APPENDIX B

Air Quality Study

Submitted to:
LADWP
Los Angeles, CA

Submitted by:
AECOM
Orange, CA
60249076
May 2012

Air Quality and Climate Change Technical Report for the Scattergood Generating Station Unit 3 Repowering Project

AECOM

LOS ANGELES DEPARTMENT OF WATER & POWER

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List of Acronyms

°F	degree Fahrenheit
AB	Assembly Bill
AER	annual emissions report
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACT	best available control technology
BMP	best management practices
BPIP-Prime	Building Profile Input Program
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CCAA	California Clean Air Act
CCGS	combined cycle generating system
CEC	California Energy Commission
CEMS	continuous emissions monitoring system
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CTG	combustion turbine generator
DPM	diesel particulate matter
EIR	Environmental Impact Report
g/l	grams per liter
GE	General Electric
GHG	greenhouse gas
GWP	Global Warming Potential
HAP	hazardous air pollutants
HARP	Hot Spots Analysis Reporting Program

HI	hazard index
HRA	health risk assessment
HRSG	heat recovery steam generator
IPCC	Intergovernmental Panel on Climate Change
kV	kilovolts
kW	kilowatt
LADWP	Los Angeles Department of Water and Power
LAX	Los Angeles International Airport
lb/MMscf	pounds per million standard cubic feet
LST	Localized Significance Threshold
MATES	Multiple Air Toxics Exposure Study
MEIR	maximum exposed individual resident
MEIW	maximum exposed individual worker
MMscf/day	million standard cubic feet per day
MW	Megawatt
MWh	megawatt hours
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAD	North America Datum
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	Nitrogen dioxide
NOx	Nitrogen oxide
NSPS	New Source Performance Review
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
Pb	Lead
PM_{10}	Particulate matter, micron size 10
$PM_{2.5}$	Particulate matter, micron size 2.5
ppm	parts per million
ppmv	parts per million by volume
ppmvd	parts per million, volumetric dry
RECLAIM	Regional Clean Air Incentives Market
REL	Reference Exposure Level

RPS	Renewable Portfolio Standards
SB	Senate Bill
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
scf	Standard cubic feet
SCGS	simple cycle generating system
SCR	Selective Catalytic Reduction
SF_6	Sulfur hexafluoride
SGS	Scattergood Generating Station
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SoCal Gas	Southern California Gas
SOx	sulfur oxide
SRA	source receptor area
STG	steam turbine generator
TAC	Toxic Air Contaminant
T-BACT	Toxic Best Available Control Technology
TPY	Tons per Year
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VOC	volatile organic compounds

1.0 Introduction

This technical report focuses on the potential air quality, public health, and climate change impacts of the construction and operation of the Scattergood Generating Station (SGS) Unit 3 Repower Project (herein referred to as the "proposed project" or "project"); the project proponent is the Los Angeles Department of Water and Power (LADWP). The proposed project would remove the existing generation Unit 3 from operation and replace its generating capacity with modern high-efficiency generation units constructed within the SGS property boundaries.

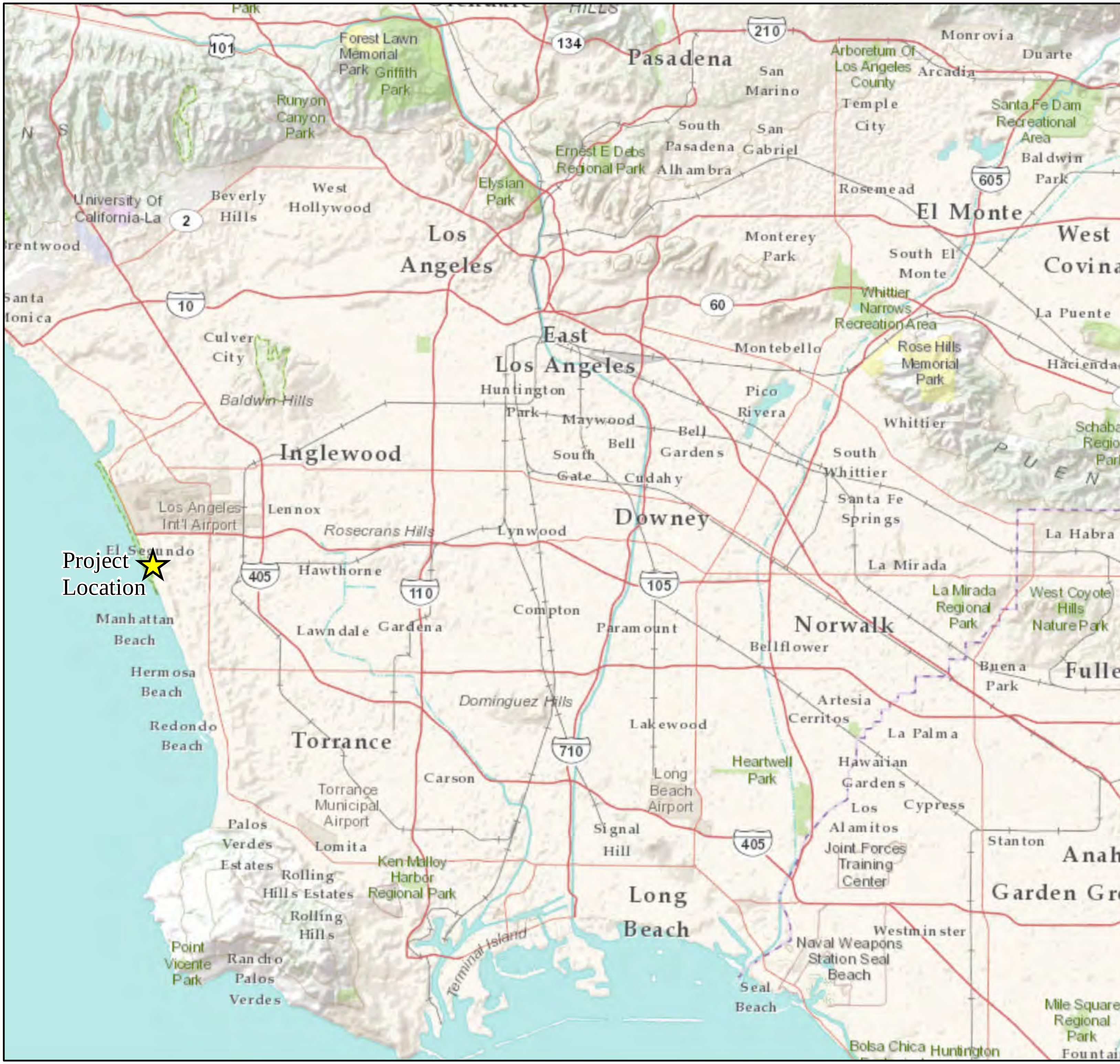
Criteria pollutant emissions, air toxics, and greenhouse gas (GHG) emissions produced from the proposed project would occur both during construction and operation. This study analyzes potential air quality and climate change impacts associated with the short-term construction and long-term operation of the proposed project; as applicable, potential mitigation measures designed to lessen and/or avoid significant adverse project-related air quality impacts are recommended. The appendices to this report include detailed emission calculations and supporting modeling files for the air quality impact analysis and the human health risk assessment (HRA).

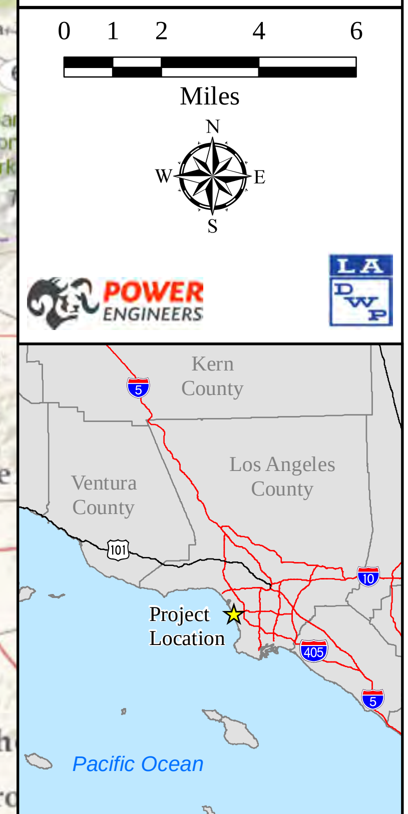
1.1 Project Location

SGS is located at 12700 Vista Del Mar in the city of Los Angeles. SGS is located within the South Coast Air Basin (SCAB), under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). Primary access to the site is provided from Vista Del Mar, a local north-south coastal road that runs along the western boundary of SGS. Secondary access to the site for large deliveries is provided from Grand Avenue, which is an east-west public thoroughfare that divides SGS into northern and southern parcels.

Dockweiler State Beach is located to the west of SGS and Vista Del Mar. SGS is bounded on the north by the Hyperion Treatment Plant, which is the primary wastewater treatment facility for the city of Los Angeles and which is also located entirely within Los Angeles. Bordering SGS on the northeast and east are residential neighborhoods located within the city of El Segundo. SGS is bordered on the south by a large Chevron Corporation oil refinery, which is located within the City of El Segundo.

In addition to the areas that are immediately adjacent to the SGS property, uses within 0.5 mile of the property include additional residential neighborhoods; commercial establishments; an elementary, middle, and high school; two public parks; and the El Segundo Civic Center. All these uses are located within the city of El Segundo. The NRG El Segundo Generating Station is located approximately 0.4 miles south of SGS along the west side Vista Del Mar. Los Angeles International Airport (LAX) is located approximately 0.75 miles north of SGS. Figure 1 illustrates the location of SGS in relation to the region, and Figure 2 shows the surrounding vicinity.





Scattergood Unit 3 Repowering Project

Regional Map

Scattergood Unit 3 Repowering Project

Existing Site Map

1.2 Project Description

LADWP proposes to remove the existing generation Unit 3 from operation and replace its generating capacity with modern high-efficiency generation units constructed within the SGS property boundaries. Existing Unit 3 is a natural gas-fired steam boiler generation unit that was put into operation in 1974. It has a maximum gross generating capacity of 460 megawatts (MW). The generation units that would replace Unit 3 under the proposed project would have a gross generating capacity of up to 590 MW, depending on the type and configuration of the units provided. As part of the proposed project, LADWP would also physically and permanently de-rate (i.e., reduce the generating capacity of) the existing generation Unit 1 at SGS by the necessary amount such that there would be no increase in the total gross generating capacity of SGS. The proposed project would also include associated cooling units, pollution control systems, and ancillary facilities necessary for the operation of the new generation units. Existing Unit 3 would be demolished under the proposed project.

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 SCAB under the provisions of the Regional Clean Air Incentives Market (RECLAIM) program. The proposed project is expected to reduce both fuel consumption and air pollution per MW of electricity produced. In addition, since the new generators would be air-cooled, the existing use of ocean water for generator cooling at SGS would be greatly reduced compared to existing conditions.

The primary objectives of the proposed project include:

- Achieve RECLAIM program objectives by repowering Unit 3 pursuant to the 2003 Settlement Agreement between LADWP and SCAQMD, as amended (September 2011);
- Reduce natural gas consumption relative to the amount of energy produced and, as a result, also reduce the production of GHG emissions;
- Meet the energy demands of the city of Los Angeles;
- Provide for base load generation requirements to help meet the basic demand for energy in the service area;
- Integrate intermittent renewable energy power resources;
- Increase the reliability of LADWP's existing electrical generation system; and,
- Reduce SGS use of ocean water for cooling compared to existing conditions

Because the exact type and configuration of the proposed generation units cannot be established until the actual award of contract for the proposed project, two basic development scenarios are under consideration to meet the proposed project objectives and serve as the basis for the environmental analysis in this study. The proposed units may include a single combined cycle generating system (CCGS) that would consist of a natural gas-fired combustion turbine generator (CTG) paired with a heat recovery steam generator (HRSG) that would provide steam to drive a steam turbine generator (STG), and a simple cycle generating system (SCGS) consisting of two high-efficiency natural gas-fired CTGs; this option is referred to as "Generation Scenario 1" or the General Electric (GE) Option. The proposed generation units may also consist of two separate and operationally distinct CCGSs; this option is referred to as "Generation Scenario 2" or the Siemens Option. A detailed description of both proposed generation scenarios is presented in Section 1.2.1; operational and construction components of each generation scenario are described in Section 1.2.2 and 1.2.3, respectively;.

Impacts resulting from construction and operation have been evaluated for both generation scenarios and are presented in Section 6.0.

1.2.1 Electrical Generation Scenarios

As described above, air quality and GHG impacts have been evaluated for two generation scenarios for completeness under the California Environmental Quality Act (CEQA). The generation scenarios are described below.

Generation Scenario 1: CCGS and SCGS (525 Gross MW)

Power generation components proposed for operation under Generation Scenario 1, or the "GE Option," include a CCGS consisting of one CTG and one STG, an SCGS consisting of two CTGs, and a 2,500-kW emergency diesel-fueled back-up generator. The generator would be equipped with a 2,800-gallon diesel fuel tank. The power generation components are described in detail below.

Under this scenario, generation for base load would be provided by a CCGS (a GE 107FA one-on-one combined cycle block or similar unit), and generation to respond to short-term peaks in demand for power would be provided by a SCGS (two GE LMS100 CTGs or similar units). The CCGS would consist of one CTG and one STG operating in combination to produce up to 318.5 MW of gross power. The CTG component of the CCGS would operate on a mixture of compressed natural gas and air to produce a gross output of about 209.5 MW. Exhaust heat from the CTG would be captured in a HRSG, where it would be used to produce steam to drive the STG component of the CCGS. The STG would have a gross output of about 108.8 MW. Steam exiting the STG would be condensed using a dry cooling system with electric powered fans. The condensate from the cooling system would be pumped back to the HRSG to be converted back into steam in a closed-loop cycle.

To help meet peak load requirements, an SCGS consisting of two individual CTGs operating independently would be provided. The SCGS would offer substantial flexibility to react quickly (in terms of fast starts, rapid ramp rates, and frequent on and off cycling) to changes in the demand for energy, which would increase overall system efficiency and fuel conservation. This type of unit is often referred to as a peaking unit. The CTGs would use a mixture of compressed natural gas and air to produce a gross output of about 103 MW each. The CTGs would incorporate an inter-stage cooler to increase the output and efficiency of the units. Each CTG would require a dry cooling system to dissipate the heat from the inter-stage cooler system. Total electrical generation (gross) for Scenario 1 is summarized in Table 1-1.

Table 1-1: Gross Electrical Output (megawatts): Generation Scenario 1

Equipment	Gas Turbine Generator	Steam Turbine Generator	Total Plant
CCGS (7FA.05)	209.5	108.8	318.5
SCGS (LMS100)	103.0	---	103.0
SCGS (LMS100)	103.0	---	103.0
Total	415.5	108.8	524.5

The total gross generating capacity of the proposed units under this scenario would be approximately 525 MW. This would exceed the 460 MW gross generating capacity of existing Unit 3 by approximately 65 MW. Therefore, under this scenario, the generating capacity of existing Unit 1 would be permanently reduced by a total of 65 MW to maintain a total gross generating capacity of Unit 1 and the new units to no more than 645 MW (Note: Due to an administrative error, the SCAQMD operating permit for SGS indicates that the gross generating capacity of Unit 1 is 179 MW. The actual gross capacity is 185 MW; the net capacity is 179 MW.

Generation Scenario 2: Two CCGSs (590 Gross MW)

Power generation components proposed for operation under Generation Scenario 2, or the “Siemens Option” includes two CCGSs, each consisting of one CTG and one HRSG. Generation Scenario 2 also includes four 2,500 kW diesel-fueled emergency generators, each with a 2,800 gallon diesel fuel tank. The power generation components are described in detail below.

Under this scenario, base load would be provided by a new CCGS similar to that described for Generation Scenario 1, although it would operate at a slightly lower total gross capacity of 314.4 MW (a Siemens Flex-Plant 30 one-on-one combined cycle block or similar unit). The CTG component of the CCGS would provide about 206 MW gross capacity, and the STG component would provide about 108 MW gross capacity. Peak load capability would be provided by an additional CCGS unit (a Siemens Flex-Plant 10 one-on-one combined cycle block or similar unit). The peak-load CCGS would operate in a similar manner as the base-load CCGS, with a natural gas-fired CTG providing a gross output of about 206 MW and an HRSG that would capture exhaust heat to produce steam that would power an STG, which would provide an additional 70 MW of gross capacity, for a total gross capacity of about 276 MW. Unlike the base-load CCGS, the peak-load CCGS would provide for fast-starts, rapid ramp rates, and frequent on and off cycling. Steam from the STG would be cooled using a cooling system similar to that for the base-load CCGS but smaller in scale. The condensate would be pumped back to the HRSG to be converted back into steam in a closed-loop cycle. Total electrical generation (gross) for Scenario 2 is summarized in Table 1-2.

Table 1-2: Gross Electrical Output (megawatts): Generation Scenario 2

Equipment	Gas Turbine Generator	Steam Turbine Generator	Total Plant
Flex-Plant 30	206.5	107.9	314.4
Flex-Plant 10	206.5	69.5	276.0
Total	413.0	177.4	590.4

The total gross generating capacity of the proposed units under this scenario would be approximately 590 MW. This would exceed the gross generating capacity of existing Unit 3 by approximately 130 MW. Therefore, under this scenario, the generating capacity of existing Unit 1 would be permanently reduced by a total of 130 MW to maintain a total gross generating capacity of Unit 1 and the new units to 645 MW.

1.2.2 Project Operation

The proposed CCGS (whether the base-load or peak-load unit) would include one CTG paired with one STG. The excess heat from the CTG would be exhausted through the HRSG to produce steam, which would drive the STG. The SCGS would include two CTG units. The new generation units would be designed to provide a gross load capacity of between 525 and 590 MW. The CTGs would be fired by natural gas to produce thermal energy, and the thermal energy would be converted into mechanical energy required to drive the turbines and generators, which would produce electricity. Air would be supplied to the CTGs through an inlet air filter and evaporative coolers via an air inlet duct. Natural gas would be obtained through the site's existing gas supply lines. This mixture of fuel and air would be ignited and burned, producing high-temperature pressurized gas to drive the turbines and electric generators.

The new CTGs would use a combination of processes to control air pollutant emissions. The combustor in the CCGS CTG would use dry low nitrogen oxide (NOx) burners to reduce emissions of NOx. The combustors in the SCGS CTGs would use water injection to reduce emissions of NOx. The CTG exhaust would be routed to an oxidation catalyst to control carbon monoxide (CO) emissions and then pass through a selective catalytic reduction (SCR) system 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.

Power Transmission

Power generated by the proposed generation units would be stepped up in voltage from 13.8 kilovolts (kV) to either 138 kV or 230 kV using generator step-up transformers. The transformers would be connected to a switch rack, and the power would be delivered to the switchyard and the existing Scattergood-Olympic or Airport transmission lines.

Emergency Diesel Generator

One 2,500 kilowatt (kW) diesel-fueled black start generator would be installed to provide power to the proposed SCGS for emergency starts if Generation Scenario 1 were to be implemented. The diesel generator would be skid-mounted with a 2,800-gallon diesel fuel tank.

Four 2,500 kW diesel-fueled black start generators would be installed to provide power to the proposed CCGSs for emergency starts if Generation Scenario 2 were to be implemented. Each of the four diesel generators would be skid-mounted with a 2,800-gallon diesel fuel tank. All black start generators would be equipped with diesel particulate filters, which provide up to 90 percent reduction in diesel particulate matter.

Auxiliary Steam Boiler

An independent source of steam would be provided for the base-load CCGS to help seal the STG in order to allow shorter start-up times. The steam would be produced by an electrically-heated boiler that can produce 20,000 pounds per hour of steam.

Ammonia Handling and Storage

As with current operations, aqueous ammonia would be used in the SCR systems of the proposed generators at SGS. Ammonia for the new equipment would be obtained from the existing ammonia storage system at SGS. Ammonia would be routed from the storage tanks to the CTGs via new piping. It is anticipated that no new ammonia storage facilities would be required, and no increase in the number or rate of deliveries of ammonia would be required since ammonia used for the new generators would be generally offset by the reduction in ammonia use associated with removal from service of existing Unit 3.

Oil Water Separators

Each Generation Scenario will include two 500 gallon per minute (gpm) oil water separators (OWS) which will collect potentially oily wastewater from equipment area wash downs. Oil will collect in the OWS and will be removed by vacuum truck prior to the oil collection section of the OWS reaching capacity.

Wastewater Treatment and Disposal

Water that is used in the CCGS and SCGS must be 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 treated in an upgraded SGS wastewater treatment system. The upgrade would include replacement of existing wastewater settling basins with aboveground settling tanks. Wastewater would be treated and discharged at a high rate of dilution in the SGS ocean water cooling outfall.

Cooling System Components

The proposed generation units would be cooled utilizing a closed-loop water circulation system to transfer heat from the STGs of the CCGSs or the CTGs of the SCGS to the cooling system. This system would condense steam exiting the STG using fans that would draw air over tubes containing the steam, and the condensate would be pumped back to the HRSG to be converted back into steam in a closed-loop cycle. Each CTG of the SCGS would have an inter-stage cooler in the compression section of the turbine. This inter-stage cooling provides cooling flow to the high-pressure compressor and increases overall efficiency and power output. The warm water in the closed-loop would be sent from the heat exchanger to the cooling system, where the water would be cooled by fans that would draw air over tubes containing the water, and the cooled water would then be pumped back to the heat exchangers.

By employing a closed-loop dry cooling system for the proposed generation units rather than ocean water cooling, the project would substantially reduce the amount of once-through cooling water utilized at SGS. It is anticipated that replacement of Unit 3 with dry-cooled generation units would reduce the maximum once-through ocean water cooling flow by about 55 percent. The proposed repowering project would not require any modifications of the cooling water intake or outfall structures, and the plant's existing once-through cooling water circulation system would continue to serve Units 1 and 2 at the substantially reduced flow.

Wet Surface Air Cooler

The excess heat from the auxiliary closed-loop dry cooling system described above will be managed by installing a wet surface air cooler (WSAC). The WSAC will be comprised of a three cell unit (six fans with six emission points) with a total circulation rate of 10,700 gpm.

Natural Gas System

Natural gas is the primary fuel for the CTGs of the CCGS and SCGS. New natural gas lines would be teed-off of the existing Southern California Gas Company metering station located within the SGS site near the Grand Avenue entrance. Natural gas would be routed to an on-site compressor building where it would be compressed for use in the generator systems. The compressor building will house a minimum of three screw-type compressors connected to a common header to supply each CTG.

Operating Personnel Requirements

Once constructed, the proposed project would not require additional personnel beyond the number currently employed at SGS to support site operations. Currently, the station employs about 120 personnel. The main gate for SGS personnel would remain along Grand Avenue. The new generation units would be capable of operating 24 hours per day, 7 days per week.

Project Termination and Decommissioning

The estimated life of the new generation units 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.

1.2.3 Project Construction

Construction of the proposed project generation units, as described below, would take approximately 3 years to complete. Construction is scheduled to begin in late 2012 and continue to completion at the end of 2015. The demolition of Unit 3, including necessary pre-demolition activities, would require an additional 5.25 years to accomplish. For the purposes of estimating the calendar duration of the project and the monthly levels of activity related to personnel, truck deliveries, equipment operations, and earthwork, it has been assumed that, on average, 20 workdays would be available each month. This would generally account for holidays and rain days that would fall on weekdays, during which no construction activity would occur. Construction activities would normally occur Monday through Friday from about 7:00 a.m. to 3:30 p.m. However, construction activities by reduced work crews may also be conducted until 7:00 p.m., Monday through Friday. To ensure that the proposed project stays on schedule, two shifts per day may be necessary at times during construction, and occasional Saturday shifts may also be required. Some construction activities must be conducted continuously until complete (e.g., welding activities that cannot be interrupted may need to be carried on throughout the night).

Other than the delivery of materials and supplies to the site and the hauling of debris from the site, most construction activities, including supply laydown, soil excavation and stockpiling, and equipment storage, would be confined within the SGS boundaries. The general truck route for construction would be from the westbound Interstate 105, including transitions to the Interstate-105 from the north and southbound Interstate 405, west on Imperial Highway, and south along Vista Del Mar to either the Vista Del Mar gate or east along Grand Avenue to the Grand Avenue gate.

It is anticipated that approximately 440 parking spaces to support construction activity would be available on site. Assuming an average vehicle occupancy of 1.2 (i.e., that one out of every six workers would either carpool or use an alternate means of transportation to reach the project site), these spaces would accommodate all worker vehicles, even during the peak of construction activity.

The construction for the proposed project would be continuous; however for descriptive purposes, tasks can be grouped together in phases based on their general purpose, schedule, and similarities in the type of work conducted. While the tasks and phases would generally be sequential in that some must precede others at a given location, a certain amount of overlap between tasks would occur as construction proceeds in different locations within the site.

Construction of the proposed project would consist of three primary phases of work: demolition and site preparation, generation unit construction and commissioning, and Unit 3 decommissioning and demolition. Each phase of work would require truck deliveries and/or haul trips and the operation of heavy equipment, including cranes, excavators, loaders, graders, dozers, backhoes, and various types of on-site trucks. The following provides a general description of the three primary construction phases and the tasks to be completed within each phase. These are provided as a means of describing the overall sequence of construction and establishing the general level of activity related to functions such as equipment operations, truck deliveries, worker commute trips, and earthwork. Spreadsheets that reflect the type, duration, and level of activities for the various construction tasks in terms of personnel, off-site truck trips, and on-site equipment operations are included in Appendix A of this Air Quality and Climate Change Technical Report.

Phase 1: Demolition and Site Preparation

The demolition and site preparation phase would consist of those construction tasks that are required to facilitate the actual installation of the generation units and ancillary facilities within SGS. The tasks in this phase include mobilization; modifications to public streets and the SGS gates; demolition and relocation of existing SGS systems and facilities; the construction of new on-site roads, laydown areas, and construction worker parking areas; earthwork and retaining wall construction; and the installation of new wastewater settling tanks and treatment systems. This work would establish the conditions that would allow for the continuation of existing operations at SGS during construction, prepare sites for the proposed project facilities, and provide the areas necessary to support project construction.

Limited areas are currently available within SGS to accommodate construction support functions, such as supply laydown, worker vehicle parking, and supervision offices. In order to partially accommodate these functions, the large existing fuel tanks located in the southern parcel of SGS (south of Grand Avenue) would be entirely demolished along with any infrastructure associated with the tanks. This would provide approximately 5 acres for parking and laydown area. Prior to demolition, barriers to reduce dust would be constructed along the eastern perimeter of the fuel tanks site to buffer residential areas during project construction.

Because the construction of the lower terrace CCGS would prohibit the use of the existing main gate located along Vista Del Mar in the northwest corner of SGS, the gate function would be relocated to Grand Avenue, at the site of the existing SGS secondary gate. The existing gate and/or an adjacent gate on Vista Del Mar would be used for deliveries/hauling related to the construction of the CCGS on the lower terrace. The Grand Avenue gate would be used by SGS personnel, for most normal deliveries, for deliveries related to portions of the work on the lower terrace CCGS, and for deliveries/hauling related to the mezzanine-level construction. In order to accommodate these uses, the gate, including an on-site bridge, would need to be modified. In addition, Grand Avenue, which currently consists of two westbound lanes and one eastbound lane in the area of the gate, would require widening and modifications to provide turning lanes to accommodate the level and type of traffic anticipated during construction of the proposed project. The new lane configuration would include an eastbound left-turn lane and a westbound right-turn lane into the Grand Avenue gate and an eastbound right-turn lane and westbound left-turn lane into a gate opposite the Grand Avenue entrance that would provide access to the southern parcel of SGS, where laydown and parking for project construction support would be provided.

The locations of the proposed generation units are currently occupied by several lower-intensity functions, including storage, parking, and a wastewater settlement basin. These facilities would be demolished and, if necessary, relocated during Phase 1 prior to the construction of the actual generation units. Portions of the lower terrace CCGS site would be used in a staged manner for laydown as construction proceeds on the site. The mezzanine level would also be used as laydown to support the lower terrace CCGS construction until construction begins on the peak-load units located on the mezzanine. In addition, the paved area located west of the three existing water storage tanks on the uppermost terrace of the northern parcel of SGS would be used for construction worker vehicle parking and for storing lightweight materials that would not require the operation of heavy equipment to transfer. The paved area to the east of the water storage tanks would be used for worker parking and temporary offices.

In order to provide sufficient space for the base-load CCGS on the lower terrace, the embankment that separates the lower terrace from the mezzanine level would need to be cut back, and a retaining wall would be required to support the portion of the embankment that would remain. The removal of the existing road connecting the lower terrace with the mezzanine level along the northwest perimeter of SGS would also be required, and several gas, water, and steam lines would need to be relocated. In addition, the mezzanine area would be filled and graded as required to provide a level pad for the construction of the peak-load generation units. Because an existing wastewater settlement basin would be removed in the area of the proposed base-load CCGS on the lower terrace, its function must be relocated elsewhere within SGS. The only available area within the site located at the appropriate elevation and not occupied by existing generation facilities would be in the southwest corner of the site, where an existing wastewater settlement basin and settlement tank are currently located. As part of the proposed project, the existing wastewater settlement basin would be replaced with two new tanks that would be sized to accommodate the wastewater storage function required to support both current operations during project construction and future operations after completion of the repowering project.

Many of the construction tasks during this phase would overlap in time because they would take place in different locations. The overall duration of Phase 1 is estimated to be approximately 12 months. The final 3 months of Phase 1 would occur concurrently with the first 3 months of Phase 2 (generation unit construction and commissioning). The Phase 1 work would be the same regardless of which generation scenario (i.e., a CCGS and SCGS, or two CCGSs) was implemented.

During Phase 1, the number of on-site workers per day based on a monthly average would range from a low of 38 to a peak of 76, including those workers associated with the initial Phase 2 work. The number of truck delivery or haul roundtrips per day based on a monthly average would range from a low of three to a peak of 32, including those truck trips associated the initial Phase 2 work. The number of full-time operating on-site construction equipment per day based on a monthly average would range from a low of 2 during mobilization to a peak of 40, including the equipment associated with the initial Phase 2 work.

Phase 2: Generation Unit Construction and Commissioning

Construction of the proposed generation units would consist of several major tasks, including finish grading and installation of the equipment foundations; installation of the primary generation unit systems, including underground utilities, the CTGs, STG(s), HRSG(s), cooling systems, control rooms, and auxiliary equipment; installation of the aboveground piping systems; installation of the generation unit electrical equipment; and testing and commissioning of the units. The expansion of the existing switchyard would also occur during Phase 2. While these major tasks would generally occur sequentially in that some must precede others at a given location, significant overlap between the tasks would occur as construction proceeds in different locations within the project site. The overall phase would require approximately 30 months to complete. (As discussed above, the initial 3 months of Phase 2 would occur concurrently with the final 3 months of Phase 1, and they are not, therefore, included in the total determination of numbers of personnel, equipment, and truck trips for Phase 2).

Based on Generation Scenario 2 (two CCGSs), which would require the greatest amount of construction activity, during Phase 2 the number of on-site workers per day based on a monthly average would range from a low of 49 to a peak of 524, when the maximum overlap between the various construction tasks would occur. The number of truck delivery or haul roundtrips per day based on a monthly average would range from a low of one to a peak of 8. This would include an estimated total of 16 oversize loads throughout the entire phase. The number of full-time operating equipment per day based on a monthly average would range from a low of 1 to a peak of 101.

The foundation work would occur preceding the construction of each major component of the generation system. Foundations would generally be supported by continuous spread footings, but for heavier facilities, deeper foundations would include grade beams supported by concrete caissons, which would be poured in place. Depending on which generation scenario was implemented, all the foundation work for the repowering project would continue for approximately 23 consecutive months, including the initial 3 months of overlap with Phase 1. As individual foundations are completed, the primary generation units and associated elements would be installed in a staged manner at each location. Overall, this work would lag behind the foundation construction by approximately 3 months, and continue for about 3 months after the final foundation construction was completed. The aboveground piping and electrical equipment installation would begin approximately 12 months after the first foundation work was initiated and would continue for about 18 months.

Commissioning of the systems would also occur in a staged manner, following switchyard expansion and before pre-demolition activities associated with Unit 3. The commissioning for the CCGS would include steam blows to thoroughly clean lines, synchronization of the CTGs and STGs, testing and adjusting the thermal and chemical characteristics of the HRSG, and comprehensive trial runs. The commissioning of the SCGS would include testing and synchronizing the CTG electrical and mechanical systems and completing trial runs.

Phase 3: Decommissioning and Demolition of Unit 3.

Within 6 months of completion of the commissioning of the proposed project generators, LADWP would remove existing Unit 3 from service and surrender the operating permits pursuant to SCAQMD Rule 2012. The 6-month period of time would allow for a verification of the reliability of and any necessary adjustments to the new generation units. Prior to initiating the actual demolition of Unit 3, several tasks would need to be completed. Existing Units 1, 2, and 3 share many common electrical, plumbing, and mechanical systems that must be appropriately identified, isolated, reconfigured as necessary, and severed so as to not compromise the continued safe and reliable operation of Units 1 and 2. Based on its age and its function, Unit 3 contains several types of hazardous materials, including asbestos, lead paint, petroleum products, and potentially toxic fluids. These materials must be thoroughly identified and removed prior to the demolition of the primary structure of Unit 3. In addition, some of the equipment in Unit 3 may have salvage or reutilization value, and this equipment would be identified and removed prior to demolition. These tasks generally could not begin prior to the decommissioning of Unit 3 (6 months after final commissioning of the proposed project generation units), and they would take approximately 2 to 2.5 years to complete, including site investigations, engineering plans, awards of contracts, and execution. During the pre-demolition portion of Phase 3, the number of on-site personnel and equipment would remain less than 5, and no more than one truck roundtrip for delivery or hauling per week would be anticipated.

After completion of the above pre-demolition tasks, the actual demolition of Unit 3 would commence. It would take approximately 2 years to complete this task, including the removal of the structure itself and backfilling the area in which Unit 3 is located, which is approximately 15 feet lower in elevation than the surrounding areas. During this task, the number of on-site workers per day based on a monthly average would range from a low of 16 to a peak of 47. The number of truck delivery or haul roundtrips would range from a low of about one per week to a peak of 15 per day. The number of full-time equipment operating onsite per day based on a monthly average would range from a low of one to a peak of 21.

2.0 Environmental Setting

2.1 Regional Climate

Air quality in a region is primarily affected by the type and amount of contaminants emitted into the atmosphere. However, topographical and meteorological conditions such as temperature, wind, humidity, precipitation, cloud cover, and influx of solar radiation significantly impact the dispersion or trapping of the emitted pollutants, thus playing a major role in the prevailing air quality conditions. Within the SCAB, frequent formation of inversion layers traps the air pollutants in the basin, leading to increased pollution episodes. The SCAB has low mixing heights and light winds, which are conducive to the accumulation of air pollutants.

Temperature has a significant impact on wind flow, pollutant dispersion, vertical mixing, and photochemistry within the region. Annual average temperatures throughout the SCAB vary from low to middle 60 degrees Fahrenheit (ºF). 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. More than 90 percent of the rainfall in the region occurs from November through April. Annual average rainfall varies from approximately 9 inches in Riverside to 14 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 comprise 5 percent to 10 percent of all days in the SCAB, with the frequency being higher near the coast. The nearest meteorological station to the proposed project site is the LAX, which recorded annual average high and low temperatures of 69.9°F and 56.2°F respectively, from 1996 to 2008. The average annual rainfall measured during the same period was 13 inches (WRCC 2008).

The importance of wind to air pollution is considerable. The direction and speed of the wind determines 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 5 to 10 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.

The vertical dispersion of air pollutants in the SCAB is frequently restricted by the presence of a persistent temperature inversion in the atmospheric layers 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 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.

2.2 Existing Conditions

2.2.1 Background Attainment of Criteria Pollutant Standards

The SCAQMD monitors levels of various pollutants at a network of monitoring stations throughout the SCAB. The closest ambient air monitoring station to the proposed project is the Southwest Coastal Los Angeles County monitoring station located at 7201 West Westchester Parkway, in Los Angeles, approximately 2.5 miles to the northeast of SGS. This station monitors ambient concentrations of carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), particles smaller than 10 microns diameter (PM_{10}), lead and sulfates. Ambient concentrations of particles smaller than 2.5 microns diameter ($PM_{2.5}$), were not monitored at this location; therefore, $PM_{2.5}$ concentrations were obtained from the next closest monitoring station, located at 3648 North Long Beach Boulevard, in Long Beach, approximately 14.5 miles southeast of SGS. Background ambient air quality data from 2008 through 2010, which represents the most recent three years of available data, have been compared to the most stringent of either the California Ambient Air Quality Standards (CAAQS) or the National Ambient Air Quality Standards (NAAQS), and are presented in Table 2-1 below.

Table 2-1: Background Air Quality Data (2008 - 2010) from Southwest Coastal Los Angeles County Monitoring Station

Pollutant (Units)	Ambient Air Quality Standards		Maximum Observed Concentration (Number of Days Standard Exceeded)		
	State Standard	Federal Standard	2008	2009	2010
CO (ppm)					
1-Hour	20	35	4	2	--
8-Hour	9.0	9	2.53	1.99	2.19
O_3 (ppm)					
1- Hour	0.09	--	0.086	0.077	0.089
8-Hour	0.070	0.075	0.076 (1)	0.070	0.070
NO_2 (ppm)					
1-Hour	0.18	0.100	0.094	0.077	0.076
Annual Arithmetic Mean	0.030	0.053	0.014	0.0159	0.012
SO_2 (ppm)					
1-Hour	0.25	0.075	0.02	0.02	--
24-Hour	0.04	0.14	0.004	0.006	0.004
PM_{10} (µg/m^3)					
24-Hour	50	150	50.0	52.0 (1)	37.0
Annual Arithmetic Mean	20	--	25.5	25.5	--
$PM_{2.5}$ (µg/m^3)[1]					
24-Hour	--	35	57.2 (8)	63.0 (7)	25.0 (0)
Annual Arithmetic Mean	12	15	14.1	12.9	10.5

Table 2-1: Background Air Quality Data (2008 - 2010) from Southwest Coastal Los Angeles County Monitoring Station

Pollutant (Units)	Ambient Air Quality Standards		Maximum Observed Concentration (Number of Days Standard Exceeded)		
	State Standard	Federal Standard	2008	2009	2010
Lead (µg/m³)					
30-Day Average	1.5	--	0.01	0.00	--
Calendar Quarter	--	1.5	0.01	0.00	--
Rolling 3-Month Average	--	0.15	--	--	--
Sulfates (µg/m³)					
24-Hour	25	--	14.0	8.6	--

Acronyms:

µg/m³ = micrograms per cubic meter; ppm = parts per million; CO = carbon monoxide; O_3 = ozone; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide; PM_{10} = particulates smaller than 10 microns in diameter; $PM_{2.5}$ = particulates smaller than 10 microns in diameter

Notes:

1) The Southwest Coastal Los Angeles County monitoring station does not monitor for $PM_{2.5}$; therefore, $PM_{2.5}$ monitoring data obtained from the next closest monitoring station is presented. The next closest monitoring station is located at 3648 North Long Beach Boulevard, in Long Beach, California.

--* Insufficient (or no) data available at the Westchester Parkway monitoring station to determine the value.

Source: California Air Resource Board Air Data Air Monitoring (ADAM) Statistics website. Available at www.arb.ca.gov/adam/. Accessed September 2011.

All air basins within the state have been formally designated as attainment or non-attainment for each standard based on monitoring data for the most recent 3 years of data, as presented in Table 2-1.

The following are descriptions of the California attainment classifications:

- **Unclassified**: A pollutant is designated as unclassified if the data are incomplete and do not support a designation of attainment or non-attainment.
- **Attainment**: A pollutant is designated attainment if the CAAQS for that pollutant was not violated at any site in the area.
- **Non-attainment**: A pollutant is designated non-attainment if there was at least one violation of a CAAQS for that pollutant in the area.
- **Non-attainment/Transitional**: A subcategory of the non-attainment designation. An area is designated non-attainment/transitional to signify that the area is close to attaining the CAAQS for that pollutant.

Area designations for the SCAB are presented in Table 2-2 below.

Table 2-2: SCAB Attainment Status

Pollutant	State Designation	Federal Designation
CO	Attainment	Maintenance
O_3[1]	Non-attainment (1-hour), Non-attainment (8-hour)	Extreme Non-attainment (1-hour) Severe- Non-attainment (8-hour)
PM_{10}	Non-attainment	Serious Non-attainment
$PM_{2.5}$	Non-attainment	Non-attainment
NO_2	Non-attainment	Maintenance
SO_2	Attainment	Attainment
Lead	Non-attainment (Los Angeles County)	Non-attainment (Los Angeles County)

Acronyms: CO = carbon monoxide; O_3 = ozone; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide; PM_{10} = particulates smaller than 10 microns in diameter; $PM_{2.5}$ = particulates smaller than 10 microns in diameter

Notes:

1) Federal non-attainment designations for O_3 are categorized into four levels of severity including moderate, serious, severe or extreme.

2.2.2 Background Toxic Air Pollutants

On a regional level, the SCAQMD has conducted urban air toxics studies within the SCAB, the most comprehensive of which is the MATES. The MATES III (2004-2006) is a monitoring and evaluation study conducted in the SCAB as a follow-up to previous air toxics studies (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 TAC emissions inventory, and a modeling effort to characterize risk across the SCAB (SCAQMD 2008a).

Monitoring data collected during the MATES III program was used to update a basin-wide emissions inventory of toxic air contaminants (TACs), and subsequently a modeling effort to characterize carcinogenic risk from exposure to air toxics across the SCAB.

According to SCAQMD, using the MATES III methodology, about 94 percent of cancer risk from TACs in the SCAB is attributed to emissions associated with mobile sources, and about 6 percent of the risk is attributed to toxics emitted from stationary sources, which include industries and businesses such as dry cleaners and chrome plating operations. The MATES III study found that carcinogenic risk from exposure to air toxics across the SCAB is about 1,200 excess cancer cases per million with diesel particulate matter (DPM) emissions contributing more than 70 percent of the risk. For comparison purposes, the SCAQMD considers the risk of a project to be significant if the incremental carcinogenic risk exceeds 10 excess cancer cases per million.

The MATES III study estimated the “background” carcinogenic risk in the vicinity of the proposed project is approximately 841 cases per million (as shown on the MATES III Model Estimated Carcinogenic Risk Interactive Map). The risk unit of “per million” refers to the expected number of additional cancer cases in a population of one million individuals that are exposed to pollutants over a 70-year period, representative of a lifetime exposure.

The estimated population-weighted risk in the SCAB for the MATES III period showed an eight 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 emissions from off-road sources (including construction, agricultural, and cargo handling equipment) were determined to be essentially unchanged (an increase of one percent) (SCAQMD 2008a).

2.2.3 Background Greenhouse Gas Emissions

As a class of pollutants responsible for global climate change, emissions of GHG are being addresses on a federal, state, and local level in different ways. Although the U.S. Environmental Protection Agency (USEPA) has established mandatory reporting requirements that affect many industry sectors, it has not established a national background level inventory or a reduction target for GHG emission. In May 2010, the California Air Resources Board (ARB) released an inventory for California that shows annual GHG emissions from electric generation from in-state power generation facilities ranged between 49.08 and 63.86 million metric tonnes[1] of carbon dioxide equivalent ($MTCO_2e$)[2] for years 2000 to 2008. Based on a peak annual state-wide inventory of 483.88 million $MTCO_2e$, electric generation can be said to account for roughly 10 percent of all GHG emissions generated in California. California legislation has created GHG performance standards for base-load electricity generation serving California customers. Regional agencies will be primarily focused on reducing GHG through requiring best available control technology (BACT) standards be achieved for new power generating facilities subject to the GHG Prevention of Significant Deterioration permitting process.

2.3 Existing Conditions – Units 1 and 3

2.3.1 Criteria Pollutant Emissions

As discussed in Section 1.2, the proposed project includes repowering of generation Unit 3 and de-rating of generation Unit 1. Existing conditions have therefore been evaluated based on Units 1 and 3 historical actual emissions to evaluate project-related incremental impacts, in accordance with CEQA. Historical peak daily criteria pollutant emissions from existing Units 1 and 3 were quantified using historical continuous emissions monitoring system (CEMS) data for NOx and emission factors and historical fuel use data for the other criteria pollutants. Unit 1 is capable of burning a mixture of natural gas and digester gas which is generated as a byproduct of the waste treatment process at the adjacent Hyperion Treatment Plant and supplied to SGS via pipelines. Emission factors for pollutants other than NOx are presented in Table 2-3.

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[1] Common international measurement for the quantity of GHG emissions; a metric ton is a unit of mass or weight in the metric system equal to 2,205 pounds or 1,000 kilograms.

[2] Metric tons of carbon dioxide equivalent ($MTCO_2e$) is a metric measure used to compare the emissions from various GHG based upon their global warming potential (GWP). Carbon dioxide equivalents are commonly expressed as "$MTCO_2e$." The carbon dioxide equivalent for a gas is derived by multiplying the metric tons of the gas by the associated GWP.

Table 2-3: Existing Unit Emission Factors (Combustion)

Pollutant	Emission Factor (lb/MMscf)		
	Unit 1		Unit 3[1]
	Natural Gas[2]	Digester Gas[3]	Natural Gas[4]
VOC	50.60	6.50	1.26
CO	4.20	19.50	115.51
SOx	1.11	32.50	0.32
PM_{10}	7.60	13.00	7.60
$PM_{2.5}$	7.60	13.00	7.60

Acronyms: lb/MMscf = pounds per million standard cubic feet of fuel; CO = carbon monoxide; VOC = volatile organic compound; PM_{10} = particulates smaller than 10 microns diameter; SOx = sulfur oxides

Notes:

1) Unit 3 utilizes natural gas only.
2) Natural gas emission factors based on most recent source testing for CO (9/23/10), VOC (7/11/02), and SOx (7/11/02), and based on AP-42 Chapter 1.4, Table 1.4-2 for PM_{10} and $PM_{2.5}$
3) Digester gas emission factors based on source testing of 14 boilers burning digester gas in the SCAQMD, as provided to LADWP for annual emissions reporting
4) Natural gas emission factors based on most recent source testing for CO (5/7/08), VOC (9/20/01), and SOx (9/20/01), and based on AP-42 Chapter 1.4, Table 1.4-2 for PM_{10} and $PM_{2.5}$.

