMP	Air Quality Management Plan
BMPs	best management practices
CAA	Clean Air Act
Caltrans	California Department of Transportation
CCGS	Combined Cycle Generating System
CEQA	California Environmental Quality Act
CO	carbon monoxide
CT	Combustion Turbine
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
GHG	greenhouse gases
HnGS	Haynes Generating Station
HRA	Health Risk Assessment
HRSG	Heat Recovery Steam Generator
JFTB	Joint Forces Training Base (Los Alamitos)
LADWP	Los Angeles Department of Water and Power
LGB	Long Beach Airport
MW	megawatt
NOP	Notice of Preparation
NOx	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
O_3	ozone
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCGS	Simple Cycle Generating System
SCR	Selective Catalytic Reduction
SEADIP	Southeast Area Development and Improvement Plan
VOCs	volatile organic compounds

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City of Seal Beach

CITY HALL 211 EIGHTH STREET
SEAL BEACH, CALIFORNIA 90740
(562) 431-2527 • www.ci.seal-beach.ca.us

May 7, 2009

Department of Water and Power
City of Los Angeles
Attn: Tom Dailor
111 North Hope Street, Room 1044
Los Angeles, CA 90012

SUBJECT: **CITY OF SEAL BEACH COMMENTS RE: "*NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE HAYNES GENERATING STATION UNITS 5 & 6 REPOWERING PROJECT*"**

Dear Mr. Dailor:

The City of Seal Beach has reviewed the above referenced Notice of Preparation (NOP) prepared by the Department of Water and Power (DWP) and has several comments relative to the document. As the City has previously commented regarding previous repowering projects at the Haynes Generating Station, proposed projects at the Haynes Generating Station are close enough to the City of Seal Beach as to cause concern regarding environmental impacts upon our community, in particular the Leisure World retirement community located immediately east of the subject property, on the easterly side of the San Gabriel River.

The City has previously commented on previous DWP projects involving the replacement of Generator Units 3, 4, 5 and 6 as part of modifications to the subject property. The following comments closely parallel the earlier comments from the City of Seal Beach on the replacement of the Generator Units 3 & 4 project.

It is of extreme concern that the impacts of the proposed project, along with the cumulative impacts of any other Alamitos or Haynes Generating Station projects are fully discussed, evaluated, and mitigated in the areas of concern discussed below, particularly in regards to the community of Leisure World.

The Leisure World retirement community is immediately east of the Haynes facility, and comprises approximately 8,300 residents, with approximately 90% being over the age of 65. It is a concern to the City as to how the levels of various air emissions could impact this population group, particularly those individuals with respiratory or other related health concerns. It has consistently been the position of the City of Seal Beach that a substantial amount of discussion is necessary to allow full and complete evaluation of potential impacts upon the residents of Seal Beach, which could have substantial adverse impacts if not adequately described, evaluated, and mitigated.

<u>Air Quality:</u>

It is indicated on page 3-5 that a health risk assessment will be performed to determine the human health impacts of the proposed project. This analysis needs to include a "*cumulative*" analysis section performed for the combined air emissions, including emissions from all emission sources units at both the Haynes and Alamitos generating facilities. The indicated "health risk assessment document, along with a "risk management plan" should be provided as technical appendices to the Draft EIR document, permitting the interested public to review and comment as to the adequacy of the health risk and risk management documents. The specific health risk assessment issues relating to an elderly, retirement community population of 8,300 persons, should be particularly discussed in this portion of the Draft EIR.

<u>Geology:</u>

The discussion on page 3-10 of the NOP indicates the existence of a document titled "*Los Angeles Department of Water and Power, Risk Management Plan, Ammonia Storage and Supply System, Haynes Generating Station*", dated June 1999. Does this document include risk management programs for the proposed project facilities? If not, the document should be updated and the information within the updated document should be evaluated within the context of the subject DEIR. In addition, the City of Seal Beach would request a copy of the referenced 1999 report and any updates to that document that may be prepared in the future. It is important to our emergency response providers to be aware of the potential risks and the management actions and programs in place at the Haynes facility to respond to potential risk and upset situations.