Emission factors for volatile organic compounds (VOC), CO, and sulfur oxides (SOx) were obtained from the most recent certified source test, as reported in the most recent annual emissions report (AER) to the SCAQMD. Emission factors for PM_{10} and $PM_{2.5}$ from natural gas combustion were obtained from the USEPA's AP-42 Compilation of Emission Factors for Natural Gas Combustion, and are representative of total particulate matter (PM). Emissions of PM from natural gas combustion primarily result from carryover of noncombustible trace constituents in the fuel (USEPA 2000). Combustion PM_{10} and $PM_{2.5}$ factors for digester gas were obtained from source testing of boilers burning digester gas in the SCAQMD, and are as reported in the facility AER since 2007.

Unit 1 baseline emissions were based on daily CEMS data (peak NOx) from the last three years of operation. Fuel use for that same peak day of NOx emissions registered by the CEMS data was used to estimate emissions for the other criteria pollutants based on the emission factors shown in Table 2-3. Natural gas and digester gas fuel usage for Unit 1 on the peak NOx day was 25.926 and 3.879 million standard cubic feet per day(MMscf/day), respectively. This fuel usage represents approximately 72 percent of the permitted heat rate capacity for Unit 1.

Unit 3 baseline emissions were based on daily CEMS data (peak NOx) from the last three years of operation. Fuel use for that same peak day of NOx emissions registered by the CEMS data was used to estimate emissions for the other criteria pollutants based on the emission factors shown in Table 2-3. Natural gas fuel usage for Unit 3 on the peak NOx day was 74.345 MMscf/day. This fuel usage represents approximately 71 percent of the permitted heat rate capacity for Unit 3.

Baseline emissions from Units 1 and 3 are presented in Table 2-4. Detailed quantification of the emissions baseline is provided in Appendix B.

Table 2-4: Existing (Baseline) Conditions, Peak Daily Emissions[1]

Source	Criteria Pollutant, lb/day					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Unit 1	1,337.3	184.6	508.1	154.9	247.5	247.5
Unit 3	93.7	8,587.6	896.6	23.8	565.0	565.0
Total Daily Emissions	1,431.0	8,772.2	1,404.6	178.7	812.5	812.5

Acronyms: VOC = volatile organic compound; CO = carbon monoxide; NOx = nitrogen oxides; SOx = sulfur oxides; PM_{10} = particulates smaller than 10 microns diameter; $PM_{2.5}$ = particulates smaller than 2.5 microns diameter;

Notes:

1) Detailed emission calculations are presented in Appendix B, Table B-1a, B-1b, and Table B-2.

Source: Modeled by AECOM 2012

2.3.2 Odors

The ability to detect odors varies considerably among the population and is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person may be perfectly acceptable to another. Unfamiliar odors are more easily detected than familiar odors and are more likely to cause complaints.

Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the intensity of the odor weakens and eventually becomes so low that detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of an odorant reaches a detection threshold; an odorant concentration below the detection threshold indicates the concentration in the air is not detectable by the average human.

The proposed project site is not odor-producing and, to date, has not resulted in any odor complaints or public nuisance issues.

2.3.3 Air Toxics

Existing operational emissions of air toxic pollutants from SGS are evaluated on a facility-wide basis pursuant to California's Assembly Bill (AB) 2588 Air Toxics "Hotspots" Program. The last approved HRA for SGS was in the year 2000 and showed reported cancer risk of 0.03 in one million (non-cancer impacts were negligible). The SCAQMD evaluates facilities annually for air toxic emissions for fee assessment, and every 4 years for detailed toxics reporting to monitoring compliance with AB 2588. Any significant change in air toxics emissions since the last approved HRA would have resulted in a requirement for SGS to update their HRA. Therefore existing baseline health risks for SGS may be considered similar to what they were reported in the last approved HRA.

2.3.4 Greenhouse Gases

Between 2010 and 2011, the average GHG emission performance, calculated as pounds of CO_2 emitted per net megawatt-hour of generated electrical power, was 1,315 pounds CO_2 per megawatt-hour.

3.0 Regulatory Setting

3.1 Criteria Pollutants and Toxic Air Contaminants

Under the Clean Air Act (CAA), the USEPA has identified and established NAAQS for ground-level concentrations for seven common air pollutants known to have deleterious human health impacts. These so-called “criteria pollutants” include CO, O_3, NO_2, sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead (Pb). The NAAQS are intended to be concentrations required to protect public health and welfare. In addition, ARB has implemented generally more stringent air quality standards, known as the CAAQS, that aid in effectively reducing harmful emissions in areas with poor air quality or non-attainment designations. Current standards set for the seven criteria pollutants are presented in Table 3-1, along with relevant health effects.

Table 3-1: Pollutant Ambient Air Quality Standards and Health Effects

Air Pollutant	Concentration/Averaging Time		Most Relevant Health Effects
	State Standard	Federal Primary Standard	
Ozone	0.09 ppm, 1-hour average, 0.070 ppm, 8-hour average	-- 0.075 ppm, 8-hour average.	(a) Short-term exposures includes decreased pulmonary function and localized lung edema (abnormal build up of fluid in the lungs) in humans and animals, and risk to public health implied by alterations in pulmonary morphology and host defense in animals;(b) Long-term exposures includes 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
Carbon Monoxide	9.0 ppm, 8-hour average 20 ppm, 1-hour average	9 ppm, 8-hour average 35 ppm, 1-hour average	(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
Nitrogen Dioxide	0.030 ppm, annual arithmetic mean 0.18 ppm 1-hour average	0.053 ppm, annual arithmetic mean; 0.100 ppm 1-hour average	(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

Table 3-1: Pollutant Ambient Air Quality Standards and Health Effects

Air Pollutant	Concentration/Averaging Time		Most Relevant Health Effects
	State Standard	Federal Primary Standard	
Sulfur Dioxide	0.04 ppm, 24-hour average 0.25 ppm, 1-hour average	-- 0.075 ppm, 1-hour average	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM_{10})	50 µg/m^3, 24-hour average 20 µg/m^3, annual arithmetic mean	150 µg/m^3, 24-hour average	(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
Fine Particulate Matter ($PM_{2.5}$)	12 µg/m^3, annual arithmetic mean	35 µg/m^3, 24-hour average 15 µg/ m^3, 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
Lead	1.5 µg/ m^3, 30-day average	1.5 µg/ m^3, calendar quarter 0.15 µg/m^3, rolling 3-month average	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction

Acronyms: ppm = parts per million; µg/m^3 = micrograms per cubic meter

"—" indicates that there is no applicable standard in place.

Source: California Air Resources Board, 2010. Ambient Air Quality Standards. Available at: http://www.arb.ca.gov/research.aaqs/aaqs2.pdf

3.1.1 Federal Authority

Criteria Pollutants

The Federal government first adopted the CAA (U.S. Code Section 7401) in 1963 to improve air quality and protect citizens' health and welfare, which required implementation of the NAAQS. The NAAQS are revised and changed when scientific evidence indicates a need. The CAA also requires each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The CAA Amendments of 1990 added requirements for states with non-attainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies.

The USEPA has been charged with implementing national air quality programs, which includes the review and approval of all SIPs to determine conformation to the mandates of the CAA and its amendments, and to determine whether implementation of the SIPs will achieve air quality goals. If the USEPA determines that a SIP is inadequate, a Federal Implementation Plan that imposes additional control measures may be prepared for the non-attainment area. Failure to submit an approvable SIP or to implement the plan within the mandated time frame may result in application of sanctions to transportation funding and stationary air pollution sources within the air basin.

Pursuant to the CAA, state and local agencies are responsible for planning for attainment and maintenance of the NAAQS. The USEPA classifies air basins (i.e., distinct geographic regions) as either “attainment” or “non-attainment” for each criteria pollutant, based on whether or not the NAAQS have been achieved. Some air basins have not received sufficient analysis for certain criteria air pollutants and are designated as “unclassified” for those pollutants. The SCAQMD and the ARB are the responsible agencies for providing attainment plans and for demonstrating attainment of these standards within the proposed project area.

There are various federal programs that are applicable to major sources of emissions such as the proposed project CCGS and the SCGS. For regulations controlling primarily criteria pollutant emissions, the USEPA has promulgated New Source Performance Standards (NSPS). Applicable federal requirements are presented in Table 3-2 below. Most of these federal programs have been delegated to the SCAQMD for implementation within the SCAB.

Table 3-2: Applicable Federal Requirements

Regulatory Citation	Description
40 Code of Federal Regulations (CFR) 52	Non-attainment New Source Review requires Best Available Control Technology (BACT) and offsets. Permitting and enforcement have been delegated to the South Coast Air Quality Management District.
40 CFR 60 Subpart KKKK	New Source Performance Standards (NSPS)for Stationary Combustion Turbines: 15 parts per million (ppm) nitrogen oxide at 15 percent oxygen and fuel sulfur limit of 0.060 pounds of sulfur oxide per million British thermal units heat input. BACT would require additional controls.
40 CFR Subpart IIII	NSPS for Stationary Compression Ignition Internal Combustion (IC) Engines). Establishes emission standards for IC Engines.

Hazardous Air Pollutants

The USEPA also administers several programs that regulate emissions of hazardous air pollutants (HAPs) from stationary and mobile sources. The USEPA identified 189 HAPs that may present a threat to human health or the environment and are regulated under control technology programs. Also, the USEPA has identified 33 urban HAPs that pose the greatest threats to public health in urban areas and are regulated under the Urban Air Toxics Strategy. The USEPA regulates HAP emissions primarily by setting emissions standards for vehicles and technology standards for industrial source categories.

There are various federal programs that are applicable to major sources of emissions such as the proposed CCGS and the SCGS. For regulations controlling HAP emissions, the USEPA has promulgated the National Emission Standards for Hazardous Air Pollutants (NESHAP), which are codified in Title 40 Code of Federal Regulations (CFR) Part 61 and Part 63.

3.1.2 State Authority

Criteria Pollutants

The California Clean Air Act (CCAA), signed into law in 1988, requires all areas to achieve and maintain attainment with the CAAQS by the earliest possible date. The CCAA, enforced by ARB, requires that each area exceeding the CAAQS develop a plan aimed at achieving those standards. The California Health and Safety Code, Section 40914, requires air districts to design a plan that achieves an annual reduction in district-wide emissions of 5 percent or more, averaged every consecutive 3-year period. To satisfy this requirement, the local Air Quality Management District's (AQMDs) are required to develop and implement air pollution reduction measures, which are described in their AQMPs and outline strategies for achieving the state ambient air quality standards for criteria pollutants for which the region is classified as non-attainment.

In addition to the CCAA, ARB is the agency which:

- Establishes and enforces emission standards for motor vehicles, fuels, and consumer products;
- Establishes health-based air quality standards;
- Conducts research;
- Monitors air quality;
- Provides compliance assistance for businesses;
- Produces education and outreach programs and materials; and
- Oversees and assists local air quality districts that regulate most non-vehicular sources of air pollution.

Toxic Air Contaminants

Similar to the federal HAPs, TACs are defined in California as air pollutants (primarily specific chemical compounds) which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health (CARB 2010b). A primary health concern due to exposure to TACs is the risk of contracting cancer. The carcinogenic potential of TACs is of 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 (or 250,000 in a million) will contract cancer over their lifetime from all causes, including diet, genetic factors, and lifestyle choices (Doll and Peto 1981).

Unlike carcinogens, most non-carcinogens have a threshold level of exposure below which the compound 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).

ARB reviews scientific research on exposure and health effects to identify the TACs that pose the greatest threat to public health. ARB maintains a 20-station toxic monitoring network within major urban areas. Data from these monitoring stations is used to determine the average annual concentrations of TACs and to assess the effectiveness of controls.

The California Air Toxics Program, developed by ARB, established the process for identification and control of TAC emissions and includes provisions to make the public aware of significant toxic exposures and to reduce risk. The CalEPA and the OEHHA have developed guidelines for evaluating risk. In addition, the state has adopted the Airborne Toxics Control Measures for Stationary Compression Ignition Engines, which limits the types of fuel allowed, establishes maximum allowable emission rates, and establishes recordkeeping requirements for equipment operators.

Some of the compounds that have been identified as TACs to date are briefly described below.

VOC are organic compounds that easily vaporize at room temperature such as benzene, toluene, xylenes, and certain alcohols. Sources include motor vehicle exhaust, burning waste, gasoline, industrial and consumer products, pesticides, industrial processes, degreasing operations, pharmaceutical manufacturing, and dry cleaning operations. Some VOC are highly reactive and contribute to the formation of O_3, while others have adverse, chronic, and acute health effects. In some cases, VOC can be both highly reactive and potentially toxic.

Carbonyl compounds, such as aldehydes and ketones, contain a carbon atom and an oxygen atom linked with a double bond (C=O). ARB currently monitors four carbonyls: formaldehyde, acetaldehyde, methyl ethyl ketone, and acrolein. Major sources of directly emitted carbonyls are fuel combustion, mobile sources, and process emissions from oil refineries. Some carbonyls are highly reactive and contribute to O_3 formation, while others have adverse chronic and acute health effects. In some cases, carbonyls can be both highly reactive and potentially toxic.

Toxic metals include ambient arsenic, beryllium, cadmium, chromium, manganese, nickel, Pb, copper, zinc, aluminum, bromine, and barium, which are monitored in support of California's TAC Identification and Control Program.

Hexavalent Chromium is one of the two most common oxidation states of chromium, and one of the most toxic substances identified by ARB. In California, major sources of hexavalent chromium include cooling towers that use it as a corrosion inhibitor, and chrome plating operations. Hexavalent chromium is monitored in support of California's TAC Identification and Control Program.

Pb is also a criteria pollutant; its health impacts are presented above in Table 3-1.

DPM from the combustion of diesel fuels consists of very small carbon particles, or “soot,” which absorb diesel-related cancer-causing substances. DPM has the potential to contribute to cancer, premature death, and other health impacts, and currently contributes over 70 percent of the currently known risks from TACs (CARB 1998; SCAQMD 2011).

3.1.3 Local Authority

The SCAQMD is the regional agency responsible for regulation and enforcement of federal, state, and local air pollution control regulations in the SCAB. The SCAQMD operates monitoring stations in the SCAB, develops and enforces rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The SCAQMD AQMP includes control measures and strategies to attain the NAAQS and CAAQS in the SCAB. The SCAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment (SCAQMD 2007).

It is the responsibility of the SCAQMD to ensure that the NAAQS and the CAAQS are achieved and maintained in the SCAB. Periodically, the SCAQMD prepares an overall AQMP to be submitted for inclusion in the SIP. The Final 2007 AQMP was adopted by the AQMD Governing Board on June 1, 2007, and includes control measures and strategies to be implemented as regulations to control or reduce criteria pollutant emissions from stationary and mobile sources (SCAQMD 2007). The SCAQMD is currently in the process of developing the 2012 AQMP which will include current regional planning information, as well as scientific and technical information.

Combustion sources proposed for Generation Scenarios 1 and 2 will be required to obtain permits to construct and permits to operate, in accordance with SCAQMD Rules 201 and 203. Permitted equipment is required to operate in compliance with numerous regulatory requirements, including but not limited to emission limits, emission monitoring, and breakdown provisions. In addition, construction activities must demonstrate compliance with several rules limiting fugitive dust and VOC emissions.

SCAQMD Construction Rules

Requirements for construction compliance are briefly described below.

<u>Rule 402 – Nuisance</u>

Rule 402 applies to odorous air contaminants and prohibits the discharge from any source which causes injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endangers the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.

<u>Rule 403 – Fugitive Dust</u>

This rule prohibits any active construction or operation, open storage piles or disturbed surface area from causing dust emissions that extend beyond the facility's fence line or prohibits dust emission that exceeds 20 percent opacity if it is the result of movement of a motorized vehicle. The rule also prohibits any active construction activity or operation without utilizing the applicable best available control measures, such as watering, installation of a trackout system, or wheel washing, that reduce potential fugitive dust impacts during earthmoving activities.

SCAQMD Rules for Operating Permits

Local rules and regulations implemented to reduce and control emissions from permitted equipment are briefly described below.

<u>Rule 409 – Combustion Contaminants</u>

This rule limits combustion contaminants to 0.1 grain per cubic foot of gas calculated to 12 percent carbon dioxide (CO_2) at standard conditions averaged over a minimum of 15 consecutive minutes. Combustion of natural gas fuel (as under the proposed project) ensures compliance with this rule.

<u>Rule 431.1 – Sulfur Content in Gaseous Fuels</u>

This rule limits sulfur content in gaseous fuels. The sulfur content of natural gas is not to exceed 16 parts per million by volume (ppmv), calculated as hydrogen sulfide. The proposed generation units will burn pipeline quality natural gas exclusively, with a sulfur content of 0.2 grains per 100 scf or 3.5 ppmv and therefore it will comply with this rule.

Rule 475 – Electric Power Generating Equipment

Rule 475 paragraph (a) limits combustion contaminant emissions from electric power generating equipment having a maximum rating of more than 10 MW net.

Regulation X – National Emission Standards for Hazardous Air Pollutants

As incorporated in this regulation, the provisions of Title 40 CFR Part 61, NESHAPs are adopted by reference and apply to the owner or operator of any source that contains an affected facility for which a standard is prescribed under this rule.

Regulation XI – National Standards of Performance for New Stationary Sources

As incorporated in this regulation, the provisions of Title 40 CFR Part 60 NSPS are adopted by reference and apply to the owner or operator of any stationary source that contains an affected facility, the construction or modification of which is commenced after the applicability date of each NSPS. The NSPS applicable to SGS is Title 40 CFR 60, Subparts A and GG, which apply to stationary gas turbines.

Rule 1401 – New Source Review of Toxic Air Contaminants

This rule requires the use of BACT for Toxics (T-BACT) and limits the level of health risk, both from listed carcinogenic and non-carcinogenic materials that the public could experience from exposure to emissions of such TACs. The rule specifies limits for maximum individual cancer risk of one-in-one million at any receptor location if the permit unit is constructed without T-BACT, or ten-in-one million at any receptor location, if the permit unit is constructed with T-BACT; limits cancer burden to no more than 0.5, and limits non-cancer acute and chronic HI to no more than 1.0 at any receptor location from equipment which emit specified TAC.

Rule 1470 - Requirements for Stationary Diesel - Fueled Internal Combustion and Other Compression Ignition Engines

This rule applies to any compression ignition engine greater than 50 brake horsepower operated within the SCAQMD and provides the requirements for the operation of such engines. This rule establishes allowable emission rates and restrictive operating schedules for engines located in close proximity to a school. Generation Scenario 1 and Generation Scenario 2 would include operation of one and four diesel-fueled black start emergency generators, respectively. This equipment would be subject to these requirements.

Rule 1701 – Prevention of Significant Deterioration

This rule applies to projects resulting in a physical change or a change in the method of operation at a source resulting in a net emissions increase that is greater than specified Significant Emissions Increase, on a pollutant by pollutant basis. A significant increase is defined as an increase of 40 tons per year (TPY) of NOx or SOx, or 100 TPY of CO. In order to evaluate “worst-case” conditions, emissions from both CCGS under Generation Scenario 2 were considered. Future potential emissions from the CCGS would result in an incremental increase in emissions in excess of the PSD thresholds for NOx and SOx. Therefore, the project shall demonstrate compliance with PSD requirements.

Regulation XX - RECLAIM

The RECLAIM program regulated under SCAQMD Regulation XX is a cap-and-trade program implemented by the SCAQMD for stationary sources that emit over 4 tons per year of NOx or SOx emissions. Electric utilities are exempt from the SOx RECLAIM program (Rule 2001(i)(2)(A)).

The RECLAIM market is divided into a Coastal and Inland zone; SGS is located in the Coastal zone. SGS holds an active RECLAIM permit with an initial 1994 NOx Starting Allocation of 1,559,677 pounds, as shown in the Facility Permit. Since the initial allocation, LADWP has considerably increased the quantity of RECLAIM trading credits shown on the facility compared to the initial allocation.

Regulation XXX – Title V Permits

The Title V Permit system is the air pollution control permit system required to implement the federal Operating Permit Program as required by Title 40 CFR Part 70, Title V of the federal CAA as amended in 1990. Title V permits require that facilities periodically report deviations from the permit terms and conditions, and deviations from local and federal rule requirements. Deviations that are attributable to upset conditions typically require both immediate verbal notifications and written follow up report to the SCAQMD. SGS hold an active Title V permit with the SCAQMD.

3.2 Greenhouse Gases and Climate Change

Climate change, often referred to as “global warming” is a global environmental issue that refers to any significant change in measures of climate including temperature, precipitation, or wind which extends for a period (decades or longer) of time. Climate change is a result of both natural factors, such as volcanic eruptions, and anthropogenic, or man-made, factors including changes in land-use and burning of fossil fuels (USEPA 2010). Anthropogenic activities such as deforestation and fossil fuel combustion emit heat-trapping GHGs, which are defined as any gas that absorbs infrared radiation within the atmosphere. The heat absorption potential of a GHG is referred to as the “Global Warming Potential” (GWP). Each GHG has a GWP value based on the heat-absorbing ability of the GHG relative to CO_2, commonly referred to as CO_2e.

GHGs, both naturally occurring and anthropogenic, prevent heat from escaping the atmosphere and thereby regulate the Earth’s temperature. Anthropogenic sources of GHGs have elevated GHG concentrations within the atmosphere, which has led to an increase in the Earth’s average surface temperature. According to National Oceanic and Atmospheric Administration and National Aeronautics and Space Administration data, the Earth’s average surface temperature has increased by about 1.2 to 1.4 ºF in the last century. The eight warmest years on record (since 1850) have all occurred since 1998, with the warmest year being 2005. Based on available data, the rise in temperature is most likely due to anthropogenic sources (USEPA 2010).

Unlike criteria air pollutants and TACs, which are of regional and local concern, GHG emissions and climate change are a global issue. Eight recognized GHGs are described below.

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

Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. CFCs are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere; however, because they destroy stratospheric ozone, their production was halted by the Montreal Protocol.

Hydroflourocarbons (HFCs) are gases consisting of hydrogen, fluorine, and carbon, and are used for refrigeration, air conditioning, foam blowing, aerosols, and fire extinguishing. HFCs are primarily used to replace ozone depleting CFCs. HFCs do not deplete the ozone layer but some have high GWPs.

Methane (CH_4) is a gas that is the main component of the natural gas used. CH_4 forms naturally from the decay of organic matter. Natural sources include wetlands, permafrost, oceans and wildfires. Anthropogenic sources include fossil fuel production, rice cultivation, biomass burning, animal husbandry (fermentation during manure management), and landfills.

***Nitrous Oxide (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 nitrogen-rich fertilizers. In addition to agricultural sources, some industrial processes (nylon production and nitric acid production) also emit N_2O. It is used in rocket engines, as an aerosol spray propellant, and in race cars. Very small quantities of N_2O may be formed during fuel combustion through the reaction of nitrogen and oxygen.

O_3 is 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 ARB, it is difficult to make an accurate determination of the contribution of O_3 precursors (NO_x and VOC) to global warming.

Sulfur Hexaflouride (SF_6) is an inorganic, colorless, odorless, non-toxic and non-flammable gas that is used as an electrical insulator in high voltage equipment that transmits and distributes electricity. SF_6 has a long lifespan and high GWP potency.

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

3.2.1 International Authority

The Intergovernmental Panel on Climate Change (IPCC) is the leading body for the assessment of climate change. The IPCC is a scientific body that reviews and assesses the most recent scientific, technical, and socio-economic information produced worldwide relevant to the understanding of climate change. The scientific evidence brought up by the first IPCC Assessment Report of 1990 unveiled the importance of climate change as a topic deserving international political attention to tackle its consequences; it therefore played a decisive role in leading to the creation of the United Nations Framework Convention on Climate Change, the key international treaty to reduce global warming and cope with the consequences of climate change.

On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

3.2.2 Federal Authority

The CAA defines the USEPA's responsibilities for protecting and improving the nation's air quality and the stratospheric O_3 layer. On September 22, 2009, the USEPA released its final GHG Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), that required the USEPA to develop "… mandatory reporting of greenhouse gases above appropriate thresholds in all sectors of the economy…." The Reporting Rule applies to most entities that emit 25,000 $MTCO_2e$ or more per year. On September 30, 2011, facility owners were required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule mandates recordkeeping and administrative requirements in order for the USEPA to verify annual GHG emissions reports.

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- **Endangerment Finding**: the current and projected concentrations of the six key well-mixed GHGs—CO_2, CH_4, N_2O, HFCs, perfluorocarbons, and SF_6 - in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The USEPA Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

As a result of these findings, and the authority of the USEPA to act on these findings, regulations have been developed that create federally enforceable permitting requirements on new and modified facilities that are major sources of GHG emissions.

3.2.3 State Authority

In efforts to reduce and mitigate climate change impacts, state and local governments are implementing policies and initiatives aimed at reducing GHG emissions. California, one of the largest state contributors to the national GHG emission inventory, has adopted significant reduction targets and strategies. A brief history of regulations and programs geared towards mitigating and reducing detrimental climate change impacts are represented in Table 3-3.

Table 3-3: California State-wide Greenhouse Gas (GHG) Policy Progress

Calendar Year	Policy	Initiative
1988	Assembly Bill (AB) 4420	California Energy Commission (CEC) began a study of state-wide global warming impacts, and developed an inventory of GHG emission sources.
2000	Senate Bill (SB) 1771	Established California Climate Action Registry to allow companies, cities, and government agencies to voluntarily record GHG emissions in anticipation of early reduction credit.
2004	AB 1493	The California Air Resource Board (ARB) enacted and enforced emission standards that reduced GHG emissions from automobiles.

Table 3-3: California State-wide Greenhouse Gas (GHG) Policy Progress

Calendar Year	Policy	Initiative
2005	Executive Order (EO) S-3-05	Established GHG emission reduction targets through calendar year 2050. Assigned lead agencies to develop a Climate Action Plan (CAP); the CAP developed programs and strategies to meet reduction targets.
2006	SB 107 Renewable Portfolio Standard	Required investor-owned utilities to get 20 percent of electricity from renewable sources by 2010.
2006	AB 1925	Required CEC to study and make recommendations for capturing and storing industrial carbon dioxide.
2006	SB 1368	Required California Public Utilities Commission to develop and adopt a GHG emission performance standard for private electric utilities.
2006	AB 32 (Global Warming Solutions Act)	Established state-wide GHG emission limits, reporting requirements, and a verification procedure to monitor and enforce compliance.
2007	EO S-01-07	Established state-wide goal to reduce carbon intensity of transportation fuels by at least 10 percent by 2020.
2007	SB 97	Required California Environmental Quality Act projects to provide GHG impact analysis; tasked local air districts to help lead and develop significance thresholds and significant impact criteria.
2008	ARB Interim Significance Thresholds	ARB developed and proposed significance thresholds for industrial, commercial and residential projects.
2008	SB 375	Established regional targets for reducing GHG emissions from passenger vehicles.
2010	17 CCR Section 95100 - 95157	Established mandatory GHG reporting, verification, and other requirements for operators of certain facilities that directly emit GHG (such as electric power generating entities)

Of particular note and influence on the proposed project is Senate Bill (SB) 1368 (Perata, Chapter 598, Statutes of 2006), which required the establishment by the CEC and the California Public Utilities Commission (CPUC) of a standard for base-load generation for new power plants, and new or renewed contracts with terms of 5 years or more, by California utilities. The standard promotes power generation projects designed to achieve GHG reductions and that would meet energy demands of the state. Pursuant to SB 1368, the CEC and the CPUC have established requirements prohibiting California utilities from entering into long-term commitments with any base-load facilities that exceed the GHG emission performance standard of 0.500 metric tons of CO_2 per MWh (i.e., 1,100 pounds of CO_2 per MWh).

Also of influence is the California Global Warming Solutions Act (Act) of 2006. Established under AB 32 (Chapter 488, Statutes of 2006) (AB 32), the Act has been the springboard for the RPS goals, emissions reduction targets, and a newly adopted cap-and-trade program which establishes a market system for major sources of GHG emissions. The Act caps California's GHG emissions at 1990 levels by 2020. This legislation represents the first enforceable state-wide program in the United States to cap all GHG emissions from major industries and include penalties for non-compliance. The Climate Change Scoping Plan, established December 11, 2008, pursuant to AB 32, outlines emission reduction strategies based on regulations, market mechanisms, and other actions. Six key elements include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a state-wide renewable energy mix of 33 percent;
- Developing a state cap-and-trade program related to CO_2 emissions that links with partner programs by the Western Climate Initiative (a collaboration of four Canadian provinces and seven North American states, including California) to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

The CO_2 reduction goals envisioned in the AB 32 Scoping Plan rely heavily on decreased emissions in the electricity sector. Of the 30 million $MTCO_2e$ reductions from the electricity sector to be achieved by 2020, nearly half are expected to come from renewable generation.

In support of these initiatives and policies, in 2009 the CEC released its Integrated Energy Policy Report. The report recognized that the operational characteristics associated with increasing renewable generation will increase the need for flexible generation to maintain grid reliability. The report asserts that natural gas-fired power plants are generally well-suited for this role and that California cannot simply replace all natural gas fired power plants with renewable energy without endangering the safety and reliability of the electric system. The report acknowledges that California will need to modernize its natural gas generating fleet to reduce environmental impacts. Moreover, the report found that future high efficiency natural gas plants will likely fill five key roles in balancing generation needs in California. These roles include: 1) intermittent generation support, 2) local capacity requirements, 3) grid operations support, 4) extreme load and system emergencies support, and 5) general energy support.

3.2.4 Local Authority

The SCAQMD Air Quality-Related Energy Policy integrates air quality, energy, and climate change issues in a coordinated and consolidated manner. On September 9, 2011, the SCAQMD adopted an air quality-related energy policy establishing ten air quality-related energy policies to guide and coordinate SCAQMD efforts to support the policies. These various policies and initiatives will:

- Promote zero- or near-zero emission technologies, including ultra clean energy strategies;
- Encourage "demand-side" energy management through energy efficiency and shifting of some energy use to off-peak hours;
- Encourage "distributed generation," including "renewables," as well as storage of electricity to reduce the need for new, large power plants and transmission lines;
- Acknowledge that some additional fossil-fueled power plants will be needed to accommodate growth and complement intermittent renewable energy sources such as wind and solar, while at the same time ensure that any community impacts from these plants are minimized; and
- Conduct public education and outreach to inform individuals and businesses of the benefits and availability of clean, efficient technologies and energy conservation.

A central part of the SCAQMD's Air Quality-Related Energy Policy is the promotion of renewable energy generation, and California has identified Los Angeles, Riverside and San Bernardino counties as locations with substantial renewable generating resource potential in wind and solar power. As indicated by the CEC's Integrated Energy Policy Report, these renewable energy sources will increasingly need to be supported by highly efficiency electrical power generating facilities, such as the proposed project.

3.2.5 Local Plans

City of Los Angeles

The City of Los Angeles has established and adopted the *City of Los Angeles's Green LA initiative* along with the City *General Plan*, which includes goals and policies that would indirectly reduce GHG emissions and climate change impacts through improved energy efficiency (City of Los Angeles 1992). Air Quality Element Goal 5 of the *General Plan* promotes energy efficiency through land use and transportation planning, the use of renewable resources and less-polluting fuels, and the implementation of conservation measures including passive methods such as site orientation and tree planting. Objective 5.1 states that the city will "increase energy efficiency of City facilities and private developments." Furthermore, Policy 5.1.3 states that the city will have LADWP make improvements at its in-basin power plants in order to reduce air emissions, which is the purpose of the proposed project.

County of Los Angeles

The County of Los Angeles has adopted a Green Building Ordinance which consists of two components related to new construction projects: Standards of Sustainability and Standards of Sustainable Excellence. The purpose of the ordinance is to incentivize reduced natural resource use during the planning and development of projects within the Los Angeles area. Although this ordinance does not address generation or use of renewable energy, it is consistent with the goals and objectives of the SCAQMD Air Quality-Related Energy Policy and reducing GHG emissions through demand-side management building practices.

LADWP

In response to the City of Los Angeles's *Green LA initiative*, LADWP has implemented various measures and deployed marketing initiatives geared towards reducing GHG emissions and climate change impacts. Measures include the purchase of renewable energy, promotion of energy efficiency, water conservation, improved recycling/reusing, and infrastructure improvements. In 2010, 20 percent of LADWP power was provided by renewable energy sources. In addition, LADWP offers cash rebates for efficient appliances and exchange programs for inefficient appliances. As one of the largest utility providers in California, LADWP will be required to achieve the RPS established under AB 32 as well as emission performance standards for new base-load generation, established per SB 1368.

4.0 Methodology for Evaluating Air Quality Impacts

The methodology utilized to evaluate air quality impacts from the proposed project includes emissions quantification of criteria pollutants, TACs, and GHGs generated during short-term, temporary construction activities, and long-term operations. Methods used to quantify and evaluate air quality impacts are described in the following subsections.

4.1 Criteria Pollutant Emissions

4.1.1 Construction Emissions

Emissions during construction will be produced by off-road construction equipment, on-road motor vehicles, and activities that generate fugitive dust. Construction emission sources for each proposed Generation Scenario are similar. However, equipment usage and onsite workers/worker trips vary based on the level of activity anticipated for construction of each generation scenario. The method used to evaluate sources of construction emissions are discussed below.

Off-Road Construction Equipment

Construction emissions from the operation of diesel-fueled off-road equipment were estimated by multiplying peak daily usage by equipment specific emission factors. Horsepower-based composite factors, with built-in load factors, were utilized to estimate peak daily emissions. The emission factors were obtained from the SCAQMD's website (SCAQMD 2011) and represent the fleet-wide average emission factors during 2012 within the SCAB. The equipment-specific load factors have been updated by multiplying the emission factor by 0.67, consistent with the CARB's recently released off-road mobile source emission inventory model (OFFROAD 2011). Peak daily equipment usage was derived from anticipated monthly activity divided by 20 work days per month. Schedule assumptions, hours of operation, equipment type, and detailed emission calculations are provided in Appendix A of this Air Quality and Climate Change Technical Report.

On-Road Motor Vehicles

Emissions from the operation of gasoline-fueled and diesel-fueled on-road motor vehicles, such as worker commute vehicles, haul trucks, dump trucks and flat-bed trucks were estimated using CARB's On-Road EMFAC2011 mobile source emission factors, obtained from the EMFAC2011 output . For this analysis, it has been assumed that field/construction workers and administrative personnel travel a roundtrip distance of 60 and 45 miles, respectively. As described in Section 1.2.1, an average vehicle occupancy of 1.2 has been applied to daily worker trips to account for carpooling during construction. Haul truck trips are assumed to travel a roundtrip distance of 60 miles during material delivery and removal.

Fugitive Dust

Fugitive dust emissions from earthmoving activities vary as a function of parameters such as soil silt content, soil moisture, wind speed, and acreage of disturbance area. Emissions from earthmoving activities are typically associated with material handling activities including haul truck loading and unloading, scraper unloading, bulldozer activity, and grading. Fugitive dust emissions were estimated using USEPA's Compilation of Air Pollutant Factors (AP-42), from Chapters 11 and 13, Section 11.9.1, Western Surface Coal Mining (per Chapter 13.2.3 Heavy Construction Operations) and

Section 13.2.4, Aggregate Handling and Storage Piles, and based on miles traveled, material loading (in tons per day), and hours of operation.

As described in Section 3.1.3, implementation of best management practices (BMPs) during construction is required per SCAQMD Rule 403, Fugitive Dust. BMPs such as site watering and street sweeping will be implemented during construction to reduce and control fugitive dust emissions. Therefore, a control efficiency of up to 61 percent has been applied to fugitive emissions of PM_{10} and $PM_{2.5}$ during construction activities, consistent with the efficiencies presented in SCAQMD's fugitive dust mitigation measure tables for construction and demolition (SCAQMD 2006).Operational Emissions

4.1.2 Operational Emissions

Operational sources of criteria pollutant emissions for the proposed project include the CTGs in the CCGS and SCGS, diesel-fired emergency generators, diesel-fuel tanks, OWSs, and WSACs. The methodology employed to calculate emissions from these sources is described below.

<u>Generation Scenario 1 (GE Option)</u>

Generation Scenario 1 will operate in a combined cycle mode (CCGS) and with a SCGS.

Combined Cycle Generating System

Operating modes for the CCGS include startups, normal operation and shutdowns. Startups for the CCGS are defined as "cold" and "non-cold." A "cold start" is a start after a plant shutdown of 72 hours or more. A "non-cold" start is defined as a start after a plant shutdown of less than 72 hours.

The operating modes used to estimate peak daily emissions from the CCGS under Generation Scenario 1 are presented in Table 4-1 below. Peak day operating modes assumes one cold start event, which has the highest uncontrolled emissions, one non-cold start, one out-of-service hour (30 minutes per shutdown), and the remainder of a 24 hour day in normal operating mode. Because any day with a cold start would likely have one or more out-of-service hours beyond what was assumed for shutdown, this approach is sufficiently conservative to estimate peak daily emissions based on operating mode. Each operating mode is described below.

Table 4-1: Generation Scenario 1 (CCGS) Operating Modes (Peak Daily)

Mode	Factor	Unit	Minutes/day
Startups - Cold	1	events/day	166
Startups - Non-Cold	1	events/day	88
Normal	16.8	hours/day	1,006
Shutdown	2	events/day	120
Out of Service	2	events/day	60
		Total Minutes per Day =	1,440
		Total Hours per Day =	24

Startups - Cold

According to the data provided by the LADWP Owner's Engineer (Owner's Engineer), a cold start will be completed in 166 minutes (time from ignition of the combustion turbine though the full operation of the steam turbine generator). The emissions provided by the Owner's Engineer for criteria pollutants except SOx were used to calculate hourly average emissions during a cold start. SOx emissions were estimated using the SCAQMD default emission factor of 0.6 lb/MMscf. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Startups - Non-Cold

The Owner's Engineer estimated that a non-cold start will be completed in 88 minutes (time from ignition of the combustion turbine through the full operation of the steam turbine generator) and provided emission estimates for the non-cold start. The emissions provided by the Owner's Engineer were used to calculate hourly average emissions for criteria pollutants except SOx during a non-cold start. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Normal Operation

Following the startup of the CCGS, the CCGS will operate at various load conditions. The CT is expected to operate at loads of 50 percent or higher during normal operation. At CT loads of 50 percent or higher, CO, NOx, and VOC emission levels will be at the BACT level of 2 ppmvd at 15 percent oxygen. The emissions of NOx, CO, VOC, PM_{10} and $PM_{2.5}$ during normal operations were estimated using emission data provided by the Owner's Engineer. SOx emissions were estimated using the SCAQMD default emission factor of 0.6 lb/MMscf. A review of the various operating conditions of the GE 7FA.05 power generating system indicated that a base load operation at 23°F would result in the highest hourly emission rates for all criteria pollutants. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Shutdown

The Owner's Engineer estimated that shutdown will be completed in 25 minutes for a best case set of conditions and provided emission estimates for 25 minutes. However, it was conservatively assumed that the duration of shutdown will be one hour. For estimating shutdown emission for one-hour duration, it was assumed that emissions from 25 to 60 minutes for CO, NOx and VOC will be the same as estimated during normal operation of the CCGS.

PM_{10} and $PM_{2.5}$ emissions were estimated using the AP-42 emission factor of 0.0066 lb/MMBtu. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Commissioning

Commissioning operation will be comprised of the steps from the first fire of the CT through the completion of the CCGS certification. The Owner's Engineer provided a schedule for commissioning the CCGS that includes 24 phases with a total duration of 460 hours. The commissioning emissions for CO, NOx, VOC, PM_{10}, $PM_{2.5}$, and SOx were estimated using the emissions data provided by the Owner's Engineer. Simple Cycle Generating System

Operating modes for the SCGS include startup, normal operation and shutdown. Operated mode for the simple cycle mode (SSGS) begins with each turbine's initial firing and continues until each unit complies with the permitted emission concentration limits. Since oxidation catalyst will not be hot enough during the entire startup period, CO and VOC concentrations are expected to be higher during the startup compared to the normal operation of the CTG.

Simple Cycle Generating System

The operating modes used to estimate peak daily emissions from the SCGS under Generation Scenario 1 are presented in Table 4-2 below. Peak day operating modes assumes four (4) start and four shutdown hours, one out-of-service hour (15 minutes per shutdown), and the remainder of a 24 hour day in normal operating mode. Because this represents the maximum permitted number of starts, shutdowns, and out-of-service hours, this approach is sufficiently conservative to estimate peak daily emissions based on operating mode. Each operating mode is described below.

Table 4-2: Generation Scenario 1 (SCGS) Operating Modes (Peak Daily)

Mode	Factor	Unit	Minutes/day
Startups	4	events/day	100
Normal	20.7	hours/day	1,240
Shutdown	4	events/day	40
Out of Service	4	events/day	60
Total Minutes per Day =			1,440
Total Hours per Day =			24

Startup

The Owner's Engineer estimated that startup will be completed in 25 minutes and provided emission factors for 25 minutes. According to the Owner's Engineer data, NOx emissions during a 25-minute startup period would be 16.6 pounds. LADWP reviewed this data and increased the NOx emissions to 20 pounds per startup to include a safety margin and ensure emissions compliance. This emission rate was also used recently for preparing the air permit application for the Haynes Repowering Project, which consisted of a similar SCGS.

The startup emissions for CO, VOC, and PM_{10} were estimated using the data provided by the Owner's Engineer. SOx emissions were estimated using the SCAQMD's default emission factor of 0.6 lb/MMscf.

Normal Operation

Following the startup of the CTG, the CTG will operate at various load conditions. The CTGs are expected to operate at loads of 50 percent or higher during normal operation. At CTG loads of 50 percent or higher, NOx emission levels will be at the BACT level of 2.5 ppmvd (at 15 percent oxygen). The CO and VOC emission levels will also be at the BACT levels of 4 ppmvd (at 15 percent oxygen) and 2.0 ppmvd (at 15 percent oxygen), respectively.

The emissions for NOx, CO, and VOC during normal operations were estimated using the basic data provided by the Owner's Engineer. PM_{10} emission data are the same as provided by the Owner's Engineer. SOx emissions were estimated using the SCAQMD's default emission factor of 0.6 lb/MMscf.

Criteria pollutants during the normal operation were estimated during the normal operation at ambient temperatures of 23°F, 63°F and 83°F, respectively. The 23°F ambient temperature represents the minimum temperature recorded at the site near SGS (LAX) according to the Western Regional Climate Center. The 83°F ambient temperature represents the maximum monthly average temperature recorded at this site. The 63°F ambient temperature represents the annual mean temperature recorded at this site. The base load operation at 63^{o}F results in the highest hourly emissions for the criteria pollutants.

Shutdown

It is estimated that each shutdown will last approximately 10 minutes. Upon initiation of the shutdown process, ammonia and water injection will be discontinued. According to the Owner's Engineer data, NOx emissions would be 0.5 pound. LADWP reviewed this data and increased the NOx emissions from 0.5 pound to 3 pounds to include a safety margin and insure emissions compliance for shutdown. This emission rate was also used recently for preparing the air permit application for the Haynes Repowering Project, which consisted of a similar SCGS.

The startup emissions for CO, VOC, and PM_{10} were estimated using the data provided by the Owner's Engineer. SO_2 emissions were estimated using the SCAQMD's default emission factor of 0.6 lb/MMscf.

Commissioning

The commissioning operation will involve the steps from first fire of the CTG through completion of the GE LMS100 SCGS certification. The commissioning schedule indicates a total duration of 176 hours consisting of nine phases. The CO, NOx, and VOC emissions were estimated using the emission data used for the Haynes Repowering Project. PM_{10} emissions were estimated using the EPA AP-42 emission factor of 0.0066 lb/MMBtu. SO_x emissions were estimated using the SCAQMD's default emission factor of 0.6 lb/MMscf.

Generation Scenario 2 (Siemens Option)

Operating modes for the Flex Plant 30 CCGS and Flex Plant 10 CCGS include cold startups, non-cold startups, normal operation and shutdowns. .A cold start is a start after a plant shutdown of 64 hours or more. A "non-cold" start is defined as a start after a plant shutdown of less than 64 hours.

Flex Plant 30 Combined Cycle Generating System

The operating modes used to estimate peak daily emissions from Flex Plant 30 under Generation Scenario 2 are presented in Table 4-3 below. Peak day operating modes assumes two (2) non-cold starts, two shutdowns, one out-of-service hour (30 minutes per shutdown), and the remainder of a 24 hour day in normal operating mode. Note that cold starts are not included in the peak day. Emissions modeling showed that due to time not spent in normal operating mode, using one cold and one non-cold start results in lower emissions for NO_x and SO_x. The emissions modeling also showed higher emissions of VOC's (2 percent) and CO (12 percent) and equivalent emission level for PM_{10} and $PM_{2.5}$. However because daily NO_x is estimated to be highest when the CCGS would operate two non-cold starts, this set of operating modes was selected as the basis of developing a peak daily emission rate. Each operating mode is described below.

Table 4-3: Generation Scenario 2 (Flex Plant 30) Operating Modes (Peak Daily)

Mode	Factor	Unit	Minutes/day
Cold	0	events/day	0
Non-Cold	2	events/day	316
Normal	15.7	hours/day	944
Shutdown	2	events/day	120
Out of Service	2	events/day	60
		Total Minutes per Day =	1,440
		Total Hours per Day =	24

<u>Cold Start</u>

The Owner's Engineer estimated that a cold start will be completed in 315 minutes (time from ignition of the combustion turbine through the full operation of the steam turbine generator) and provided emission estimates for the cold start. The emissions provided by the Owner's Engineer for all criteria pollutants except SOx were used to calculate hourly average emissions. SOx emissions were estimated using the SCAQMD's default emission factor of 0.6 lb/MMscf. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project. However, as indicated in Table 4-3, above, a cold start was not used to estimate peak daily emissions for the Flex Plant 30 because a cold start would have a lower hourly emissions rate than a non-cold start and simultaneously displace more normal operations time than a non-cold start, thereby creating lower total daily emissions when compared to using two non-cold starts combined with the corresponding longer normal operations time.

<u>Non-Cold Start</u>

The Owner's Engineer estimated that a non-cold start will be completed in 158 minutes (time from ignition of the combustion turbine through the full operation of the steam turbine generator) and provided emission estimates for the non-cold start. The emissions provided by the Owner's Engineer were used to calculate hourly average emissions for criteria pollutants except SOx. SOx emissions were estimated using the SCAQMD's default emission factor of 0.6 lb/MMscf. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Normal Operation

Following the startup of the CCGS, the CCGS will operate at various load conditions. The CTGs are expected to operate at loads of 50 percent or higher during normal operation. At loads of 50 percent or higher, CO, NOx, and VOC emission levels will be at the BACT level of 2 ppmvd (at 15 percent oxygen). Emissions of NOx, CO, VOC, , PM_{10}, and $PM_{2.5}$ during normal operations were estimated using the emission data provided by the Owner's Engineer. SOx emissions were estimated using the SCAQMD's default emission factor of 0.6 lb/MMscf.

A review of the various operating conditions of the Flex Plant 30 indicated that a base-load operation at 23°F would result in the highest hourly emission rates for all criteria pollutants. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Shutdown

The Owner's Engineer estimated that shutdown will be completed in 25 minutes for a best case set of conditions and provided emission estimates for 25 minutes. However, it was conservatively assumed that the duration of shutdown will be one hour. For estimating shutdown emission for one-hour duration, it was assumed that emissions for the remaining 35 minutes for CO, NOx and VOC will be the same as estimated during normal operation of the CCGS.

PM_{10} and $PM_{2.5}$ emissions were estimated using the AP-42 emission factor of 0.0066 lb/MMBtu. . SOx emissions were estimated using the SCAQMD default emission factor of 0.6 lb/MMscf. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Commissioning

The commissioning operation will be comprised of the steps from the first fire of the CT through the completion of the Flex Plant 30 CCGS certification. The Owner's Engineer provided a schedule for commissioning the CCGS that includes 24 phases with a total duration of 460 hours. The commissioning emissions for CO, NOx, VOC, PM_{10}, $PM_{2.5,}$ and SOx were estimated using the emissions data provided by the Owner's Engineer.

Flex Plant 10 Combined Cycle Generating System

The operating modes used to estimate peak daily emissions from Flex Plant 10 under Generation Scenario 2 are presented in Table 4-4 below. Peak day operating modes assumes one cold start event, two non-cold start, one and one-half out-of-service hours (30 minutes per shutdown), and the remainder of a 24 hour day in normal operating mode. Because this represents the maximum permitted number of starts, shutdowns, and out-of-service hours, this approach conservatively estimates peak daily emissions based on operating mode. Each operating mode is described below.

Table 4-4: Generation Scenario 2 (Flex Plant 10) Operating Modes (Peak Daily)

Mode	Factor	Unit	Minutes/day
Cold	1	events/day	155
Non-Cold	2	events/day	270
Normal	12.4	hours/day	745
Shutdown	3	events/day	180
Out of Service	3	events/day	90
		Total Minutes per Day =	1,440
		Total Hours per Day =	24

Cold Start

The Owner's Engineer estimated that a cold start will be completed in 155 minutes (time from ignition of the combustion turbine through the full operation of the steam turbine generator) and provided emission estimates for the cold start. The emissions provided by the Owner's Engineer for all criteria pollutants except SOx were used to calculate hourly average emissions. SOx emissions were estimated using the SCAQMD's default emission factor of 0.6 lb/MMscf. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Non-Cold Start

The Owner's Engineer estimated that a non-cold start will be completed in 135 minutes (time from ignition of the combustion turbine through the full operation of the steam turbine generator) and provided emission estimates for the non-cold start. The emissions provided by the Owner's Engineer were used to calculate hourly average emissions for criteria pollutants except SOx. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Normal Operation

Following the startup of the CCGS, the CCGS will operate at various load conditions. The CTGs are expected to operate at loads of 50 percent or higher during normal operation. At loads of 50 percent or higher, CO, NOx, and VOC emission levels will be at the BACT level of 2 ppmvd (at 15 percent oxygen). Emissions of NOx, CO, VOC, PM_{10}, and $PM_{2.5}$ during normal operations were estimated using the emission data provided by the Owner's Engineer. SOx emissions were estimated using the SCAQMD's default emission factor of 0.6 lb/MMscf.

A review of the various operating conditions of the Flex Plant 10 indicated that a base-load operation at 23°F would result in the highest hourly emission rates for all criteria pollutants. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Shutdown

The Owner's Engineer estimated that shutdown will be completed in 21 minutes for a best case set of conditions and provided emission estimates for 21 minutes. However, it was conservatively assumed that the duration of shutdown will be one hour. For estimating shutdown emission for one-hour duration, it was assumed that emissions for the remaining 39 minutes for CO, NOx and VOC will be the same as estimated during normal operation of the CCGS.

PM_{10} and $PM_{2.5}$ emissions were estimated using the AP-42 emission factor of 0.0066 lb/MMBtu. SOx emissions were estimated using the SCAQMD default emission factor of 0.6 lb/MMscf. This method is consistent with the approach being used to prepare the SCAQMD permit application for the proposed project.

Commissioning

The commissioning operation will be comprised of the steps from the first fire of the CT through the completion of the Flex Plant 10 CCGS certification. The Owner's Engineer provided a schedule for commissioning the CCGS that includes 24 phases with a total duration of 460 hours. The commissioning emissions for CO, NOx, VOC, PM_{10}, $PM_{2.5,}$ and SOx were estimated using the emissions data provided by the Owner's Engineer.

Diesel-Fueled Emergency Generator

For Generation Scenario 1 (GE Option), peak daily estimated criteria pollutant emissions from one diesel-fueled emergency generator are calculated based on emissions reported by the SCAQMD for Certified Internal Combustion Engines (updated July 10, 2008) for a Caterpillar emergency generator of 3,622 brake horse power rating (Model 3516C-DITA [2,500kW]). For estimating $PM_{10}/PM_{2.5}$ emissions, a control efficiency of 90 percent was used for the diesel particulate filter. It is expected that the diesel generator will be tested every month for one hour. Therefore peak daily emissions are based on one hour per day of operation.

For Generation Scenario 2 (Siemens Option), peak daily estimated criteria pollutant emissions from four diesel-fueled emergency generators are calculated based on emissions reported by the SCAQMD for Certified Internal Combustion Engines (updated July 10, 2008) for a Caterpillar emergency generator of 3,622 brake horse power rating (Model 3516C-DITA [2,500kW]). For estimating $PM_{10}/PM_{2.5}$ emissions, a control efficiency of 90 percent was used for the diesel particulate filter. It is expected that each of the diesel generators will be tested every month for one hour. Therefore peak daily emissions are based on one hour per day of operation. The peak day calculation also assumes that only one generator operates in any given hour and in any given day.

Diesel Fuel Storage Tank

For Generation Scenario 1 (GE Option), one diesel fuel storage tank of 2,800 gallon capacity will be used at SGS for storing diesel fuel for the standby power generator. VOC emissions from the diesel fuel storage tank were estimated using the USEPA TANKS program (Version 4.0.9d). The TANKS program calculated VOC emissions of 3.03 pounds per year for the storage tank r. Peak daily emissions are calculated based on one hour of use per day.

For Generation Scenario 2 (Siemens Option), four diesel fuel storage tanks of 2,800 gallon capacity each will be used at SGS for storing diesel fuel for the standby power generator. VOC emissions from each diesel fuel storage tank were estimated using the USEPA TANKS program (Version 4.0.9d).

The TANKS program calculated VOC emissions of 3.03 pounds per year for the storage tank for 50 hours of operation of the Standby Power Generator. Peak daily emissions are calculated based on one hour of use per day.

Oil Water Separators

For both Generation Scenarios, two oil water separators (OWS) will collect potentially oily wastewater from equipment area wash downs. The only potential oil contaminant is expected to be the lubricating oil associated with the CTs. Oil will collect in the OWS and will be removed by vacuum truck prior to the oil collection section of the OWS reaching capacity. Each OWS will have a capacity of 500 gpm. VOC emissions from the OWS were estimated using USEPA TANKS program (Version 4.0.9d). TANKS program predicted VOC emissions of 13.17 lb/yr from each OWS.

Wet Surface Air Coolers

For Generation Scenario 1 (GE Option), the excess heat from the auxiliary cooling system of the GE 7FA Rapid Response will be managed by installing a wet surface air cooler (WSAC). The WSAC will be comprised of a three cell unit (six fans with six emission points) with a total circulation rate of 10,700 gpm. The drift rate will be 0.0005 percent. Potable water having a total dissolved (TDS) content of 355 ppm will be used for the makeup.

PM_{10} emissions will result due to drift from the WSAC. At a 10,700 gpm circulation rate, drift from the WSAC will be a maximum of 0.054 gpm. Applying the drift factor to the circulation rate and using the TDS content, the resultant PM_{10} emission was estimated to be 0.07 lb/hr and 0.31 ton/yr. TDS in the drift was assumed to be converted to PM_{10} at 100 percent.

For Generation Scenario 2 (Siemens Option), the excess heat from the auxiliary cooling system of the Flex Plant 30 and Flex Plant 10 will be managed by installing a wet surface air cooler (WSAC). The WSAC will be comprised of a three cell unit (six fans with six emission points) with a total circulation rate of 10,900 gpm. The drift rate will be 0.0005 percent. Potable water having a total dissolved (TDS) content of 355 ppm will be used for the makeup.

PM_{10} emissions will result due to drift from the WSAC. At a 10,900 gpm circulation rate, drift from the WSAC will be a maximum of 0.055 gpm. Applying the drift factor to the circulation rate and using the TDS content, the resultant PM_{10} emission was estimated to be 0.07 lb/hr and 0.31 ton/yr. TDS in the drift was assumed to be converted to PM_{10} at 100 percent.

4.2 Ambient Air Dispersion Modeling

Criteria pollutant atmospheric modeling was performed to analyze potential localized ambient air quality impacts associated with commissioning and operation of the proposed project for comparison with NAAQS, CAAQS, and significance criteria.

The latest version of the USEPA's AERMOD model (Version 12060) was used to model NOx, PM_{10}, and CO emissions impacts from the proposed project. All PM_{10} emissions were assumed to be $PM_{2.5}$, and modeling results for PM_{10} were therefore assumed to be representative of results for $PM_{2.5}$. AERMOD was applied with the regulatory default options and the urban modeling option.

4.2.1 Representative Meteorological Data

AERMOD requires a sequential hourly record of dispersion meteorology representative of the region within which the proposed source would be located. AERMOD was applied with 5 years (2005 to

2009) of hourly meteorological data consisting of surface observations from LAX and upper air data from Miramar Marine Corps Air Station in San Diego. A wind rose of the 5 years of data is shown in Appendix D, Figure D-4. The wind rose indicates that the predominant wind direction is west-southwest.

4.2.2 Terrain and Receptor Data Processing with AERMAP

Receptor elevations and hill heights were assigned using USEPA AERMAP and commercially available digital terrain elevations developed by the United States Geological Survey by using its National Elevation Dataset. The National Elevation Dataset data provides terrain elevations with 1-meter vertical resolution and (1 arc-second) 30 meters horizontal resolution based on a Universal Transverse Mercator (UTM) coordinate system. For each receptor location, the terrain elevation was set to the elevation for the closest National Elevation Dataset grid point. The U.S. Geological Survey specifies coordinates in North American Datum 83, UTM Zone 11. Lakes Environmental software was used for assigning elevations to various receptors and hill heights.

The receptor modeling grid consists of three parts: 1) receptors along the perimeter of SGS with a spacing of approximately 50 meters, 2) receptors spaced 100 meters apart extending from the previous receptors to approximately 3 kilometers from the property line, and 3) receptors spaced 500 meters apart extending from the previous receptors approximately 2 additional kilometers. Thus, receptors up to about 5 kilometers from the property line were selected for modeling analysis. Discrete receptors within 1 mile of SGS were also located at sensitive receptors (e.g., schools, daycare centers, hospitals, etc.). No receptors were placed within the SGS property or on roadways or over water. All coordinates for sources and receptors were specified in North American Datum 83, UTM Zone 11.

4.2.3 Stack and Emissions Data

Generation Scenario 1 (GE Option)

<u>Commissioning</u>

The GE 7FA.05 will be commissioned in 24 different phases. The two GE LMS100 simple cycle turbines will be commissioned in nine phases. The dispersion characteristics (flow rate and temperature) and pollutant emissions vary greatly from phase to phase. In order to be conservative, the maximum emission rate for each pollutant over all phases of commissioning was modeled using the worst case dispersion characteristics for any of the commissioning phases for that turbine type. The stack parameters and emissions for the 7FA.05 and LMS100 combustion turbines are shown in Table D-1 of Appendix D-2 of this Air Quality and Climate Change Technical Report. Note that the emergency generator was not included in the commissioning modeling because it is assumed that the emergency generator will not be tested at the same time as the turbines are being commissioned. As an additional measure of conservatism, it is assumed that all three of the turbines are being commissioned at the worst case emission rate simultaneously, which is highly unlikely to occur. Lastly, for the 8-hour CO averaging period modeling, it was assumed that the maximum emission rate was maintained for all turbines for all 8-hours, a highly conservative measure.

<u>Turbine Information</u>

The dispersion modeling analysis was conducted with emission rates and flue gas exhaust characteristics (flow rate and temperature) that are expected to represent the range of possible values for the natural gas-fired turbines under consideration. Because turbine emission rates and flue gas characteristics for a given turbine load vary as a function of the type of operation, ambient temperature, and fuel use, data was derived for a number of ambient temperature cases for natural gas fuel under normal operations at 100 percent, 75 percent and 50 percent operating loads and for hourly cold start, non-cold start, and shutdown scenarios. Temperatures evaluated for normal operations were 23°F, 63°F and 83°F.

A detailed summary of the stack exhaust and emissions data for all operation scenarios, loads and ambient temperatures cases are provided in Appendix D. To be conservative and limit the number of cases to be modeled, the short-term modeling analysis (modeling for averaging periods of 24 hours or less) was conducted using the lowest stack exhaust temperature and exit velocity coupled with the maximum emission rate over all ambient temperature cases for each operating load scenario.

Annual modeling was based on the 100 percent load 63ºF case, assumed to be the most typical operating scenario. Stack parameters and emission rates (normal operations and cold start/shutdown) at various load settings used in the modeling for the combustion turbines are presented in Tables D.1-3 through D.1-6 of Appendix D.1 of this Air Quality and Climate Change Technical Report. Maximum emission rates for annual modeling were quantified based on the proposed permitted number of cold-starts, non-cold starts, and shutdowns that would be allowed per year with the remaining hours per year attributed to the facility emissions in normal operation mode. For Generation Scenario 1 (GE Option), annual emissions for the CCGS were based on 146 hours at cold start conditions (53 start-ups/year at 166 minutes each), 1,528 hours at non-cold start conditions, 1,095 hours at shutdown conditions, and 5,443.5 hours at normal operating mode. Annual emissions for the SSGS were based on 913 hours at startup conditions, 365 hours at shutdown conditions, and 3,891 hours at normal operating mode (capacity factor of 59 percent, or 5,168 hours/year). This approach is consistent with initial operating limits used in preparation of the SCAQMD permit application and that would not be exceeded.

Diesel Emergency Generator

In addition to the three combustion turbines, the proposed facility under Generation Scenario 1 will include a diesel-fired emergency generator. The emergency generator was modeled at its peak capacity for short-term average impacts. For annual average impacts, the emission rate modeled was based on total emissions assuming 200 hours per year operation, based on annual permit limits established by the SCAQMD.

Since the emergency generator will be limited in the amount of annual hours of operation, in accordance with USEPA guidance for intermittent sources, the emergency generator was not included in the modeling for 1-hour NO_2 NAAQS. However, the emergency generator was included in the modeling for all other pollutants and averaging periods as well as annual NO_2. It was also included in modeling for 1-hour NO_2 CAAQS. For those short-term modeling standards that are longer than 1 hour (3-hour SO_2, 8-hour CO, and 24-hour SO_2, PM_{10}, and $PM_{2.5}$), the emission rate determined for the short-term modeling was divided by the number of hours in the averaging period to simulate that the engine will only be tested for 60 minutes on any given day. The stack parameters and emission data for the emergency generator are presented in Table D-7 of Appendix D of this Air Quality and Climate Change Technical Report.

Wet Surface Air Cooler

The proposed facility under Generation Scenario 1 will include a WSAC with six fans designed to reduce excess heat from the CCGS (GE-7FA combustion turbine) auxiliary cooling system. The stack parameters and emissions for the WSAC are presented in Table D-8 in Appendix D of the Air Quality and Climate Change Technical Report.

Generation Scenario 2 (Siemens Option)

Commissioning

The Siemens Flex-Plant 30 CCGS combustion turbine will be commissioned in 24 different phases. The Siemens Flex-Plant 30 CCGS will also be commissioned in 24 phases. The dispersion characteristics (flow rate and temperature) and pollutant emissions vary greatly from phase to phase. In order to be conservative, the maximum emission rate for each pollutant over all phases of commissioning was modeled using the worst case dispersion characteristics for any of the commissioning phases for that turbine type. The stack parameters and emissions for the Flex-Plant 30 and Flex-Plant 10 combustion turbines are shown in Table D-2 of Appendix D-2 of this Air Quality and Climate Change Technical Report. Note that the emergency generators were not included in the commissioning modeling because it is assumed that the emergency generators will not be tested at the same time as the turbines are being commissioned. As an additional measure of conservatism, it is assumed that both of the turbines are being commissioned at the worst case emission rate simultaneously, which is highly unlikely to occur. Lastly, for the 8-hour CO averaging period modeling, it was assumed that the maximum emission rate was maintained for all turbines for all 8-hours, a highly conservative measure.

Turbine Information

As with Generation Scenario 1, dispersion modeling analysis was conducted with emission rates and flue gas exhaust characteristics (flow rate and temperature) that are expected to represent the range of possible values for the natural gas-fired turbines under consideration. Because turbine emission rates and flue gas characteristics for a given turbine load vary as a function of the type of operation, ambient temperature, and fuel use, data was derived for a number of ambient temperature cases for natural gas fuel under normal operations at 100 percent, 75 percent and 50 percent operating loads and for hourly cold start, non-cold start, and shutdown operating scenarios. Temperatures evaluated for normal operations were 23°F, 63°F and 83°F.

A detailed summary of the stack exhaust and emissions data for all operation scenarios, loads and ambient temperatures cases are provided in Appendix D of this Air Quality and Climate Change Technical Report. To be conservative and limit the number of cases to be modeled, the short-term modeling analysis was conducted using the lowest stack exhaust temperature and exit velocity coupled with the maximum emission rate over all ambient temperature cases for each operating load scenario.

Annual modeling was based on the 100 percent load 63°F case, assumed to be the most typical operating scenario. Stack parameters and emission rates (normal operations and cold start/shutdown) at various load settings used in the modeling for the combustion turbines are presented in Tables D-9 through D-12 of Appendix D of the Air Quality and Climate Change Technical Report. Maximum emission rates for annual modeling were quantified based on the proposed permitted number of cold-starts, non-cold starts, and shutdowns that would be allowed per year with the remaining hours per year attributed to the facility emissions in normal operation mode. For Generation Scenario 2 (Siemens Option), annual emissions for the CCGS Flex-Plant 30 were based on 278 hours at cold start conditions (53 start-ups/year at 315 minutes each), 2,474 hours at non-cold start conditions, 1,095 hours at shutdown conditions, and 4,095.5 hours at normal operating mode. Annual emissions for the CCGS Flex-Plant 10 were based on 137 hours at cold start conditions (53 start-ups/year at 155 minutes each), 3,166 hours at non-cold start conditions, 1,460 hours at shutdown conditions, and 3,267 hours at normal operating mode. This approach is consistent with initial operating limits used in preparation of the SCAQMD permit application and that would not be exceeded.

Diesel Emergency Generator

In addition to the two combustion turbines, the proposed facility under Generation Scenario 2 will include four diesel-fired emergency generators. The emergency generators were modeled at their peak capacity for short-term (modeling for averaging periods of 24 hours or less) average impacts. However, no more than one of the emergency generators will be tested at a given time. To represent the testing in the modeling, each model run that includes emergency generator emissions has four source groups, each of which represents all of the facility sources operating plus one of the four emergency generators being tested. The results of those runs were then compared and the worst case impacts of the four reported in the modeling results. For annual average impacts, the emission rate modeled was based on total emissions assuming 200 hours/year operation.

Since the emergency generators will be limited in the amount of annual hours of operation, in accordance with US EPA guidance for intermittent sources, the emergency generators were not included in the modeling for 1-hour NO_2 NAAQS as described in Section 1.7 of Appendix D of this Air Quality and Climate Change Technical Report. However, the emergency generators were included in the modeling for all other pollutants and averaging periods as well as annual NO_2. They were also included in modeling for 1-hour NO_2 CAAQS. For those short-term modeling standards that are longer than 1-hour (3-hour SO_2, 8-hour CO, and 24-hour SO_2, PM_{10}, and $PM_{2.5}$), the emission rate determined for the short term modeling was divided by the number of hours in the averaging period to simulate that the engine will only be tested for 60 minutes on any given day. Stack parameters and emission data for each emergency generator are presented in Table D-13 of Appendix D of this Air Quality and Climate Change Technical Report.

Wet Surface Air Cooler

The proposed facility under Generation Scenario 2 will include a WSAC with six fans designed to reduce excess heat from the CCGS's (Siemens Flex Plant 30 and Flex Plant 10 combustion turbines) auxiliary cooling system. The stack parameters and emissions for the WSAC are presented in Table D-14 in Appendix D of this Air Quality and Climate Change Technical Report.

4.3 Health Risk Assessment

An HRA was conducted to evaluate potential health risks from emissions from the proposed project. TACs will be emitted during the short-term construction phase and the long-term operational phase of the proposed project from the combustion of fuel in construction equipment, combustion sources, and the release of fugitive emissions from the diesel fuel storage tank(s). A detailed analysis of the HRA is provided in Appendix C of this Air Quality and Climate Change Technical Report.

4.3.1 TAC Sources

Construction

The proposed project may result in a short-term increase in TAC emissions related to construction activities. These emissions should cease following completion of construction. The main contaminant of concern associated with construction activities is DPM, which has been listed as a TAC by ARB. Based on draft updated OEHHA guidance released in February 2012, cancer health risk impacts should be evaluated for construction activities occurring over a period greater than six months. As described in Section 1.2.1, three primary construction phases will occur over an 8.25 year period; therefore, the most applicable scenario and exposure duration would be nine years. (A nine-year period is the shortest exposure duration currently defined by OEHHA for evaluating cancer health risk.)

Operation

Potential sources of TAC emissions under Generation Scenario 1 include a combined cycle generating system (CCGS) (GE 7FA turbine), a simple cycle generating system (SCGS) (comprised of two GE LMS100 turbines), an emergency generator, one diesel fuel storage tank, and WSAC comprised of six cells. Sources of TAC emissions under Generation Scenario 2 include: a Siemens Flex-Plant 30 turbine, a Flex-Plant 10 turbine, four emergency generators, four diesel fuel storage tanks, and WSAC comprised of six cells.

4.3.2 Methodology

The HRA evaluated potential cancer risk and non-cancer health hazards. The HRA was performed using the Hotspots Analysis and Reporting Program (HARP) software package (Version 1.4e) developed by ARB for conducting health risk assessments in California under the Air Toxics “Hot Spots” Program. Dispersion modeling was performed using the USEPA guideline model AERMOD (version 12060).

The dispersion modeling analysis was performed outside the HARP modeling system using the USEPA regulatory model AERMOD (version 12060), which estimates both short-term and long-term average ambient concentrations at receptor locations to produce exposure estimates. AERMOD was used in the urban mode with all model option switches set to regulatory-default settings. Modeling was performed using a UTM, zone 11, North American Datum 83 coordinate system. AERMOD accounts for site-specific terrain, meteorological conditions, and emissions parameters such as stack exit velocities and temperatures in order to estimate ambient concentrations. The emissions from the proposed project sources were modeled in AERMOD using a normalized (“unit”) emission rate. HARP On-Ramp (version 1), which allows use of AERMOD modeling files with HARP, was used to develop files from the AERMOD dispersion modeling files to conduct the risk analysis in HARP. The air dispersion analysis was conducted using 5 consecutive years (2005 to 2009) of sequential hourly meteorological data.

On-site DPM emissions generated from off-road construction equipment and on-site motor vehicles were calculated for the total project as 7,674 and 8,197 lbs for Generation Scenarios 1 and 2, respectively. Due to the concentrated level of activity within a given area during construction, DPM emissions were modeled as four area sources. Area source locations, as presented in Figure 2, represent the following concentrated activity areas: 1) CCGS/SSGS and cooling units, 2) tank demolition, 3) switchyard expansion, and 4) Unit 3 demolition/basin backfill. Construction-related cancer risk impacts were modeled for a nine–year exposure period. Total DPM emissions over the construction period were divided by nine years to calculate the annual average DPM emission rate corresponding to a nine-year exposure period.

Sources of TAC emissions from the operation of the turbines, emergency generator(s), and diesel fuel storage tank(s) were modeled as point sources with release parameters consistent with those used for modeling air quality impact analysis of criteria pollutants. For the HRA, worse-case release parameters (i.e., parameters that occur during cold start conditions) were used to model 1-hour and annual ground-level concentrations from each turbine.

The latest version of the USEPA Building Profile Input Program (BPIP-PRIME) was run to determine dominant structures for building downwash in AERMOD for the point sources. Direction-specific building heights and widths of the dominant downwash structure(s) were included in the AERMOD model data input file directly from BPIP-PRIME results.

Terrain elevations from the United States Geological Service National Elevation Dataset were processed with AERMAP (version 12060) to develop the terrain elevations and corresponding hill height scale required by AERMOD. A Cartesian receptor grid was developed to identify the locations of the maximum modeled impact near SGS. No sensitive receptors (i.e., locations where a sensitive population segment such as children, elderly, or the infirmed may be exposed to TACs from the Project) were identified.

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. The approved health values are incorporated into HARP Version 1.4e. The HARP software performs the necessary risk calculations following the OEHHA risk assessment guidelines and the ARB Interim Risk Management Policy for risk management decisions.

The following HARP options were used for the risk analysis to estimate cancer and non-cancer impacts at the maximum impact location on the receptor grid:

- 70-year Resident Cancer Risk – Derived (Adjusted) Method (operation only);
- 9-year Child Resident Cancer Risk – Derived (OEHHA) Method (construction and operation);
- 9-year Adult Resident Cancer Risk – Derived (OEHHA) Method (construction only);
- 40-year Worker Cancer Risk – Point Estimate (operation only);
- Chronic Hazard Index – Derived (OEHHA) Method (construction and operation); and
- Acute Hazard Index – Simple Acute HI (operation only).

While carcinogenic and chronic non-carcinogenic health risk values have been established for DPM, no acute diesel exhaust health risk values have been established to evaluate acute (i.e., short-term) health effects related to DPM. Therefore, the HRA did not evaluate acute impacts for construction DPM emissions.

The Derived (OEHHA) risk analysis method uses the high-end point-estimates of exposure for the two dominant (driving) exposure pathways, while the remaining exposure pathways use average point estimates. The Derived (Adjusted) method is identical to the Derived (OEHHA) method but uses the breathing rate at the 80th percentile of exposure rather than the high-end point-estimate when the inhalation pathway is one of the dominant exposure pathways. The cancer risk estimates using the Derived equations/methods are based on a 70-year exposure (resident). The point-estimate analysis uses a single value rather than a distribution of values in the dose equation for each exposure pathway.

The off-site worker exposure duration assumed a standard work schedule since the facility will operate full time, per OEHHA guidance. For the cancer and chronic HI impacts for workers, the HARP modeling option “modeled GLC and default exposure assumptions” was used. This includes the highly conservative 40-year exposure duration for the worker receptors along with an OEHHA-defined 95th percentile breathing rate of 393 liters of air per kilogram-day. Child cancer risk was evaluated for a 9-year exposure scenario. The simple acute HI method is a conservative approach where the maximum concentrations from each emission source are superimposed to impact receptors at the same time, irrespective of wind direction and/ or atmospheric stability, and is a health protective approach to assess acute impacts.

The modeled exposure pathways consisted of all pathways recommended for a health risk assessment. 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. Exposure routes for the ingestion of local fish, poultry, or livestock, and drinking water were not considered in this risk analysis because there are no such areas within the proposed project's area of influence. Long-term risks (i.e., cancer and chronic non-carcinogenic HI) and short-term risk (acute HI) were calculated at the identified off-site receptors.

4.4 Greenhouse Gas Emissions

4.4.1 Construction Sources

Direct Emission Sources

Emissions of GHG, predominately in the form of CO_2, would be generated during operation of diesel-fueled off-road equipment and gasoline-fueled on-road motor vehicles. GHG emissions from off-road equipment were estimated by multiplying total monthly usage by equipment-specific GHG emission factors. Horsepower-based composite factors, with built-in load factors, were utilized to estimate total project GHG emissions. The emission factors were obtained from the SCAQMD's website (SCAQMD 2011) and represent the fleet-wide average emission factors during 2012, within the SCAB. The equipment-specific load factors have been updated by multiplying the emission factor by 0.67, consistent with the CARB's recently released off-road mobile source emission inventory model (OFFROAD 2011). Total project GHG emissions were estimated by summing the total monthly emissions for the project duration.

Emissions from the operation of gasoline-fueled and diesel-fueled on-road motor vehicles, such as worker commute vehicles, haul trucks, dump trucks and flat-bed trucks were estimated using CARB's On-Road EMFAC2011 mobile source emission factors, obtained from the EMFAC2011 output . For this analysis, it has been assumed that field/construction workers and administrative personnel travel a roundtrip distance of 60 and 45 miles, respectively. As described in Section 1.2.1, an average vehicle occupancy of 1.2 has been applied to daily worker trips to account for carpooling during construction. Haul truck trips are assumed to travel a roundtrip distance of 60 miles during material delivery and removal.

Total project GHG emissions from off- and on-road vehicles have been amortized over the projected economic lifetime of the project, assumed to be equal to 30-years. Schedule assumptions, hours of operation, equipment type, and detailed emission calculations are provided in Appendix A of this Air Quality and Climate Change Technical Report.

Indirect Emission Sources

Emissions from the generation of purchased electrical power used during construction of the proposed project would be minimal, because construction activities requiring electricity, including temporary trailers, sign boards, electric-welders or site lighting, would be powered by on-site diesel-fueled generators. Electric-driven components consuming purchased power are assumed to be minimal and would result in negligible emissions. Additional analysis has not been conducted.

4.4.2 Operational Sources

Potential annual GHG emissions were calculated for operation of the emergency diesel generators and the new circuit breakers, expressed as MT CO_2e/year. GHG emissions for the electrical generators were calculated based on performance, expressed as pounds CO_2 per MWh.

Potential Annual Emissions

Annual GHG emissions from the emergency diesel generator were calculated for the non-emergency, routine maintenance operation of 50 hours per year. Annual usage of 50 hours is based on SCAQMD permit limits for non-emergency maintenance and testing of emergency generators.

In addition, the proposed 230-kV switch rack and emergency generator would each include six new circuit breakers. Circuit breakers containing SF_6 may result in SF_6 emissions due to leaking from equipment deterioration. Emissions of SF_6 were quantified based on a charge of 270 pounds per breaker and 31.7 pounds per breaker for the switch rack and generator, respectively. An assumed leak rate of one-half (0.5) percent, which has been determined by the CEC as BACT for new circuit breakers, was applied to annual operations, as well as a GWP of 23,900 based on a 100-year time horizon.

Potential annual GHG emission calculations are provided in Appendix E of this Air Quality and Climate Change Technical Report.

GHG Emission Performance

Impacts to GHG emissions from the proposed project were evaluated using GHG emission performance, expressed as pounds CO_2 per MWh. For Generation Scenario 1 (GE Option), the emission performance calculation included both the CCGS and the SCGS. Similarly, for Generation Scenario 2 (Siemens Option), the emission performance calculation included both CCGSs (Flex-Plant 10 and Flex-Plant 30).

Although CO_2 emissions from the CTGs are generally proportional to fuel use, electrical generation is not directly proportional to fuel use. For example, during startups and when operating at loads less than 100 percent, the quantity of fuel used per MWh of electricity generated will be higher than when operating at 100 percent load. Because annual operations are expected to include startups, shutdowns and periods operating at less than 100 percent load, annual CO_2 emissions per MWh would be higher than estimated assuming operation at 100 percent load at the annual capacity factor.

Upper limits of the annual pounds of CO_2 per MWh that would be emitted by each generating unit were estimated based on operating the CCGS power generating system (GE 7FA, Siemens Flex-Plant 10 and Siemens Flex-Plant 30) at 50 percent load and a 3 percent performance degradation over time and operating the SCGSs (GE LMS100s) at 60 percent load and a 2 percent performance degradation over time. The estimates also include normal operation, startup operation and shutdown operation.

The GHG emission performance for each generation scenario was then estimated by calculating a weighted average of the emission performance for each generating unit, where the weighting was based on the anticipated fraction of total annual generation for the individual generating units, as follows:

1. The gross generating capacity of each unit was multiplied by its maximum annual capacity factor to calculate an annualized generating capacity. The annual capacity factors used for

the CCGS and SCGS for Generation Scenario 1 (GE Option) were 100 percent and 59 percent, respectively. The annual capacity factors used for the Flex-Plant 10 and Flex-Plant 30 for Generation Scenario 2 (Siemens Option) were both 100 percent.

2. The annualized generating capacities of the units were summed to calculate a total annualized generating capacity.
3. The annualized generating capacity of each unit was divided by the total annualized generating capacity to calculate the fraction of total annualized generating capacity for each unit.
4. The GHG emission performance for each generating unit was multiplied by its fraction of the total annualized generating capacity and the results were summed to calculate total GHG emission performance.

GHG emission performance calculations are provided in Appendix E of this Air Quality and Climate Change Technical Report.

4.5 Carbon Monoxide Hot Spots

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. A CO Hot Spots Analysis of these impacts is required if:

- The project is anticipated to increase the volume-to-capacity ratio of an intersection rated C, resulting in a change of level-of-service (LOS) from C to D or worse; or
- The project is anticipated to increase the volume-to-capacity ratio of an intersection rated D or worse by 0.02.

Based on the Traffic and Transportation Study, intersections within the project area would remain at an LOS C during project construction. Operational impacts would not result in increased trip generation or roadway/intersection impacts. Therefore, a CO Hot Spots analysis is not required, and it is presumed that the proposed project would not create a significant adverse CO emissions impact from off-site construction traffic.

5.0 Thresholds of Significance

5.1 Criteria Pollutants, Toxic Air Contaminants and Odors

The thresholds for determining the significance of air quality impacts for this analysis are based on the environmental checklist in Appendix G of the CEQA Guidelines. Per the CEQA Guidelines, the proposed project would result in a significant air quality impact if the project would do any of the following as a result of implementation:

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

As stated in Appendix G of the CEQA Guidelines, the significance criteria established by the applicable AQMD or air pollution control district may be relied upon to make the above determinations. Thus, the appropriate district-recommended significance thresholds, as published in their respective CEQA guidance documents, also apply to individual projects under their jurisdiction. The SCAQMD has established air quality significance thresholds for construction and operation to evaluate localized and regional impacts, as presented in Table 5-1.

Table 5-1: Air Quality Significance Thresholds

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NO_x	100 lb/day	55 lb/day
VOC	75 lb/day	55 lb/day
PM_{10}	150 lb/day	150 lb/day
$PM_{2.5}$	55 lb/day	55 lb/day
SO_x	150 lb/day	150 lb/day
CO	550 lb/day	550 lb/day
Lead	3 lb/day	3 lb/day

Table 5-1: Air Quality Significance Thresholds

Toxic Air Contaminants (TAC) and Odor Thresholds	
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic and Acute Hazard Index ≥ 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402
GHG	10,000 MT/yr CO2e for industrial facilities
Ambient Air Quality Standards for Criteria Pollutants	
NO_2	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards;
1-hr average	0.18 ppm (state)
Annual arithmetic mean	0.03 ppm (state) and 0.0534 ppm (federal)
PM_{10}	
24-hour average	10.4 μg/m^3 (construction) & 2.5 μg/m^3 (operation)
Annual average	1.0 μg/m^3
$PM_{2.5}$	
24-hour average	10.4 μg/m^3 (construction) & 2.5 μg/m^3 (operation)
SO_2	
1-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile)
24-hour average	0.04 (state)
Sulfate	
24-hour average	25 μg/m^3
CO	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards;
1-hour average	20 ppm (state) and 35 ppm (federal)
8-hour average	9.0 ppm (state/federal)
Lead	
30-day Day Average	1.5 μg/m3 (state)
Rolling 3-month average	0.15 μg/m3 (federal)
Quarterly average	1.5 μg/m3 (federal)

Acronyms: μg/m^3 = micrograms per cubic meter; lb/day = pounds per day; ppm = parts per million; > greater than; $CO2_e$ = carbon dioxide equivalent; MT/yr = metric tons per year; GHG = greenhouse gas; SCAQMD = South Coast Air Quality Management District; NOx = Nitrogen Oxide; VOC = volatile organic compound; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; Sox = sulfur oxides; CO = carbon monoxide; NO_2 = nitrogen dioxide

Notes:

Based on SCAQMD 2006 "Final Methodology to Calculate Particulate Matter (PM) 2.5 and $PM_{2.5}$ Significance Thresholds", regional thresholds, October 2006.

Table 5-1: Air Quality Significance Thresholds

Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated. Source: SCAQMD, 2011. SCAQMD Air Quality Significance thresholds. Available at: http://www.aqmd.gov/ceqa/handbook/signthres.pdf

5.2 Greenhouse Gases

Jurisdictional and lead agencies and professional organizations such as the SCAQMD, ARB, the California Air Pollution Control Officers Association, and the Bay Area Air Quality Management District have developed both quantitative and qualitative interim significance thresholds for project-level GHGs. As presented in Table 5-1, the SCAQMD has adopted an interim numerical GHG significance threshold of 10,000 metric tons CO_2e for industrial projects, such as a manufacturing facility or refinery. The interim threshold accounts for emissions generated during both construction and operation, and recommends that construction emissions be amortized over a 30-year projected project lifetime.

However, electrical generation that serves a distribution grid is part of the California energy system and a comparison of direct emissions to mass emission standards does not adequately assess the overall impact of GHG emissions or climate change. The mass emission standards do not consider individual or system-wide electrical generating efficiency or recent SCAQMD and CEC energy policies that recognize the need for fossil fuel electricity generation in order to support power reliability in response to increasing demand for renewable energy sources. These policies ensure that clean air goals of California are advanced by permitting agencies by requiring all proposed fossil-fueled plants to meet BACT and that project applications take into account energy generation efficiency. The most appropriate threshold for evaluating significance for the proposed project is the base-load performance standard established pursuant to SB 1368 of 1,100 lbs CO_2 per MWh, which is recommended for impact evaluation for a power generation project.

As discussed in Section 3.2.3, SB 1368 was signed into law in September 2006 and established emission performance standards for new base-load generation within California. SB 1368, in conjunction with the California RPS, is intended to reduce GHG emissions within the electricity generation sectors. RPS requires energy providers to procure and generate electricity from renewable energy for up to 20 percent of their retail energy. Renewable energy production and use creates a problem of intermittency whereby base-load power must be used to accommodate variances in energy demand and renewable energy production. Utilizing the lowest energy intensity available for base-load power will reduce GHG emissions system-wide. Therefore, a GHG evaluation based on a performance standard for electricity production will produce an accurate assessment of environmental impacts.

SB1368 requires that all new baseload power generation (i.e., intended to generate at an annualized plant capacity factor of at least 60 percent) of load-serving entities (utilities) meet emission performance standard for all baseload generation that is no higher than the rate of emissions of GHG's for combined-cycle natural gas baseload generation. Compliance with the performance standard will be determined based on the net emissions resulting from the production of electricity by the baseload generation.

In keeping with the intent of CEQA, to maintain a quality environment now and in the future, the ultimate goal of a GHG impact analysis is to reduce man-made causes of climate change across the globe. The performance standard accounts for system-wide impacts taking into consideration the qualitative, economic, and technical factors or the electricity industry. Such an analysis will account for project-level improvements such as reduced natural gas use, improved efficiency, and overall reduced emissions. Analyzing GHG emission impacts based on a performance standard is consistent with numerous projects certified through the CEC that have utilized an efficiency standard to evaluate project-level impacts. The CEC's evaluation of the Pio Pico Energy Center Power Project and the Carlsbad Energy Center Project are two examples.

GHG emission performance standards have not been established for non-baseload power generation, such as the peaking units included in the proposed project. However, to evaluate the significance of GHG emissions from all of the proposed new electrical generation units, the 1,100 pounds CO_2 per MWh performance standard established pursuant to SB 1368 is applied to the overall GHG emission performance, including the peaking units.

Emissions of GHG due to construction activities and secondary sources during operations (circuit breaker leakage and blackstart generator operation) are not included in the net emissions resulting from the production of electricity by the baseload generation pursuant to SB 1368. It would not be appropriate to include these in the mass emissions used to evaluate GHG significance because it is not how energy projects are evaluated pursuant to SB 1368. In addition, there is no other construction-related efficiency performance standard for determining the significance of GHG impacts that has been adopted by the SCAQMD or the state. However the SCAQMD interim GHG mass emission threshold is intended to cover construction-related activities. Therefore, GHG emissions generated during construction and secondary sources during operations are most appropriately evaluated separately from electrical generation and based on the GHG mass emission CEQA threshold established by the SCAQMD shown in Table 5-1.

6.0 Impact Assessment

6.1 Criteria Pollutant Emissions

6.1.1 Construction Emissions

Regional Construction Emissions Impacts

Regional air quality impacts have been evaluated by quantifying the peak daily emissions generated from diesel- and gasoline-fueled construction equipment, haul/delivery trucks, and worker commute trips, as well as fugitive dust generated during demolition and earthmoving activities. As described in Section 4.1.1, peak daily emissions are based on peak monthly activities. Emissions for each month of activity, as presented in Table 6-1, were quantified to determine the peak month of emissions; peak daily emissions are based on 20 days per month of activity. As described in Section 1.2.3, construction activities would occur in three phases. The anticipated duration and overlapping months are presented in Table 6-1 below.

Table 6-1: Construction Activities and Schedule

Phase	Activity	Duration	Months
1	Demolition of Four Storage Tanks in southeast corner	3 months	1 though 3
	Site Preparation	9 months	4 through 12
2	Plant Construction[1]	28 months	10 through 37
	Switchyard Expansion	9 months	29 through 37
3	Unit 3 Pre-Demolition	30 months	46 through 75
	Unit 3 Demolition	11 months	76 through 86
	Unit 3 Basin Retaining Wall	3 months	87 through 89
	Unit 3 Basin Backfill, Compact and Grade	10 months	90 through 99

Construction Emissions for Generation Scenario 1

Peak daily emissions generated as a result of construction for Generation Scenario 1 would occur during plant construction activities, as presented in Table 6-2. Components of plant construction include civil earthwork, foundation pouring, and structural, mechanical and electrical installations. Peak daily emission during plant construction are based on up to 102 pieces of equipment operating concurrently, as presented in Table 3a of Appendix A in this Air Quality and Climate Change Technical Report. This level of activity occurs during concurrent civil earthwork, structural, mechanical and electrical components, as presented in Table 6-2 below.

Table 6-2: Regional Impact Analysis - Peak Daily Criteria Pollutant Emissions Summary for Generation Scenario 1 (GE Option)

Phase	Activity Description	Criteria Pollutant					
		VOC	CO	NOX	SOX	PM_{10}	$PM_{2.5}$
1	Storage Tank Demolition	8.7	44.0	89.3	0.1	4.4	3.6
	Site Preparation	39.0	154.3	**317.2**	0.4	29.5	16.3
2	Plant Construction	57.3	255.5	**372.6**	0.6	30.9	18.7
	Switchyard Expansion	37.0	206.2	**180.2**	0.4	12.9	9.9
3	Unit 3 Pre-Demolition	0.2	1.7	1.1	0.0	0.1	0.1
	Unit 3 Demolition	15.0	65.1	**122.6**	0.2	6.5	5.8
	Unit 3 Basin Retaining Wall	7.7	32.2	52.2	0.1	3.1	2.8
	Unit 3 Basin Backfill, Compact and Grade	3.1	14.7	22.0	0.0	3.5	1.5
Peak Daily Emissions, lb/day =		57.3	255.5	**372.6**	0.6	52.9	30.9
SCAQMD Mass-Daily Threshold (Construction)[1]		75	550	100	150	150	55
Exceed SCAQMD Mass-Daily Threshold (Y/N)?		No	No	**Yes**	No	No	No

Values in "bold" exceed the SCAQMD's mass-daily threshold

Source:

1) SCAQMD CEQA Thresholds, March 2011. Available at: http://www.aqmd.gov/ceqa/handbook/signthres.pdf

Modeled by AECOM 2012

The construction emissions for Generation Scenario 1 are compared to the SCAQMD's regional mass daily significance thresholds, as presented in Table 6-2. Emissions during the construction phase are not expected to exceed the significance thresholds for CO, VOC, SOx, PM_{10}, and $PM_{2.5}$, but peak daily construction emissions are anticipated to exceed the significance threshold for NOx. Therefore, the air quality impacts associated with construction activities of Generation Scenario 1 are considered significant. Details of the construction emission calculations are included in Appendix A in this Air Quality and Climate Change Technical Report.