<u>Noise:</u>

The NOP at pages 3-18 and 3-19 indicates that noise and groundborne vibration issues will be discussed within the Draft EIR. The City of Seal Beach is concerned that the public have an opportunity to review and comment as to the potential noise and vibration impacts and the ability of any proposed mitigation measures to reduce any additional noise and vibration generating sources to a less than significant level. The City of Seal Beach concurs that the Draft EIR should include a noise and groundborne vibration impact section, and in particular discuss the additional operational noise generated by the new facilities, the ability of the "proposed noise reduction measures" to reduce that noise to a level of less than significant, and discussion as what noise level is deemed acceptable.

The project description indicates that:

- ☐ Construction activities are anticipated to last approximately 26 months and take place six days per week, Monday through Saturday.
- ☐ To insure the construction activities stay on schedule, Sunday shifts may be required at times, and two shifts per day are possible at times during the construction period to ensure that construction activities stay on schedule.
- ☐ Approximately 300 workers would be on the site on the same day, although not at the same time, in either one or two shifts.
- ☐ Pile driving activities are anticipated at different phases throughout the construction process.

This type of construction schedule and the resultant noise, groundborne vibration and night-lighting impacts needs to be thoroughly analyzed and mitigated within the Draft EIR. The City wishes to express extreme concern regarding all anticipated construction activities that would occur before 7:00 AM or after 8:00 PM, and anytime on Sundays. Analysis of impacts to the adjoining residential communities of Leisure World and Island Village of extended construction hours and Sunday construction activities need to be specifically presented within the Draft EIR.

The City clearly recognizes the actions taken by DWP to alleviate construction noise impacts within Leisure World as part of the replacement of Generator Units 3 and 4 and anticipates the implementation of the same mitigation measures, if determined appropriate based on the environmental analysis, as part of this project.

The Initial Study indicates there would be "**Less Than Significant Impact**" or "**No Impact**" to "*Aesthetics*" and "*Public Services*". The City is concerned that the public will have no opportunity to review and comment as to potential impacts upon certain aesthetic and public service-related concerns that may be created by the proposed project. The City of Seal Beach concerns regarding these environmental impact issues are set forth below:

Aesthetics:

The Draft EIR should discuss the potential light and glare related issues regarding additional light sources, both temporary and permanent, upon landing activities related to Long Beach Airport. It appears that the subject facility is located in close proximity to the general landing corridor for flights into Long Beach Airport. This issue needs to be evaluated and mitigated, if necessary, within the Draft EIR document. In addition, the impacts of lighting, both during construction and long-term operations, need to be evaluated for impacts upon the Leisure World residential community. The impacts of spill-over lighting and glare impacts are of particular concern.

Public Services:

The Draft EIR should discuss and evaluate the ability of emergency service providers to adequately respond to an emergency situation at the revised facility. The City of Seal Beach requests the Draft EIR to provide discussion and specific information as to the nearest responding emergency service unit locations (map exhibit), and estimated response times, and potential impact upon the capabilities of emergency medical response to meet the demands placed upon the emergency medical response system by a large amount of emergency calls from impacted persons. It should be indicated that Orange County Fire Authority units, located in Seal Beach, and the Seal Beach Police Department may also be impacted by additional emergency response training, assuming that mutual aid agreements are required to be effectuated. Costs of additional emergency response training should be the responsibility of the project proponent.

The analysis should also include a cumulative impact discussion of the potential impacts to emergency responders from both the AES Alamitos and Haynes facilities.

Cumulative Impacts:

The cumulative environmental impacts of this project, along with other projects that may be identified as part of the Notice of Preparation process, need to thoroughly identified, evaluated, and mitigated in the Draft EIR on the subject project.

Upon the preparation of the Draft EIR for this project, please send 4 hard copies and a digital copy, if available, to Mr. Lee Whittenberg, Director of Development Services, City Hall, 211 Eighth Street, Seal Beach, 90740. Thank you for your consideration of the comments of the City of Seal Beach. If you have questions concerning this matter, please do not hesitate to contact Mr. Whittenberg at telephone (562) 431-2527, extension 1313, or by e-mail at lwhittenberg@ci.seal-beach.ca.us.

Sincerely,

Lee Whittenberg
Director of Development Services

Distribution:

Seal Beach City Council
City Manager

Golden Rain Foundation

Seal Beach Planning Commission
Director of Development Service

DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS – M.S.#40
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P. O. BOX 942873
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PHONE (916) 654-4959
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Flex your power!
Be energy efficient!