Construction Emissions for Generation Scenario 2

As described above for construction of Generation Scenario 1, peak daily emissions generated as a result of construction for Generation Scenario 2 would occur during plant construction activities. Peak daily emission during plant construction occurs during concurrent civil earthwork, structural, mechanical and electrical components. Peak daily activities include operation of up to 101 pieces of equipment operating concurrently, worker commute trips, and haul truck deliveries, as presented in Table 3b of Appendix A in this Air Quality and Climate Change Technical Report. Construction under Generation Scenario 2 is anticipated to require up to 20 percent more workers compared to Generation Scenario 1, which contributes to the increase in emissions compared with Generation Scenario 1, as presented in Table 6-2 and 6-3.

Table 6-3: Regional Impact Analysis - Peak Daily Criteria Pollutant Emissions Summary for Generation Scenario 2 (Siemens Option)

Phase	Activity Description	Criteria Pollutant					
		VOC	CO	NOX	SOX	PM_{10}	$PM_{2.5}$
1	Storage Tank Demolition	8.7	44.0	89.3	0.1	4.4	3.6
	Site Preparation	39.0	154.3	**317.2**	0.4	29.5	16.3
2	Plant Construction	64.4	289.5	**397.1**	0.6	31.2	19.4
	Switchyard Expansion	38.0	214.9	**181.9**	0.4	13.1	10.0
3	Unit 3 Pre-Demolition	0.2	1.7	1.1	0.0	0.1	0.1
	Unit 3 Demolition	15.0	65.1	**122.6**	0.2	6.5	5.8
	Unit 3 Basin Retaining Wall	7.7	32.2	52.2	0.1	3.1	2.8
	Unit 3 Basin Backfill, Compact and Grade	3.1	14.7	22.0	0.0	3.5	1.5
Peak Daily Emissions, lb/day =		64.4	289.5	**397.1**	0.6	53.2	31.2
SCAQMD Mass-Daily Threshold (Construction)		75	550	100	150	150	55
Exceed SCAQMD Mass-Daily Threshold (Y/N)?		No	No	**Yes**	No	No	No

Values in "bold" exceed the SCAQMD's mass-daily threshold

Source:

1) SCAQMD CEQA Thresholds, March 2011. Available at: http://www.aqmd.gov/ceqa/handbook/signthres.pdf

Modeled by AECOM 2012

The construction emissions for the Generation Scenario 2 are compared to the SCAQMD's regional mass daily significance thresholds, as presented in Table 6-3. Emissions during the construction phase are not expected to exceed the significance thresholds for CO, VOC, SOx, $PM_{10,}$ and $PM_{2.5}$, but peak daily construction emissions are anticipated to exceed the significance threshold for NOx. Therefore, the air quality impacts associated with construction of Generation Scenario 2 are considered significant. Details of the construction emission calculations are included in Appendix A of this Air Quality and Climate Change Technical Report.

Localized Construction Emissions Impacts

The SCAQMD has developed a Localized Significance Threshold (LST) Methodology to evaluate the potential localized impacts of criteria pollutants from on-site emissions sources during construction and operation, as applicable (SCAQMD 2008b). An LST analysis is not required for SOx and VOC emissions because these pollutants do not contribute to localized criteria pollutant air quality impacts, although VOC may be analyzed as an air toxic.

The LST Methodology consists of performing dispersion modeling for CO, NOx, PM_{10}, and $PM_{2.5}$ from on-site equipment to determine whether or not the project may cause exceedances of the applicable LSTs at the nearest sensitive receptors. For small projects less than or equal to 5 acres, the SCAQMD (2008b) has developed look-up tables showing the maximum emissions that would not cause an exceedance of any LST, based on distance to the nearest sensitive receptor, size of the project, and meteorology of each source receptor area (SRA) to assist with determining whether or not any LSTs would be exceeded. If dispersion modeling shows that on-site emissions cause or contribute to an exceedance of any LST or if daily on-site mass emissions equal or exceed any of the values in the lookup tables, local air quality impacts to nearby sensitive receptors are concluded to be significant.

To determine whether or not localized air quality impacts are significant for attainment pollutants, NO_2 (formed by conversion of NOx emissions to NO_2) and CO, the mass rates in the tables are derived using an air quality dispersion model to back-calculate the emissions per day that would cause or contribute to a violation of any ambient air quality standard for a particular SRA, taking into account the highest measured background concentrations in the SRA. The most stringent standard for NO_2 is the 1-hour state standard of 0.18 ppm, and for CO it is the 1-hour and 8-hour state standards of nine ppm and 20 ppm, respectively.

For PM_{10} and $PM_{2.5}$, which are nonattainment pollutants, the mass rates in the tables are developed using a dispersion model to back-calculate the emissions necessary to exceed a concentration equivalent to 50 micrograms per cubic meter averaged over 5 hours, which is the control requirement in Rule 403 - Fugitive Dust. The control requirement in Rule 403, in turn, is related to the 24-hour CAAQS for $PM_{10.}$ The equivalent concentration for developing PM_{10} and $PM_{2.5}$ emission limits is 10.4 micrograms per cubic meter, which is a 24-hour average.

The LST lookup tables were used to determine whether or not the proposed activities would exceed any of the LSTs at the nearest sensitive receptors. Therefore, the following LST analysis consists of comparing maximum daily on-site CO, NOx, $PM_{10,}$ and $PM_{2.5}$ emissions to the values in the applicable lookup tables, based on the size or total area of the emissions source, the location of the on-site emissions source, the ambient air quality in the SRA in which the emission source is located, and the distance to the closest sensitive receptor. For this analysis, four sites within the project footprint were evaluated based on schedule and site size. The four sites include tank demolition, switchyard expansion, Unit 3 demolition, and plant construction, as presented in Table 6-5. The general location of these sites is presented in Figure 2. The site size is based on anticipated acres of disturbed activity for the construction component; the distance to the nearest receptor was measured in meters, using georeferenced Google Earth data.

Receptors for the analysis include residences for PM_{10} and $PM_{2.5}$ and residences, commercial or industrial locations for CO and NOx. The equivalent concentration for developing PM_{10} and $PM_{2.5}$ emission limits is a 24-hour average. Because individuals could remain at a residence for 24 hours, and it is unlikely that they would remain at a commercial or industrial location for 24 hours, only residential receptors are used for PM_{10} and $PM_{2.5}$. Residential, commercial and industrial receptors are used for CO and NOx because the equivalent concentrations for these pollutants are based on shorter averaging times (1 hour for NO_2 and 1 and 8 hours for CO), and individuals could remain at these locations for these shorter periods.

Peak daily on-site CO, NOx, PM_{10} and $PM_{2.5}$ emissions were calculated and compared with the emission limits in the look-up tables. Detailed on-site construction emission calculations are in Appendix A of this Air Quality and Climate Change Technical Report.

Maximum daily on-site emissions and the applicable LSTs from the look-up tables are summarized in Table 6-4 and 6-5 for construction for Generation Scenarios 1 and 2, respectively.

Table 6-4: Localized Construction Impact Summary – Generation Scenario 1 (GE Option)

Description	CO	NO_2	PM_{10}	$PM_{2.5}$
Area 1 - Tank Demolition	11.7	30.2	1.4	1.2
LST - 5 acres, 25 meters	1531	221	13	6
Exceed SCAQMD LST (Y/N)?	No	No	No	No
Area 2 - Switchyard Expansion	83.5	167.4	12.1	8.8
LST - 1 acre, 200 meters	2367	156	57	18
Exceed SCAQMD LST (Y/N)?	No	**Yes**	No	No
Area 3 - Unit 3 Demolition/Basin Backfill	46.9	94.5	6.9	4.6
LST - 1 acre, 200 meters	2367	156	57	18
Exceed SCAQMD LST (Y/N)?	No	No	No	No
Area 4 - New SCGS/CCGS, Cooling Units, Compressor, and WW Tanks	168.9	357.4	51.7	17.7
LST - 2 acres, 200 meters	2961	186	64	21
Exceed SCAQMD LST (Y/N)?	No	**Yes**	No	No
Modeled by AECOM 2012				

Table 6-5: Localized Construction Impact Summary – Generation Scenario 2 (Siemens Option)

Description	CO	NO_2	PM_{10}	$PM_{2.5}$
Area 1 - Tank Demolition	14.9	41.9	2.0	1.7
LST - 5 acres, 25 meters	1531	221	13	6
Exceed SCAQMD LST (Y/N)?	No	No	No	No
Area 2 - Switchyard Expansion	83.9	168.4	10.5	8.8
LST - 1 acre, 200 meters	2367	156	57	18
Exceed SCAQMD LST (Y/N)?	No	**Yes**	No	No
Area 3 - Unit 3 Demolition/Basin Backfill	46.9	94.5	5.1	4.6
1 acre, 200 meters	2367	156	57	18
Exceed SCAQMD LST (Y/N)?	No	No	No	No
Area 4 - New SCGS/CCGS, Cooling Units, Compressor, and WW Tanks	153.3	377.8	29.9	18.2
2 acres, 200 meters	2961	186	64	21
Exceed SCAQMD LST (Y/N)?	No	**Yes**	No	No
Modeled by AECOM 2012				

Table 6-6 and 6-7 show that the CO, PM_{10} and $PM_{2.5}$ emission limits are not exceeded, but the NO_2 emission limits are exceeded. Therefore, emissions during construction of the proposed Generation Scenario 1 or Generation Scenario 2 are not expected to cause significant adverse localized CO, PM_{10} or $PM_{2.5}$ air quality impacts at the nearest sensitive receptors, but they may cause significant adverse localized NO_2 air quality impacts to the nearest sensitive receptors.

6.1.2 Commissioning Emissions

Regional Commissioning Emissions Impacts

Generation Scenario 1 (GE Option)

The commissioning emissions for CO, NOx, VOC, PM_{10}, $PM_{2.5}$ and SOx were estimated by LADWP for the Permit to Construct/Permit to Operate application using the emission data provided by the equipment manufacturer. Emissions data and an emission summary are presented in Table 6-6. For this analysis, commissioning of the proposed CCGS and SCGS are assumed to occur separately. Peak daily emissions are based on commissioning of one system per period, which results from the CCGS. Emissions of NOx are higher during commissioning than during normal operations due to the need to test and tune the CTGs prior to installation of the SCR to control NOx. 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 6-6: Generation Scenario 1 (GE Option) – Commissioning Emission Rate and Emissions Summary

Source	Emission Rate, lb/hr					
	VOC	**CO**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
CCGS (CTG & STG)	86.7	4,000.0	250.0	1.6	10.1	10.1
SCGS (One CTG)	12.0	197.3	80.3	0.5	6.6	6.6
Source	**Peak Daily Emissions, lb/day**					
	VOC	**CO**	**NOX**	**SOX**	**PM_{10}**	**$PM_{2.5}$**
CCGS (CTG & STG)	**2,080.8**	**96,000.0**	**6,000.0**	38.4	**242.4**	**242.4**
SCGS (Two CTGs)	**552.0**	**9,075.8**	**3,693.8**	23.0	**303.6**	**303.6**
Peak Daily =	**2,080.8**	**96,000.0**	**6,000.0**	38.4	**303.6**	**303.6**
SCAQMD Thresholds	75	550	100	150	150	55
Exceed Threshold (Y/N)?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**

Acronyms: VOCs = volatile organic compounds ; CO = carbon monoxide; NOx = nitrogen oxide; SOx = sulfur oxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; CCGS = combined cycle generating system; SCGS = simple cycle generating system; CTG = combustion turbine generator; STG = steam turbine generator; SCAQMD = South Coast Air Quality Management District

Values in “bold” exceed the SCAQMD’s mass-daily threshold

Detailed emission calculations and operating parameters are presented in Appendix A, Table A-1c.

Source: Modeled by AECOM 2012

Peak daily emissions during commissioning for Generation Scenario 1 are compared to the SCAQMD’s regional mass daily significance threshold for construction, as presented in Table 5-1. Emissions during the commissioning phase of the proposed project are anticipated to exceed the significance thresholds for ROG, CO, NOx, PM_{10} and $PM_{2.5}$. Therefore, regional air quality impacts associated with commissioning activities are considered significant and unavoidable.

Generation Scenario 2 (Siemens Option)

The commissioning emissions for CO, NOx, VOC, PM_{10} and SOx were estimated by LADWP for the Permit to Construct/Permit to Operate application using the emission data provided by the equipment manufacturer. Emissions data and emission summary are presented in Table 6-7. For this analysis, commissioning of the proposed Flex Plant 30 and Flex Plant 10 are assumed to occur separately. Peak daily emissions are based on commissioning of one system per period, which results from the Flex Plant 30. Emissions of NOx are higher during commissioning than during normal operations due to the need to test and tune the CTGs prior to installation of the SCR to control NOx. 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 6-7: Generation Scenario 2 (Siemens Option) - Commissioning Emission Rate and Emissions Summary

Source	Emission Rate, lb/hr					
	VOC	CO	NOX	SOX	PM_{10}	$PM_{2.5}$
Flex Plant 30 (SCGS)	552.0	4817.3	220.8	1.6	9.1	9.1
Flex Plant 10 (SCGS)	552.0	4817.3	222.6	1.6	9.3	9.3
Source	**Peak Daily Emissions, lb/day**					
	VOC	**CO**	**NOX**	**SOX**	**PM_{10}**	**$PM_{2.5}$**
Flex Plant 30 (SCGS)	13,248.0	115,615.2	5,299.2	38.4	218.4	218.4
Flex Plant 10 (SCGS)	12,696.0	110,797.9	5,119.8	36.8	213.9	213.9
Peak Daily	**13,248.0**	**115,615.2**	**5,299.2**	38.4	**218.4**	**218.4**
SCAQMD Thresholds	75	550	100	150	150	55
Exceed Threshold (Y/N)?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**

Acronyms: VOCs = volatile organic compounds ; CO = carbon monoxide; NOx = nitrogen oxide; SOx = sulfur oxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; CCGS = combined cycle generating system; SCGS = simple cycle generating system; CTG = combustion turbine generator; STG = steam turbine generator; SCAQMD = South Coast Air Quality Management District

Values in "bold" exceed the SCAQMD's mass-daily threshold

Detailed emission calculations and operating parameters are presented in Appendix A, Table A-1c.

Source: Modeled by AECOM 2012

Peak daily emissions during commissioning for Generation Scenario 2 are compared to the SCAQMD's regional mass daily significance threshold for construction, as presented in Table 5-1. Emissions during the commissioning phase of the proposed project are anticipated to exceed the regional significance thresholds for ROG, CO, NOx, PM_{10}, and $PM_{2.5}$. Therefore, regional air quality impacts associated with commissioning activities are considered significant and unavoidable.

Turbine Commissioning Localized Air Quality Impacts

Generation Scenario 1 (GE Option)

Local air quality impacts for 8-hour CO and 1-hour NO_2 CAAQS have been evaluated using refined dispersion modeling. The results of the 1-hour and 8-hour CO and 1-hour NO_2 CAAQS for the GE combustion turbine under Generation Scenario 1 are shown in Table 6-8. In this analysis, the tables show that the modeled impacts from project sources, when added to the appropriate ambient background concentration, are below their respective CAAQS in all cases. The results of the 1-hour and 8-hour CO NAAQS analysis for the Generation Scenario 1 are shown in Table D.1-3 of Appendix D.1 of this Air Quality and Climate Change Technical Report.

Table 6-8: Generation Scenario 1 (GE Turbines) Combustion Turbine Commissioning – CAAQS

Pollutant	Averaging Period	Commissioning AERMOD Predicted Concentrations ($\mu g/m^3$)						Background ($\mu g/m^3$)	Cumulative Concentration ($\mu g/m^3$)	AAQS ($\mu g/m^3$)
		2005	2006	2007	2008	2009	Max. Design Value			
CO	1-hour	1264.50	1326.48	1309.71	1064.99	1337.22	1337.22	4,597.70	5,934.92	23,000
	8-hour	783.46	780.74	712.75	670.33	802.10	802.10	2,873.56	3,675.67	10,000
NO_2*	1-hour	85.33	85.37	85.45	75.48	86.49	86.49	169.20	255.69	339

Acronyms: µg/m3 = micrograms per cubic meter; SO_2 = sulfur dioxide; CO = carbon monoxide; NO_2 = nitrogen dioxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; CAAQS = California Ambient Air Quality Standards

* Modeled 1-hr NO_x concentration was multiplied by 0.80. Assumed 80 percent of 1-hr NOx converts to NO_2.

Source: Modeled by AECOM 2012

Emissions of PM_{10} and $PM_{2.5}$ were not included in the evaluation of local air quality impacts during commissioning because peak daily PM_{10} and $PM_{2.5}$ emissions would be as high or higher during normal operations than during commissioning, and impacts during normal operation were evaluated as discussed below. As shown in Table 6-12, modeled PM_{10} and $PM_{2.5}$ impacts during normal operation were below the significance thresholds. Therefore, local PM_{10} and $PM_{2.5}$ impacts during commissioning would also be below the significance thresholds.

Therefore the modeled impacts for the GE combustion turbine commissioning scenario under Generation Scenario 1 are below the significance thresholds; impacts are less than significant.

Generation Scenario 2 (Siemens Option)

Local air quality impacts for 8-hour CO and 1-hour NO_2 CAAQS have been evaluated using refined dispersion modeling. The results of the 1-hour and 8-hour CO and 1-hour NO_2 CAAQS analysis for the Siemens combustion turbine commissioning scenario under Generation Scenario 2 are shown in Table 6-9. In this analysis, the tables show that the modeled impacts from project sources, when added to the appropriate ambient background concentration, are below their respective CAAQS in all cases. The results of the 1-hour and 8-hour CO NAAQS analysis for the Generation Scenario 1 are shown in Table D.1-6 of Appendix D.1 of this Air Quality and Climate Change Technical Report.

Table 6-9: Generation Scenario 2 (Siemens Turbines) Combustion Turbine Commissioning – CAAQS

Pollutant	Averaging Period	Commissioning AERMOD Predicted Concentrations (μg/m^3)						Background (μg/m^3)	Cumulative Concentration (μg/m^3)	CAAQS (μg/m^3)
		2005	2006	2007	2008	2009	Max Design Value			
CO	1-hour	1330.22	1367.77	1358.05	1358.97	1488.75	1488.75	4,597.70	6,086.46	23,000
	8-hour	1093.83	1032.39	1044.91	964.56	1077.24	1093.83	2,873.56	3,967.39	10,000
NO_2*	1-hour	48.94	50.35	49.98	50.01	54.73	54.73	169.20	223.93	339

Acronyms: µg/m3 = micrograms per cubic meter; SO_2 = sulfur dioxide; CO = carbon monoxide; NO_2 = nitrogen dioxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; CAAQS = California Ambient Air Quality Standards

* Modeled 1-hr NO_x concentration was multiplied by 0.80. Assumed 80 percent of 1-hr NOx converts to NO_2.

Source: Modeled by AECOM 2012

Emissions of PM_{10} and $PM_{2.5}$ were not included in the evaluation of local air quality impacts during commissioning because peak daily PM_{10} and $PM_{2.5}$ emissions would be as high or higher during normal operations than during commissioning, and impacts during normal operation were evaluated as discussed below. As shown in Table 6-14, modeled PM_{10} and $PM_{2.5}$ impacts during normal operation were below the significance thresholds. Therefore, local PM_{10} and $PM_{2.5}$ impacts during commissioning would also be below the significance thresholds.

Therefore, the modeled impacts for the Siemens combustion turbine commissioning scenario under Generation Scenario 2 are below the significance thresholds; impacts are less than significant.

6.1.3 Operational Criteria Pollutant Emissions

Regional Operational Emissions Impacts

Peak daily emissions resulting from operation of the proposed project (Generation Scenario 1 or Generation Scenario 2) were compared to existing emissions (Generation Units 1 and 3); the incremental change in emissions was then compared to the SCAQMD's mass-daily thresholds for operations to determine the level of significance related to regional air quality impacts. Peak daily emissions were estimated based on the operating modes presented in Tables 4-1 through 4-4 above.

Generation Scenario 1 (GE Option)

Sources of emissions during operation of the proposed Generation Scenario 1 include a CCGS (GE 7FA turbine), an SCGS comprised of two GE LMS100 turbines, an emergency generator, one diesel fuel storage tank, and a WSAC comprised of six fans. Operating parameters, emission factors, and detailed emission calculations are presented in Appendix B of this Air Quality and Climate Change Technical Report. Peak daily operational emissions are presented in Table 6-10.

Table 6-10: Generation Scenario 1 (GE Option), Peak Daily Emissions (lb/day)[1]

Source	Criteria Pollutant					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Existing Emissions (Unit 1 and 3)	1,431.0	8,772.2	1,404.6	178.7	812.5	812.5
Proposed Generation Scenario 1						
CCGS (CTG & STG)	153.1	998.1	508.7	29.4	230.3	230.3
SCGS (2 CTGs)	104.7	420.3	525.8	23.6	266.0	266.0
Other Sources	2.1	5.4	29.5	0.0	1.7	0.1
Unit 1 - Derated	867.4	119.7	329.5	100.5	160.5	160.5
Total =	1,127.3	1,543.5	1,393.6	153.5	658.6	656.9
Incremental Change in Emissions	(303.7)	(7,228.6)	(11.0)	(25.1)	(153.9)	(155.6)
SCAQMD Mass-Daily Emissions Threshold	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)?	No	No	No	No	No	No

Acronyms: VOC = volatile organic compound; CO = carbon monoxide; NOx = nitrogen oxide; SOx = sulfur oxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; CCGS = combined cycle generating system; SCGS = simple cycle generating system; CTG = combustion turbine generator; STG = steam turbine generator; SCAQMD = South Coast Air Quality Management District; lb/day = pounds per day

Notes:
1) Detailed emission calculations are presented in Appendix B.

Source: Modeled by AECOM 2012

As presented in Table 6-10, the proposed Generation Scenario 1 would result in criteria pollutant emission reductions for VOC, CO, NOx, SOx, PM_{10} and $PM_{2.5}$; therefore, the proposed project would result in a regional air quality benefit. Therefore, operational regional air quality impacts for Generation Scenario 1 would be less than significant.

Generation Scenario 2 (Siemens Option)

Sources of emissions during operation of Generation Scenario 2 include: a Siemens Flex-Plant 30 turbine, a Flex-Plant 10 turbine, four emergency generators, four diesel fuel storage tanks, and WSAC comprised of six cells. Operating parameters, emission factors, and detailed emission calculations are presented in Appendix B of this Air Quality and Climate Change Technical Report. Peak daily operational emissions are presented in Table 6-11.

Table 6-11: Generation Scenario 2 (Siemens Option), Peak Daily Operational Emissions (lb/day)[1]

Source	Criteria Pollutant					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Existing Emissions (Unit 1 and 3)	1,431.0	8,772.2	1,404.6	178.7	812.5	812.5
Proposed Generation Scenario 2						
Flex Plant 30	369.8	855.2	597.8	28.2	208.9	208.9
Flex Plant 10	275.8	811.4	604.4	29.2	213.3	213.3
Other Sources	2.1	5.4	29.5	0.0	1.7	0.1
Unit 1 - Derated	394.7	54.5	149.9	45.7	73.0	73.0
Proposed Project Total	1,042.4	1,726.5	1,381.7	103.1	497.0	495.3
Incremental Change in Emissions	(388.6)	(7,045.7)	(22.9)	(75.6)	(315.6)	(317.2)
SCAQMD Mass-Daily Emissions Threshold	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)?	No	No	No	No	No	No

Acronyms: VOC = volatile organic compound; CO = carbon monoxide; NOx = nitrogen oxide; SOx = sulfur oxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; CCGS = combined cycle generating system; SCGS = simple cycle generating system; CTG = combustion turbine generator; STG = steam turbine generator; SCAQMD = South Coast Air Quality Management District; lb/day = pounds per day

Notes:

1) Detailed emission calculations are presented in Appendix B.

Source: Modeled by AECOM 2012

As presented in Table 6-11, the proposed Generation Scenario 2 would result regional criteria pollutant emission reductions for VOC, CO, NOx, SOx, PM_{10} and $PM_{2.5}$; therefore, the proposed project would result in a regional air quality benefit. (Note that the project would have the same result if the peak daily emissions were based on one cold start and one non-cold start, rather than two non-cold starts). Therefore, operational regional air quality impacts for Generation Scenario 2 would be less than significant.

Localized Operational Emissions Impacts

Criteria pollutant atmospheric dispersion 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 presented in Table 5-1. All model input and output files are provided in Appendix D on the modeling archive CD.

The results of the dispersion modeling analysis for the CTGs for Generation Scenario 1 are shown in Table 6-10 for the normal operation load cases and in Table 6-12 for the startup / shutdown cases. Tables 6-10 and 6-11 show that none of the localized significance thresholds are exceeded. Therefore, no significant adverse localized air quality impacts are expected during the operation of Generation Scenario 1.

Table 6-12: Generation Scenario 1 (GE Turbines) Normal Operation Maximum Project Impacts

Pollutant	Averaging Period	Normal Operations AERMOD Predicted Concentrations (μg/m³)				Background (μg/m³)	Cumulative Concentration (μg/m³)	CAAQS (μg/m³)	Significance Thresholds[2]
		50% Load	75% Load	100% Load	Maximum[1]				
SO_2	1-hour	0.34	0.34	0.34	0.34	52.40	52.74	655	-
	24-hour	0.07	0.07	0.07	0.07	23.58	23.65	105	-
CO	1-hour	45.36	45.36	45.36	45.36	4,597.70	4,643.06	23,000	-
	8-hour	2.70	2.71	2.72	2.72	2,873.56	2,876.28	10,000	-
NO_2[3]	1-hour	114.49	114.49	114.49	114.49	169.20	283.70	339	-
	Annual	-	-	-	0.41	29.89	30.30	57	-
PM_{10}	24-hour	0.93	0.81	0.67	0.93	96.00	96.93	-	2.5
	Annual	-	-	-	0.22	27.70	27.92	-	1.0
$PM_{2.5}$	24-hour	0.93	0.81	0.67	0.93	78.30	79.23	-	2.5
	Annual	-	-	-	0.22	16.80	17.02	-	-

Acronyms: µg/m3 = micrograms per cubic meter; SO_2 = sulfur dioxide; CO = carbon monoxide; NO_2 = nitrogen dioxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; CAAQS = California Ambient Air Quality Standards

Notes:

1) Annual impacts from NO_2, PM_{10} and $PM_{2.5}$ emissions were modeled separately from the 50%, 75% and 100% Load Cases; therefore, there is only one value corresponding to the annual averaging period.
2) Significance thresholds represent the "allowable change" in criteria pollutant concentration, due to proposed operations, when compared to existing or background ambient conditions.
3) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80 and modeled annual NO_x concentration was multiplied by 0.75.

Source: Modeled by AECOM 2012

Table 6-13: Generation Scenario 1 (GE Turbines) Startup/Shutdown Maximum Project Impacts - CAAQS

Pollutant	Averaging Period	Startup/Shutdown AERMOD Predicted Concentrations (μg/m³)				Background (μg/m³)	Cumulative Concentration (μg/m³)	CAAQS (μg/m³)
		Cold Start	Non-Cold Start	Shutdown	Maximum			
SO_2	1-hour	0.34	0.34	0.34	0.34	52.40	52.74	655
CO	1-hour	45.38	45.38	45.36	45.38	4,597.70	4,643.09	23,000
NO_2 (1)	1-hour	114.50	114.50	114.50	114.50	169.20	283.70	339

Acronyms: µg/m3 = micrograms per cubic meter; SO_2 = sulfur dioxide; CO = carbon monoxide; NO_2 = nitrogen dioxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; CAAQS = California Ambient Air Quality Standards

Notes:

1) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80.

Source: Modeled by AECOM 2012

The results of the dispersion modeling analysis for the combustion turbines for Generation Scenario 2 are shown in Table 6-14 for the normal operation load cases and in Table 6-15 for the startup / shutdown cases. Tables 6-14 and 6-15 show that none of the localized significance thresholds are exceeded. Therefore, no significant adverse localized air quality impacts are expected during the operation of Generation Scenario 2.

Table 6-14: Generation Scenario 2 (Siemens Turbines) Normal Operation Maximum Project Impacts

Pollutant	Averaging Period	Normal Operations AERMOD Predicted Concentrations (µg/m³)				Background (µg/m³)	Cumulative Concentration (µg/m³)	CAAQS (µg/m³)	Significance Thresholds[2]
		50% Load	75% Load	100% Load	Maximum[1]				
SO_2	1-hour	0.25	0.28	0.29	0.29	52.40	52.69	655	-
	24-hour	0.06	0.07	0.08	0.08	23.58	23.66	105	-
CO	1-hour	27.26	27.26	27.26	27.26	4,597.70	4,624.96	23,000	-
	8-hour	2.08	2.23	2.25	2.25	2,873.56	2,875.82	10,000	-
NO_2[(3)]	1-hour	120.47	120.47	120.47	120.47	169.20	289.67	339	-
	Annual	-	-	-	0.49	29.89	30.38	57	-
PM_{10}	24-hour	0.74	0.65	0.57	0.74	96.00	96.74	-	2.5
	Annual	-	-	-	0.23	27.70	27.93	-	1.0
$PM_{2.5}$	24-hour	0.74	0.65	0.57	0.74	78.30	79.04	-	2.5
	Annual	-	-	-	0.23	16.80	17.03	-	-

Acronyms: µg/m3 = micrograms per cubic meter; SO_2 = sulfur dioxide; CO = carbon monoxide; NO_2 = nitrogen dioxide; PM_{10} = particulates less than 10 microns in diameter; $PM_{2.5}$ = particulates less than 2.5 microns in diameter; CAAQS = California Ambient Air Quality Standards

Notes:

1) Annual impacts from NO_2, PM_{10} and $PM_{2.5}$ emissions were modeled separately from the 50%, 75% and 100% Load Cases; therefore, there is only one value corresponding to the annual averaging period.

2) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80 and modeled annual NO_x concentration was multiplied by 0.75.

3) Significance thresholds represent the “allowable change” in criteria pollutant concentration, due to proposed operations, when compared to existing or background ambient conditions.

Source: Modeled by AECOM 2012

Table 6-15: Generation Scenario 2 (Siemens Turbines) Startup/Shutdown Maximum Project Impacts

Pollutant	Averaging Period	Startup/Shutdown AERMOD Predicted Concentrations ($\mu g/m^3$)				Background ($\mu g/m^3$)	Cumulative Concentration ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
		Cold Start	Non-Cold Start	Shutdown	Maximum			
SO_2	1-hour	0.25	0.25	0.25	0.25	52.40	52.65	655
CO	1-hour	27.26	27.26	27.26	27.26	4,597.70	4,624.96	23,000
NO_2 (1)	1-hour	120.47	120.47	120.47	120.47	169.20	289.67	339

Acronyms: µg/m3 = micrograms per cubic meter; SO_2 = sulfur dioxide; CO = carbon monoxide; NO_2 = nitrogen dioxide; CAAQS = California Ambient Air Quality Standards

Notes:

1) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80 and modeled annual NO_x concentration was multiplied by 0.75.

Source: Modeled by AECOM 2012

6.2 Toxic Air Contaminants

The HRA evaluated cancer risk health hazards from short-term onsite construction-related DPM emissions; cancer and non-cancer health hazards were evaluated for long term operations. Details of the HRA are presented in Appendix C of this Air Quality and Climate Change Technical Report. The maximum exposed individual resident (MEIR) and maximum exposed individual worker (MEIW) were identified based on locations of maximum impact on the Cartesian grid i.e. the offsite point of maximum impact.

6.2.1 HRA Results for Construction Impacts

The maximum cancer risk due to construction emissions from Generation Scenario 1 was determined to be 5.98 in-a-million for the 9-year child exposure, as shown in Table 6-16.

Table 6-16: Summary of Maximum Impacts for Construction – Generation Scenario 1

Receptor Type		9-year Maximum Cancer Risk (per million)
MEIR	Adult	4.05
	Child	5.98
Significance Threshold		10
Exceed Threshold (Y/N)?		N

Definitions:

MEIR: Maximum exposed individual at an existing residential receptor; 9-year child exposure scenario for cancer risk.

Source: Modeled by AECOM 2012

As presented in Table 6-16, the incremental increase in health risk impacts during short-term construction would not exceed the SCAQMD's threshold of 10 in-a-million. Therefore, the impacts would be less than significant.

The maximum cancer risk due to construction emissions from Generation Scenario 2 was determined to be 6.39 in-a-million for the 9-year child exposure, as shown in Table 6-15. Receptor locations identified with maximum risk greater than 1-in-one-million based on the most conservative case (9-year child exposure) are presented on Figure 1, Appendix C of this Air Quality and Climate Change Technical Report.

Table 6-17: Summary of Maximum Impacts for Construction – Generation Scenario 2

Receptor Type		9-year Maximum Cancer Risk (per million)
MEIR	Adult	4.32
	Child	6.39
Significance Threshold		10
Exceed Threshold (Y/N)?		N

Definitions:

MEIR: Maximum exposed individual at an existing residential receptor 9-year child exposure scenario for cancer risk.

Source: Modeled by AECOM 2012

As presented in Table 6-17, the incremental increase in health risk impacts during short-term construction would not exceed the SCAQMD's threshold of 10 in-a-million. Therefore, the impacts would be less than significant.

6.2.2 HRA Results for Generation Scenario 1 (GE Option) Operation

Results of the HRA for Generation Scenario 1 are shown in Table 6-18. As shown in Table 6-18, the cancer risk at the MEIR was estimated to be 0.33-in-one-million, the non-cancer acute and chronic HI at the MEIR were estimated to be 0.01. The cancer risk at the MEIW, based on worker exposure, was estimated to be 0.06-in-one million. The non-cancer chronic and acute HIs at the MEIW were the same as those estimated at the MEIR. These health impacts are higher than those reported in the AB2588-approved HRA described in the baseline section because this CEQA analysis evaluated potential emission increases consistent with permitting requirements, whereas the AB2588 HRA was based on actual emissions. This analysis did not reduce potential impacts from baseline conditions but evaluated them as new emission increases.

Table 6-18: Summary of Maximum Impacts for the Generation Scenario 1 (GE Option)

Receptor Type[1]		Maximum Cancer Risk (per million)	Maximum Acute Hazard Index	Maximum Chronic Hazard Index
MEIR	Adult	0.33	0.01	0.01
	Child	0.08	--	--
MEIW		0.06	0.01	0.01
Significance Threshold		10	1	1
Exceed Threshold (Y/N)?		No	No	No

Definitions: MEIR: Maximum exposed individual at an existing residential receptor; 70-year adult exposure scenario and 9-year child exposure scenario for cancer risk. MEIW: Maximum exposed individual at an existing occupational worker receptor; 40-year adult worker exposure scenario.

Notes:

Table 6-18: Summary of Maximum Impacts for the Generation Scenario 1 (GE Option)

Receptor Type[1]	Maximum Cancer Risk (per million)	Maximum Acute Hazard Index	Maximum Chronic Hazard Index
1) All impacts based on point of maximum impact (PMI) on the Cartesian receptor grid.			
Source: Modeled by AECOM 2012			

These estimates are below the CEQA significance thresholds. Therefore, health risks from exposure to TACs during operation for Generation Scenario 1 are less than significant. Figure 3 shows the locations of the receptors with the maximum risks.

Figure 3 Point of Maximum Impact for GE Installation

6.2.3 HRA Results for Generation Scenario 2 (Siemens Option) Operation

Results of the HRA for Generation Scenario 2 are shown in Table 6-19. As shown in Table 6-19, the cancer risk at the MEIR was estimated to be 0.39 in-a-million, the non-cancer chronic and acute HIs at the MEIR were estimated to be 0.01. The cancer risk at the MEIW, based on worker exposure, was estimated to be 0.08 in-a-million. The non-cancer chronic and acute HIs at the MEIW were estimated to be 0.01. Similar to Scenario 1, these health impacts are higher than those reported in the AB2588-approved HRA described in the baseline section because these are based on potential emission increases.

Table 6-19: Summary of Maximum Impacts for Generation Scenario 2 (Siemens Option)

Receptor Type[1]		Maximum Cancer Risk (per million)	Maximum Acute Hazard Index	Maximum Chronic Hazard Index
MEIR[2]	Adult	0.39	0.01	0.01
	Child	0.09	--	--
MEIW		0.08	0.01	0.01
Significance Threshold		10	1	1
Exceed Threshold (Y/N)?		N	N	N

Definitions:

MEIR: Maximum exposed individual at an existing residential receptor; 70-year adult exposure scenario and 9-year child exposure scenario for cancer risk.

MEIW: Maximum exposed individual at an existing occupational worker receptor; 40-year adult worker exposure scenario.

Notes:

1) All impacts based on point of maximum impact (PMI) on the Cartesian receptor grid.

Source: Modeled by AECOM 2012

These estimates are below the CEQA significance thresholds. Therefore, health risks from exposure to TACs during operation for Generation Scenario 2 are less than significant. Figure 4 shows the locations of the receptors with the maximum risks.

Figure 4 Point of Maximum Impact for Siemens Installation

6.3 Greenhouse Gas Emissions and Climate Change

6.3.1 Construction Emissions

Construction activities result in short-term, temporary generation of GHG emissions. The duration of activities associated with Phase 1 and 2 is anticipated to be 3 years; the duration of activities associated with Phase 3 is anticipated to be 5.25. GHG emissions from construction activities would primarily result from fuel combustion during the operation of off-road diesel-fueled construction equipment. Detailed construction information is provided in Appendix A in this Air Quality and Climate Change Technical Report. Estimated annual GHG emissions and emissions amortized over 30-years are presented in Table 6-20.

Table 6-20: GHG Construction Emissions Summary (CO2e)

Phase	Activity Description	Generation Scenario 1		Generation Scenario 2	
		MT/activity	Amortized MT/30-yr	MT/activity	Amortized MT/30-yr
1	Storage Tank Demolition	291	9.7	324.6	10.8
	Site Preparation	1,349	45.0	1356.6	45.2
2	Plant Construction	8,634	287.8	9349.3	311.6
	Switchyard Expansion	1,594	53.1	1487.5	49.6
3	Unit 3 Pre-Demolition	33	1.1	32.8	1.1
	Unit 3 Demolition	1,122	37.4	1122.1	37.4
	Unit 3 Basin Retaining Wall	174	5.8	174.4	5.8
	Unit 3 Basin Backfill, Compact and Grade	230	7.7	230.1	7.7
Total Project Construction GHG Emissions =		13,427	447.6	14,077	469.2
Detailed emission calculations are presented in Appendix A, Table A-3a and A-3b.					
Source: Modeled by AECOM 2012					

Total construction-related GHG emissions for the duration of activities is less than 15,000 $MTCO_2e$; furthermore, when amortized over 30 years of anticipated project operation, the impact is minimal (i.e. less than 500 MTCO2e/yr) compared to the benefit provided by the performance standard gains demonstrated during operations.

6.3.2 Operational Emissions

Operational sources of GHG emissions include the CTGs, circuit breaker leakage, and emergency generators. As discussed in Section 4.2.2, two approaches have been utilized to evaluate climate change impacts from various emission sources. Emissions from circuit breaker leakage and emergency generator operations have been evaluated based on annual mass emissions, in metric tons of CO2e oer year, as presented in Table 6-21.

Table 6-21: Potential Annual GHG Emissions Summary from Emergency Generators and Circuit Breakers

GHG	GWP	Generation Scenario 1			Generation Scenario 2		
		Metric Tons per Year		$MTCO_2e$/Year	Metric Tons per Year		$MTCO_2e$/Year
		Emergency Generators	Circuit Breakers		Emergency Generators	Circuit Breakers	
CO_2	1	97	-	97	390	-	390
CH_4	21	0.004	-	0.08	0.015	-	0.36
N_2O	310	0.0008	-	0.25	0.0032	-	0.99
SF_6	23,900	-	2.12E-03	51	-	2.12E-03	51
			Total =	148		Total =	442

Acronyms: GHG = greenhouse gas; GWP = global warming potential; MT CO_2e/Year = metric tons of carbon dioxide equivalent per year; CO_2 = carbon dioxide; CH_4 = methane; N_2O = Nitrous oxide; SF_6 = sulfur hexafluoride

Detailed emission calculations are presented in Appendix E.

Source: Modeled by AECOM 2012

Annual mass GHG emissions from construction, circuit breaker leakage, and emergency generator operation are presented in Table 6-22 and are compared to the SCAQMD's threshold of 10,000 MTCO2e/yr for industrial sources.

Table 6-22: Annual GHG Mass Emission Summary

Source Description	Generation Scenario 1	Generation Scenario 2
	$MTCO_2e$/Yr	
Amortized Construction	448	469
Circuit Breaker Leakage	51	51
Emergency Generators	97	391
Annual GHG Emissions =	596	911
SCAQMD GHG Significance Threshold	10,000	
Exceed Threshold (Y/N)?	No	No

Acronyms: MT CO_2e/Year = metric tons of carbon dioxide equivalent per year

As presented in Table 6-22, annual GHG emissions from amortized construction, circuit breaker leakage, and emergency generator operation would not exceed the SCAQMD's annual GHG significance threshold of 10,000 $MTCO_2e$/yr for industrial sources. Therefore, this impact would be less than significant.

Impacts associated with the CTGs have been evaluated based on the annual emissions performance, in pounds of CO_2 per MWh, as presented in Table 6-23. The estimated annual GHG emissions performance (pounds of CO_2 per MWh) of the CTGs are shown in Table 6-23 and are compared with the emission performance standard established pursuant to the requirements of SB 1368.

Table 6-23: Operational GHG Emissions Performance Summary

	GE Option	Siemens Option
Project CO_2 Emissions Performance (lbs CO_2/MWh) =	1,025	993
Project CO_2 Emissions Performance ($MTCO_2$/MWh) =	0.465	0.450
Emissions Performance Standard, lbs CO_2/MWh	1,100	
Emissions Performance Standard, MTCO2/MWh	0.500	
Exceed the Emissions Performance Standard? (Y/N)	No	

Acronyms: GHG = greenhouse gas; CO_2 = carbon dioxide; lbs CO_2/MWh = pounds of CO_2 per megawatt hour; $MTCO_2$/MWh = metric tons of carbon oxide per megawatt hour

Detailed emission calculations are presented in Appendix E.

Source: Modeled by AECOM 2012

As shown in Table 6-23, the GHG emissions performance of 1,025 lbs CO_2/MWh for Generation Scenario 1 and 993 lbs CO_2/MWh for Generation Scenario 2 are below the performance standard of 1,100 lbs CO2/MWh. Therefore, impacts from GHG emissions from the proposed project are consistent with state-wide policy intended to reduce GHG emissions from power generation. Therefore, this project would not conflict with or obstruct regional and state-wide goals to reduce GHG emissions and climate change impacts. Additionally, the GHG emission performance values for the proposed project are below the average GHG emission performance for Unit 3 during 2010 and 2011 of 1,315 lbs CO_2/MWh. Thus, the proposed project results in a substantial improvement in GHG emission performance.

6.4 Odors

The proposed project has the potential to result in objectionable odors during construction, with some odors associated with the operation of diesel engines during construction. However, these odors are typical of urbanized environments and would be subject to construction and air quality regulations, including proper maintenance of machinery to minimize engine emissions. These emissions are also of short duration, and they are quickly dispersed into the atmosphere. Therefore, the project would not create objectionable odor impacts during construction. The proposed project is not expected to cause any objectionable odors during operation.

7.0 Mitigation Measures

Mitigation measures are required, if feasible, to minimize the significant air quality impacts associated with the construction and turbine commissioning phases of the proposed project since the quantity of NOx emissions are considered significant during the construction phase and the quantities of VOC, CO, NOx, PM_{10} and $PM_{2.5}$ are considered significant during the commissioning phase.

7.1 Construction Mitigation Measures

The proposed project is expected to have significant adverse air quality impacts due to NOx emissions during construction. NOx emissions are anticipated to be primarily from construction equipment exhaust and on-road motor vehicle exhaust. The following mitigation measures will be imposed on the proposed project to reduce NOx emissions associated with construction activities.

7.1.1 Construction Equipment:

A-1 During project construction, all internal combustion engines/construction equipment operating on the project site shall meet USEPA-Certified Tier 3 emissions standards, or higher, according to the following:

- From January 1, 2012, to December 31, 2014: All off-road diesel-powered construction equipment greater than 50 horsepower shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with control technologies certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations
- On or after January 1, 2015: All off-road diesel-powered construction equipment greater than 50 horsepower shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with control technologies certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations.

A-2 In the event a Tier 3 or Tier 4 engine is not available for any off-road engine larger than 50 horsepower, that engine shall be equipped with a diesel particulate filter (soot filter), unless certified by engine manufacturers that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is “not practical” if, among other reasons:

(1) There is no available soot filter that has been certified by either ARB or USEPA for the engine in question; or

(2) The construction equipment is intended to be on site for 10 days or less.

The use of a soot filter may be terminated immediately if one of the following conditions exists:

(1) The use of the soot filter is excessively reducing normal availability of the construction equipment due to increased downtime for maintenance, and/or reduced power output due to an excessive increase in backpressure;

(2) The soot filter is causing or is reasonably expected to cause significant engine damage; or

(3) The soot filter is causing or is reasonably expected to cause a significant risk to workers or the public.

A-3 All construction equipment shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

A-4 Prohibit construction equipment from idling longer than 5 minutes and post signs prohibiting idling longer than 5 minutes at the facility entrance and near areas where construction equipment is operating.

A-5 The engine size of construction equipment shall be the minimum practical size to support the required scope of work for the equipment.

A-6 Use electric welders instead of gas or diesel welders in portions of the facility where electricity is available.

A-7 Use on-site electricity rather than temporary power generators in portions of the facility where electricity is available.

A-8 Suspend all construction activities that generate air pollutant emissions during first stage smog alerts.

A-9 Use electricity or alternate fuels for on-site mobile equipment instead of diesel equipment to the extent feasible.

7.2 Commissioning Mitigation Measures

Emissions of VOC, CO, NOx, PM_{10} and $PM_{2.5}$ during turbine commissioning will be from fuel combustion in the combustion turbines. No feasible mitigation measures for these emissions have been identified. The commissioning activities are required to ensure safe, reliable operation of the CTGs and the associated emission control systems. Therefore, they cannot feasibly be altered to reduce emissions. Additionally, existing Unit 3 cannot be decommissioned and existing Unit 1 cannot be de-rated to offset emissions during the commissioning activities because operation of these units at their current capacities is needed to provide reliable electrical power to LADWP's customers prior to full operation of the proposed project.

7.3 Level of Significance after Mitigation

Construction emissions for the proposed project for NOx are expected to remain significant following mitigation. Emissions of CO, VOC, SOx, PM_{10} and $PM_{2.5}$ generated during construction are less than significant and, therefore, mitigation is not required. Construction emissions are expected to be short-term, and they will be eliminated following completion of the construction phase.

The mitigation measures are expected to result in additional emission reductions and reduce the potentially significant adverse impacts associated with NOx emissions; however, sufficient emission reductions are not expected to reduce the significant NOx emissions to less than significant. VOC, CO, SOx, PM_{10}, and $PM_{2.5}$ emissions would remain less than significant.

Localized significant impacts from construction activities were analyzed for NO_2, CO, PM_{10}, and $PM_{2.5}$. The construction activities associated with the proposed project are not expected to cause a significant adverse localized air quality impact to nearby sensitive receptors for CO, PM_{10} and $PM_{2.5}$, and no mitigation would be required. However, the analysis concluded that construction emissions of NOx may cause the NO_2 LST (Table 5-1) to be exceeded. The mitigation measures are expected to result in additional NOx emission reductions and reduce the potentially significant adverse localized NO_2 impacts associated with NOx emissions; however, the impacts are expected to remain significant.

The commissioning phase impacts of the proposed project exceed the applicable VOC, CO, NOx, PM_{10} and $PM_{2.5}$ significance thresholds and, therefore, generate significant VOC, CO, NOx, PM_{10} and $PM_{2.5}$ impacts. No feasible mitigation measures to reduce VOC, CO, NOx, PM_{10} or $PM_{2.5}$ emissions during commissioning have been identified. Therefore, impacts from VOC, CO, NOx, PM_{10} and $PM_{2.5}$ emissions during commissioning are expected to remain significant.

An LST analysis was conducted to evaluate impacts to ambient CO, NO_2, PM_{10} and $PM_{2.5}$ air quality during operation of the proposed project. The modeling analysis indicated that impacts to ambient CO, NO_2, PM_{10} and $PM_{2.5}$ air quality would be below the corresponding significance criteria. Therefore, localized ambient air quality impacts during operation of the proposed project are expected to be less than significant.

The proposed project was analyzed for cancer and non-cancer human health impacts and determined to be less than significant. The estimated cancer risks due to the construction and operation of the proposed project are expected to be less than the significance criterion of 10 in one million. The chronic non-cancer hazard index and the acute hazard index are both below the significance criterion of 1.0. Therefore, the proposed project is not expected to cause a potentially significant adverse impact associated with exposure to toxic air contaminants.

The proposed project was analyzed for GHG emissions during operation of the proposed project. The GHG emissions performance (lb CO_2/MWh) was less than the SB 1368 performance standard, which is used as the significance threshold for this project. Therefore, GHG emissions from the proposed project are not expected to cause a potentially significant adverse impact.

8.0 Cumulative Impacts

Projects undergoing CEQA evaluation are required to analyze the potential impacts from new and planned, similar and nearby projects. The evaluation of cumulative impacts addresses the potential cumulative effect of potentially concurrent projects within a specified proximity. For this analysis, potential concurrent projects which have been approved in local planning documents (i.e. Specific Plan) or certified CEQA projects were evaluated to determine the potential cumulative air quality and climate change impacts. Planned or proposed projects which have not received approval or authorization have not been included in this evaluation based on the uncertainty of implementation.

8.1 Construction Impacts

Criteria pollutant emissions generated during construction and operation have been evaluated related to the potential for project-level emissions to result in a cumulatively considerable incremental impact. Construction activities for proposed Generation Scenario 1 and Generation Scenario 2 are proposed to occur between 2012 and 2015. Due to the uncertainly of concurrent construction activities as well as the recognized level of significance (from short-term, temporary construction activities) in forecasted projects presented in the Cumulative Impacts Section of the Environmental Impact Report, it has been assumed that construction activities associated with proposed Generation Scenario 1 or Generation Scenario 2 would have the potential to result in a cumulatively considerable incremental increase in criteria pollutant emissions.

8.2 Operational Impacts

As presented in the Cumulative Impacts Section of the Environmental Impact Report, approved CEQA projects within the area of evaluation are predominately commercial and residential development projects, with no proposed industrial projects. As discussed in Section 6.1.3 operation of either proposed generation scenario would result in a reduction in regional criteria pollutant emissions. Therefore, the proposed project would also not result in or contribute to a potentially cumulatively considerable incremental increase in criteria pollutant emissions. The cumulative impact would be less than significant.

9.0 References

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Appendix A

Construction Emissions

Scattergood Generating Station (SGS) Unit 3 Repowering Project

Appendix A: Construction Emissions - Criteria Pollutant(s) and Greenhouse Gases

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Summary Tables (Criteria Pollutant Emissions)

Table A-1a: Regional Impact Analysis - Peak Daily Criteria Pollutant Emissions Summary for Generation Scenario 1 (GE Option)

Phase	Activity Description	Criteria Pollutant					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
1	Storage Tank Demolition	8.7	44.0	89.3	0.2	4.4	3.6
	Site Preparation	39.0	154.3	317.2	0.4	29.5	16.3
2	Plant Construction	57.5	256.3	374.3	0.6	31.1	18.8
	Switchyard Expansion	37.0	206.4	180.6	0.4	12.9	9.9
3	Unit 3 Pre-Demolition	0.2	1.7	1.1	0.0	0.1	0.1
	Unit 3 Demolition	15.0	65.1	122.6	0.2	6.5	5.8
	Unit 3 Basin Retaining Wall	7.7	32.2	52.2	0.1	3.1	2.8
	Unit 3 Basin Backfill, Compact and Grade	3.1	14.7	22.0	0.0	3.5	1.5
	Peak Daily Emissions, lb/day =	57.5	256.3	374.3	0.6	31.1	18.8
	SCAQMD Mass-Daily Threshold (Construction)	75	550	100	150	150	55
	Exceed SCAQMD Mass-Daily Threshold (Y/N)?	No	No	Yes	No	No	No

Table A-1b: Regional Impact Analysis - Peak Daily Criteria Pollutant Emissions Summary for Generation Scenario 2 (Siemens Option)

Phase	Activity Description	Criteria Pollutant					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
1	Storage Tank Demolition	8.7	44.0	89.3	0.2	4.4	3.6
	Site Preparation	39.0	154.3	317.2	0.4	29.5	16.3
2	Plant Construction	64.4	289.5	397.1	0.6	31.2	19.4
	Switchyard Expansion	38.0	214.9	181.9	0.4	13.1	10.0
3	Unit 3 Pre-Demolition	0.2	1.7	1.1	0.0	0.1	0.1
	Unit 3 Demolition	15.0	65.1	122.6	0.2	6.5	5.8
	Unit 3 Basin Retaining Wall	7.7	32.2	52.2	0.1	3.1	2.8
	Unit 3 Basin Backfill, Compact and Grade	3.1	14.7	22.0	0.0	3.5	1.5
	Peak Daily Emissions, lb/day =	64.4	289.5	397.1	0.6	31.2	19.4
	SCAQMD Mass-Daily Threshold (Construction)	75	550	100	150	150	55
	Exceed SCAQMD Mass-Daily Threshold (Y/N)?	No	No	Yes	No	No	No

Table A-2a: Generation Scenario 1 (GE Option) Peak Daily Localized Criteria Pollutant Emissions Summary (lb/day)				
Description	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Area 1 - Tank Demolition	11.7	30.2	1.4	1.2
LST - 5 acres, 25 meters	1531	221	13	6
Exceed SCAQMD LST (Y/N)?	No	No	No	No
Area 2 - Switchward Expansion	83.5	167.4	12.1	8.8
LST - 1 acre, 200 meters	2367	156	57	18
Exceed SCAQMD LST (Y/N)?	No	Yes	No	No
Area 3 - Unit 3 Demolition/Basin Backfill	596.4	94.5	6.9	4.6
LST - 1 acre, 200 meters	2367	156	57	18
Exceed SCAQMD LST (Y/N)?	No	No	No	No
Area 4 - New SCGS/CCGS, Cooling Units, Compressor, and WW Tanks	168.9	357.4	51.7	17.7
LST - 2 acres, 200 meters	2961	186	64	21
Exceed SCAQMD LST (Y/N)?	No	Yes	No	No

Table A-2b: Generation Scenario 2 (Siemens Option) Peak Daily Localized Criteria Pollutant Emissions Summary (lb/day)				
Description	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Area 1 - Tank Demolition	14.9	41.9	2.0	1.7
LST - 5 acres, 25 meters	1531	221	13	6
Exceed SCAQMD LST (Y/N)?	No	No	No	No
Area 2 - Switchward Expansion	83.9	168.4	10.5	8.8
LST - 1 acre, 200 meters	2367	156	57	18
Exceed SCAQMD LST (Y/N)?	No	Yes	No	No
Area 3 - Unit 3 Demolition/Basin Backfill	46.9	94.5	5.1	4.6
1 acre, 200 meters	2367	156	57	18
Exceed SCAQMD LST (Y/N)?	No	No	No	No
Area 4 - New SCGS/CCGS, Cooling Units, Compressor, and WW Tanks	153.3	377.8	29.9	18.2
2 acres, 200 meters	2961	186	64	21
Exceed SCAQMD LST (Y/N)?	No	Yes	No	No

Table A-3a: GHG Emissions Summary for Generation Scenario 1 (GE Option)				
Phase	**Activity Description**	**GHG (CO2e)**		
		lb/project	**MT/activity**	**Amortized**
1	Storage Tank Demolition	640,925	291	9.7
	Site Preparation	2,991,384	1,357	45.2
2	Plant Construction	19,126,638	8,674	289.1
	Switchyard Expansion	3,516,508	1,595	53.2
3	Unit 3 Pre-Demolition	72,275	33	1.1
	Unit 3 Demolition	2,474,256	1,122	37.4
	Unit 3 Basin Retaining Wall	384,582	174	5.8
	Unit 3 Basin Backfill, Compact and Grade	507,453	230	7.7
Total Project Construction GHG Emissions =		29,714,022	13,476	449.2
SCAQMD GHG Threshold				10,000
Exceed SCAQMD GHG Threshold (Y/N)?				No

Table A-3b: GHG Emissions Summary for Generation Scenario 2 (Siemens Option)				
Phase	**Activity Description**	**GHG (CO2e)**		
		lb/project	**MT/project**	**Amortized**
1	Storage Tank Demolition	640,925	291	9.7
	Site Preparation	2,991,384	1,357	45.2
2	Plant Construction	20,615,196	9,349	311.6
	Switchyard Expansion	3,279,831	1,487	49.6
3	Unit 3 Pre-Demolition	72,275	33	1.1
	Unit 3 Demolition	2,474,256	1,122	37.4
	Unit 3 Basin Retaining Wall	384,582	174	5.8
	Unit 3 Basin Backfill, Compact and Grade	507,453	230	7.7
Total Project Construction GHG Emissions =		30,965,902	14,043	468.1
SCAQMD GHG Threshold				10,000
Exceed SCAQMD GHG Threshold (Y/N)?				No

Detailed Construction Tables (Criteria Pollutant and GHG Emissions)

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from Construction Equipment					7/1/13	8/1/13	9/1/13	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16
20	WD/ Month	Quant	Op Hrs/WD each	Op Hr/Mo	10	11	12	29	30	31	32	33	34	35	36	37	38	39	40
(1) Demolition																			
65 T Crane		1	8	160															
Cat950 Loader w/Forks		1	8	160															
Water Truck		1	4	80															
60 Ft Manlift		1	8	160															
Excavator		1	8	160															
Shear		1	8	160															
10 Wheeler Dump Trucks		2	8	320															
40 Ft Flat Bed Trucks		2	8	320															
Phase 1 Monthly Summary																			
				Miles/month															
				miles/month															
				Demolition - tons/month															
(2) Site Prep																			
Parts Truck		1	4	80	240	0	0												
4000 Gallon Water Truck		1	6	120	120	120	120												
10 Wheeler Dump Trucks		4	8	640	320		200												
Excavator, Komatsu PC 400		1	8	160	80	50	50												
Dozer, D6M		1	4	80	40														
Roller/Compactor		1	8	160	120		120												
Grader, Cat 14G		1	4	80	60	10	60												
Dozer, D6M		1	4	80	60		60												
Yard Crane, ATV		1	8	160		160													
Loader/Forks Cat 966		1	8	160		160													
Concrete Pump		1	2	40		40													
Grove 25t Crane		1	8	160		160													
Misc.		1	4	80	80	80	80												
Phase 2 Monthly Summary					1120	780	690												
				Miles/month	9600	9960	3600												
				miles/month	49550	46750	64300												
				tons/month	0	0	0												
(3) Switchyard Expansion																			
Grader, Cat 14G		1	8	160				80											
Loader/Forks Cat 966		1	6	120					60			60				60			
Scissors Lift 20 ft		2	8	320									160						
10 Wheel Dump Truck		1	8	160				80								80			
Rock Wheel Trencher		1	8	160					120										
Concrete Pump		1	8	160						40									
Grove 25t Crane		1	6	120								60							
Phase 3 Peak Month								160	**180**	40	0	120	160	0	0	140			
				Miles/month															
				miles/month															
				tons/month															
(4) Unit 3 Pre-Demolition Activities																			

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from Construction Equipment

					7/1/13	8/1/13	9/1/13	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16
20	WD/ Month	Quant	Op Hrs/WD each	Op Hr/Mo	10	11	12	29	30	31	32	33	34	35	36	37	38	39	40
Scissors Lift 20 ft		1	8	20															
10 Wheeler Dump Trucks		1	4	80															
Cat950 Loader w/Forks		1	4	80															
Phase 4 Peak Month																			
				Miles/month															
				miles/month															
				Demolition - tons/month															
(5) Unit 3 Demolition																			
Parts Truck		1	4	80															
4000 gal Water Truck		1	6	120															
Excavator, Komatsu PC 400		7	8	1120															
Yard Crane, ATV		1	8	160															
Grove 25t Crane		1	8	160															
500 T Crane		1	8	160															
Loader/Forks Cat 966		5	8	800															
Scissors lift 20 ft		5	8	800															
Phase 5 Peak Month																			
				Miles/month															
				miles/month															
				tons/month															
(6) Unit 3 Basin Retaining Wall																			
Scissors lift 20 ft		5	8	800															
Loader/Forks Cat 966		5	8	800															
175 CFM Air Compressor		1	8	160															
Concrete Pump		1	2	40															
Grove 25t Crane		1	8	160															
Phase 6 Peak Month																			
				Miles/month															
				miles/month															
				tons/month															
(7) Unit 3 Basin Backfill, Compact & Grade																			
Roller/Compactor		1	8	160															
Cat 14H Blade		1	8	160															
Grader, Cat 14G		1	4	80															
Dozer, D6M		1	4	80															
4000Gal Water Truck		1	6	120															
Phase 7 Peak Month																			
				Miles/month															
				miles/month															
				Backfill - CY/month															
(8) Plant Construction																			
(i) Civil Earthwork																			
CAT 627F Scraper		6	8	960	480	600	960												
CAT 14H Blade		3	8	480	320	320	480												
MF 650B Skip		2	8	320	160	240	320	40											
Water Truck		3	8	480	160	320	480	480											

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from Construction Equipment																			
					7/1/13	**8/1/13**	**9/1/13**	**2/1/15**	**3/1/15**	**4/1/15**	**5/1/15**	**6/1/15**	**7/1/15**	**8/1/15**	**9/1/15**	**10/1/15**	**11/1/15**	**12/1/15**	**1/1/16**
20	**WD/ Month**	**Quant**	**Op Hrs/WD each**	**Op Hr/Mo**	**10**	**11**	**12**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Kobelco 80 - Exc		2	8	320	160	240	320	160											
10 Wheeler Dump Trucks		6	8	960	480	600	960	120	120										
CAT 815F Compactor		4	8	640	160	480	640	80	80										
CAT D6R Dozer		4	8	640	160	480	640	80	80										
CAT TH103 Forklift		2	8	320	160	240	320	160	160										
175 CFM Air Compressor		1	8	160	160	160	160	120	120										
				Miles/month				1800	0										
				miles/month				442000	422000										
				tons/month															
(ii) Foundations																			
90-Ton Rough Terrain Crane		1	6	120	80	80	80	30											
60-Ton Rough Terrain Crane		2	6	240	80	120	180	120											
Scissor Lifts 20 ft		4	8	640				80	40										
1 Ton Parts Truck		1	6	120	80	80	80	120	60										
175 CFM Air Compressor		2	8	320	40	40	80	80	60										
Electric, Welding Machine 400 Amps		1	4	80															
				Miles/month															
				miles/month															
				tons/month															
(iii) Structural Steel																			
1-Ton Flatbed Truck		3	6	360															
1-Ton Flatbed Truck w/Trailer		2	6	240															
6,000 # Forklift		2	8	320															
Electric, Welding Machine Six Pack		4	8	640															
Gas/Diesel Compressor Combo		4	8	640															
90-Ton Rough Terrain Crane		4	8	640															
60-Ton Rough Terrain Crane		2	8	320															
Scissors Lift 20 ft		6	8	960															
SJ 600 Man Lifts 66 ft		8	8	1280															
				Miles/month															
				miles/month															
				tons/month															

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from Construction Equipment																			
		Quant	Op Hrs/WD each	Op Hr/Mo	7/1/13	8/1/13	9/1/13	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16
20	WD/ Month				10	11	12	29	30	31	32	33	34	35	36	37	38	39	40
(iv) Mechanical																			
1-Ton Flatbed Truck		6	6	720				120	120	120	60	60	60	60					
1-Ton Flatbed Truck w/Trailer		4	6	480				40	40	40	40	40	40	40					
6,000 # Forklift		4	6	480				100	60	60	60	60							
Electric, Welding Machine Six Pack		8	8	1280				320	320	320	200	180	120	80					
Gas/Diesel Compressor Combo		4	8	640				120	120	80	80	80							
90-Ton Rough Terrain Crane		3	6	360				100	100	80									
60-Ton Rough Terrain Crane		3	6	360				120	80	80	80	80	60						
Scissors Lift 20 ft		8	8	1280				160	160	160	160	80	80	80					
SJ 600 Man Lifts 66 ft		8	8	1280				320	320	240	240	240	160	60					
500 Ton Crane		3	8	480				160											
				Miles/month															
				miles/month															
				tons/month															
(v) Electrical																			
Backhoe		2	8	320				480	480	720	720	720	720	600	480	480			
Bobcat		3	8	480				320	320	320	320	320	320	320	120	120			
175 CFM Air Compressor		2	8	320				160	320	320	320	320	320	320	320	320			
Vaccum Trailers		2	6	240				240	240	180	180	120	60	40	40	40			
Rock Wheel Trencher		2	6	240				240	180	180	120	80	80	80	80	40			
Equipment Trailer (pullers, benders,ect		3	8	480				480	320	240	160	160	160	160	160	80			
Generators		4	8	640				480	360	320	240	240	160	160	160	160			
Scissors Lift 20 ft		6	6	720				640	720	640	480	320	240	120	120	120			
SJ 600 Man Lifts 66 ft		4	6	480				480	360	360	240	120	60	60	60	60			
Service Trucks-Conductor Splicing		3	6	360				360	360	360	240	120	80	60	60	60			
Dump Truck		2	6	240				240	240	240	180	100	80	60	60	60			
ForkLift		3	6	360				360	360	240	180	120	80	80	80	80			
				Miles/month															
				miles/month						382000	348000	230000	190000	140000	125000	59000			
				tons/month															

Detailed Construction Tables (C

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C

					2/1/16	3/1/16	4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17
20	WD/ Month	Quant	Op Hrs/WD each	Op Hr/Mo	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
(1) Demolition																			
65 T Crane		1	8	160															
Cat950 Loader w/Forks		1	8	160															
Water Truck		1	4	80															
60 Ft Manlift		1	8	160															
Excavator		1	8	160															
Shear		1	8	160															
10 Wheeler Dump Trucks		2	8	320															
40 Ft Flat Bed Trucks		2	8	320															
				Phase 1 Monthly Summary															
				Miles/month															
				miles/month															
				Demolition - tons/month															
(2) Site Prep																			
Parts Truck		1	4	80															
4000 Gallon Water Truck		1	6	120															
10 Wheeler Dump Trucks		4	8	640															
Excavator, Komatsu PC 400		1	8	160															
Dozer, D6M		1	4	80															
Roller/Compactor		1	8	160															
Grader, Cat 14G		1	4	80															
Dozer, D6M		1	4	80															
Yard Crane, ATV		1	8	160															
Loader/Forks Cat 966		1	8	160															
Concrete Pump		1	2	40															
Grove 25t Crane		1	8	160															
Misc.		1	4	80															
				Phase 2 Monthly Summary															
				Miles/month															
				miles/month															
				tons/month															
(3) Switchyard Expansion																			
Grader, Cat 14G		1	8	160															
Loader/Forks Cat 966		1	6	120															
Scissors Lift 20 ft		2	8	320															
10 Wheel Dump Truck		1	8	160															
Rock Wheel Trencher		1	8	160															
Concrete Pump		1	8	160															
Grove 25t Crane		1	6	120															
				Miles/month															
				miles/month															
				tons/month															
(4) Unit 3 Pre-Demolition Activities																			

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
					2/1/16	3/1/16	4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17
20	**WD/ Month**	**Quant**	**Op Hrs/WD each**	**Op Hr/Mo**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**
Scissors Lift 20 ft		1	8	20						10	10		10		10		10	10	
10 Wheeler Dump Trucks		1	4	80															
Cat950 Loader w/Forks		1	4	80															
Phase 4 Peak Month										10	10	0	10	0	10	0	10	10	0
				Miles/month						0	0	0	0	0	0	0	0	0	0
				miles/month						4000	4000	4000	6000	6000	2000	2000	2000	2000	2000
			Demolition - tons/month							233	233	233	233	233	233	233	233	233	233
(5) Unit 3 Demolition																			
Parts Truck		1	4	80															
4000 gal Water Truck		1	6	120															
Excavator, Komatsu PC 400		7	8	1120															
Yard Crane, ATV		1	8	160															
Grove 25t Crane		1	8	160															
500 T Crane		1	8	160															
Loader/Forks Cat 966		5	8	800															
Scissors lift 20 ft		5	8	800															
Phase 5 Peak Month																			
				Miles/month															
				miles/month															
				tons/month															
(6) Unit 3 Basin Retaining Wall																			
Scissors lift 20 ft		5	8	800															
Loader/Forks Cat 966		5	8	800															
175 CFM Air Compressor		1	8	160															
Concrete Pump		1	2	40															
Grove 25t Crane		1	8	160															
Phase 6 Peak Month																			
				Miles/month															
				miles/month															
				tons/month															
(7) Unit 3 Basin Backfill, Compact & Grade																			
Roller/Compactor		1	8	160															
Cat 14H Blade		1	8	160															
Grader, Cat 14G		1	4	80															
Dozer, D6M		1	4	80															
4000Gal Water Truck		1	6	120															
Phase 7 Peak Month																			
				Miles/month															
				miles/month															
			Backfill - CY/month																
(8) Plant Construction																			
(i) Civil Earthwork																			
CAT 627F Scraper		6	8	960															
CAT 14H Blade		3	8	480															
MF 650B Skip		2	8	320															
Water Truck		3	8	480															

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
					2/1/16	3/1/16	4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17
20	WD/ Month	Quant	Op Hrs/WD each	Op Hr/Mo	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
Kobelco 80 - Exc		2	8	320															
10 Wheeler Dump Trucks		6	8	960															
CAT 815F Compactor		4	8	640															
CAT D6R Dozer		4	8	640															
CAT TH103 Forklift		2	8	320															
175 CFM Air Compressor		1	8	160															
				Miles/month															
				miles/month															
				tons/month															
(ii) Foundations																			
90-Ton Rough Terrain Crane		1	6	120															
60-Ton Rough Terrain Crane		2	6	240															
Scissor Lifts 20 ft		4	8	640															
1 Ton Parts Truck		1	6	120															
175 CFM Air Compressor		2	8	320															
Electric, Welding Machine 400 Amps		1	4	80															
				Miles/month															
				miles/month															
				tons/month															
(iii) Structural Steel																			
1-Ton Flatbed Truck		3	6	360															
1-Ton Flatbed Truck w/Trailer		2	6	240															
6,000 # Forklift		2	8	320															
Electric, Welding Machine Six Pack		4	8	640															
Gas/Diesel Compressor Combo		4	8	640															
90-Ton Rough Terrain Crane		4	8	640															
60-Ton Rough Terrain Crane		2	8	320															
Scissors Lift 20 ft		6	8	960															
SJ 600 Man Lifts 66 ft		8	8	1280															
				Miles/month															
				miles/month															
				tons/month															

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
					2/1/16	3/1/16	4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17
20	**WD/ Month**	**Quant**	**Op Hrs/WD each**	**Op Hr/Mo**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**
(iv) Mechanical																			
1-Ton Flatbed Truck		6	6	720															
1-Ton Flatbed Truck w/Trailer		4	6	480															
6,000 # Forklift		4	6	480															
Electric, Welding Machine Six Pack		8	8	1280															
Gas/Diesel Compressor Combo		4	8	640															
90-Ton Rough Terrain Crane		3	6	360															
60-Ton Rough Terrain Crane		3	6	360															
Scissors Lift 20 ft		8	8	1280															
SJ 600 Man Lifts 66 ft		8	8	1280															
500 Ton Crane		3	8	480															
				Miles/month															
				miles/month															
				tons/month															
(v) Electrical																			
Backhoe		2	8	320															
Bobcat		3	8	480															
175 CFM Air Compressor		2	8	320															
Vaccum Trailers		2	6	240															
Rock Wheel Trencher		2	6	240															
Equipment Trailer (pullers, benders,ect		3	8	480															
Generators		4	8	640															
Scissors Lift 20 ft		6	6	720															
SJ 600 Man Lifts 66 ft		4	6	480															
Service Trucks-Conductor Splicing		3	6	360															
Dump Truck		2	6	240															
ForkLift		3	6	360															
				Miles/month															
				miles/month															
				tons/month															

Detailed Construction Tables (C

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
		Quant	Op Hrs/WD each	Op Hr/Mo	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18
20	WD/ Month				56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
(1) Demolition																			
65 T Crane		1	8	160															
Cat950 Loader w/Forks		1	8	160															
Water Truck		1	4	80															
60 Ft Manlift		1	8	160															
Excavator		1	8	160															
Shear		1	8	160															
10 Wheeler Dump Trucks		2	8	320															
40 Ft Flat Bed Trucks		2	8	320															
				Phase 1 Monthly Summary															
				Miles/month															
				miles/month															
				Demolition - tons/month															
(2) Site Prep																			
Parts Truck		1	4	80															
4000 Gallon Water Truck		1	6	120															
10 Wheeler Dump Trucks		4	8	640															
Excavator, Komatsu PC 400		1	8	160															
Dozer, D6M		1	4	80															
Roller/Compactor		1	8	160															
Grader, Cat 14G		1	4	80															
Dozer, D6M		1	4	80															
Yard Crane, ATV		1	8	160															
Loader/Forks Cat 966		1	8	160															
Concrete Pump		1	2	40															
Grove 25t Crane		1	8	160															
Misc.		1	4	80															
				Phase 2 Monthly Summary															
				Miles/month															
				miles/month															
				tons/month															
(3) Switchyard Expansion																			
Grader, Cat 14G		1	8	160															
Loader/Forks Cat 966		1	6	120															
Scissors Lift 20 ft		2	8	320															
10 Wheel Dump Truck		1	8	160															
Rock Wheel Trencher		1	8	160															
Concrete Pump		1	8	160															
Grove 25t Crane		1	6	120															
				Miles/month															
				miles/month															
				tons/month															
(4) Unit 3 Pre-Demolition Activities																			

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
					5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18
20	**WD/ Month**	**Quant**	**Op Hrs/WD each**	**Op Hr/Mo**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**
Scissors Lift 20 ft		1	8	20	10		20	10		10	10		10	10					
10 Wheeler Dump Trucks		1	4	80									10	10	10			10	10
Cat950 Loader w/Forks		1	4	80											10			10	10
Phase 4 Peak Month					10	0	20	10	0	10	10	0	20	20	20	0	0	20	20
				Miles/month	0	0	0	0	0	0	0	0	60	60	60	60	60	60	60
				miles/month	2000	1000	500	1000	2000	2000	1000	1000	500	2000	2000	2000	500	500	500
				Demolition - tons/month	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233
(5) Unit 3 Demolition																			
Parts Truck		1	4	80															
4000 gal Water Truck		1	6	120															
Excavator, Komatsu PC 400		7	8	1120															
Yard Crane, ATV		1	8	160															
Grove 25t Crane		1	8	160															
500 T Crane		1	8	160															
Loader/Forks Cat 966		5	8	800															
Scissors lift 20 ft		5	8	800															
Phase 5 Peak Month																			
				Miles/month															
				miles/month															
				tons/month															
(6) Unit 3 Basin Retaining Wall																			
Scissors lift 20 ft		5	8	800															
Loader/Forks Cat 966		5	8	800															
175 CFM Air Compressor		1	8	160															
Concrete Pump		1	2	40															
Grove 25t Crane		1	8	160															
Phase 6 Peak Month																			
				Miles/month															
				miles/month															
				tons/month															
(7) Unit 3 Basin Backfill, Compact & Grade																			
Roller/Compactor		1	8	160															
Cat 14H Blade		1	8	160															
Grader, Cat 14G		1	4	80															
Dozer, D6M		1	4	80															
4000Gal Water Truck		1	6	120															
Phase 7 Peak Month																			
				Miles/month															
				miles/month															
				Backfill - CY/month															
(8) Plant Construction																			
(i) Civil Earthwork																			
CAT 627F Scraper		6	8	960															
CAT 14H Blade		3	8	480															
MF 650B Skip		2	8	320															
Water Truck		3	8	480															

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
					5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18
20	WD/ Month	Quant	Op Hrs/WD each	Op Hr/Mo	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
Kobelco 80 - Exc		2	8	320															
10 Wheeler Dump Trucks		6	8	960															
CAT 815F Compactor		4	8	640															
CAT D6R Dozer		4	8	640															
CAT TH103 Forklift		2	8	320															
175 CFM Air Compressor		1	8	160															
				Miles/month															
				miles/month															
				tons/month															
(ii) Foundations																			
90-Ton Rough Terrain Crane		1	6	120															
60-Ton Rough Terrain Crane		2	6	240															
Scissor Lifts 20 ft		4	8	640															
1 Ton Parts Truck		1	6	120															
175 CFM Air Compressor		2	8	320															
Electric, Welding Machine 400 Amps		1	4	80															
				Miles/month															
				miles/month															
				tons/month															
(iii) Structural Steel																			
1-Ton Flatbed Truck		3	6	360															
1-Ton Flatbed Truck w/Trailer		2	6	240															
6,000 # Forklift		2	8	320															
Electric, Welding Machine Six Pack		4	8	640															
Gas/Diesel Compressor Combo		4	8	640															
90-Ton Rough Terrain Crane		4	8	640															
60-Ton Rough Terrain Crane		2	8	320															
Scissors Lift 20 ft		6	8	960															
SJ 600 Man Lifts 66 ft		8	8	1280															
				Miles/month															
				miles/month															
				tons/month															

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
		Quant	Op Hrs/WD each	Op Hr/Mo	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18
20	WD/ Month				56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
(iv) Mechanical																			
1-Ton Flatbed Truck		6	6	720															
1-Ton Flatbed Truck w/Trailer		4	6	480															
6,000 # Forklift		4	6	480															
Electric, Welding Machine Six Pack		8	8	1280															
Gas/Diesel Compressor Combo		4	8	640															
90-Ton Rough Terrain Crane		3	6	360															
60-Ton Rough Terrain Crane		3	6	360															
Scissors Lift 20 ft		8	8	1280															
SJ 600 Man Lifts 66 ft		8	8	1280															
500 Ton Crane		3	8	480															
				Miles/month															
				miles/month															
				tons/month															
(v) Electrical																			
Backhoe		2	8	320															
Bobcat		3	8	480															
175 CFM Air Compressor		2	8	320															
Vaccum Trailers		2	6	240															
Rock Wheel Trencher		2	6	240															
Equipment Trailer (pullers, benders,ect		3	8	480															
Generators		4	8	640															
Scissors Lift 20 ft		6	6	720															
SJ 600 Man Lifts 66 ft		4	6	480															
Service Trucks-Conductor Splicing		3	6	360															
Dump Truck		2	6	240															
ForkLift		3	6	360															
				Miles/month															
				miles/month															
				tons/month															

Detailed Construction Tables (C

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
		Quant	Op Hrs/WD each	Op Hr/Mo	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19
20	WD/ Month				71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
(1) Demolition																			
65 T Crane		1	8	160															
Cat950 Loader w/Forks		1	8	160															
Water Truck		1	4	80															
60 Ft Manlift		1	8	160															
Excavator		1	8	160															
Shear		1	8	160															
10 Wheeler Dump Trucks		2	8	320															
40 Ft Flat Bed Trucks		2	8	320															
				Phase 1 Monthly Summary															
				Miles/month															
				miles/month															
				Demolition - tons/month															
(2) Site Prep																			
Parts Truck		1	4	80															
4000 Gallon Water Truck		1	6	120															
10 Wheeler Dump Trucks		4	8	640															
Excavator, Komatsu PC 400		1	8	160															
Dozer, D6M		1	4	80															
Roller/Compactor		1	8	160															
Grader, Cat 14G		1	4	80															
Dozer, D6M		1	4	80															
Yard Crane, ATV		1	8	160															
Loader/Forks Cat 966		1	8	160															
Concrete Pump		1	2	40															
Grove 25t Crane		1	8	160															
Misc.		1	4	80															
				Phase 2 Monthly Summary															
				Miles/month															
				miles/month															
				tons/month															
(3) Switchyard Expansion																			
Grader, Cat 14G		1	8	160															
Loader/Forks Cat 966		1	6	120															
Scissors Lift 20 ft		2	8	320															
10 Wheel Dump Truck		1	8	160															
Rock Wheel Trencher		1	8	160															
Concrete Pump		1	8	160															
Grove 25t Crane		1	6	120															
				Miles/month															
				miles/month															
				tons/month															
(4) Unit 3 Pre-Demolition Activities																			

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
					8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19
20	**WD/ Month**	**Quant**	**Op Hrs/WD each**	**Op Hr/Mo**	**71**	**72**	**73**	**74**	**75**	**76**	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**
Scissors Lift 20 ft		1	8	20															
10 Wheeler Dump Trucks		1	4	80			10	10	10										
Cat950 Loader w/Forks		1	4	80			10	10	10										
Phase 4 Peak Month					0	0	20	20	**20**										
				Miles/month	60	60	60	60	60										
				miles/month	2000	2000	2000	500	500										
				Demolition - tons/month	233	233	233	233	233										
(5) Unit 3 Demolition																			
Parts Truck		1	4	80						80	80	80	80	80	80	80	80	80	80
4000 gal Water Truck		1	6	120								120	120	120	120	120	120	120	120
Excavator, Komatsu PC 400		7	8	1120								1120	1120	1120	1120	1120	1120	1120	1120
Yard Crane, ATV		1	8	160								160	160	160	160	160	160	160	160
Grove 25t Crane		1	8	160								160	160	160	160	160	160	160	160
500 T Crane		1	8	160								160	160	160	160	160	160	160	160
Loader/Forks Cat 966		5	8	800								800	800	800	800	800	800	800	800
Scissors lift 20 ft		5	8	800								800	800	800	800	800	800	800	800
Phase 5 Peak Month										80	80	**3400**	3400	3400	3400	3400	3400	3400	3400
				Miles/month						600	360	6240	6240	2640	2640	12240	12240	18240	240
				miles/month						18500	19000	44000	44000	44000	44000	39500	39500	39500	39500
				tons/month															
(6) Unit 3 Basin Retaining Wall																			
Scissors lift 20 ft		5	8	800															
Loader/Forks Cat 966		5	8	800															
175 CFM Air Compressor		1	8	160															
Concrete Pump		1	2	40															
Grove 25t Crane		1	8	160															
Phase 6 Peak Month																			
				Miles/month															
				miles/month															
				tons/month															
(7) Unit 3 Basin Backfill, Compact & Grade																			
Roller/Compactor		1	8	160															
Cat 14H Blade		1	8	160															
Grader, Cat 14G		1	4	80															
Dozer, D6M		1	4	80															
4000Gal Water Truck		1	6	120															
Phase 7 Peak Month																			
				Miles/month															
				miles/month															
				Backfill - CY/month															
(8) Plant Construction																			
(i) Civil Earthwork																			
CAT 627F Scraper		6	8	960															
CAT 14H Blade		3	8	480															
MF 650B Skip		2	8	320															
Water Truck		3	8	480															

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
					8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19
20	WD/ Month	Quant	Op Hrs/WD each	Op Hr/Mo	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
Kobelco 80 - Exc		2	8	320															
10 Wheeler Dump Trucks		6	8	960															
CAT 815F Compactor		4	8	640															
CAT D6R Dozer		4	8	640															
CAT TH103 Forklift		2	8	320															
175 CFM Air Compressor		1	8	160															
				Miles/month															
				miles/month															
				tons/month															
(ii) Foundations																			
90-Ton Rough Terrain Crane		1	6	120															
60-Ton Rough Terrain Crane		2	6	240															
Scissor Lifts 20 ft		4	8	640															
1 Ton Parts Truck		1	6	120															
175 CFM Air Compressor		2	8	320															
Electric, Welding Machine 400 Amps		1	4	80															
				Miles/month															
				miles/month															
				tons/month															
(iii) Structural Steel																			
1-Ton Flatbed Truck		3	6	360															
1-Ton Flatbed Truck w/Trailer		2	6	240															
6,000 # Forklift		2	8	320															
Electric, Welding Machine Six Pack		4	8	640															
Gas/Diesel Compressor Combo		4	8	640															
90-Ton Rough Terrain Crane		4	8	640															
60-Ton Rough Terrain Crane		2	8	320															
Scissors Lift 20 ft		6	8	960															
SJ 600 Man Lifts 66 ft		8	8	1280															
				Miles/month															
				miles/month															
				tons/month															

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																			
					8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19
20	WD/ Month	Quant	Op Hrs/WD each	Op Hr/Mo	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
(iv) Mechanical																			
1-Ton Flatbed Truck		6	6	720															
1-Ton Flatbed Truck w/Trailer		4	6	480															
6,000 # Forklift		4	6	480															
Electric, Welding Machine Six Pack		8	8	1280															
Gas/Diesel Compressor Combo		4	8	640															
90-Ton Rough Terrain Crane		3	6	360															
60-Ton Rough Terrain Crane		3	6	360															
Scissors Lift 20 ft		8	8	1280															
SJ 600 Man Lifts 66 ft		8	8	1280															
500 Ton Crane		3	8	480															
				Miles/month															
				miles/month															
				tons/month															
(v) Electrical																			
Backhoe		2	8	320															
Bobcat		3	8	480															
175 CFM Air Compressor		2	8	320															
Vaccum Trailers		2	6	240															
Rock Wheel Trencher		2	6	240															
Equipment Trailer (pullers, benders,ect		3	8	480															
Generators		4	8	640															
Scissors Lift 20 ft		6	6	720															
SJ 600 Man Lifts 66 ft		4	6	480															
Service Trucks-Conductor Splicing		3	6	360															
Dump Truck		2	6	240															
ForkLift		3	6	360															
				Miles/month															
				miles/month															
				tons/month															

Detailed Construction Tables (C

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																		
		Quant	Op Hrs/WD each	Op Hr/Mo	11/1/19	12/1/19	1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
20	WD/ Month				86	87	88	89	90	91	92	93	94	95	96	97	98	99
(1) Demolition																		
65 T Crane		1	8	160														
Cat950 Loader w/Forks		1	8	160														
Water Truck		1	4	80														
60 Ft Manlift		1	8	160														
Excavator		1	8	160														
Shear		1	8	160														
10 Wheeler Dump Trucks		2	8	320														
40 Ft Flat Bed Trucks		2	8	320														
				Phase 1 Monthly Summary														
				Miles/month														
				miles/month														
				Demolition - tons/month														
(2) Site Prep																		
Parts Truck		1	4	80														
4000 Gallon Water Truck		1	6	120														
10 Wheeler Dump Trucks		4	8	640														
Excavator, Komatsu PC 400		1	8	160														
Dozer, D6M		1	4	80														
Roller/Compactor		1	8	160														
Grader, Cat 14G		1	4	80														
Dozer, D6M		1	4	80														
Yard Crane, ATV		1	8	160														
Loader/Forks Cat 966		1	8	160														
Concrete Pump		1	2	40														
Grove 25t Crane		1	8	160														
Misc.		1	4	80														
				Phase 2 Monthly Summary														
				Miles/month														
				miles/month														
				tons/month														
(3) Switchyard Expansion																		
Grader, Cat 14G		1	8	160														
Loader/Forks Cat 966		1	6	120														
Scissors Lift 20 ft		2	8	320														
10 Wheel Dump Truck		1	8	160														
Rock Wheel Trencher		1	8	160														
Concrete Pump		1	8	160														
Grove 25t Crane		1	6	120														
				Miles/month														
				miles/month														
				tons/month														
(4) Unit 3 Pre-Demolition Activities																		

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																		
					11/1/19	12/1/19	1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
20	**WD/ Month**	**Quant**	**Op Hrs/WD each**	**Op Hr/Mo**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**
Scissors Lift 20 ft		1	8	20														
10 Wheeler Dump Trucks		1	4	80														
Cat950 Loader w/Forks		1	4	80														
Phase 4 Peak Month																		
				Miles/month														
				miles/month														
			Demolition - tons/month															
(5) Unit 3 Demolition																		
Parts Truck		1	4	80	80													
4000 gal Water Truck		1	6	120	120													
Excavator, Komatsu PC 400		7	8	1120	1120													
Yard Crane, ATV		1	8	160	160													
Grove 25t Crane		1	8	160	160													
500 T Crane		1	8	160	160													
Loader/Forks Cat 966		5	8	800	800													
Scissors lift 20 ft		5	8	800	800													
Phase 5 Peak Month					3400													
				Miles/month	240													
				miles/month	19500													
				tons/month														
(6) Unit 3 Basin Retaining Wall																		
Scissors lift 20 ft		5	8	800		880	880	880										
Loader/Forks Cat 966		5	8	800		800	800	800										
175 CFM Air Compressor		1	8	160		160	160	160										
Concrete Pump		1	2	40		40	40	40										
Grove 25t Crane		1	8	160		160	160	160										
Phase 6 Peak Month						**2040**	2040	2040										
				Miles/month		420	900	1440										
				miles/month		**24500**	**24500**	**24500**										
				tons/month														
(7) Unit 3 Basin Backfill, Compact & Grade																		
Roller/Compactor		1	8	160					160	160	160	160	160	160	160	160	160	
Cat 14H Blade		1	8	160					160	160	160	160	160	160	160	160	160	
Grader, Cat 14G		1	4	80					80	80	80	80	80	80	80	80	80	
Dozer, D6M		1	4	80					80	80	80	80	80	80	80	80	80	
4000Gal Water Truck		1	6	120					120	120	120	120	120	120	120	120	120	
Phase 7 Peak Month									**600**	600	600	600	600	600	600	600	600	
				Miles/month					240	240	240	240	240	240	240	240	240	240
				miles/month					14500	14500	14500	14500	14500	14500	14500	14500	14500	14500
			Backfill - CY/month						**11000**	**11000**	**11000**	**11000**	**11000**	**11000**	**11000**	**11000**	**11000**	**11000**
(8) Plant Construction																		
(i) Civil Earthwork																		
CAT 627F Scraper		6	8	960														
CAT 14H Blade		3	8	480														
MF 650B Skip		2	8	320														
Water Truck		3	8	480														

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																		
					11/1/19	12/1/19	1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
20	WD/ Month	Quant	Op Hrs/WD each	Op Hr/Mo	86	87	88	89	90	91	92	93	94	95	96	97	98	99
Kobelco 80 - Exc		2	8	320														
10 Wheeler Dump Trucks		6	8	960														
CAT 815F Compactor		4	8	640														
CAT D6R Dozer		4	8	640														
CAT TH103 Forklift		2	8	320														
175 CFM Air Compressor		1	8	160														
				Miles/month														
				miles/month														
				tons/month														
(ii) Foundations																		
90-Ton Rough Terrain Crane		1	6	120														
60-Ton Rough Terrain Crane		2	6	240														
Scissor Lifts 20 ft		4	8	640														
1 Ton Parts Truck		1	6	120														
175 CFM Air Compressor		2	8	320														
Electric, Welding Machine 400 Amps		1	4	80														
				Miles/month														
				miles/month														
				tons/month														
(iii) Structural Steel																		
1-Ton Flatbed Truck		3	6	360														
1-Ton Flatbed Truck w/Trailer		2	6	240														
6,000 # Forklift		2	8	320														
Electric, Welding Machine Six Pack		4	8	640														
Gas/Diesel Compressor Combo		4	8	640														
90-Ton Rough Terrain Crane		4	8	640														
60-Ton Rough Terrain Crane		2	8	320														
Scissors Lift 20 ft		6	8	960														
SJ 600 Man Lifts 66 ft		8	8	1280														
				Miles/month														
				miles/month														
				tons/month														