May 5, 2009

Mr. Tom Dailor
Los Angeles City
Department of Water and Power
111 N. Hope Street, Room 1044
Los Angeles, CA 90012-2694

Dear Mr. Dailor:

City of Los Angeles' Notice of Preparation of a Draft Environmental Impact Report for the Haynes Generating Station Units 5 & 6 Repowering Project; SCH# 2005061111

The California Department of Transportation (Caltrans), Division of Aeronautics (Division), reviewed the above-referenced document with respect to airport-related noise and safety impacts and regional aviation land use planning issues pursuant to the California Environmental Quality Act (CEQA). The Division has technical expertise in the areas of airport operations safety, noise and airport land use compatibility. We are a funding agency for airport projects and we have permit authority for public-use and special-use airports and heliports. We offer the following comments for your consideration.

The proposal is for the construction of a 600-megawatt electrical simple cycle generating system at the existing Haynes Generating Station in Long Beach. The project site is located approximately 12,000 feet southwest of Los Alamitos AAF, directly beneath the extended centerline for Runway 4R-22L.

State Public Utilities Code Section 21659 prohibits structural hazards near airports. Depending on structural heights and in accordance with Title 14 of the Code of Federal Regulations, Part 77 "Objects Affecting Navigable Airspace" a Notice of Proposed Construction or Alteration (Form 7460-1) may be required by the Federal Aviation Administration (FAA) for any construction:

- within 20,000 ft of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 ft, or;
- within 10,000 ft of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 ft.

Form 7460-1 is available on-line at https://oeaaa.faa.gov/oeaaa/external/portal.jsp and, if required, should be submitted electronically to the FAA.

The proposal must not result in hazards to flight associated with distracting lights, glare, and sources of smoke; electronic hazards that may interfere with aircraft instruments or radio communication; or from plumes creating turbulence resulting in aircraft instability.

These comments reflect the areas of concern to the Division of Aeronautics with respect to airport-related noise, safety, and regional land use planning issues. We advise you to contact our District 7 office concerning surface transportation issues.

Thank you for the opportunity to review and comment on this proposal. If you have any questions, please call me at (916) 654-5314.

Sincerely,

Sandy Hesnard
SANDY HESNARD
Aviation Environmental Specialist

c: State Clearinghouse, Los Alamitos AAF

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, REGIONAL PLANNING
IGR/CEQA BRANCH
100 SO. MAIN ST.
LOS ANGELES, CA 90012
PHONE (213) 897-6536
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Flex your power!
Be energy efficient!

Mr. Tom Dailor
DWP
City of LosAngeles
111 N. Hope St., Room 1044
LosAngeles, CA. 90012

RE: IGR/CEQA # 090426NY
NOP/Haynes Generating Station
Units 5 and 6 Repowering Project
LA / 22/1.14

April 21, 2009

Dear Mr. Dailor:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the proposed Haynes Generating Station Units 5 and 6 repowering Project.

We ask that any substantial likelihood of platooning (caravans of trucks) be reduced with appropriate procedures for material haul during demolition and building.
Platooning could affect service of intersections such as on 7-th Street (SR-22) [*or other locations, like street intersections at or near freeway interchange ramps*] .
Spacing between departure times for trucks traveling to and from site might be required, or hauling within peak commute times might be limited. Material might be hauled out as it accrues, although temporarily some might be stored on-site in case of conditions like fill shrinkage.

We would like to remind you that any transportation of heavy construction equipment and/or materials which requires the use of oversized-transport vehicles on State highways will require a Caltrans transportation permit. We recommend that large size truck trips be limited to off-peak commute periods.

If you have any questions regarding this response, please call the Project Engineer/Coordinator Mr. Yerjanian at (213) 897-6536 and refer to IGR/CEQA # 090426NY.

Sincerely,

Nerses A. Yerjanian

For: Elmer Alvarez
IGR/CEQA Branch Manager
Transportation Planning Office
Caltrans, District 7

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

May 14, 2009

Mr. Tom Dailor, Environmental Supervisor
CITY OF LOS ANGELES DEPARTMENT OF WATER & POWER
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Re: SCH#2005061111; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for **the Haynes Generating Station Units 5 & 6 Re-Powering (600-megawatt [MW] electrical generating system) Project**; located south but near the City of Long Beach south of S.R. 22 and one-mile east of S.R. 1; Los Angeles County, California

Dear Mr. Dailor:

The Native American Heritage Commission (NAHC) is the state 'trustee agency' pursuant to Public Resources Code §21070 designated to protect California's Native American Cultural Resources. The California Environmental Quality Act (CEQA) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the California Code of Regulations §15064.5(b)(c)(f) CEQA guidelines). Section 15382 of the 2007 CEQA Guidelines defines a significant impact on the environment as "a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ... objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE)', and if so, to mitigate that effect. To adequately assess the project-related impacts on historical resources, the Commission recommends the following action:

√ Contact the appropriate California Historic Resources Information Center (CHRIS) for possible 'recorded sites' in locations where the development will or might occur.. Contact information for the Information Center nearest you is available from the State Office of Historic Preservation (916/653-7278)/ http://www.ohp.parks.ca.gov. The record search will determine:

- If a part or the entire APE has been previously surveyed for cultural resources.
- If any known cultural resources have already been recorded in or adjacent to the APE.
- If the probability is low, moderate, or high that cultural resources are located in the APE.
- If a survey is required to determine whether previously unrecorded cultural resources are present.

√ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
- The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

√ The Native American Heritage Commission (NAHC) performed:

  * A Sacred Lands File (SLF) search of the project 'area of potential effect (APE)': The results: No known Native American Cultural Resources were identified within one-half mile of the 'area of potential effect' (APE).: However, there are Native American cultural resources in close proximity to the APE. The NAHC urges caution with any ground-breaking activity. Also, the NAHC SLF is not exhaustive and local tribal contacts should be consulted from the attached list and the there are Native American cultural resources in close proximity..

- The NAHC advises the use of Native American Monitors, also, when professional archaeologists or the equivalent are employed by project proponents, in order to ensure proper identification and care given cultural resources that may be discovered. The NAHC, FURTHER, recommends that contact be made with Native American Contacts on the attached list to get their input on potential IMPACT of the project (APE) on cultural resources.. In some cases, the existence of a Native American cultural resources may be known only to a local tribe(s) or Native American individuals or elders.
- √ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
- Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f).

In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.

- Again, a culturally-affiliated Native American tribe may be the only source of information about a Sacred Site/Native American cultural resource.
- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.

√ Lead agencies should include provisions for discovery of Native American human remains or unmarked cemeteries in their mitigation plans.

* CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens.

√ Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the California Code of Regulations (CEQA Guidelines) mandate procedures to be followed, including that construction or excavation be stopped in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery until the county coroner or medical examiner can determine whether the remains are those of a Native American. . Note that §7052 of the Health & Safety Code states that disturbance of Native American cemeteries is a felony.

<u>√ Lead agencies should consider avoidance, as defined in §15370 of the California Code of Regulations (CEQA Guidelines), when significant cultural resources are discovered during the course of project planning and implementation</u>

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,

Dave Singleton
Program Analyst

Attachment: List of Native American Contacts

Cc: State Clearinghouse

Native American Contacts
Los Angeles County
May 14, 2009

LA City/County Native American Indian Comm
Ron Andrade, Director
3175 West 6th Street, Rm. 403
Los Angeles , CA 90020
(213) 351-5324
(213) 386-3995 FAX

Gabrielino Tongva Nation
Sam Dunlap, Tribal Secretary
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net

(909) 262-9351 - cell

Ti'At Society
Cindi Alvitre
6515 E. Seaside Walk, #C Gabrielino
Long Beach , CA 90803
calvitre@yahoo.com
(714) 504-2468 Cell

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
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gtongva@verizon.net
562-761-6417 - voice
562-925-7989 - fax

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Admin.
, Gabrielino Tongva
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310-570-6567

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Gabrieleno/Tongva San Gabriel Band of Mission
Anthony Morales, Chairperson
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(626) 286-1632
(626) 286-1758 - Home
(626) 286-1262 Fax

Gabrielino-Tongva Tribe
Felicia Sheerman, Chairperson
501 Santa Monica Blvd, # 500 Gabrielino
Santa Monica , CA 90401
(310) 587-2203
(310) 428-7720 - cell
(310) 587-2281
fsheerman1@GabrielinoTribe.

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2009061111; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the Haynes Generating Station Units 5 & 6 Re-Powering System Project; located south of the Gargen Grove Freeway (S.R. 22) and one mile east of S.R. 1 south of Long Beach; Los Angeles County, California.