Table A-4a: Generation Scenario 1 (GE Option) - Usage Summary from C																		
					11/1/19	12/1/19	1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
20	**WD/ Month**	**Quant**	**Op Hrs/WD each**	**Op Hr/Mo**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**
(iv) Mechanical																		
1-Ton Flatbed Truck		6	6	720														
1-Ton Flatbed Truck w/Trailer		4	6	480														
6,000 # Forklift		4	6	480														
Electric, Welding Machine Six Pack		8	8	1280														
Gas/Diesel Compressor Combo		4	8	640														
90-Ton Rough Terrain Crane		3	6	360														
60-Ton Rough Terrain Crane		3	6	360														
Scissors Lift 20 ft		8	8	1280														
SJ 600 Man Lifts 66 ft		8	8	1280														
500 Ton Crane		3	8	480														
				Miles/month														
				miles/month														
				tons/month														
(v) Electrical																		
Backhoe		2	8	320														
Bobcat		3	8	480														
175 CFM Air Compressor		2	8	320														
Vaccum Trailers		2	6	240														
Rock Wheel Trencher		2	6	240														
Equipment Trailer (pullers, benders,ect		3	8	480														
Generators		4	8	640														
Scissors Lift 20 ft		6	6	720														
SJ 600 Man Lifts 66 ft		4	6	480														
Service Trucks-Conductor Splicing		3	6	360														
Dump Truck		2	6	240														
ForkLift		3	6	360														
				Miles/month														
				miles/month														
				tons/month														

Table A-4b: Generation Scenario 1 (GE Option) - VOC Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	VOC EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.095	0.0
Cat950 Loader w/Forks	1	8		0.085	0.0
Water Truck	1	4	2	1.71E-03	0.0
60 Ft Manlift	1	8		0.039	0.0
Excavator	1	8		0.087	0.0
Shear	1	8		0.058	0.0
10 Wheeler Dump Trucks	2	8	10	0.150	0.0
40 Ft Flat Bed Trucks	2	8	10	0.002	0.0
Phase 1 Peak Month				0.000	0.0
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(2) Site Prep					
Parts Truck	1	4	10	0.002	0.0
4000 Gallon Water Truck	1	6	2	1.71E-03	0.0
10 Wheeler Dump Trucks	4	8	10	0.150	0.0
Excavator, Komatsu PC 400	1	8		0.087	0.0
Dozer, D6M	1	4		0.209	0.0
Roller/Compactor	1	8		0.070	0.0
Grader, Cat 14G	1	4		0.103	0.0
Dozer, D6M	1	4		0.209	0.0
Yard Crane, ATV	1	8		0.095	0.0
Loader/Forks Cat 966	1	8		0.085	0.0
Concrete Pump	1	2		0.081	0.0
Grove 25t Crane	1	8		0.095	0.0
Misc.	1	4		0.062	0.0
Phase 2 Peak Month				0.000	0.0
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.103	0.0
Loader/Forks Cat 966	1	6		0.085	0.0
Scissors Lift 20 ft	2	8		0.039	0.0
10 Wheel Dump Truck	1	8	10	0.150	0.0
Rock Wheel Trencher	1	8		0.101	0.0
Concrete Pump	1	8		0.081	0.0
Grove 25t Crane	1	6		0.095	0.0
				0.000	0.0
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.039	0.0
10 Wheeler Dump Trucks	1	4	10	0.150	0.0
Cat950 Loader w/Forks	1	4		0.085	0.0
Phase 4 Peak Month				0.000	0.0
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.002	0.0
4000 gal Water Truck	1	6	2	1.71E-03	0.0
Excavator, Komatsu PC 400	7	8		0.087	0.0
Yard Crane, ATV	1	8		0.095	0.0
Grove 25t Crane	1	8		0.095	0.0
500 T Crane	1	8		0.095	0.0
Loader/Forks Cat 966	5	8		0.085	0.0
Scissors lift 20 ft	5	8		0.039	0.0
Phase 5 Peak Month				0.000	0.0
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.039	0.0
Loader/Forks Cat 966	5	8		0.085	0.0
175 CFM Air Compressor	1	8		0.098	0.0
Concrete Pump	1	2		0.081	0.0
Grove 25t Crane	1	8		0.095	0.0
Phase 6 Peak Month				0.000	0.0
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.070	0.0
Cat 14H Blade	1	8		0.103	0.0
Grader, Cat 14G	1	4		0.103	0.0
Dozer, D6M	1	4		0.209	0.0
4000Gal Water Truck	1	6	2	1.71E-03	0.0
Phase 7 Peak Month				0.000	0.0
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0

Table A-4b: Generation Scenario 1 (GE Option) - VOC Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	VOC EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.195	0.0
CAT 14H Blade	3	8		0.103	0.0
MF 650B Skip	2	8		0.058	9.2
Water Truck	3	8	2	1.71E-03	1.6
Kobelco 80 - Exc	2	8		0.087	27.9
10 Wheeler Dump Trucks	6	8	10	0.150	144.1
CAT 815F Compactor	4	8		0.070	27.8
CAT D6R Dozer	4	8		0.209	100.1
CAT TH103 Forklift	2	8		0.039	12.6
175 CFM Air Compressor	1	8		0.098	15.7
Truck Trips				1.71E-03	9.5
Personnel				6.19E-04	189.4
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.095	11.5
60-Ton Rough Terrain Crane	2	6		0.095	22.9
Scissor Lifts 20 ft	4	8		0.039	24.7
1 Ton Parts Truck	1	6	1.3	1.71E-03	0.3
175 CFM Air Compressor	2	8		0.098	29.5
Electric, Welding Machine 400 Amps	1	4		0.000	0.0
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	0.4	1.71E-03	0.2
1-Ton Flatbed Truck w/Trailer	2	6	0.7	1.71E-03	0.2
6,000 # Forklift	2	8		0.039	11.8
Electric, Welding Machine Six Pack	4	8		0.000	0.0
Gas/Diesel Compressor Combo	4	8		0.083	26.6
90-Ton Rough Terrain Crane	4	8		0.095	30.5
60-Ton Rough Terrain Crane	2	8		0.095	15.3
Scissors Lift 20 ft	6	8		0.039	24.7
SJ 600 Man Lifts 66 ft	8	8		0.039	37.1
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0

Table A-4b: Generation Scenario 1 (GE Option) - VOC Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	VOC EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	0.4	1.71E-03	0.5
1-Ton Flatbed Truck w/Trailer	4	6	0.3	1.71E-03	0.2
6,000 # Forklift	4	6		0.039	18.8
Electric, Welding Machine Six Pack	8	8		0.000	0.0
Gas/Diesel Compressor Combo	4	8		0.083	53.3
90-Ton Rough Terrain Crane	3	6		0.095	22.9
60-Ton Rough Terrain Crane	3	6		0.095	22.9
Scissors Lift 20 ft	8	8		0.039	44.0
SJ 600 Man Lifts 66 ft	8	8		0.039	34.8
500 Ton Crane	3	8		0.095	30.5
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0
(v) Electrical					
Backhoe	2	8		0.058	20.8
Bobcat	3	8		0.036	5.7
175 CFM Air Compressor	2	8		0.098	15.7
Vaccum Trailers	2	6		0.083	10.0
Rock Wheel Trencher	2	6		0.101	12.1
Equipment Trailer (pullers, benders,ect	3	8		0.083	15.0
Generators	4	8		0.083	40.0
Scissors Lift 20 ft	6	6		0.039	4.6
SJ 600 Man Lifts 66 ft	4	6		0.039	4.6
Service Trucks-Conductor Splicing	3	6	0.4	1.71E-03	0.1
Dump Truck	2	6	10	0.150	15.0
ForkLift	3	6		0.039	4.7
Truck Trips				1.71E-03	0.0
Personnel				6.19E-04	0.0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.0

Total Monthly Emissions (lb/Month)	1149.6
Total Monthly Onsite Exhaust (lb/Month)	950.7
Total Monthly Onsite Fugitive (lb/Month)	0.0
Total Monthly Offsite Exhaust (lb/Month)	198.9
Total Monthly Onsite Emissions (lb/Month)	950.7
Total Monthly Emissions (lb/Month)	1149.6

Project Summary				
Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total Emissions	11368	1150	57	7
Onsite Exhaust Emissions	9266	951	48	6
Onsite Fugitive Emissions	0	0	0	0
Offsite Exhaust Emissions	2102	199	10	1
Month	14	22	22	22

Regional VOC Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	173	8.7
Site Preparation	781	39.0
Plant Construction	1,150	57.5
Switchyard Expansion	740	37.0
Unit 3 Pre-Demolition	4	0.2
Unit 3 Demolition	300	15.0
Unit 3 Basin Retaining wall	154	7.7
Unit 3 Basin Backfill, Compact and Grade	62	3.1

Localized VOC Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demo	69	3
Switch	464	23
Unit 3 Demo	3108	155
Plant	951	48

Table A-4c: Generation Scenario 1 (GE Option) - CO Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.331	0
Cat950 Loader w/Forks	1	8		0.325	0
Water Truck	1	4	2	7.95E-03	0
60 Ft Manlift	1	8		0.132	0
Excavator	1	8		0.362	0
Shear	1	8		0.256	0
10 Wheeler Dump Trucks	2	8	10	0.445	0
40 Ft Flat Bed Trucks	2	8	10	0.008	0
Phase 1 Peak Month				0.000	0
Truck Trips				7.95E-03	0
Personnel				5.52E-03	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.008	0
4000 Gallon Water Truck	1	6	2	7.95E-03	0
10 Wheeler Dump Trucks	4	8	10	0.445	0
Excavator, Komatsu PC 400	1	8		0.362	0
Dozer, D6M	1	4		0.837	0
Roller/Compactor	1	8		0.275	0
Grader, Cat 14G	1	4		0.411	0
Dozer, D6M	1	4		0.837	0
Yard Crane, ATV	1	8		0.331	0
Loader/Forks Cat 966	1	8		0.325	0
Concrete Pump	1	2		0.298	0
Grove 25t Crane	1	8		0.331	0
Misc.	1	4		0.258	0
Phase 2 Peak Month				0.000	0
Truck Trips				0.008	0
Personnel				0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.411	0
Loader/Forks Cat 966	1	6		0.325	0
Scissors Lift 20 ft	2	8		0.132	0
10 Wheel Dump Truck	1	8	10	0.445	0
Rock Wheel Trencher	1	8		0.318	0
Concrete Pump	1	8		0.298	0
Grove 25t Crane	1	6		0.331	0
				0.000	0
Truck Trips				0.008	0
Personnel				0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.132	0
10 Wheeler Dump Trucks	1	4	10	0.445	0
Cat950 Loader w/Forks	1	4		0.325	0
Phase 4 Peak Month				0.000	0
Truck Trips				0.008	0
Personnel				0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.008	0
4000 gal Water Truck	1	6	2	7.95E-03	0
Excavator, Komatsu PC 400	7	8		0.362	0
Yard Crane, ATV	1	8		0.331	0
Grove 25t Crane	1	8		0.331	0
500 T Crane	1	8		0.331	0
Loader/Forks Cat 966	5	8		0.325	0
Scissors lift 20 ft	5	8		0.132	0
Phase 5 Peak Month				0.000	0
Truck Trips				0.008	0
Personnel				0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.132	0
Loader/Forks Cat 966	5	8		0.325	0
175 CFM Air Compressor	1	8		0.345	0
Concrete Pump	1	2		0.298	0
Grove 25t Crane	1	8		0.331	0
Phase 6 Peak Month				0.000	0
Truck Trips				0.008	0
Personnel				0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.275	0
Cat 14H Blade	1	8		0.411	0
Grader, Cat 14G	1	4		0.411	0
Dozer, D6M	1	4		0.837	0
4000Gal Water Truck	1	6	2	0.008	0
Phase 7 Peak Month				0.000	0
Truck Trips				0.008	0
Personnel				0.006	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-4c: Generation Scenario 1 (GE Option) - CO Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.736	0
CAT 14H Blade	3	8		0.411	0
MF 650B Skip	2	8		0.256	41
Water Truck	3	8	2	0.008	8
Kobelco 80 - Exc	2	8		0.362	116
10 Wheeler Dump Trucks	6	8	10	0.445	427
CAT 815F Compactor	4	8		0.275	110
CAT D6R Dozer	4	8		0.837	402
CAT TH103 Forklift	2	8		0.151	48
175 CFM Air Compressor	1	8		0.345	55
Truck Trips				0.008	44
Personnel				0.006	1689
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.331	40
60-Ton Rough Terrain Crane	2	6		0.331	80
Scissor Lifts 20 ft	4	8		0.132	85
1 Ton Parts Truck	1	6	1.3	0.008	1
175 CFM Air Compressor	2	8		0.345	103
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips				0.008	0
Personnel				0.006	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	0.4	0.008	1
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0.008	1
6,000 # Forklift	2	8		0.151	45
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.312	100
90-Ton Rough Terrain Crane	4	8		0.331	106
60-Ton Rough Terrain Crane	2	8		0.331	53
Scissors Lift 20 ft	6	8		0.132	85
SJ 600 Man Lifts 66 ft	8	8		0.132	127
Truck Trips				0.008	0
Personnel				0.006	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-4c: Generation Scenario 1 (GE Option) - CO Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	0.4	0.008	2
1-Ton Flatbed Truck w/Trailer	4	6	0.3	0.008	1
6,000 # Forklift	4	6		0.151	73
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.312	200
90-Ton Rough Terrain Crane	3	6		0.331	80
60-Ton Rough Terrain Crane	3	6		0.331	80
Scissors Lift 20 ft	8	8		0.132	151
SJ 600 Man Lifts 66 ft	8	8		0.132	119
500 Ton Crane	3	8		0.331	106
Truck Trips				0.008	0
Personnel				0.006	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(v) Electrical					
Backhoe	2	8		0.256	92
Bobcat	3	8		0.158	25
175 CFM Air Compressor	2	8		0.345	55
Vaccum Trailers	2	6		0.312	37
Rock Wheel Trencher	2	6		0.318	38
Equipment Trailer (pullers, benders,ect	3	8		0.312	56
Generators	4	8		0.312	150
Scissors Lift 20 ft	6	6		0.132	16
SJ 600 Man Lifts 66 ft	4	6		0.132	16
Service Trucks-Conductor Splicing	3	6	0.4	0.008	0
Dump Truck	2	6	10	0.445	44
ForkLift	3	6		0.151	18
Truck Trips				7.95E-03	0
Personnel				5.52E-03	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Total Monthly Emissions (lb/Month)	5126
Total Monthly Onsite Exhaust (lb/Month)	3393
Total Monthly Onsite Fugitive (lb/Month)	0
Total Monthly Offsite Exhaust (lb/Month)	1733
Total Monthly Onsite Emissions (lb/Month)	3393
Total Monthly Emissions (lb/Month)	5126

Project Summary

Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total Emissions	52470	5126	256	32
Onsite Exhaust Emissions	29119	3393	170	21
Onsite Fugitive Emissions	0	0	0	0
Offsite Exhaust Emissions	23351	1733	87	11
Month	18	22	22	22

Regional CO Emissions Summary

Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	880	44.0
Site Preparation	3,087	154.3
Plant Construction	5,126	256.3
Switchyard Expansion	4,128	206.4
Unit 3 Pre-Demolition	34	1.7
Unit 3 Demolition	1,302	65.1
Unit 3 Basin Retaining wal	643	32.2
Unit 3 Basin Backfill, Compact and Grade	293	14.7

Localized CO Emissions Summary

Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demo	235	12
Switch	1674	84
Unit 3 Demo	11928	596
Plant	3393	170

Table A-4d: Generation Scenario 1 (GE Option) - NOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	NOx EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.854	0
Cat950 Loader w/Forks	1	8		0.672	0
Water Truck	1	4	2	2.98E-02	0
60 Ft Manlift	1	8		0.218	0
Excavator	1	8		0.658	0
Shear	1	8		0.390	0
10 Wheeler Dump Trucks	2	8	10	1.351	0
40 Ft Flat Bed Trucks	2	8	10	0.030	0
Phase 1 Peak Month				0.000	0
Truck Trips				2.98E-02	0
Personnel				4.58E-04	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.030	0
4000 Gallon Water Truck	1	6	2	2.98E-02	0
10 Wheeler Dump Trucks	4	8	10	1.351	0
Excavator, Komatsu PC 400	1	8		0.658	0
Dozer, D6M	1	4		1.800	0
Roller/Compactor	1	8		0.465	0
Grader, Cat 14G	1	4		0.838	0
Dozer, D6M	1	4		1.800	0
Yard Crane, ATV	1	8		0.854	0
Loader/Forks Cat 966	1	8		0.672	0
Concrete Pump	1	2		0.500	0
Grove 25t Crane	1	8		0.854	0
Misc.	1	4		0.576	0
Phase 2 Peak Month				0.000	0
Truck Trips				0.030	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.838	0
Loader/Forks Cat 966	1	6		0.672	0
Scissors Lift 20 ft	2	8		0.218	0
10 Wheel Dump Truck	1	8	10	1.351	0
Rock Wheel Trencher	1	8		0.469	0
Concrete Pump	1	8		0.500	0
Grove 25t Crane	1	6		0.854	0
				0.000	0
Truck Trips				0.030	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.218	0
10 Wheeler Dump Trucks	1	4	10	1.351	0
Cat950 Loader w/Forks	1	4		0.672	0
Phase 4 Peak Month				0.000	0
Truck Trips				0.030	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.030	0
4000 gal Water Truck	1	6	2	2.98E-02	0
Excavator, Komatsu PC 400	7	8		0.658	0
Yard Crane, ATV	1	8		0.854	0
Grove 25t Crane	1	8		0.854	0
500 T Crane	1	8		0.854	0
Loader/Forks Cat 966	5	8		0.672	0
Scissors lift 20 ft	5	8		0.218	0
Phase 5 Peak Month				0.000	0
Truck Trips				0.030	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.218	0
Loader/Forks Cat 966	5	8		0.672	0
175 CFM Air Compressor	1	8		0.649	0
Concrete Pump	1	2		0.500	0
Grove 25t Crane	1	8		0.854	0
Phase 6 Peak Month				0.000	0
Truck Trips				0.030	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.465	0
Cat 14H Blade	1	8		0.838	0
Grader, Cat 14G	1	4		0.838	0
Dozer, D6M	1	4		1.800	0
4000Gal Water Truck	1	6	2	0.030	0
Phase 7 Peak Month				0.000	0
Truck Trips				0.030	0
Personnel				0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-4d: Generation Scenario 1 (GE Option) - NOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	NOx EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		1.721	0
CAT 14H Blade	3	8		0.838	0
MF 650B Skip	2	8		0.390	62
Water Truck	3	8	2	0.030	29
Kobelco 80 - Exc	2	8		0.658	210
10 Wheeler Dump Trucks	6	8	10	1.351	1297
CAT 815F Compactor	4	8		0.465	186
CAT D6R Dozer	4	8		1.800	864
CAT TH103 Forklift	2	8		0.290	93
175 CFM Air Compressor	1	8		0.649	104
Truck Trips				0.030	165
Personnel				0.000	140
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.854	103
60-Ton Rough Terrain Crane	2	6		0.854	205
Scissor Lifts 20 ft	4	8		0.218	139
1 Ton Parts Truck	1	6	1.3	0.030	5
175 CFM Air Compressor	2	8		0.649	195
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips				0.030	0
Personnel				0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	0.4	0.030	4
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0.030	4
6,000 # Forklift	2	8		0.290	87
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.578	185
90-Ton Rough Terrain Crane	4	8		0.854	273
60-Ton Rough Terrain Crane	2	8		0.854	137
Scissors Lift 20 ft	6	8		0.218	139
SJ 600 Man Lifts 66 ft	8	8		0.218	209
Truck Trips				0.030	0
Personnel				0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-4d: Generation Scenario 1 (GE Option) - NOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	NOx EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	0.4	0.030	8
1-Ton Flatbed Truck w/Trailer	4	6	0.3	0.030	3
6,000 # Forklift	4	6		0.290	139
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.578	370
90-Ton Rough Terrain Crane	3	6		0.854	205
60-Ton Rough Terrain Crane	3	6		0.854	205
Scissors Lift 20 ft	8	8		0.218	248
SJ 600 Man Lifts 66 ft	8	8		0.218	196
500 Ton Crane	3	8		0.854	273
Truck Trips				0.030	0
Personnel				0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(v) Electrical					
Backhoe	2	8		0.390	140
Bobcat	3	8		0.180	29
175 CFM Air Compressor	2	8		0.649	104
Vaccum Trailers	2	6		0.578	69
Rock Wheel Trencher	2	6		0.469	56
Equipment Trailer (pullers, benders,ect	3	8		0.578	104
Generators	4	8		0.578	277
Scissors Lift 20 ft	6	6		0.218	26
SJ 600 Man Lifts 66 ft	4	6		0.218	26
Service Trucks-Conductor Splicing	3	6	0.4	0.030	1
Dump Truck	2	6	10	1.351	135
ForkLift	3	6		0.290	35
Truck Trips				2.98E-02	0
Personnel				4.58E-04	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Total Monthly Emissions (lb/Month)	7486
Total Monthly Onsite Exhaust (lb/Month)	7181
Total Monthly Onsite Fugitive (lb/Month)	0
Total Monthly Offsite Exhaust (lb/Month)	305
Total Monthly Onsite Emissions (lb/Month)	7181
Total Monthly Emissions (lb/Month)	7486

Project Summary				
Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total Emissions	77084	7486	374	47
Onsite Exhaust Emissions	74168	7181	359	45
Onsite Fugitive Emissions	0	0	0	0
Offsite Exhaust Emissions	2917	305	15	2
Month	12	22	22	22

Regional NOx Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	1,786	89.3
Site Preparation	6,345	317.2
Plant Construction	7,486	374.3
Switchyard Expansion	3,612	180.6
Unit 3 Pre-Demolition	23	1.1
Unit 3 Demolition	2,452	122.6
Unit 3 Basin Retaining wall	1,044	52.2
Unit 3 Basin Backfill, Compact and Grade	440	22.0

Localized NOx Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demo	603	30
Switch	3356	168
Unit 3 Demo	1890	94
Plant	7181	359

Table A-4f: Generation Scenario 1 (GE Option) - PM10 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM10 EmFac (lb/hr or lb/mi)	Peak Month (11/1/13) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.037	0
Cat950 Loader w/Forks	1	8		0.037	0
Water Truck	1	4	2	1.39E-03	0
60 Ft Manlift	1	8		0.015	0
Excavator	1	8		0.036	0
Shear	1	8		0.029	0
10 Wheeler Dump Trucks	2	8	10	0.048	0
40 Ft Flat Bed Trucks	2	8	10	0.001	0
Phase 1 Peak Month				0.000	0
Truck Trips				1.39E-03	0
Personnel				1.07E-04	0
Fugitive Dust - Demo	0.0022		Fugitive Dust - Equip	0.1356	0.000000
(2) Site Prep					
Parts Truck	1	4	10	0.001	0
4000 Gallon Water Truck	1	6	2	1.39E-03	0
10 Wheeler Dump Trucks	4	8	10	0.048	0
Excavator, Komatsu PC 400	1	8		0.036	0
Dozer, D6M	1	4		0.076	0
Roller/Compactor	1	8		0.033	0
Grader, Cat 14G	1	4		0.044	0
Dozer, D6M	1	4		0.076	0
Yard Crane, ATV	1	8		0.037	0
Loader/Forks Cat 966	1	8		0.037	0
Concrete Pump	1	2		0.035	0
Grove 25t Crane	1	8		0.037	0
Misc.	1	4		0.025	0
Phase 2 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	0.0022		Fugitive Dust - Equip	0.1356	0.000000
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.044	0
Loader/Forks Cat 966	1	6		0.037	0
Scissors Lift 20 ft	2	8		0.015	0
10 Wheel Dump Truck	1	8	10	0.048	0
Rock Wheel Trencher	1	8		0.039	0
Concrete Pump	1	8		0.035	0
Grove 25t Crane	1	6		0.037	0
				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	0.0022		Fugitive Dust - Equip	0.1356	0.000000
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.015	0
10 Wheeler Dump Trucks	1	4	10	0.048	0
Cat950 Loader w/Forks	1	4		0.037	0
Phase 4 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	0.0022		Fugitive Dust - Equip	0.1356	0.000000
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.001	0
4000 gal Water Truck	1	6	2	1.39E-03	0
Excavator, Komatsu PC 400	7	8		0.036	0
Yard Crane, ATV	1	8		0.037	0
Grove 25t Crane	1	8		0.037	0
500 T Crane	1	8		0.037	0
Loader/Forks Cat 966	5	8		0.037	0
Scissors lift 20 ft	5	8		0.015	0
Phase 5 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	0.0022		Fugitive Dust - Equip	0.1356	0.000000
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.015	0
Loader/Forks Cat 966	5	8		0.037	0
175 CFM Air Compressor	1	8		0.047	0
Concrete Pump	1	2		0.035	0
Grove 25t Crane	1	8		0.037	0
Phase 6 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	0.0022		Fugitive Dust - Equip	0.1356	0.000000
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.033	0
Cat 14H Blade	1	8		0.044	0
Grader, Cat 14G	1	4		0.044	0
Dozer, D6M	1	4		0.076	0
4000Gal Water Truck	1	6	2	0.001	0
Phase 7 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Soil	0.0002		Fugitive Dust - Equip	0.1356	0.000000

Table A-4f: Generation Scenario 1 (GE Option) - PM10 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM10 EmFac (lb/hr or lb/mi)	Peak Month (11/1/13) Emissions, lb/month
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.073	70
CAT 14H Blade	3	8		0.044	21
MF 650B Skip	2	8		0.029	9
Water Truck	3	8	2	0.001	1
Kobelco 80 - Exc	2	8		0.036	11
10 Wheeler Dump Trucks	6	8	10	0.048	46
CAT 815F Compactor	4	8		0.033	21
CAT D6R Dozer	4	8		0.076	49
CAT TH103 Forklift	2	8		0.015	5
175 CFM Air Compressor	1	8		0.047	8
Truck Trips				0.001	3
Personnel				0.000	21
Fugitive Dust - Soil	0.0002		Fugitive Dust - Equip	0.1356	282.002746
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.037	4
60-Ton Rough Terrain Crane	2	6		0.037	9
Scissor Lifts 20 ft	4	8		0.015	1
1 Ton Parts Truck	1	6	1.3	0.001	0
175 CFM Air Compressor	2	8		0.047	8
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Soil	0.0002		Fugitive Dust - Equip	0.1356	0.000000
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	0.4	0.001	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0.001	0
6,000 # Forklift	2	8		0.015	2
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.035	11
90-Ton Rough Terrain Crane	4	8		0.037	12
60-Ton Rough Terrain Crane	2	8		0.037	4
Scissors Lift 20 ft	6	8		0.015	5
SJ 600 Man Lifts 66 ft	8	8		0.015	5
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Soil	0.0002		Fugitive Dust - Equip	0.1356	0.000000

Table A-4f: Generation Scenario 1 (GE Option) - PM10 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM10 EmFac (lb/hr or lb/mi)	Peak Month (11/1/13) Emissions, lb/month
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	0.4	0.001	0
1-Ton Flatbed Truck w/Trailer	4	6	0.3	0.001	0
6,000 # Forklift	4	6		0.015	2
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.035	3
90-Ton Rough Terrain Crane	3	6		0.037	4
60-Ton Rough Terrain Crane	3	6		0.037	3
Scissors Lift 20 ft	8	8		0.015	0
SJ 600 Man Lifts 66 ft	8	8		0.015	0
500 Ton Crane	3	8		0.037	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Soil	0.0002		Fugitive Dust - Equip	0.1356	0.000000
(v) Electrical					
Backhoe	2	8		0.029	0
Bobcat	3	8		0.014	0
175 CFM Air Compressor	2	8		0.047	0
Vaccum Trailers	2	6		0.035	0
Rock Wheel Trencher	2	6		0.039	0
Equipment Trailer (pullers, benders,ect	3	8		0.035	0
Generators	4	8		0.035	0
Scissors Lift 20 ft	6	6		0.015	0
SJ 600 Man Lifts 66 ft	4	6		0.015	0
Service Trucks-Conductor Splicing	3	6	0.4	0.001	0
Dump Truck	2	6	10	0.048	0
ForkLift	3	6		0.015	0
Truck Trips				1.39E-03	0
Personnel				1.07E-04	0
Fugitive Dust - Soil	0.0002		Fugitive Dust - Equip	0.1356	0.000000

Project Summary				
Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total Emissions	5762	622	31	4
Onsite Exhaust Emissions	3622	315	16	2
Onsite Fugitive Emissions	1777	282	14	2
Offsite Exhaust Emissions	363	25	1	0
Month	12	14	14	14

Regional PM10 Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	88	4.4
Site Preparation	589	29.5
Plant Construction	622	31.1
Switchyard Expansion	258	12.9
Unit 3 Pre-Demolition	2	0.1
Unit 3 Demolition	131	6.5
Unit 3 Basin Retaining wal	62	3.1
Unit 3 Basin Backfill, Compact and Grade	70	3.5

Localized PM10 Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demo	28	1
Switch	209	10
Unit 3 Demo	101	5
Plant	597	30

HRA Modeling	
Emission Description	Total Project PM10 (lb/project)
Total Emissions	11,871
Onsite Exhaust Emissions	7,730
Onsite Fugitive Emissions	2,818
Offsite Exhaust Emissions	1,323

Table A-4g: Generation Scenario 1 (GE Option) - PM2.5 Emissions Summary					Peak Month (7/1/14)
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM2.5 EmFac (lb/hr or lb/mi)	Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.034	0
Cat950 Loader w/Forks	1	8		0.034	0
Water Truck	1	4	2	1.16E-03	0
60 Ft Manlift	1	8		0.014	0
Excavator	1	8		0.033	0
Shear	1	8		0.027	0
10 Wheeler Dump Trucks	2	8	10	0.044	0
40 Ft Flat Bed Trucks	2	8	10	0.001	0
Phase 1 Peak Month				0.000	0
Truck Trips				1.16E-03	0
Personnel				4.63E-05	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.001	0
4000 Gallon Water Truck	1	6	2	1.16E-03	0
10 Wheeler Dump Trucks	4	8	10	0.044	0
Excavator, Komatsu PC 400	1	8		0.033	0
Dozer, D6M	1	4		0.070	0
Roller/Compactor	1	8		0.030	0
Grader, Cat 14G	1	4		0.040	0
Dozer, D6M	1	4		0.070	0
Yard Crane, ATV	1	8		0.034	0
Loader/Forks Cat 966	1	8		0.034	0
Concrete Pump	1	2		0.032	0
Grove 25t Crane	1	8		0.034	0
Misc.	1	4		0.023	0
Phase 2 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.040	0
Loader/Forks Cat 966	1	6		0.034	0
Scissors Lift 20 ft	2	8		0.014	0
10 Wheel Dump Truck	1	8	10	0.044	0
Rock Wheel Trencher	1	8		0.036	0
Concrete Pump	1	8		0.032	0
Grove 25t Crane	1	6		0.034	0
				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.014	0
10 Wheeler Dump Trucks	1	4	10	0.044	0
Cat950 Loader w/Forks	1	4		0.034	0
Phase 4 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.001	0
4000 gal Water Truck	1	6	2	1.16E-03	0
Excavator, Komatsu PC 400	7	8		0.033	0
Yard Crane, ATV	1	8		0.034	0
Grove 25t Crane	1	8		0.034	0
500 T Crane	1	8		0.034	0
Loader/Forks Cat 966	5	8		0.034	0
Scissors lift 20 ft	5	8		0.014	0
Phase 5 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.014	0
Loader/Forks Cat 966	5	8		0.034	0
175 CFM Air Compressor	1	8		0.043	0
Concrete Pump	1	2		0.032	0
Grove 25t Crane	1	8		0.034	0
Phase 6 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.030	0
Cat 14H Blade	1	8		0.040	0
Grader, Cat 14G	1	4		0.040	0
Dozer, D6M	1	4		0.070	0
4000Gal Water Truck	1	6	2	0.001	0
Phase 7 Peak Month				0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00

Table A-4g: Generation Scenario 1 (GE Option) - PM2.5 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM2.5 EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.067	0
CAT 14H Blade	3	8		0.040	0
MF 650B Skip	2	8		0.027	4
Water Truck	3	8	2	0.001	1
Kobelco 80 - Exc	2	8		0.033	11
10 Wheeler Dump Trucks	6	8	10	0.044	42
CAT 815F Compactor	4	8		0.030	12
CAT D6R Dozer	4	8		0.070	34
CAT TH103 Forklift	2	8		0.014	5
175 CFM Air Compressor	1	8		0.043	7
Truck Trips				0.001	6
Personnel				0.000	14
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	1.35E+01
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.034	4
60-Ton Rough Terrain Crane	2	6		0.034	8
Scissor Lifts 20 ft	4	8		0.014	9
1 Ton Parts Truck	1	6	1.3	0.001	0
175 CFM Air Compressor	2	8		0.043	13
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	0.4	0.001	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0.001	0
6,000 # Forklift	2	8		0.014	4
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.032	10
90-Ton Rough Terrain Crane	4	8		0.034	11
60-Ton Rough Terrain Crane	2	8		0.034	5
Scissors Lift 20 ft	6	8		0.014	9
SJ 600 Man Lifts 66 ft	8	8		0.014	13
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00

Table A-4g: Generation Scenario 1 (GE Option) - PM2.5 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM2.5 EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	0.4	0.001	0
1-Ton Flatbed Truck w/Trailer	4	6	0.3	0.001	0
6,000 # Forklift	4	6		0.014	7
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.032	21
90-Ton Rough Terrain Crane	3	6		0.034	8
60-Ton Rough Terrain Crane	3	6		0.034	8
Scissors Lift 20 ft	8	8		0.014	15
SJ 600 Man Lifts 66 ft	8	8		0.014	12
500 Ton Crane	3	8		0.034	11
Truck Trips				0.001	0
Personnel				0.000	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00
(v) Electrical					
Backhoe	2	8		0.027	10
Bobcat	3	8		0.013	2
175 CFM Air Compressor	2	8		0.043	7
Vaccum Trailers	2	6		0.032	4
Rock Wheel Trencher	2	6		0.036	4
Equipment Trailer (pullers, benders,ect	3	8		0.032	6
Generators	4	8		0.032	16
Scissors Lift 20 ft	6	6		0.014	2
SJ 600 Man Lifts 66 ft	4	6		0.014	2
Service Trucks-Conductor Splicing	3	6	0.4	0.001	0
Dump Truck	2	6	10	0.044	4
ForkLift	3	6		0.014	2
Truck Trips				1.16E-03	0
Personnel				4.63E-05	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00

Project Summary				
Maximum	**Annual - 12 Month Rolling (lb/yr)**	**Peak Month, lb/month**	**Peak Day, lb/day**	**Average Hourly (lb/hr)**
Total Emissions	3889	377	19	2
Onsite Exhaust Emissions	3330	343	17	2
Onsite Fugitive Emissions	370	14	1	0
Offsite Exhaust Emissions	189	21	1	0
Month	12	22	22	22

Regional PM2.5 Emissions Summary		
Activity	**Peak Month, lb/month**	**Peak Day, lb/day**
Tank Demolition	72	3.6
Site Preparation	326	16.3
Plant Construction	377	18.8
Switchyard Expansion	199	9.9
Unit 3 Pre-Demolition	1	0.1
Unit 3 Demolition	116	5.8
Unit 3 Basin Retaining wall	56	2.8
Unit 3 Basin Backfill, Compact and Grade	31	1.5

Localized PM2.5 Emissions Summary		
Activity	**Peak Month, lb/month**	**Peak Day, lb/day**
Tank Demo	24	1
Switch	176	9
Unit 3 Demo	93	5
Plant	356	18

Table A-4e: Generation Scenario 1 (GE Option) - SOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	SOx EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.001	0
Cat950 Loader w/Forks	1	8		0.001	0
Water Truck	1	4	2	3.74E-05	0
60 Ft Manlift	1	8		0.000	0
Excavator	1	8		0.001	0
Shear	1	8		0.001	0
10 Wheeler Dump Trucks	2	8	10	0.002	0
40 Ft Flat Bed Trucks	2	8	10	0.000	0
Phase 1 Peak Month				0.000	0
Truck Trips				3.74E-05	0
Personnel				8.53E-06	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.000	0
4000 Gallon Water Truck	1	6	2	3.74E-05	0
10 Wheeler Dump Trucks	4	8	10	0.002	0
Excavator, Komatsu PC 400	1	8		0.001	0
Dozer, D6M	1	4		0.002	0
Roller/Compactor	1	8		0.001	0
Grader, Cat 14G	1	4		0.001	0
Dozer, D6M	1	4		0.002	0
Yard Crane, ATV	1	8		0.001	0
Loader/Forks Cat 966	1	8		0.001	0
Concrete Pump	1	2		0.001	0
Grove 25t Crane	1	8		0.001	0
Misc.	1	4		0.001	0
Phase 2 Peak Month				0.000	0
Truck Trips				0.000	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.001	0
Loader/Forks Cat 966	1	6		0.001	0
Scissors Lift 20 ft	2	8		0.000	0
10 Wheel Dump Truck	1	8	10	0.002	0
Rock Wheel Trencher	1	8		0.000	0
Concrete Pump	1	8		0.001	0
Grove 25t Crane	1	6		0.001	0
				0.000	0
Truck Trips				0.000	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.000	0
10 Wheeler Dump Trucks	1	4	10	0.002	0
Cat950 Loader w/Forks	1	4		0.001	0
Phase 4 Peak Month				0.000	0
Truck Trips				0.000	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.000	0
4000 gal Water Truck	1	6	2	3.74E-05	0
Excavator, Komatsu PC 400	7	8		0.001	0
Yard Crane, ATV	1	8		0.001	0
Grove 25t Crane	1	8		0.001	0
500 T Crane	1	8		0.001	0
Loader/Forks Cat 966	5	8		0.001	0
Scissors lift 20 ft	5	8		0.000	0
Phase 5 Peak Month				0.000	0
Truck Trips				0.000	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.000	0
Loader/Forks Cat 966	5	8		0.001	0
175 CFM Air Compressor	1	8		0.001	0
Concrete Pump	1	2		0.001	0
Grove 25t Crane	1	8		0.001	0
Phase 6 Peak Month				0.000	0
Truck Trips				0.000	0
Personnel				0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.001	0
Cat 14H Blade	1	8		0.001	0
Grader, Cat 14G	1	4		0.001	0
Dozer, D6M	1	4		0.002	0
4000Gal Water Truck	1	6	2	0.000	0
Phase 7 Peak Month				0.000	0
Truck Trips				0.000	0
Personnel				0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-4e: Generation Scenario 1 (GE Option) - SOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	SOx EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.002	0
CAT 14H Blade	3	8		0.001	0
MF 650B Skip	2	8		0.001	0
Water Truck	3	8	2	0.000	0
Kobelco 80 - Exc	2	8		0.001	0
10 Wheeler Dump Trucks	6	8	10	0.002	2
CAT 815F Compactor	4	8		0.001	0
CAT D6R Dozer	4	8		0.002	1
CAT TH103 Forklift	2	8		0.000	0
175 CFM Air Compressor	1	8		0.001	0
Truck Trips				0.000	0
Personnel				0.000	3
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.001	0
60-Ton Rough Terrain Crane	2	6		0.001	0
Scissor Lifts 20 ft	4	8		0.000	0
1 Ton Parts Truck	1	6	1.3	0.000	0
175 CFM Air Compressor	2	8		0.001	0
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips				0.000	0
Personnel				0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	0.4	0.000	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0.000	0
6,000 # Forklift	2	8		0.000	0
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.001	0
90-Ton Rough Terrain Crane	4	8		0.001	0
60-Ton Rough Terrain Crane	2	8		0.001	0
Scissors Lift 20 ft	6	8		0.000	0
SJ 600 Man Lifts 66 ft	8	8		0.000	0
Truck Trips				0.000	0
Personnel				0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-4e: Generation Scenario 1 (GE Option) - SOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	SOx EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	0.4	0.000	0
1-Ton Flatbed Truck w/Trailer	4	6	0.3	0.000	0
6,000 # Forklift	4	6		0.000	0
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.001	0
90-Ton Rough Terrain Crane	3	6		0.001	0
60-Ton Rough Terrain Crane	3	6		0.001	0
Scissors Lift 20 ft	8	8		0.000	0
SJ 600 Man Lifts 66 ft	8	8		0.000	0
500 Ton Crane	3	8		0.001	0
Truck Trips				0.000	0
Personnel				0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(v) Electrical					
Backhoe	2	8		0.001	0
Bobcat	3	8		0.000	0
175 CFM Air Compressor	2	8		0.001	0
Vaccum Trailers	2	6		0.001	0
Rock Wheel Trencher	2	6		0.000	0
Equipment Trailer (pullers, benders,ect	3	8		0.001	0
Generators	4	8		0.001	0
Scissors Lift 20 ft	6	6		0.000	0
SJ 600 Man Lifts 66 ft	4	6		0.000	0
Service Trucks-Conductor Splicing	3	6	0.4	0.000	0
Dump Truck	2	6	10	0.002	0
ForkLift	3	6		0.000	0
Truck Trips				3.74E-05	0
Personnel				8.53E-06	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Total Monthly Emissions (lb/Month	11
Total Monthly Onsite Exhaust (lb/Month	8
Total Monthly Onsite Fugitive (lb/Month	0
Total Monthly Offsite Exhaust (lb/Month	3
Total Monthly Onsite Emissions (lb/Month	8
Total Monthly Emissions (lb/Month	11

Project Summary				
Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total Emissions	114	11	1	0
Onsite Exhaust Emissions	84	8	0	0
Onsite Fugitive Emissions	0	0	0	0
Offsite Exhaust Emissions	30	3	0	0
Month	14	22	22	22

Regional SOx Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	3.0	0.2
Site Preparation	7.7	0.4
Plant Construction	11.3	0.6
Switchyard Expansion	7.9	0.4
Unit 3 Pre-Demolition	0.1	0.0
Unit 3 Demolition	3.3	0.2
Unit 3 Basin Retaining wal	1.4	0.1
Unit 3 Basin Backfill, Compact and Grade	0.6	0.0

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summary	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO2 EmFac (lb/hr or lb/mi)	CH4 EmFac (lb/hr or lb/mi)	10/1/12 1	11/1/12 2	12/1/12 3	1/1/13 4	2/1/13 5	3/1/13 6	4/1/13 7	5/1/13 8	6/1/13 9	7/1/13 10	8/1/13 11	9/1/13 12
(1) Demolition																	
65 T Crane	1	8		86.192	0.009	5182	10365	8637	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		72.770	0.008	1459	11669	7293	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	3.897	0.000	78	312	156	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		23.264	0.003	233	3734	1867	0	0	0	0	0	0	0	0	0
Excavator	1	8		80.119	0.008	0	6423	6423	0	0	0	0	0	0	0	0	0
Shear	1	8		44.758	0.005	1346	3589	2243	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	174.255	0.014	0	20945	41890	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	3.897	0.000	4680	4680	4680	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month						0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.90E+00	0.000	65516	150921	150921	0	0	0	0	0	0	0	0	0
Personnel				8.03E-01	0.000	27148	49268	49268	0	0	0	0	0	0	0	0	0
(2) Site Prep																	
Parts Truck	1	4	10	3.897	0.000	0	0	0	9359	0	0	9359	0	0	9359	0	0
4000 Gallon Water Truck	1	6	2	3.90E+00	0.000	0	0	0	936	936	936	936	936	936	936	936	936
10 Wheeler Dump Trucks	4	8	10	174.255	0.014	0	0	0	76798	76798	34908	34908	111705	34908	55853	0	34908
Excavator, Komatsu PC 400	1	8		80.119	0.008	0	0	0	8831	8831	4014	4014	12845	4014	6423	4014	4014
Dozer, D6M	1	4		160.195	0.019	0	0	0	8832	8832	12847	12847	12847	0	6424	0	0
Roller/Compactor	1	8		44.926	0.006	0	0	0	3605	0	7209	7209	0	5407	5407	0	5407
Grader, Cat 14G	1	4		88.938	0.009	0	0	0	7131	891	7131	7131	891	5348	5348	891	5348
Dozer, D6M	1	4		160.195	0.019	0	0	0	12847	0	12847	12847	0	9635	9635	0	9635
Yard Crane, ATV	1	8		86.192	0.009	0	0	0	0	13820	13820	0	13820	13820	0	13820	0
Loader/Forks Cat 966	1	8		72.770	0.008	0	0	0	0	11669	11669	0	11669	11669	0	11669	0
Concrete Pump	1	2		49.607	0.007	0	0	0	0	1990	1990	0	1990	1990	0	1990	0
Grove 25t Crane	1	8		86.192	0.009	0	0	0	0	13820	13820	0	13820	13820	0	13820	0
Misc.	1	4		82.206	0.006	0	0	0	6586	6586	6586	6586	6586	6586	6586	6586	6586
Phase 2 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.897	0.000	0	0	0	17783	33694	46095	57794	51945	40012	37438	38842	14039
Personnel				0.803	0.000	0	0	0	22925	29762	33784	41024	40822	33583	39857	37605	51722
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	8		88.938	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		72.770	0.008	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	174.255	0.014	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		39.341	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		49.607	0.007	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	1	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	174.255	0.014	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		72.770	0.008	0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa				10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14	5/1/14	6/1/14	7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15
	Number of pieces of equipment	**Op Hrs/WD/piece**	**Op miles/hr/vehicle**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**
(1) Demolition																			
65 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(2) Site Prep																			
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16	3/1/16	4/1/16	5/1/16
				29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
(1) Demolition																			
65 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(2) Site Prep																			
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	8		7131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	4376	0	0	4376	0	0	0	4376	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	3734	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	13963	0	0	0	0	0	0	0	13963	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		0	4744	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	5182	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17
				45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
(1) Demolition																			
65 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(2) Site Prep																			
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	1	8		0	233	233	0	233	0	233	0	233	233	0	233	0	467	233	0
10 Wheeler Dump Trucks	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	3218	3218	3218	4826	4826	1609	1609	1609	1609	1609	1609	804	402	804	1609