SCH#2005061111

Native American Contacts
Los Angeles County
May 14, 2009

Gabrielino-Tongva Tribe
Bernie Acuna
501 Santa Monica Blvd, # 500 Gabrielino
Santa Monica , CA 90401
(310) 587-2203
(310) 428-7720 - cell
(310) 587-2281

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2009061111; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the Haynes Generating Station Units 5 & 6 Re-Powering System Project; located south of the Gargen Grove Freeway (S.R. 22) and one mile east of S.R. 1 south of Long Beach; Los Angeles County, California.

SCH#2005061111

ORANGE COUNTY ALUC

AIRPORT LAND USE COMMISSION

FOR ORANGE COUNTY

3160 Airway Avenue • Costa Mesa, California 92626 • 949.252.5170 fax: 949.252.6012

May 12, 2009

Tom Dailor
Department of Water and Power
City of Los Angeles
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Subject: Haynes Generating Station Units 5 and 6 Repowering Project

Dear Mr. Dailor:

Thank you for the opportunity to review the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the Haynes Generating Station Units 5 and 6 Repowering Project in the context of the Commission's *Airport Environs Land Use Plan (AELUP) for Joint Forces Training Base (JFTB) Los Alamitos.* The Airport Land Use Commission (ALUC) for Orange County is reviewing the project due to its location within the Notification Area for JFTB Los Alamitos.

The Los Angeles Department of Water and Power (LADWP) proposes to construct at 600-megawatt (MW) electrical simple cycle generating system (SCGS) at the existing Haynes Generating Station (HnGS) in Long Beach, California. In reviewing the NOP for this proposed project we recommend that the DEIR include a description of the proposed structure elevations above mean sea level (AMSL) using National Geodetic Vertical Datum of 1929 (NGVD29) or North American Vertical Datum 1988 (NAVD88). This information will assist in determining the project's impact on the Federal Aviation Regulation (FAR) Part 77 Notification Area for JFTB Los Alamitos. The environmental document should address the FAA height restrictions and include the proposed structure heights AMSL. Should the project penetrate the notification surface for JFTB Los Alamitos, the project applicant shall file a Form 7460-1 Notice of Proposed Construction or Alteration with the FAA. We request that you also provide our ALUC with a copy of the FAA aeronautical study if one is completed.

Thank you for the opportunity to comment on this NOP. Please contact Lea Umnas at (949) 252-5123 or via email at lumnas@ocair.com if you need any additional details or information regarding the future referral of your project.

Sincerely,

Kari A. Rigoni

Kari A. Rigoni
Executive Officer

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

April 21, 2009

Mr. Tom Dailor
Department of Water and Power
City of Los Angeles
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Dear Mr. Dailor:

Notice of Preparation of a Draft Environmental Impact Report (Draft EIR) for the Haynes Generating Station Units 5 and 6 Repowering Project

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the draft environmental impact report (EIR). Please send the SCAQMD a copy of the Draft EIR upon its completion. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality analysis and electronic versions of all air quality modeling and health risk assessment files. Electronic files include spreadsheets, database files, input files, output files, etc., and does not mean Adobe PDF files. Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. Alternatively, the lead agency may wish to consider using the California Air Resources Board (CARB) approved URBEMIS 2007 Model. This model is available on the SCAQMD Website at: www.urbemis.com.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

The SCAQMD has developed a methodology for calculating PM2.5 emissions from construction and operational activities and processes. In connection with developing PM2.5 calculation methodologies, the SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD requests that the lead agency quantify PM2.5 emissions and compare the results to the recommended PM2.5 significance thresholds. Guidance for calculating PM2.5 emissions and PM2.5 significance thresholds can be found at the following internet address: http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html.

In addition to analyzing regional air quality impacts the SCAQMD recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the lead agency perform a localized significance analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

It is recommended that lead agencies for projects generating or attracting vehicular trips, especially heavy-duty diesel-fueled vehicles, perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis") can be found on the SCAQMD's CEQA web pages at the following internet address: http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures
In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the SCAQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additional mitigation measures can be found on the SCAQMD's CEQA web pages at the following internet address: www.aqmd.gov/ceqa/handbook/mitigation/MM_intro.html Additionally, SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/prdas/aqguide/aqguide.html. In addition, guidance on sitting incompatible land uses can be found in the California Air Resources Board's Air Quality and Land Use Handbook: A Community Perspective, which can be found at the following internet address: http://www.arb.ca.gov/ch/handbook.pdf. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources
SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's World Wide Web Homepage (http://www.aqmd.gov).

The SCAQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Daniel Garcia, Air Quality Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Steve Smith

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Planning, Rule Development and Area Sources

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