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	**10/1/17**	**11/1/17**	**12/1/17**	**1/1/18**	**2/1/18**	**3/1/18**	**4/1/18**	**5/1/18**	**6/1/18**	**7/1/18**	**8/1/18**	**9/1/18**	**10/1/18**	**11/1/18**	**12/1/18**	**1/1/19**
				61	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**	**76**
(1) Demolition																			
65 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(2) Site Prep																			
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	1	8		233	233	0	233	233	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	0	0	0	1745	1745	1745	0	0	1745	1745	0	0	1745	1745	1745	0
Cat950 Loader w/Forks	1	4		0	0	0	0	0	729	0	0	729	729	0	0	729	729	729	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	234	234	234	234	234	234	234	234	234	234	234	234	0
Personnel				1609	804	804	402	1609	1609	1609	402	402	402	1609	1609	1609	402	402	0

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																	
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19	11/1/19	12/1/19	1/1/20	2/1/20	3/1/20
				77	78	79	80	81	82	83	84	85	86	87	88	89	90
(1) Demolition																	
65 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0
(2) Site Prep																	
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa												
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	4/1/20 91	5/1/20 92	6/1/20 93	7/1/20 94	8/1/20 95	9/1/20 96	10/1/20 97	11/1/20 98	12/1/20 99
(1) Demolition												
65 T Crane	1	8		0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
(2) Site Prep												
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion				0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	8		0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	0	0	0	0	0
				0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities				0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	1	8		0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summary																	
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO2 EmFac (lb/hr or lb/mi)	CH4 EmFac (lb/hr or lb/mi)	10/1/12	11/1/12	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13	6/1/13	7/1/13	8/1/13	9/1/13
						1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Parts Truck	1	4	10	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
4000 gal Water Truck	1	6	2	3.90E+00	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		80.119	0.008	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
500 T Crane	1	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		72.770	0.008	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
Phase 5 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		72.770	0.008	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		63.607	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		49.607	0.007	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		44.926	0.006	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Blade	1	8		88.938	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		88.938	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		160.195	0.019	0	0	0	0	0	0	0	0	0	0	0	0
4000Gal Water Truck	1	6	2	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Phase 7 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
(i) Civil Earthwork				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
CAT 627F Scraper	6	8		175.872	0.018	0	0	0	0	0	0	0	0	0	84596	105745	169193
CAT 14H Blade	3	8		88.938	0.009	0	0	0	0	0	0	0	0	0	28522	28522	42784
MF 650B Skip	2	8		44.758	0.005	0	0	0	0	0	0	0	0	0	7179	10768	14358
Water Truck	3	8	2	3.897	0.000	0	0	0	0	0	0	0	0	0	1248	2496	3744
Kobelco 80 - Exc	2	8		80.119	0.008	0	0	0	0	0	0	0	0	0	12845	19268	25691
10 Wheeler Dump Trucks	6	8	10	174.255	0.014	0	0	0	0	0	0	0	0	0	83779	104724	167558
CAT 815F Compactor	4	8		44.926	0.006	0	0	0	0	0	0	0	0	0	7209	21628	28837
CAT D6R Dozer	4	8		160.195	0.019	0	0	0	0	0	0	0	0	0	25695	77084	102778
CAT TH103 Forklift	2	8		36.445	0.004	0	0	0	0	0	0	0	0	0	5843	8765	11686
175 CFM Air Compressor	1	8		63.607	0.009	0	0	0	0	0	0	0	0	0	10207	10207	10207
Truck Trips				3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14	5/1/14	6/1/14	7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15
				13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Blade	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000Gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(i) Civil Earthwork				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 627F Scraper	6	8		169193	169193	84596	84596	28199	10575	5287	0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		42784	42784	42784	28522	28522	10696	5348	0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		14358	14358	14358	14358	14358	10768	10768	3589	3589	7179	7179	2154	3589	3589	3589	1795
Water Truck	3	8	2	3744	3744	3744	3744	3744	2808	2808	1872	1872	3744	3744	2246	3744	3744	3744	3744
Kobelco 80 - Exc	2	8		25691	25691	25691	25691	25691	19268	19268	12845	12845	25691	25691	15415	25691	12845	12845	12845
10 Wheeler Dump Trucks	6	8	10	167558	167558	167558	167558	167558	125669	125669	83779	83779	167558	167558	100535	167558	83779	73307	41890
CAT 815F Compactor	4	8		28837	28837	28837	28837	28837	21628	21628	14418	14418	18023	14418	8651	14418	7209	7209	3605
CAT D6R Dozer	4	8		102778	102778	102778	102778	102778	77084	77084	51389	38542	77084	51389	30833	38542	25695	12847	12847
CAT TH103 Forklift	2	8		11686	11686	11686	11686	11686	8765	8765	5843	5843	11686	11686	7012	11686	11686	8765	5843
175 CFM Air Compressor	1	8		10207	10207	10207	10207	10207	7655	7655	5103	5103	10207	10207	4593	7655	7655	7655	7655
Truck Trips				9359	9359	16847	17315	12635	28780	26674	21995	21995	21527	21059	16379	15443	4680	4680	4680
Personnel				129506	161681	161681	181791	181791	181791	181791	181791	238097	246141	246141	310492	326579	342667	366799	366799
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16	3/1/16	4/1/16	5/1/16
				29	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Blade	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000Gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(i) Civil Earthwork				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 627F Scraper	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		1795	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	3	8	2	3744	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kobelco 80 - Exc	2	8		12845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	6	8	10	20945	20945	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 815F Compactor	4	8		3605	3605	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT D6R Dozer	4	8		12847	12847	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT TH103 Forklift	2	8		5843	5843	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		7655	7655	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				7020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				355537	339450	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17
				45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Blade	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000Gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(i) Civil Earthwork				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 627F Scraper	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	3	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kobelco 80 - Exc	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	6	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 815F Compactor	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT D6R Dozer	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT TH103 Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	10/1/17	11/1/17	12/1/17	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19
				61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3120
4000 gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2340
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14881
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Blade	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000Gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(i) Civil Earthwork				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 627F Scraper	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	3	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kobelco 80 - Exc	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	6	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 815F Compactor	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT D6R Dozer	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT TH103 Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																	
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19	11/1/19	12/1/19	1/1/20	2/1/20	3/1/20
				77	78	79	80	81	82	83	84	85	86	87	88	89	90
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parts Truck	1	4	10	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	0	0	0	0
4000 gal Water Truck	1	6	2	0	936	936	936	936	936	936	936	936	936	0	0	0	0
Excavator, Komatsu PC 400	7	8		0	89918	89918	89918	89918	89918	89918	89918	89918	89918	0	0	0	0
Yard Crane, ATV	1	8		0	13820	13820	13820	13820	13820	13820	13820	13820	13820	0	0	0	0
Grove 25t Crane	1	8		0	13820	13820	13820	13820	13820	13820	13820	13820	13820	0	0	0	0
500 T Crane	1	8		0	13820	13820	13820	13820	13820	13820	13820	13820	13820	0	0	0	0
Loader/Forks Cat 966	5	8		0	58345	58345	58345	58345	58345	58345	58345	58345	58345	0	0	0	0
Scissors lift 20 ft	5	8		0	18669	18669	18669	18669	18669	18669	18669	18669	18669	0	0	0	0
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				1404	24335	24335	10295	10295	47733	47733	71132	936	936	0	0	0	0
Personnel				15283	35393	35393	35393	35393	31773	31773	31773	31773	15685	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	20536	20536	20536	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	58345	58345	58345	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	10207	10207	10207	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	1990	1990	1990	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	13820	13820	13820	0
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	1638	3510	5616	0
Personnel				0	0	0	0	0	0	0	0	0	0	19707	19707	19707	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	7209
Cat 14H Blade	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	14261
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	7131
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	12847
4000Gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	936
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	936
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	11664
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction				0	0	0	0	0	0	0	0	0	0	0	0	0	0
(i) Civil Earthwork				0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 627F Scraper	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	3	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kobelco 80 - Exc	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	6	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 815F Compactor	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT D6R Dozer	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT TH103 Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa												
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
				91	92	93	94	95	96	97	98	99
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition				0	0	0	0	0	0	0	0	0
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0
4000 gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0
500 T Crane	1	8		0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall				0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade				0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		7209	7209	7209	7209	7209	7209	7209	7209	0
Cat 14H Blade	1	8		14261	14261	14261	14261	14261	14261	14261	14261	0
Grader, Cat 14G	1	4		7131	7131	7131	7131	7131	7131	7131	7131	0
Dozer, D6M	1	4		12847	12847	12847	12847	12847	12847	12847	12847	0
4000Gal Water Truck	1	6	2	936	936	936	936	936	936	936	936	0
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0
Truck Trips				936	936	936	936	936	936	936	936	936
Personnel				11664	11664	11664	11664	11664	11664	11664	11664	11664
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction				0	0	0	0	0	0	0	0	0
(i) Civil Earthwork				0	0	0	0	0	0	0	0	0
CAT 627F Scraper	6	8		0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		0	0	0	0	0	0	0	0	0
Water Truck	3	8	2	0	0	0	0	0	0	0	0	0
Kobelco 80 - Exc	2	8		0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	6	8	10	0	0	0	0	0	0	0	0	0
CAT 815F Compactor	4	8		0	0	0	0	0	0	0	0	0
CAT D6R Dozer	4	8		0	0	0	0	0	0	0	0	0
CAT TH103 Forklift	2	8		0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summary																	
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO2 EmFac (lb/hr or lb/mi)	CH4 EmFac (lb/hr or lb/mi)	10/1/12	11/1/12	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13	6/1/13	7/1/13	8/1/13	9/1/13
						1	2	3	4	5	6	7	8	9	10	11	12
(ii) Foundations				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	1	6		86.192	0.009	0	0	0	0	0	0	0	0	0	6910	6910	6910
60-Ton Rough Terrain Crane	2	6		86.192	0.009	0	0	0	0	0	0	0	0	0	6910	10365	15547
Scissor Lifts 20 ft	4	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	3.897	0.000	0	0	0	0	0	0	0	0	0	416	416	416
175 CFM Air Compressor	2	8		63.607	0.009	0	0	0	0	0	0	0	0	0	2552	2552	5103
Electric, Welding Machine 400 Amps	1	4		0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	3	6	0.4	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		36.445	0.004	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14	5/1/14	6/1/14	7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15
				13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
(ii) Foundations				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	1	6		6910	10365	10365	10365	10365	7774	7774	5182	5182	10365	10365	6219	6910	6910	5182	2591
60-Ton Rough Terrain Crane	2	6		17275	20729	20729	20729	20729	15547	15547	10365	10365	20729	20729	12438	20729	10365	10365	10365
Scissor Lifts 20 ft	4	8		0	1867	2800	12135	14935	11202	11202	7468	7468	14935	14935	8961	14935	7468	3734	1867
1 Ton Parts Truck	1	6	1.3	416	624	624	624	624	468	468	312	312	624	624	374	624	624	624	624
175 CFM Air Compressor	2	8		5103	10207	10207	10207	10207	7655	7655	5103	5422	19138	19138	11483	20414	10207	5103	5103
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	3	6	0.4	208	416	416	416	624	624	624	624	624	485	416	208	208	139	0	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	312	312	624	624	624	624	624	624	624	468	312	312	312	208	0	0
6,000 # Forklift	2	8		5843	5843	5843	5843	5843	11686	11686	11686	11686	10956	9495	7304	5843	5843	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		9784	19568	19568	19568	29352	39136	39136	29352	19568	19568	9784	9784	9784	9784	0	0
90-Ton Rough Terrain Crane	4	8		13820	27639	41459	41459	41459	55279	55279	55279	41459	27639	13820	13820	13820	13820	0	0
60-Ton Rough Terrain Crane	2	8		10365	10365	10365	27639	27639	27639	27639	27639	15547	13820	10365	10365	10365	10365	0	0
Scissors Lift 20 ft	6	8		3734	7468	11202	14935	18669	18669	22403	22403	18669	14935	11202	3734	3734	0	0	0
SJ 600 Man Lifts 66 ft	8	8		3734	7468	14935	14935	18669	22403	26137	29871	29871	22403	11202	3734	3734	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16	3/1/16	4/1/16	5/1/16
				29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
(ii) Foundations				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	1	6		2591	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	6		10365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissor Lifts 20 ft	4	8		1867	933	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	624	312	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		5103	3828	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17
				45	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
(ii) Foundations				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissor Lifts 20 ft	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	10/1/17	11/1/17	12/1/17	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19
				61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
(ii) Foundations				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissor Lifts 20 ft	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																	
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19	11/1/19	12/1/19	1/1/20	2/1/20	3/1/20
				77	78	79	80	81	82	83	84	85	86	87	88	89	90
(ii) Foundations				0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissor Lifts 20 ft	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel				0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa												
	Number of pieces of equipment	**Op Hrs/WD/piece**	**Op miles/hr/vehicle**	**4/1/20**	**5/1/20**	**6/1/20**	**7/1/20**	**8/1/20**	**9/1/20**	**10/1/20**	**11/1/20**	**12/1/20**
				91	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**
(ii) Foundations				0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	1	6		0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	6		0	0	0	0	0	0	0	0	0
Scissor Lifts 20 ft	4	8		0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel				0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	3	6	0.4	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	0.7	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summary																	
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO2 EmFac (lb/hr or lb/mi)	CH4 EmFac (lb/hr or lb/mi)	10/1/12	11/1/12	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13	6/1/13	7/1/13	8/1/13	9/1/13
						1	2	3	4	5	6	7	8	9	10	11	12
(iv) Mechanical				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	6	6	0.4	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	0.3	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	4	6		36.445	0.004	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
500 Ton Crane	3	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe	2	8		44.758	0.005	0	0	0	0	0	0	0	0	0	0	0	0
Bobcat	3	8		20.286	0.003	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		63.607	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Vaccum Trailers	2	6		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		39.341	0.009	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ect	3	8		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0
Generators	4	8		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	2	6	10	174.255	0.014	0	0	0	0	0	0	0	0	0	0	0	0
ForkLift	3	6		36.445	0.004	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				3.90E+00	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				8.03E-01	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																	

GHG Emissions Summary				
Activity	**lbs CO2e/project**	**tons CO2e/project**	**metric tons (MT) CO2e/project**	**Amortized Project (30-year Project Lifetime)**
Tank Demolition	640,925	320	291	10
Site Preparation	2,991,384	1,496	1,357	45
Plant Construction	19,126,638	9,563	8,674	289
Switchyard Expansion	3,516,508	1,758	1,595	53
Unit 3 Pre-Demolition	72,275	36	33	1
Unit 3 Demolition	2,474,256	1,237	1,122	37
Unit 3 Basin Retaining wall	384,582	192	174	6
Unit 3 Basin Backfill, Compact and Grade	507,453	254	230	8
Project Summary	29,714,022	14,857	13,475	449

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14	5/1/14	6/1/14	7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15
				13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
(iv) Mechanical				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	6	6	0.4	208	416	416	416	416	624	624	832	971	1109	1248	780	832	624	416	374
1-Ton Flatbed Truck w/Trailer	4	6	0.3	156	156	156	156	156	156	312	312	312	442	624	468	416	333	208	187
6,000 # Forklift	4	6		4382	4382	4382	4382	4382	4382	8765	10956	17529	17529	11686	6574	8765	7012	4382	3944
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		4892	4892	9784	9784	9784	9784	19568	29352	39136	39136	29352	14676	19568	15655	9784	8806
90-Ton Rough Terrain Crane	3	6		6910	10365	10365	10365	10365	20729	20729	31094	31094	20729	20729	12956	10365	8292	10365	9328
60-Ton Rough Terrain Crane	3	6		6910	6910	10365	10365	10365	10365	15547	31094	31094	20729	20729	14252	10365	8292	10365	9328
Scissors Lift 20 ft	8	8		0	0	3734	3734	7468	11202	11202	16802	16802	26604	29871	19953	21003	16802	11202	10081
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	3734	8868	9801	16802	21003	29871	19953	21003	16802	11202	10081
500 Ton Crane	3	8		0	0	0	0	13820	13820	13820	13820	13820	27639	27639	20729	41459	33167	27639	24875
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe	2	8		0	0	0	0	0	0	0	0	0	16152	16152	16152	16152	16152	16152	21536
Bobcat	3	8		0	0	0	0	0	0	0	0	0	3257	3257	3257	3257	3257	3257	3257
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	10207	10207	10207	10207	10207	10207	10207
Vaccum Trailers	2	6		0	0	0	0	0	0	0	7338	7338	7338	7338	11007	14676	14676	14676	14676
Rock Wheel Trencher	2	6		0	0	0	0	0	0	0	4744	4744	4744	4744	7116	7116	7116	9488	9488
Equipment Trailer (pullers, benders,ect	3	8		0	0	0	0	0	0	0	9784	9784	11007	11007	14676	14676	19568	19568	29352
Generators	4	8		0	0	0	0	0	0	0	19568	19568	29352	29352	29352	29352	39136	39136	39136
Scissors Lift 20 ft	6	6		0	0	0	0	0	0	0	2800	2800	2800	5601	8401	8401	11202	11202	14935
SJ 600 Man Lifts 66 ft	4	6		0	0	0	0	0	0	0	0	0	2800	2800	4201	5601	8401	8401	11202
Service Trucks-Conductor Splicing	3	6	0.4	0	0	0	0	0	0	0	208	208	173	173	208	208	277	312	416
Dump Truck	2	6	10	0	0	0	0	0	0	0	20945	20945	17454	17454	20945	27926	31417	34908	41890
ForkLift	3	6		0	0	0	0	0	0	0	4382	4382	4382	4382	4382	6574	8765	13147	13147
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																			

GHG Emissions Summary			
Activity	**lbs CO2e/project**	**tons CO2e/project**	**metric tons (MT) CO2e/project**
Tank Demolition	640,925	320	291
Site Preparation	2,991,384	1,496	1,357
Plant Construction	19,126,638	9,563	8,674
Switchyard Expansion	3,516,508	1,758	1,595
Unit 3 Pre-Demolition	72,275	36	33
Unit 3 Demolition	2,474,256	1,237	1,122
Unit 3 Basin Retaining wall	384,582	192	174
Unit 3 Basin Backfill, Compact and Grade	507,453	254	230
Project Summary	29,714,022	14,857	13,475

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16	3/1/16	4/1/16	5/1/16
				29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
(iv) Mechanical				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	6	6	0.4	208	208	208	104	104	104	104	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	0.3	52	52	52	52	52	52	52	0	0	0	0	0	0	0	0	0
6,000 # Forklift	4	6		3652	2191	2191	2191	2191	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		7338	7338	4892	4892	4892	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		8637	8637	6910	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		10365	6910	6910	6910	6910	5182	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		3734	3734	3734	3734	1867	1867	1867	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		7468	7468	5601	5601	5601	3734	1400	0	0	0	0	0	0	0	0	0
500 Ton Crane	3	8		13820	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe	2	8		21536	21536	32305	32305	32305	32305	26920	21536	21536	0	0	0	0	0	0	0
Bobcat	3	8		6513	6513	6513	6513	6513	6513	6513	2443	2443	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		10207	20414	20414	20414	20414	20414	20414	20414	20414	0	0	0	0	0	0	0
Vaccum Trailers	2	6		14676	14676	11007	11007	7338	3669	2446	2446	2446	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		9488	7116	7116	4744	3163	3163	3163	3163	1581	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ect	3	8		29352	19568	14676	9784	9784	9784	9784	9784	4892	0	0	0	0	0	0	0
Generators	4	8		29352	22014	19568	14676	14676	9784	9784	9784	9784	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		14935	16802	14935	11202	7468	5601	2800	2800	2800	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		11202	8401	8401	5601	2800	1400	1400	1400	1400	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	624	624	624	416	208	139	104	104	104	0	0	0	0	0	0	0
Dump Truck	2	6	10	41890	41890	41890	31417	17454	13963	10472	10472	10472	0	0	0	0	0	0	0
ForkLift	3	6		13147	13147	8765	6574	4382	2922	2922	2922	2922	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	307274	279925	185008	152833	112614	100548	47459	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																			

GHG Emissions Summary			
Activity	lbs CO2e/project	tons CO2e/project	metric tons (MT) CO2e/project
Tank Demolition	640,925	320	291
Site Preparation	2,991,384	1,496	1,357
Plant Construction	19,126,638	9,563	8,674
Switchyard Expansion	3,516,508	1,758	1,595
Unit 3 Pre-Demolition	72,275	36	33
Unit 3 Demolition	2,474,256	1,237	1,122
Unit 3 Basin Retaining wall	384,582	192	174
Unit 3 Basin Backfill, Compact and Grade	507,453	254	230
Project Summary	29,714,022	14,857	13,475

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17
				45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
(iv) Mechanical				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	6	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 Ton Crane	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bobcat	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccum Trailers	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ect	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generators	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	2	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ForkLift	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																			

GHG Emissions Summary			
Activity	**lbs CO2e/project**	**tons CO2e/project**	**metric tons (MT) CO2e/project**
Tank Demolition	640,925	320	291
Site Preparation	2,991,384	1,496	1,357
Plant Construction	19,126,638	9,563	8,674
Switchyard Expansion	3,516,508	1,758	1,595
Unit 3 Pre-Demolition	72,275	36	33
Unit 3 Demolition	2,474,256	1,237	1,122
Unit 3 Basin Retaining wall	384,582	192	174
Unit 3 Basin Backfill, Compact and Grade	507,453	254	230
Project Summary	29,714,022	14,857	13,475

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																			
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	10/1/17	11/1/17	12/1/17	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19
				61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
(iv) Mechanical				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	6	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 Ton Crane	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bobcat	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccum Trailers	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ect	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generators	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	2	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ForkLift	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																			

GHG Emissions Summary			
Activity	**lbs CO2e/project**	**tons CO2e/project**	**metric tons (MT) CO2e/project**
Tank Demolition	640,925	320	291
Site Preparation	2,991,384	1,496	1,357
Plant Construction	19,126,638	9,563	8,674
Switchyard Expansion	3,516,508	1,758	1,595
Unit 3 Pre-Demolition	72,275	36	33
Unit 3 Demolition	2,474,256	1,237	1,122
Unit 3 Basin Retaining wall	384,582	192	174
Unit 3 Basin Backfill, Compact and Grade	507,453	254	230
Project Summary	29,714,022	14,857	13,475

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa																	
	Number of pieces of equipment	**Op Hrs/WD/piece**	**Op miles/hr/vehicle**	**2/1/19**	**3/1/19**	**4/1/19**	**5/1/19**	**6/1/19**	**7/1/19**	**9/1/19**	**9/1/19**	**10/1/19**	**11/1/19**	**12/1/19**	**1/1/20**	**2/1/20**	**3/1/20**
				77	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**
(iv) Mechanical				0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	6	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 Ton Crane	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bobcat	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccum Trailers	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ect	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generators	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	2	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ForkLift	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																	

GHG Emissions Summary			
Activity	**lbs CO2e/project**	**tons CO2e/project**	**metric tons (MT) CO2e/project**
Tank Demolition	640,925	320	291
Site Preparation	2,991,384	1,496	1,357
Plant Construction	19,126,638	9,563	8,674
Switchyard Expansion	3,516,508	1,758	1,595
Unit 3 Pre-Demolition	72,275	36	33
Unit 3 Demolition	2,474,256	1,237	1,122
Unit 3 Basin Retaining wall	384,582	192	174
Unit 3 Basin Backfill, Compact and Grade	507,453	254	230
Project Summary	29,714,022	14,857	13,475

Table A-4h: Generation Scenario 1 (GE Option) - GHG Emissions Summa												
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
				91	92	93	94	95	96	97	98	99
(iv) Mechanical				0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck	6	6	0.4	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	0.3	0	0	0	0	0	0	0	0	0
6,000 # Forklift	4	6		0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0
500 Ton Crane	3	8		0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical				0	0	0	0	0	0	0	0	0
Backhoe	2	8		0	0	0	0	0	0	0	0	0
Bobcat	3	8		0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0
Vaccum Trailers	2	6		0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		0	0	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ect	3	8		0	0	0	0	0	0	0	0	0
Generators	4	8		0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		0	0	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	0	0	0	0	0	0	0	0	0
Dump Truck	2	6	10	0	0	0	0	0	0	0	0	0
ForkLift	3	6		0	0	0	0	0	0	0	0	0
Truck Trips				0	0	0	0	0	0	0	0	0
Personnel				0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating												

GHG Emissions Summary			
Activity	**lbs CO2e/project**	**tons CO2e/project**	**metric tons (MT) CO2e/project**
Tank Demolition	640,925	320	291
Site Preparation	2,991,384	1,496	1,357
Plant Construction	19,126,638	9,563	8,674
Switchyard Expansion	3,516,508	1,758	1,595
Unit 3 Pre-Demolition	72,275	36	33
Unit 3 Demolition	2,474,256	1,237	1,122
Unit 3 Basin Retaining wall	384,582	192	174
Unit 3 Basin Backfill, Compact and Grade	507,453	254	230
Project Summary	29,714,022	14,857	13,475

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment																									
					10/1/12	11/1/12	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13	6/1/13	7/1/13	8/1/13	9/1/13	10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14	5/1/14	6/1/14
	WD/ Month	Quant	Op Hr/WD/ea	Op Hr/Mo	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
(1) Demolition																									
65 T Crane		1	8	0	60	120	100																		
Cat950 Loader w/Forks		1	8	0	20	160	100																		
Water Truck		1	4	0	10	40	20																		
60 Ft Manlift		1	8	0	10	160	80																		
Excavator		1	8	0		80	80																		
Shear		1	8	0	30	80	50																		
10 Wheeler Dump Trucks		2	8	0		120	240																		
40 Ft Flat Bed Trucks		2	8	0	120	120	120																		
				Phase 1 Peak Month	250	**880**	790																		
				Miles/month	16800	38700	38700																		
				miles/month	33750	61250	61250																		
				Demolition - tons/month	667	**667**	667																		
(2) Site Prep																									
Parts Truck		1	4	0	250	880	790	240	0	0	240	0	0	240	0	0									
4000 Gallon Water Truck		1	6	0				120	120	120	120	120	120	120	120	120									
10 Wheeler Dump Trucks		4	8	0				440	440	200	200	640	200	320		200									
Excavator, Komatsu PC 400		1	8	0				110	110	50	50	160	50	80	50	50									
Dozer, D6M		1	4	0				55	55	80	80	80		40											
Roller/Compactor		1	8	0				80		160	160		120	120		120									
Grader, Cat 14G		1	4	0				80	10	80	80	10	60	60	10	60									
Dozer, D6M		1	4	0				80		80	80		60	60		60									
Yard Crane, ATV		1	8	0					160	160		160	160		160										
Loader/Forks Cat 966		1	8	0					160	160		160	160		160										
Concrete Pump		1	2	0					40	40		40	40		40										
Grove 25t Crane		1	8	0					160	160		160	160		160										
Misc.		1	4	0				80	80	80	80	80	80	80	80	80									
							Phase 2 Peak Month	1,285	1,335	**1,370**	1,090	1,610	1,210	1,120	780	690									
				Miles/month				4,560	8,640	11,820	14,820	13,320	10,260	9,600	9,960	3,600									
				miles/month				28,500	37,000	42,000	51,000	50,750	41,750	49,550	46,750	64,300									
				tons/month																					
(3) Switchyard Expansion																									
Grader, Cat 14G		1	8	160																					
Loader/Forks Cat 966		1	6	120																					
Scissors Lift 20 ft		2	8	320																					
10 Wheel Dump Truck		1	8	160																					
Rock Wheel Trencher		1	8	160																					
Concrete Pump		1	8	160																					
Grove 25t Crane		1	6	120																					
				Miles/month																					
				miles/month																					
				tons/month																					
(4) Unit 3 Pre-Demolition Activities																									
Scissors Lift 20 ft		1	8	20																					
10 Wheeler Dump Trucks		1	4	80																					
Cat950 Loader w/Forks		1	4	80																					
				Miles/month																					
				miles/month																					
				Demolition - tons/month																					
(5) Unit 3 Demolition																									
Parts Truck		1	4	80																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment																									
					10/1/12	11/1/12	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13	6/1/13	7/1/13	8/1/13	9/1/13	10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14	5/1/14	6/1/14
	WD/ Month	Quant	Op Hr/WD/ea	Op Hr/Mo	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
4000 gal Water Truck		1	6	120																					
Excavator, Komatsu PC 400		7	8	1120																					
Yard Crane, ATV		1	8	160																					
Grove 25t Crane		1	8	160																					
500 T Crane		1	8	160																					
Loader/Forks Cat 966		5	8	800																					
Scissors lift 20 ft		5	8	800																					
				Miles/month																					
				miles/month																					
				tons/month																					
(6) Unit 3 Basin Retaining Wall																									
Scissors lift 20 ft		5	8	800																					
Loader/Forks Cat 966		5	8	800																					
175 CFM Air Compressor		1	8	160																					
Concrete Pump		1	2	40																					
Grove 25t Crane		1	8	160																					
				Miles/month																					
				miles/month																					
				tons/month																					
(7) Unit 3 Basin Backfill, Compact & Grade																									
Roller/Compactor		1	8	160																					
Cat 14H Blade		1	8	160																					
Grader, Cat 14G		1	4	80																					
Dozer, D6M		1	4	80																					
4000Gal Water Truck		1	6	120																					
Phase 7 Peak Month																									
				Miles/month																					
				miles/month																					
			Backfill - CY/month																						
(8) Plant Construction																									
(i) Civil Earthwork																									
CAT 627F Scraper		6	8	0										480	600	960	960	960	480	480	160	80	40		
CAT 14H Blade		3	8	0										320	320	480	480	480	480	320	320	160	80		
MF 650B Skip		2	8	0										160	240	320	320	320	320	320	320	320	320	160	160
Water Truck		3	8	0										160	320	480	480	480	480	480	480	480	480	480	480
Kobelco 80 - Exc		2	8	0										160	240	320	320	320	320	320	320	320	320	320	320
10 Wheeler Dump Trucks		6	8	0										480	600	960	960	960	960	960	960	960	960	960	960
CAT 815F Compactor		4	8	0										160	480	640	640	640	640	640	640	640	640	640	640
CAT D6R Dozer		4	8	0										160	480	640	640	640	640	640	640	640	640	640	480
CAT TH103 Forklift		2	8	0										160	240	320	320	320	320	320	320	320	320	320	320
175 CFM Air Compressor		1	8	0										160	160	160	160	160	160	160	160	160	160	160	160
				Miles/month													2,400	2,400	5,160	5,280	5,160	9,360	9,480	7,440	5,640
				miles/month													201,000	201,000	226,000	226,000	246,000	246,000	246,000	356,000	386,000
				tons/month																					
(ii) Foundations																									
90-Ton Rough Terrain Crane		1	6	0										80	80	80	80	120	120	120	120	120	120	120	120
60-Ton Rough Terrain Crane		2	6	0										80	120	180	200	240	240	240	240	240	240	240	240
Scissors Lift 20 ft		4	8	0														80	120	520	640	640	640	640	640
1 Ton Parts Truck		1	6	0										80	80	80	80	120	120	120	120	120	120	120	120
175 CFM Air Compressor		2	8	0										40	40	80	80	160	160	160	160	160	160	160	170
Electric, Welding Machine 400 Amps		1	4	0													20	40	40	40	40	40	40	60	80
				Miles/month																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment																									
					10/1/12	11/1/12	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13	6/1/13	7/1/13	8/1/13	9/1/13	10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14	5/1/14	6/1/14
	WD/ Month	Quant	Op Hr/WD/ea	Op Hr/Mo	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
				miles/month																					
				tons/month																					
(iii) Structural Steel																									
1-Ton Flatbed Truck		3	6	0													120	240	240	240	360	360	360	360	360
1-Ton Flatbed Truck w/Trailer		2	6	0													120	120	240	240	240	240	240	240	240
6,000 # Forklift		2	8	0													160	160	160	160	160	320	320	320	320
Electric, Welding Machine Six Pack		4	8	0													160	320	320	480	480	480	640	640	640
Gas/Diesel Compressor Combo		4	8	0													160	320	320	320	480	640	640	480	320
90-Ton Rough Terrain Crane		4	8	0													160	320	480	480	480	640	640	640	480
60-Ton Rough Terrain Crane		2	8	0													120	120	120	320	320	320	320	320	180
Scissors Lift 20 ft		6	8	0													160	320	480	640	800	800	960	960	800
SJ 600 Man Lifts 66 ft		8	8	0													160	320	640	640	800	960	1,120	1,280	1,280
				Miles/month																					
				miles/month																					
				tons/month																					
(iv) Mechanical																									
1-Ton Flatbed Truck		6	6	0													120	240	240	240	240	360	360	480	560
1-Ton Flatbed Truck w/Trailer		4	6	0													120	120	120	120	120	120	240	240	240
6,000 # Forklift		4	6	0													120	120	120	120	120	120	240	300	480
Electric, Welding Machine Six Pack		8	8	0													240	240	240	320	320	320	480	600	720
Gas/Diesel Compressor Combo		4	8	0													80	80	160	160	160	160	320	480	640
90-Ton Rough Terrain Crane		3	6	0													80	120	120	120	120	240	240	360	360
60-Ton Rough Terrain Crane		3	6	0													80	80	120	120	120	120	180	360	360
Scissors Lift 20 ft		8	8	0															160	160	320	480	480	720	720
SJ 600 Man Lifts 66 ft		8	8	0																		160	380	420	720
500 Ton Crane		3	8	0																	160	160	160	160	160
				Miles/month																					
				miles/month																					
				tons/month																					
(v) Electrical																									
Backhoe		2	8	0																					
Bobcat		3	8	0																					
175 CFM Air Compressor		2	8	0																					
Vaccum Trailers		2	6	0																				120	120
Rock Wheel Trencher		2	6	0																				120	120
Equipment Trailer (pullers, benders,ect		3	8	0																				160	160
Generators		4	8	0																				320	320
Scissors Lift 20 ft		6	6	0																				120	120
SJ 600 Man Lifts 66 ft		4	6	0																					
Service Trucks-Conductor Splicing		3	6	0																				120	120
Dump Truck		2	6	0																				120	120
ForkLift		3	6	0																				120	120
				Miles/month																					
				miles/month																					
				tons/month																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment																									
		Quant	Op Hr/WD/ea	Op Hr/Mo	7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16	3/1/16
	WD/ Month				22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
(1) Demolition																									
65 T Crane		1	8	0																					
Cat950 Loader w/Forks		1	8	0																					
Water Truck		1	4	0																					
60 Ft Manlift		1	8	0																					
Excavator		1	8	0																					
Shear		1	8	0																					
10 Wheeler Dump Trucks		2	8	0																					
40 Ft Flat Bed Trucks		2	8	0																					
				Phase 1 Peak Month																					
				Miles/month																					
				miles/month																					
				Demolition - tons/month																					
(2) Site Prep																									
Parts Truck		1	4	0																					
4000 Gallon Water Truck		1	6	0																					
10 Wheeler Dump Trucks		4	8	0																					
Excavator, Komatsu PC 400		1	8	0																					
Dozer, D6M		1	4	0																					
Roller/Compactor		1	8	0																					
Grader, Cat 14G		1	4	0																					
Dozer, D6M		1	4	0																					
Yard Crane, ATV		1	8	0																					
Loader/Forks Cat 966		1	8	0																					
Concrete Pump		1	2	0																					
Grove 25t Crane		1	8	0																					
Misc.		1	4	0																					
				Miles/month																					
				miles/month																					
				tons/month																					
(3) Switchyard Expansion																									
Grader, Cat 14G		1	8	160								80													
Loader/Forks Cat 966		1	6	120									60			60				60					
Scissors Lift 20 ft		2	8	320													160								
10 Wheel Dump Truck		1	8	160								80								80					
Rock Wheel Trencher		1	8	160									120												
Concrete Pump		1	8	160										40											
Grove 25t Crane		1	6	120												60									
											Phase 3 Peak Month	160	**180**	40	0	120	160	0	0	140					
				Miles/month									0	0	0	600	0	0	0	0					
				miles/month												200,000	150,000	110,000	69,000	43,000					
				tons/month																					
(4) Unit 3 Pre-Demolition Activities																									
Scissors Lift 20 ft		1	8	20																					
10 Wheeler Dump Trucks		1	4	80																					
Cat950 Loader w/Forks		1	4	80																					
				Miles/month																					
				miles/month																					
				Demolition - tons/month																					
(5) Unit 3 Demolition																									
Parts Truck		1	4	80																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment

					7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16	3/1/16
	WD/ Month	Quant	Op Hr/WD/ea	Op Hr/Mo	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
4000 gal Water Truck		1	6	120																					
Excavator, Komatsu PC 400		7	8	1120																					
Yard Crane, ATV		1	8	160																					
Grove 25t Crane		1	8	160																					
500 T Crane		1	8	160																					
Loader/Forks Cat 966		5	8	800																					
Scissors lift 20 ft		5	8	800																					
				Miles/month																					
				miles/month																					
				tons/month																					
(6) Unit 3 Basin Retaining Wall																									
Scissors lift 20 ft		5	8	800																					
Loader/Forks Cat 966		5	8	800																					
175 CFM Air Compressor		1	8	160																					
Concrete Pump		1	2	40																					
Grove 25t Crane		1	8	160																					
				Miles/month																					
				miles/month																					
				tons/month																					
(7) Unit 3 Basin Backfill, Compact & Grade																									
Roller/Compactor		1	8	160																					
Cat 14H Blade		1	8	160																					
Grader, Cat 14G		1	4	80																					
Dozer, D6M		1	4	80																					
4000Gal Water Truck		1	6	120																					
Phase 7 Peak Month																									
				Miles/month																					
				miles/month																					
				Backfill - CY/month																					
(8) Plant Construction																									
(i) Civil Earthwork																									
CAT 627F Scraper		6	8	0																					
CAT 14H Blade		3	8	0																					
MF 650B Skip		2	8	0	160	160	80	80	80	80	40	40													
Water Truck		3	8	0	480	480	480	480	480	480	480	480													
Kobelco 80 - Exc		2	8	0	320	320	320	320	160	160	160	160													
10 Wheeler Dump Trucks		6	8	0	960	960	960	960	480	420	240	120	120	60											
CAT 815F Compactor		4	8	0	400	320	320	320	160	160	80	80	80	80	40										
CAT D6R Dozer		4	8	0	480	320	320	240	160	80	80	80	80	40											
CAT TH103 Forklift		2	8	0	320	320	320	320	320	240	160	160	160	160	80										
175 CFM Air Compressor		1	8	0	160	160	120	120	120	120	120	120	120	60	60										
				Miles/month	5,520	5,400	4,200	3,960	1,200	1,200	1,200	1,800	0	0	0										
				miles/month	386,000	486,000	486,000	506,000	506,000	486,000	512,000	472,000	367,000	338,000	225,000										
				tons/month																					
(ii) Foundations																									
90-Ton Rough Terrain Crane		1	6	0	120	120	120	80	80	60	30	30													
60-Ton Rough Terrain Crane		2	6	0	240	240	240	240	120	120	120	120													
Scissors Lift 20 ft		4	8	0	640	640	640	640	320	160	80	80	40	40	40										
1 Ton Parts Truck		1	6	0	120	120	120	120	120	120	120	120	60	60	40										
175 CFM Air Compressor		2	8	0	300	300	300	320	160	80	80	80	60	40	30										
Electric, Welding Machine 400 Amps		1	4	0	80	80	60	40	40	40	20														
				Miles/month																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment																									
		Quant	Op Hr/WD/ea	Op Hr/Mo	7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16	3/1/16
	WD/ Month				22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
				miles/month																					
				tons/month																					
(iii) Structural Steel																									
1-Ton Flatbed Truck		3	6	0	280	240	120	120	80																
1-Ton Flatbed Truck w/Trailer		2	6	0	180	120	120	120	80																
6,000 # Forklift		2	8	0	300	260	200	160	160																
Electric, Welding Machine Six Pack		4	8	0	480	200	160	160	120																
Gas/Diesel Compressor Combo		4	8	0	320	160	160	160	160																
90-Ton Rough Terrain Crane		4	8	0	320	160	160	160	160																
60-Ton Rough Terrain Crane		2	8	0	160	120	120	120	120																
Scissors Lift 20 ft		6	8	0	640	480	160	160																	
SJ 600 Man Lifts 66 ft		8	8	0	960	480	160	160																	
				Miles/month																					
				miles/month																					
				tons/month																					
(iv) Mechanical																									
1-Ton Flatbed Truck		6	6	0	640	720	600	480	360	240	120	120	120	120	60	60	60	60							
1-Ton Flatbed Truck w/Trailer		4	6	0	340	480	480	320	240	160	80	40	40	40	40	40	40	40							
6,000 # Forklift		4	6	0	480	320	240	240	240	120	120	100	60	60	60	60									
Electric, Welding Machine Six Pack		8	8	0	800	960	1,280	800	720	320	320	320	320	320	200	180	120	80							
Gas/Diesel Compressor Combo		4	8	0	640	480	320	320	160	160	160	120	120	80	80	80									
90-Ton Rough Terrain Crane		3	6	0	240	240	200	120	120	120	120	100	100	80											
60-Ton Rough Terrain Crane		3	6	0	240	240	220	120	120	120	120	120	80	80	80	80	60								
Scissors Lift 20 ft		8	8	0	1,140	1,280	1,140	900	600	480	300	160	160	160	160	80	80	80							
SJ 600 Man Lifts 66 ft		8	8	0	900	1,280	1,140	900	720	480	480	320	320	240	240	240	160	60							
500 Ton Crane		3	8	0	320	320	320	480	480	320	160	160													
				Miles/month																					
				miles/month																					
				tons/month																					
(v) Electrical																									
Backhoe		2	8	0	360	360	360	360	360	360	480	480	480	720	720	720	720	600	480	480	480				
Bobcat		3	8	0	160	160	160	160	160	160	160	320	320	320	320	320	320	320	120	120	80				
175 CFM Air Compressor		2	8	0	160	160	160	160	160	160	160	160	320	320	320	320	320	320	320	320	160				
Vaccum Trailers		2	6	0	120	120	180	240	240	240	240	240	240	180	180	120	60	40	40	40					
Rock Wheel Trencher		2	6	0	120	120	180	180	180	240	240	240	180	180	120	80	80	80	80	40	20				
Equipment Trailer (pullers, benders,ect		3	8	0	180	180	240	240	320	320	480	480	320	240	160	160	160	160	160	80	80				
Generators		4	8	0	480	480	480	480	640	640	640	480	360	320	240	240	160	160	160	160	120				
Scissors Lift 20 ft		6	6	0	120	240	360	360	480	480	640	640	720	640	480	320	240	120	120	120	80				
SJ 600 Man Lifts 66 ft		4	6	0	120	120	180	240	360	360	480	480	360	360	240	120	60	60	60	60	60				
Service Trucks-Conductor Splicing		3	6	0	100	100	120	120	160	180	240	360	360	360	240	120	80	60	60	60	60				
Dump Truck		2	6	0	100	100	120	160	180	200	240	240	240	240	180	100	80	60	60	60	60				
ForkLift		3	6	0	120	120	120	180	240	360	360	360	360	240	180	120	80	80	80	80	80				
				Miles/month																	0				
				miles/month																					
				tons/month																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment

					4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17
	WD/ Month	Quant	Op Hr/WD/ea	Op Hr/Mo	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
(1) Demolition																									
65 T Crane		1	8	0																					
Cat950 Loader w/Forks		1	8	0																					
Water Truck		1	4	0																					
60 Ft Manlift		1	8	0																					
Excavator		1	8	0																					
Shear		1	8	0																					
10 Wheeler Dump Trucks		2	8	0																					
40 Ft Flat Bed Trucks		2	8	0																					
				Phase 1 Peak Month																					
				Miles/month																					
				miles/month																					
				Demolition - tons/month																					
(2) Site Prep																									
Parts Truck		1	4	0																					
4000 Gallon Water Truck		1	6	0																					
10 Wheeler Dump Trucks		4	8	0																					
Excavator, Komatsu PC 400		1	8	0																					
Dozer, D6M		1	4	0																					
Roller/Compactor		1	8	0																					
Grader, Cat 14G		1	4	0																					
Dozer, D6M		1	4	0																					
Yard Crane, ATV		1	8	0																					
Loader/Forks Cat 966		1	8	0																					
Concrete Pump		1	2	0																					
Grove 25t Crane		1	8	0																					
Misc.		1	4	0																					
				Miles/month																					
				miles/month																					
				tons/month																					
(3) Switchyard Expansion																									
Grader, Cat 14G		1	8	160																					
Loader/Forks Cat 966		1	6	120																					
Scissors Lift 20 ft		2	8	320																					
10 Wheel Dump Truck		1	8	160																					
Rock Wheel Trencher		1	8	160																					
Concrete Pump		1	8	160																					
Grove 25t Crane		1	6	120																					
				Miles/month																					
				miles/month																					
				tons/month																					
(4) Unit 3 Pre-Demolition Activities																									
Scissors Lift 20 ft		1	8	20				10	10		10		10		10	10		10		20	10		10	10	
10 Wheeler Dump Trucks		1	4	80																					
Cat950 Loader w/Forks		1	4	80																					
							Phase 4 Peak Month	10	10	0	10	0	10	0	10	10	0	10	0	20	10	0	10	10	0
				Miles/month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				miles/month				4000	4000	4000	6000	6000	2000	2000	2000	2000	2000	2000	1000	500	1000	2000	2000	1000	1000
				Demolition - tons/month				233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233
(5) Unit 3 Demolition																									
Parts Truck		1	4	80																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment

	WD/ Month	Quant	Op Hr/WD/ea	Op Hr/Mo	4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17
					43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4000 gal Water Truck		1	6	120																					
Excavator, Komatsu PC 400		7	8	1120																					
Yard Crane, ATV		1	8	160																					
Grove 25t Crane		1	8	160																					
500 T Crane		1	8	160																					
Loader/Forks Cat 966		5	8	800																					
Scissors lift 20 ft		5	8	800																					
				Miles/month																					
				miles/month																					
				tons/month																					
(6) Unit 3 Basin Retaining Wall																									
Scissors lift 20 ft		5	8	800																					
Loader/Forks Cat 966		5	8	800																					
175 CFM Air Compressor		1	8	160																					
Concrete Pump		1	2	40																					
Grove 25t Crane		1	8	160																					
				Miles/month																					
				miles/month																					
				tons/month																					
(7) Unit 3 Basin Backfill, Compact & Grade																									
Roller/Compactor		1	8	160																					
Cat 14H Blade		1	8	160																					
Grader, Cat 14G		1	4	80																					
Dozer, D6M		1	4	80																					
4000Gal Water Truck		1	6	120																					
Phase 7 Peak Month																									
				Miles/month																					
				miles/month																					
				Backfill - CY/month																					
(8) Plant Construction																									
(i) Civil Earthwork																									
CAT 627F Scraper		6	8	0																					
CAT 14H Blade		3	8	0																					
MF 650B Skip		2	8	0																					
Water Truck		3	8	0																					
Kobelco 80 - Exc		2	8	0																					
10 Wheeler Dump Trucks		6	8	0																					
CAT 815F Compactor		4	8	0																					
CAT D6R Dozer		4	8	0																					
CAT TH103 Forklift		2	8	0																					
175 CFM Air Compressor		1	8	0																					
				Miles/month																					
				miles/month																					
				tons/month																					
(ii) Foundations																									
90-Ton Rough Terrain Crane		1	6	0																					
60-Ton Rough Terrain Crane		2	6	0																					
Scissors Lift 20 ft		4	8	0																					
1 Ton Parts Truck		1	6	0																					
175 CFM Air Compressor		2	8	0																					
Electric, Welding Machine 400 Amps		1	4	0																					
				Miles/month																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment

					4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17
	WD/ Month	Quant	Op Hr/WD/ea	Op Hr/Mo	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
				miles/month																					
				tons/month																					
(iii) Structural Steel																									
1-Ton Flatbed Truck		3	6	0																					
1-Ton Flatbed Truck w/Trailer		2	6	0																					
6,000 # Forklift		2	8	0																					
Electric, Welding Machine Six Pack		4	8	0																					
Gas/Diesel Compressor Combo		4	8	0																					
90-Ton Rough Terrain Crane		4	8	0																					
60-Ton Rough Terrain Crane		2	8	0																					
Scissors Lift 20 ft		6	8	0																					
SJ 600 Man Lifts 66 ft		8	8	0																					
				Miles/month																					
				miles/month																					
				tons/month																					
(iv) Mechanical																									
1-Ton Flatbed Truck		6	6	0																					
1-Ton Flatbed Truck w/Trailer		4	6	0																					
6,000 # Forklift		4	6	0																					
Electric, Welding Machine Six Pack		8	8	0																					
Gas/Diesel Compressor Combo		4	8	0																					
90-Ton Rough Terrain Crane		3	6	0																					
60-Ton Rough Terrain Crane		3	6	0																					
Scissors Lift 20 ft		8	8	0																					
SJ 600 Man Lifts 66 ft		8	8	0																					
500 Ton Crane		3	8	0																					
				Miles/month																					
				miles/month																					
				tons/month																					
(v) Electrical																									
Backhoe		2	8	0																					
Bobcat		3	8	0																					
175 CFM Air Compressor		2	8	0																					
Vaccum Trailers		2	6	0																					
Rock Wheel Trencher		2	6	0																					
Equipment Trailer (pullers, benders,ect		3	8	0																					
Generators		4	8	0																					
Scissors Lift 20 ft		6	6	0																					
SJ 600 Man Lifts 66 ft		4	6	0																					
Service Trucks-Conductor Splicing		3	6	0																					
Dump Truck		2	6	0																					
ForkLift		3	6	0																					
				Miles/month																					
				miles/month																					
				tons/month																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment

		Quant	Op Hr/WD/ea	Op Hr/Mo	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19
	WD/ Month				64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
(1) Demolition																									
65 T Crane		1	8	0																					
Cat950 Loader w/Forks		1	8	0																					
Water Truck		1	4	0																					
60 Ft Manlift		1	8	0																					
Excavator		1	8	0																					
Shear		1	8	0																					
10 Wheeler Dump Trucks		2	8	0																					
40 Ft Flat Bed Trucks		2	8	0																					
				Phase 1 Peak Month																					
				Miles/month																					
				miles/month																					
				Demolition - tons/month																					
(2) Site Prep																									
Parts Truck		1	4	0																					
4000 Gallon Water Truck		1	6	0																					
10 Wheeler Dump Trucks		4	8	0																					
Excavator, Komatsu PC 400		1	8	0																					
Dozer, D6M		1	4	0																					
Roller/Compactor		1	8	0																					
Grader, Cat 14G		1	4	0																					
Dozer, D6M		1	4	0																					
Yard Crane, ATV		1	8	0																					
Loader/Forks Cat 966		1	8	0																					
Concrete Pump		1	2	0																					
Grove 25t Crane		1	8	0																					
Misc.		1	4	0																					
				Miles/month																					
				miles/month																					
				tons/month																					
(3) Switchyard Expansion																									
Grader, Cat 14G		1	8	160																					
Loader/Forks Cat 966		1	6	120																					
Scissors Lift 20 ft		2	8	320																					
10 Wheel Dump Truck		1	8	160																					
Rock Wheel Trencher		1	8	160																					
Concrete Pump		1	8	160																					
Grove 25t Crane		1	6	120																					
				Miles/month																					
				miles/month																					
				tons/month																					
(4) Unit 3 Pre-Demolition Activities																									
Scissors Lift 20 ft		1	8	20	10	10																			
10 Wheeler Dump Trucks		1	4	80	10	10	10			10	10			10	10	10									
Cat950 Loader w/Forks		1	4	80			10			10	10			10	10	10									
					20	20	20	0	0	20	20	0	0	20	20	20									
				Miles/month	60	60	60	60	60	60	60	60	60	60	60	60									
				miles/month	500	2000	2000	2000	500	500	500	2000	2000	2000	500	500									
				Demolition - tons/month	233	233	233	233	233	233	233	233	233	233	233	233									
(5) Unit 3 Demolition																									
Parts Truck		1	4	80													80	80	80	80	80	80	80	80	80

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment																									
					1/1/18	**2/1/18**	**3/1/18**	**4/1/18**	**5/1/18**	**6/1/18**	**7/1/18**	**8/1/18**	**9/1/18**	**10/1/18**	**11/1/18**	**12/1/18**	**1/1/19**	**2/1/19**	**3/1/19**	**4/1/19**	**5/1/19**	**6/1/19**	**7/1/19**	**9/1/19**	**9/1/19**
	WD/ Month	**Quant**	**Op Hr/WD/ea**	**Op Hr/Mo**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**	**76**	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**
4000 gal Water Truck		1	6	120															120	120	120	120	120	120	120
Excavator, Komatsu PC 400		7	8	1120															1,120	1,120	1,120	1,120	1,120	1,120	1,120
Yard Crane, ATV		1	8	160															160	160	160	160	160	160	160
Grove 25t Crane		1	8	160															160	160	160	160	160	160	160
500 T Crane		1	8	160															160	160	160	160	160	160	160
Loader/Forks Cat 966		5	8	800															800	800	800	800	800	800	800
Scissors lift 20 ft		5	8	800															800	800	800	800	800	800	800
																Phase 5 Peak Month	80	80	**3,400**	3,400	3,400	3,400	3,400	3,400	3,400
				Miles/month													600	360	6,240	6,240	2,640	2,640	12,240	12,240	18,240
				miles/month													18,500	19,000	44,000	44,000	44,000	44,000	39,500	39,500	39,500
				tons/month																					
(6) Unit 3 Basin Retaining Wall																									
Scissors lift 20 ft		5	8	800																					
Loader/Forks Cat 966		5	8	800																					
175 CFM Air Compressor		1	8	160																					
Concrete Pump		1	2	40																					
Grove 25t Crane		1	8	160																					
				Miles/month																					
				miles/month																					
				tons/month																					
(7) Unit 3 Basin Backfill, Compact & Grade																									
Roller/Compactor		1	8	160																					
Cat 14H Blade		1	8	160																					
Grader, Cat 14G		1	4	80																					
Dozer, D6M		1	4	80																					
4000Gal Water Truck		1	6	120																					
Phase 7 Peak Month																									
				Miles/month																					
				miles/month																					
				Backfill - CY/month																					
(8) Plant Construction																									
(i) Civil Earthwork																									
CAT 627F Scraper		6	8	0																					
CAT 14H Blade		3	8	0																					
MF 650B Skip		2	8	0																					
Water Truck		3	8	0																					
Kobelco 80 - Exc		2	8	0																					
10 Wheeler Dump Trucks		6	8	0																					
CAT 815F Compactor		4	8	0																					
CAT D6R Dozer		4	8	0																					
CAT TH103 Forklift		2	8	0																					
175 CFM Air Compressor		1	8	0																					
				Miles/month																					
				miles/month																					
				tons/month																					
(ii) Foundations																									
90-Ton Rough Terrain Crane		1	6	0																					
60-Ton Rough Terrain Crane		2	6	0																					
Scissors Lift 20 ft		4	8	0																					
1 Ton Parts Truck		1	6	0																					
175 CFM Air Compressor		2	8	0																					
Electric, Welding Machine 400 Amps		1	4	0																					
				Miles/month																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment

		Quant	Op Hr/WD/ea	Op Hr/Mo	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19
	WD/ Month				64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
				miles/month																					
				tons/month																					
(iii) Structural Steel																									
1-Ton Flatbed Truck		3	6	0																					
1-Ton Flatbed Truck w/Trailer		2	6	0																					
6,000 # Forklift		2	8	0																					
Electric, Welding Machine Six Pack		4	8	0																					
Gas/Diesel Compressor Combo		4	8	0																					
90-Ton Rough Terrain Crane		4	8	0																					
60-Ton Rough Terrain Crane		2	8	0																					
Scissors Lift 20 ft		6	8	0																					
SJ 600 Man Lifts 66 ft		8	8	0																					
				Miles/month																					
				miles/month																					
				tons/month																					
(iv) Mechanical																									
1-Ton Flatbed Truck		6	6	0																					
1-Ton Flatbed Truck w/Trailer		4	6	0																					
6,000 # Forklift		4	6	0																					
Electric, Welding Machine Six Pack		8	8	0																					
Gas/Diesel Compressor Combo		4	8	0																					
90-Ton Rough Terrain Crane		3	6	0																					
60-Ton Rough Terrain Crane		3	6	0																					
Scissors Lift 20 ft		8	8	0																					
SJ 600 Man Lifts 66 ft		8	8	0																					
500 Ton Crane		3	8	0																					
				Miles/month																					
				miles/month																					
				tons/month																					
(v) Electrical																									
Backhoe		2	8	0																					
Bobcat		3	8	0																					
175 CFM Air Compressor		2	8	0																					
Vaccum Trailers		2	6	0																					
Rock Wheel Trencher		2	6	0																					
Equipment Trailer (pullers, benders,ect		3	8	0																					
Generators		4	8	0																					
Scissors Lift 20 ft		6	6	0																					
SJ 600 Man Lifts 66 ft		4	6	0																					
Service Trucks-Conductor Splicing		3	6	0																					
Dump Truck		2	6	0																					
ForkLift		3	6	0																					
				Miles/month																					
				miles/month																					
				tons/month																					

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment

		Quant	Op Hr/WD/ea	Op Hr/Mo	10/1/19	11/1/19	12/1/19	1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
	WD/ Month				85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
(1) Demolition																			
65 T Crane		1	8	0															
Cat950 Loader w/Forks		1	8	0															
Water Truck		1	4	0															
60 Ft Manlift		1	8	0															
Excavator		1	8	0															
Shear		1	8	0															
10 Wheeler Dump Trucks		2	8	0															
40 Ft Flat Bed Trucks		2	8	0															
				Phase 1 Peak Month															
				Miles/month															
				miles/month															
				Demolition - tons/month															
(2) Site Prep																			
Parts Truck		1	4	0															
4000 Gallon Water Truck		1	6	0															
10 Wheeler Dump Trucks		4	8	0															
Excavator, Komatsu PC 400		1	8	0															
Dozer, D6M		1	4	0															
Roller/Compactor		1	8	0															
Grader, Cat 14G		1	4	0															
Dozer, D6M		1	4	0															
Yard Crane, ATV		1	8	0															
Loader/Forks Cat 966		1	8	0															
Concrete Pump		1	2	0															
Grove 25t Crane		1	8	0															
Misc.		1	4	0															
				Miles/month															
				miles/month															
				tons/month															
(3) Switchyard Expansion																			
Grader, Cat 14G		1	8	160															
Loader/Forks Cat 966		1	6	120															
Scissors Lift 20 ft		2	8	320															
10 Wheel Dump Truck		1	8	160															
Rock Wheel Trencher		1	8	160															
Concrete Pump		1	8	160															
Grove 25t Crane		1	6	120															
				Miles/month															
				miles/month															
				tons/month															
(4) Unit 3 Pre-Demolition Activities																			
Scissors Lift 20 ft		1	8	20															
10 Wheeler Dump Trucks		1	4	80															
Cat950 Loader w/Forks		1	4	80															
				Miles/month															
				miles/month															
				Demolition - tons/month															
(5) Unit 3 Demolition																			
Parts Truck		1	4	80	80	80													

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment

	WD/ Month	Quant	Op Hr/WD/ea	Op Hr/Mo	10/1/19	11/1/19	12/1/19	1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
					85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
4000 gal Water Truck		1	6	120	120	120													
Excavator, Komatsu PC 400		7	8	1120	1,120	1,120													
Yard Crane, ATV		1	8	160	160	160													
Grove 25t Crane		1	8	160	160	160													
500 T Crane		1	8	160	160	160													
Loader/Forks Cat 966		5	8	800	800	800													
Scissors lift 20 ft		5	8	800	800	800													
					3,400	3,400													
				Miles/month	240	240													
				miles/month	39,500	19,500													
				tons/month															
(6) Unit 3 Basin Retaining Wall																			
Scissors lift 20 ft		5	8	800			880	880	880										
Loader/Forks Cat 966		5	8	800			800	800	800										
175 CFM Air Compressor		1	8	160			160	160	160										
Concrete Pump		1	2	40			40	40	40										
Grove 25t Crane		1	8	160			160	160	160										
						Phase 6 Peak Month	2,040	2,040	2,040										
				Miles/month			420	900	1,440										
				miles/month			24,500	24,500	24,500										
				tons/month															
(7) Unit 3 Basin Backfill, Compact & Grade																			
Roller/Compactor		1	8	160						160	160	160	160	160	160	160	160	160	
Cat 14H Blade		1	8	160						160	160	160	160	160	160	160	160	160	
Grader, Cat 14G		1	4	80						80	80	80	80	80	80	80	80	80	
Dozer, D6M		1	4	80						80	80	80	80	80	80	80	80	80	
4000Gal Water Truck		1	6	120						120	120	120	120	120	120	120	120	120	
Phase 7 Peak Month										**600**	600	600	600	600	600	600	600	600	
				Miles/month						240	240	240	240	240	240	240	240	240	240
				miles/month						14,500	14,500	14,500	14,500	14,500	14,500	14,500	14,500	14,500	14,500
				Backfill - CY/month						11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
(8) Plant Construction																			
(i) Civil Earthwork																			
CAT 627F Scraper		6	8	0															
CAT 14H Blade		3	8	0															
MF 650B Skip		2	8	0															
Water Truck		3	8	0															
Kobelco 80 - Exc		2	8	0															
10 Wheeler Dump Trucks		6	8	0															
CAT 815F Compactor		4	8	0															
CAT D6R Dozer		4	8	0															
CAT TH103 Forklift		2	8	0															
175 CFM Air Compressor		1	8	0															
				Miles/month															
				miles/month															
				tons/month															
(ii) Foundations																			
90-Ton Rough Terrain Crane		1	6	0															
60-Ton Rough Terrain Crane		2	6	0															
Scissors Lift 20 ft		4	8	0															
1 Ton Parts Truck		1	6	0															
175 CFM Air Compressor		2	8	0															
Electric, Welding Machine 400 Amps		1	4	0															
				Miles/month															

Table A-5a: Generation Scenario 2 (Siemens Option) - Usage Summary from Construction Equipment

					10/1/19	11/1/19	12/1/19	1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
	WD/ Month	Quant	Op Hr/WD/ea	Op Hr/Mo	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
				miles/month															
				tons/month															
(iii) Structural Steel																			
1-Ton Flatbed Truck		3	6	0															
1-Ton Flatbed Truck w/Trailer		2	6	0															
6,000 # Forklift		2	8	0															
Electric, Welding Machine Six Pack		4	8	0															
Gas/Diesel Compressor Combo		4	8	0															
90-Ton Rough Terrain Crane		4	8	0															
60-Ton Rough Terrain Crane		2	8	0															
Scissors Lift 20 ft		6	8	0															
SJ 600 Man Lifts 66 ft		8	8	0															
				Miles/month															
				miles/month															
				tons/month															
(iv) Mechanical																			
1-Ton Flatbed Truck		6	6	0															
1-Ton Flatbed Truck w/Trailer		4	6	0															
6,000 # Forklift		4	6	0															
Electric, Welding Machine Six Pack		8	8	0															
Gas/Diesel Compressor Combo		4	8	0															
90-Ton Rough Terrain Crane		3	6	0															
60-Ton Rough Terrain Crane		3	6	0															
Scissors Lift 20 ft		8	8	0															
SJ 600 Man Lifts 66 ft		8	8	0															
500 Ton Crane		3	8	0															
				Miles/month															
				miles/month															
				tons/month															
(v) Electrical																			
Backhoe		2	8	0															
Bobcat		3	8	0															
175 CFM Air Compressor		2	8	0															
Vaccum Trailers		2	6	0															
Rock Wheel Trencher		2	6	0															
Equipment Trailer (pullers, benders,ect		3	8	0															
Generators		4	8	0															
Scissors Lift 20 ft		6	6	0															
SJ 600 Man Lifts 66 ft		4	6	0															
Service Trucks-Conductor Splicing		3	6	0															
Dump Truck		2	6	0															
ForkLift		3	6	0															
				Miles/month															
				miles/month															
				tons/month															

Table A-5b: Generation Scenario 2 (Siemens Option) - VOC Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	VOC EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.095	0
Cat950 Loader w/Forks	1	8		0.085	0
Water Truck	1	4	2	0.002	0
60 Ft Manlift	1	8		0.039	0
Excavator	1	8		0.087	0
Shear	1	8		0.058	0
10 Wheeler Dump Trucks	2	8	10	0.150	0
40 Ft Flat Bed Trucks	2	8	10	0.002	0
Phase 1 Peak Month				0.000	0
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.002	0
4000 Gallon Water Truck	1	6	2	0.002	0
10 Wheeler Dump Trucks	4	8	10	0.150	0
Excavator, Komatsu PC 400	1	8		0.087	0
Dozer, D6M	1	4		0.209	0
Roller/Compactor	1	8		0.070	0
Grader, Cat 14G	1	4		0.103	0
Dozer, D6M	1	4		0.209	0
Yard Crane, ATV	1	8		0.095	0
Loader/Forks Cat 966	1	8		0.085	0
Concrete Pump	1	2		0.081	0
Grove 25t Crane	1	8		0.095	0
Misc.	1	4		0.062	0
Phase 2 Peak Month				0.000	0
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.103	0
Loader/Forks Cat 966	1	6		0.085	0
Scissors Lift 20 ft	2	8		0.039	0
10 Wheel Dump Truck	1	8	10	0.150	0
Rock Wheel Trencher	1	8		0.101	0
Concrete Pump	1	8		0.081	0
Grove 25t Crane	1	6		0.095	0
Phase 3 Peak Month				0.000	0
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.039	0
10 Wheeler Dump Trucks	1	4	10	0.150	0
Cat950 Loader w/Forks	1	4		0.085	0
Phase 4 Peak Month				0.000	0
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.002	0
4000 gal Water Truck	1	6	2	0.002	0
Excavator, Komatsu PC 400	7	8		0.087	0
Yard Crane, ATV	1	8		0.095	0
Grove 25t Crane	1	8		0.095	0
500 T Crane	1	8		0.095	0
Loader/Forks Cat 966	5	8		0.085	0
Scissors lift 20 ft	5	8		0.039	0
Phase 5 Peak Month				0.000	0
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.039	0
Loader/Forks Cat 966	5	8		0.085	0
175 CFM Air Compressor	1	8		0.098	0

Table A-5b: Generation Scenario 2 (Siemens Option) - VOC Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	VOC EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
Concrete Pump	1	2		0.081	0
Grove 25t Crane	1	8		0.095	0
Phase 6 Peak Month				0.000	0
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.070	0
Cat 14H Blade	1	8		0.103	0
Grader, Cat 14G	1	4		0.103	0
Dozer, D6M	1	4		0.209	0
4000Gal Water Truck	1	6	2	0.002	0
Phase 7 Peak Month				0.000	0
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.195	0
CAT 14H Blade	3	8		0.103	0
MF 650B Skip	2	8		0.058	9
Water Truck	3	8	2	0.002	2
Kobelco 80 - Exc	2	8		0.087	28
10 Wheeler Dump Trucks	6	8	10	0.150	144
CAT 815F Compactor	4	8		0.070	28
CAT D6R Dozer	4	8		0.209	100
CAT TH103 Forklift	2	8		0.039	13
175 CFM Air Compressor	1	8		0.098	16
Truck Trips			Miles/month	0.002	9
Personnel			miles/month	0.001	239
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.095	11
60-Ton Rough Terrain Crane	2	6		0.095	23
Scissors Lift 20 ft	4	8		0.039	25
1 Ton Parts Truck	1	6	1.3	0.002	0
175 CFM Air Compressor	2	8		0.098	30
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	1.6	0.002	1
1-Ton Flatbed Truck w/Trailer	2	6	1.5	0.002	0
6,000 # Forklift	2	8		0.039	12
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.083	27
90-Ton Rough Terrain Crane	4	8		0.095	31
60-Ton Rough Terrain Crane	2	8		0.095	15
Scissors Lift 20 ft	6	8		0.039	25
SJ 600 Man Lifts 66 ft	8	8		0.039	37
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	3.4	0.002	4
1-Ton Flatbed Truck w/Trailer	4	6	1.4	0.002	1
6,000 # Forklift	4	6		0.039	19
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.083	53
90-Ton Rough Terrain Crane	3	6		0.095	23
60-Ton Rough Terrain Crane	3	6		0.095	23
Scissors Lift 20 ft	8	8		0.039	44
SJ 600 Man Lifts 66 ft	8	8		0.039	35
500 Ton Crane	3	8		0.095	31
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-5b: Generation Scenario 2 (Siemens Option) - VOC Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	VOC EmFac (lb/hr or lb/mi)	Peak Month (7/1/14) Emissions, lb/month
(v) Electrical				0.000	0
Backhoe	2	8		0.058	21
Bobcat	3	8		0.036	6
175 CFM Air Compressor	2	8		0.098	16
Vaccum Trailers	2	6		0.083	10
Rock Wheel Trencher	2	6		0.101	12
Equipment Trailer (pullers, benders,ect	3	8		0.083	15
Generators	4	8		0.083	40
Scissors Lift 20 ft	6	6		0.039	5
SJ 600 Man Lifts 66 ft	4	6		0.039	5
Service Trucks-Conductor Splicing	3	6	0.4	0.002	0
Dump Truck	2	6	10	0.150	15
ForkLift	3	6		0.039	5
Truck Trips			Miles/month	0.002	0
Personnel			miles/month	0.001	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
Architectural Coating					83

Total Monthly Emissions (lb/Month)	1287
Total Monthly Onsite Exhaust (lb/Month)	955
Total Monthly Onsite Fugitive (lb/Month)	0
Total Monthly Fugitive ROG Emissions (lb/Month)	83
Total Monthly Offsite Exhaust (lb/Month)	248
Total Monthly Onsite Emissions (lb/Month)	1039
Total Monthly Emissions (lb/Month)	1287

Project Summary				
Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total Emissions	12882	1287	64	8
Onsite Exhaust Emissions	10206	955	48	6
Onsite Fugitive Dust Emissions	0	0	0	0
Fugitive ROG Emissions	83	83	4	1
Offsite Exhaust Emissions	2592	248	12	2
Month	14	22	22	22

Regional VOC Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	173	8.7
Site Preparation	781	39.0
Plant Construction	1,287	64.4
Switchyard Expansion	759	38.0
Unit 3 Pre-Demolition	4	0.2
Unit 3 Demolition	300	15.0
Unit 3 Basin Retaining wall	154	7.7
Unit 3 Basin Backfill, Compact and Grade	62	3.1

Table A-5c: Generation Scenario 2 (Siemens Option) - CO Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO EmFac (lb/hr or lb/mi)	Peak Month (8/1/14) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.331	0
Cat950 Loader w/Forks	1	8		0.325	0
Water Truck	1	4	2	0.008	0
60 Ft Manlift	1	8		0.132	0
Excavator	1	8		0.362	0
Shear	1	8		0.256	0
10 Wheeler Dump Trucks	2	8	10	0.445	0
40 Ft Flat Bed Trucks	2	8	10	0.008	0
Phase 1 Peak Month				0.000	0
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.008	0
4000 Gallon Water Truck	1	6	2	0.008	0
10 Wheeler Dump Trucks	4	8	10	0.445	0
Excavator, Komatsu PC 400	1	8		0.362	0
Dozer, D6M	1	4		0.837	0
Roller/Compactor	1	8		0.275	0
Grader, Cat 14G	1	4		0.411	0
Dozer, D6M	1	4		0.837	0
Yard Crane, ATV	1	8		0.331	0
Loader/Forks Cat 966	1	8		0.325	0
Concrete Pump	1	2		0.298	0
Grove 25t Crane	1	8		0.331	0
Misc.	1	4		0.258	0
Phase 2 Peak Month				0.000	0
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.411	0
Loader/Forks Cat 966	1	6		0.325	0
Scissors Lift 20 ft	2	8		0.132	0
10 Wheel Dump Truck	1	8	10	0.445	0
Rock Wheel Trencher	1	8		0.318	0
Concrete Pump	1	8		0.298	0
Grove 25t Crane	1	6		0.331	0
Phase 3 Peak Month				0.000	0
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.132	0
10 Wheeler Dump Trucks	1	4	10	0.445	0
Cat950 Loader w/Forks	1	4		0.325	0
Phase 4 Peak Month				0.000	0
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.008	0
4000 gal Water Truck	1	6	2	0.008	0
Excavator, Komatsu PC 400	7	8		0.362	0
Yard Crane, ATV	1	8		0.331	0
Grove 25t Crane	1	8		0.331	0
500 T Crane	1	8		0.331	0
Loader/Forks Cat 966	5	8		0.325	0
Scissors lift 20 ft	5	8		0.132	0
Phase 5 Peak Month				0.000	0
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.132	0
Loader/Forks Cat 966	5	8		0.325	0
175 CFM Air Compressor	1	8		0.345	0

Table A-5c: Generation Scenario 2 (Siemens Option) - CO Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO EmFac (lb/hr or lb/mi)	Peak Month (8/1/14) Emissions, lb/month
Concrete Pump	1	2		0.298	0
Grove 25t Crane	1	8		0.331	0
Phase 6 Peak Month				0.000	0
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.275	0
Cat 14H Blade	1	8		0.411	0
Grader, Cat 14G	1	4		0.411	0
Dozer, D6M	1	4		0.837	0
4000Gal Water Truck	1	6	2	0.008	0
Phase 7 Peak Month				0.000	0
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.736	0
CAT 14H Blade	3	8		0.411	0
MF 650B Skip	2	8		0.256	41
Water Truck	3	8	2	0.008	8
Kobelco 80 - Exc	2	8		0.362	116
10 Wheeler Dump Trucks	6	8	10	0.445	427
CAT 815F Compactor	4	8		0.275	88
CAT D6R Dozer	4	8		0.837	268
CAT TH103 Forklift	2	8		0.151	48
175 CFM Air Compressor	1	8		0.345	55
Truck Trips			Miles/month	0.008	43
Personnel			miles/month	0.006	2683
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.331	40
60-Ton Rough Terrain Crane	2	6		0.331	80
Scissors Lift 20 ft	4	8		0.132	85
1 Ton Parts Truck	1	6	1.3	0.008	1
175 CFM Air Compressor	2	8		0.345	103
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	1.6	0.008	3
1-Ton Flatbed Truck w/Trailer	2	6	1.5	0.008	1
6,000 # Forklift	2	8		0.151	39
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.312	50
90-Ton Rough Terrain Crane	4	8		0.331	53
60-Ton Rough Terrain Crane	2	8		0.331	40
Scissors Lift 20 ft	6	8		0.132	64
SJ 600 Man Lifts 66 ft	8	8		0.132	64
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	3.4	0.008	20
1-Ton Flatbed Truck w/Trailer	4	6	1.4	0.008	5
6,000 # Forklift	4	6		0.151	48
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.312	150
90-Ton Rough Terrain Crane	3	6		0.331	80
60-Ton Rough Terrain Crane	3	6		0.331	80
Scissors Lift 20 ft	8	8		0.132	169
SJ 600 Man Lifts 66 ft	8	8		0.132	169
500 Ton Crane	3	8		0.331	106
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-5c: Generation Scenario 2 (Siemens Option) - CO Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	CO EmFac (lb/hr or lb/mi)	Peak Month (8/1/14) Emissions, lb/month
(v) Electrical					
Backhoe	2	8		0.256	92
Bobcat	3	8		0.158	25
175 CFM Air Compressor	2	8		0.345	55
Vaccum Trailers	2	6		0.312	37
Rock Wheel Trencher	2	6		0.318	38
Equipment Trailer (pullers, benders,ect	3	8		0.312	56
Generators	4	8		0.312	150
Scissors Lift 20 ft	6	6		0.132	32
SJ 600 Man Lifts 66 ft	4	6		0.132	16
Service Trucks-Conductor Splicing	3	6	0.4	0.008	0
Dump Truck	2	6	10	0.445	44
ForkLift	3	6		0.151	18
Truck Trips			Miles/month	0.008	0
Personnel			miles/month	0.006	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Total Monthly Emissions (lb/Month)	5791
Total Monthly Onsite Exhaust (lb/Month)	3065
Total Monthly Onsite Fugitive (lb/Month)	0
Total Monthly Offsite Exhaust (lb/Month)	2726
Total Monthly Onsite Emissions (lb/Month)	3065
Total Monthly Emissions (lb/Month)	5791

Project Summary				
Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total	60928	5791	290	36
Onsite Exhaust	32470	3065	153	19
Onsite Fugitive	0	0	0	0
Offsite Exhaust	28458	2726	136	17
Month	18	23	23	23

Regional CO Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	880	44.0
Site Preparation	3,087	154.3
Plant Construction	5,791	289.5
Switchyard Expansion	4,297	214.9
Unit 3 Pre-Demolition	34	1.7
Unit 3 Demolition	1,302	65.1
Unit 3 Basin Retaining wall	643	32.2
Unit 3 Basin Backfill, Compact and Grade	293	14.7

Localized CO Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demo	235	12
Switch	1677	84
Unit 3 Demo	939	47
Plant	3065	153

Table A-5d: Generation Scenario 2 (Siemens Option) - NOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	NOx EmFac (lb/hr or lb/mi)	Peak Month (5/1/14) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.854	0
Cat950 Loader w/Forks	1	8		0.672	0
Water Truck	1	4	2	0.030	0
60 Ft Manlift	1	8		0.218	0
Excavator	1	8		0.658	0
Shear	1	8		0.390	0
10 Wheeler Dump Trucks	2	8	10	1.351	0
40 Ft Flat Bed Trucks	2	8	10	0.030	0
Phase 1 Peak Month				0.000	0
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.030	0
4000 Gallon Water Truck	1	6	2	0.030	0
10 Wheeler Dump Trucks	4	8	10	1.351	0
Excavator, Komatsu PC 400	1	8		0.658	0
Dozer, D6M	1	4		1.800	0
Roller/Compactor	1	8		0.465	0
Grader, Cat 14G	1	4		0.838	0
Dozer, D6M	1	4		1.800	0
Yard Crane, ATV	1	8		0.854	0
Loader/Forks Cat 966	1	8		0.672	0
Concrete Pump	1	2		0.500	0
Grove 25t Crane	1	8		0.854	0
Misc.	1	4		0.576	0
Phase 2 Peak Month				0.000	0
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.838	0
Loader/Forks Cat 966	1	6		0.672	0
Scissors Lift 20 ft	2	8		0.218	0
10 Wheel Dump Truck	1	8	10	1.351	0
Rock Wheel Trencher	1	8		0.469	0
Concrete Pump	1	8		0.500	0
Grove 25t Crane	1	6		0.854	0
Phase 3 Peak Month				0.000	0
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.218	0
10 Wheeler Dump Trucks	1	4	10	1.351	0
Cat950 Loader w/Forks	1	4		0.672	0
Phase 4 Peak Month				0.000	0
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive dust - Equip	0.00E+00	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.030	0
4000 gal Water Truck	1	6	2	0.030	0
Excavator, Komatsu PC 400	7	8		0.658	0
Yard Crane, ATV	1	8		0.854	0
Grove 25t Crane	1	8		0.854	0
500 T Crane	1	8		0.854	0
Loader/Forks Cat 966	5	8		0.672	0
Scissors lift 20 ft	5	8		0.218	0
Phase 5 Peak Month				0.000	0
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive dust - Equip	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.218	0
Loader/Forks Cat 966	5	8		0.672	0
175 CFM Air Compressor	1	8		0.649	0
Concrete Pump	1	2		0.500	0

Table A-5d: Generation Scenario 2 (Siemens Option) - NOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	NOx EmFac (lb/hr or lb/mi)	Peak Month (5/1/14) Emissions, lb/month
Grove 25t Crane	1	8		0.854	0
Phase 6 Peak Month				0.000	0
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive dust - Equip	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.465	0
Cat 14H Blade	1	8		0.838	0
Grader, Cat 14G	1	4		0.838	0
Dozer, D6M	1	4		1.800	0
4000Gal Water Truck	1	6	2	0.030	0
Phase 7 Peak Month				0.000	0
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		1.721	0
CAT 14H Blade	3	8		0.838	0
MF 650B Skip	2	8		0.390	62
Water Truck	3	8	2	0.030	29
Kobelco 80 - Exc	2	8		0.658	210
10 Wheeler Dump Trucks	6	8	10	1.351	1297
CAT 815F Compactor	4	8		0.465	297
CAT D6R Dozer	4	8		1.800	1152
CAT TH103 Forklift	2	8		0.290	93
175 CFM Air Compressor	1	8		0.649	104
Truck Trips			Miles/month	0.030	222
Personnel			miles/month	0.000	163
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.854	103
60-Ton Rough Terrain Crane	2	6		0.854	205
Scissors Lift 20 ft	4	8		0.218	139
1 Ton Parts Truck	1	6	1.3	0.030	5
175 CFM Air Compressor	2	8		0.649	104
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	1.6	0.030	17
1-Ton Flatbed Truck w/Trailer	2	6	1.5	0.030	11
6,000 # Forklift	2	8		0.290	93
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.578	277
90-Ton Rough Terrain Crane	4	8		0.854	547
60-Ton Rough Terrain Crane	2	8		0.854	273
Scissors Lift 20 ft	6	8		0.218	209
SJ 600 Man Lifts 66 ft	8	8		0.218	279
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	3.4	0.030	49
1-Ton Flatbed Truck w/Trailer	4	6	1.4	0.030	10
6,000 # Forklift	4	6		0.290	87
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.578	277
90-Ton Rough Terrain Crane	3	6		0.854	308
60-Ton Rough Terrain Crane	3	6		0.854	308
Scissors Lift 20 ft	8	8		0.218	157
SJ 600 Man Lifts 66 ft	8	8		0.218	91
500 Ton Crane	3	8		0.854	137
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-5d: Generation Scenario 2 (Siemens Option) - NOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	NOx EmFac (lb/hr or lb/mi)	Peak Month (5/1/14) Emissions, lb/month
(v) Electrical					
Backhoe	2	8		0.390	0
Bobcat	3	8		0.180	0
175 CFM Air Compressor	2	8		0.649	0
Vaccum Trailers	2	6		0.578	69
Rock Wheel Trencher	2	6		0.469	56
Equipment Trailer (pullers, benders,ect	3	8		0.578	92
Generators	4	8		0.578	185
Scissors Lift 20 ft	6	6		0.218	26
SJ 600 Man Lifts 66 ft	4	6		0.218	0
Service Trucks-Conductor Splicing	3	6	0.4	0.030	2
Dump Truck	2	6	10	1.351	162
ForkLift	3	6		0.290	35
Truck Trips			Miles/month	0.030	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Project Summary				
Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total	84202	7942	397	50
Onsite Exhaust	80498	7557	378	47
Onsite Fugitive	0	0	0	0
Offsite Exhaust	3704	385	19	2
Month	13	20	20	20

Regional NOx Emissions Summary		
Activity	**Peak Month, lb/month**	**Peak Day, lb/day**
Tank Demolition	1,786	89.3
Site Preparation	6,345	317.2
Plant Construction	7,942	397.1
Switchyard Expansion	3,638	181.9
Unit 3 Pre-Demolition	23	1.1
Unit 3 Demolition	2,452	122.6
Unit 3 Basin Retaining wall	1,044	52.2
Unit 3 Basin Backfill, Compact and Grade	440	22.0

Localized CO Emissions Summary		
Activity	**Peak Month, lb/month**	**Peak Day, lb/day**
Tank Demo	30	603
Switch	168	3368
Unit 3 Demo	94	1890
Plant	378	7557

Table A-5f: Generation Scenario 2 (Siemens Option) - PM10 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM10 EmFac (lb/hr or lb/mi)	Peak Month (11/1/13) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.037	0
Cat950 Loader w/Forks	1	8		0.037	0
Water Truck	1	4	2	0.001	0
60 Ft Manlift	1	8		0.015	0
Excavator	1	8		0.036	0
Shear	1	8		0.029	0
10 Wheeler Dump Trucks	2	8	10	0.048	0
40 Ft Flat Bed Trucks	2	8	10	0.001	0
Phase 1 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	2.19E-03		Fugitive Dust - Equip	1.36E-01	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.001	0
4000 Gallon Water Truck	1	6	2	0.001	0
10 Wheeler Dump Trucks	4	8	10	0.048	0
Excavator, Komatsu PC 400	1	8		0.036	0
Dozer, D6M	1	4		0.076	0
Roller/Compactor	1	8		0.033	0
Grader, Cat 14G	1	4		0.044	0
Dozer, D6M	1	4		0.076	0
Yard Crane, ATV	1	8		0.037	0
Loader/Forks Cat 966	1	8		0.037	0
Concrete Pump	1	2		0.035	0
Grove 25t Crane	1	8		0.037	0
Misc.	1	4		0.025	0
Phase 2 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	2.19E-03		Fugitive Dust - Equip	1.36E-01	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.044	0
Loader/Forks Cat 966	1	6		0.037	0
Scissors Lift 20 ft	2	8		0.015	0
10 Wheel Dump Truck	1	8	10	0.048	0
Rock Wheel Trencher	1	8		0.039	0
Concrete Pump	1	8		0.035	0
Grove 25t Crane	1	6		0.037	0
Phase 3 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	2.19E-03		Fugitive Dust - Equip	1.36E-01	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.015	0
10 Wheeler Dump Trucks	1	4	10	0.048	0
Cat950 Loader w/Forks	1	4		0.037	0
Phase 4 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	2.19E-03		Fugitive Dust - Equip	1.36E-01	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.001	0
4000 gal Water Truck	1	6	2	0.001	0
Excavator, Komatsu PC 400	7	8		0.036	0
Yard Crane, ATV	1	8		0.037	0
Grove 25t Crane	1	8		0.037	0
500 T Crane	1	8		0.037	0
Loader/Forks Cat 966	5	8		0.037	0
Scissors lift 20 ft	5	8		0.015	0
Phase 5 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	2.19E-03		Fugitive Dust - Equip	1.36E-01	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.015	0
Loader/Forks Cat 966	5	8		0.037	0
175 CFM Air Compressor	1	8		0.047	0

Table A-5f: Generation Scenario 2 (Siemens Option) - PM10 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM10 EmFac (lb/hr or lb/mi)	Peak Month (11/1/13) Emissions, lb/month
Concrete Pump	1	2		0.035	0
Grove 25t Crane	1	8		0.037	0
Phase 6 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	2.19E-03		Fugitive Dust - Equip	1.36E-01	0.00E+00
Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.033	0
Cat 14H Blade	1	8		0.044	0
Grader, Cat 14G	1	4		0.044	0
Dozer, D6M	1	4		0.076	0
4000Gal Water Truck	1	6	2	0.001	0
Phase 7 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	1.97E-04		Fugitive Dust - Equip	1.36E-01	0.00E+00
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.073	70
CAT 14H Blade	3	8		0.044	21
MF 650B Skip	2	8		0.029	9
Water Truck	3	8	2	0.001	1
Kobelco 80 - Exc	2	8		0.036	11
10 Wheeler Dump Trucks	6	8	10	0.048	46
CAT 815F Compactor	4	8		0.033	21
CAT D6R Dozer	4	8		0.076	49
CAT TH103 Forklift	2	8		0.015	5
175 CFM Air Compressor	1	8		0.047	8
Truck Trips			Miles/month	0.001	3
Personnel			miles/month	0.000	21
Fugitive Dust - Soil	1.97E-04		Fugitive Dust - Equip	1.36E-01	2.82E+02
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.037	4
60-Ton Rough Terrain Crane	2	6		0.037	9
Scissors Lift 20 ft	4	8		0.015	1
1 Ton Parts Truck	1	6	1.3	0.001	0
175 CFM Air Compressor	2	8		0.047	8
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	1.97E-04		Fugitive Dust - Equip	1.36E-01	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	1.6	0.001	1
1-Ton Flatbed Truck w/Trailer	2	6	1.5	0.001	0
6,000 # Forklift	2	8		0.015	2
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.035	11
90-Ton Rough Terrain Crane	4	8		0.037	12
60-Ton Rough Terrain Crane	2	8		0.037	4
Scissors Lift 20 ft	6	8		0.015	5
SJ 600 Man Lifts 66 ft	8	8		0.015	5
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	1.97E-04		Fugitive Dust - Equip	1.36E-01	0.00E+00
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	3.4	0.001	1
1-Ton Flatbed Truck w/Trailer	4	6	1.4	0.001	0
6,000 # Forklift	4	6		0.015	2
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.035	3
90-Ton Rough Terrain Crane	3	6		0.037	4
60-Ton Rough Terrain Crane	3	6		0.037	3
Scissors Lift 20 ft	8	8		0.015	0
SJ 600 Man Lifts 66 ft	8	8		0.015	0
500 Ton Crane	3	8		0.037	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	1.97E-04		Fugitive Dust - Equip	1.36E-01	0.00E+00

Table A-5f: Generation Scenario 2 (Siemens Option) - PM10 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM10 EmFac (lb/hr or lb/mi)	Peak Month (11/1/13) Emissions, lb/month
(v) Electrical					
Backhoe	2	8		0.029	0
Bobcat	3	8		0.014	0
175 CFM Air Compressor	2	8		0.047	0
Vaccum Trailers	2	6		0.035	0
Rock Wheel Trencher	2	6		0.039	0
Equipment Trailer (pullers, benders,ect	3	8		0.035	0
Generators	4	8		0.035	0
Scissors Lift 20 ft	6	6		0.015	0
SJ 600 Man Lifts 66 ft	4	6		0.015	0
Service Trucks-Conductor Splicing	3	6	0.4	0.001	0
Dump Truck	2	6	10	0.048	0
ForkLift	3	6		0.015	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	1.97E-04		Fugitive Dust - Equip	1.36E-01	0.00E+00

Project Summary

Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total	6266	624	31	4
Onsite Exhaust	3915	317	16	2
Onsite Fugitive	1909	282	14	2
Offsite Exhaust	441	25	1	0
Month	12	14	14	14

Regional PM10 Emissions Summary

Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	88	4.4
Site Preparation	589	29.5
Plant Construction	624	31.2
Switchyard Expansion	262	13.1
Unit 3 Pre-Demolition	2	0.1
Unit 3 Demolition	131	6.5
Unit 3 Basin Retaining wall	62	3.1
Unit 3 Basin Backfill, Compact and Grade	70	3.5

Localized PM10 Emissions Summary

Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demo	28	1
Switch	209	10
Unit 3 Demo	101	5
Plant	599	30

HRA Modeling

Emission Description	Total Project PM10 (lb/project)
Total	12545
Onsite Exhaust	8170
Onsite Fugitive	2973
Offsite Exhaust	1402

Table A-5g: Generation Scenario 2 (Siemens Option) - PM2.5 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM2.5 EmFac (lb/hr or lb/mi)	Peak Month (5/1/14) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.034	0
Cat950 Loader w/Forks	1	8		0.034	0
Water Truck	1	4	2	0.001	0
60 Ft Manlift	1	8		0.014	0
Excavator	1	8		0.033	0
Shear	1	8		0.027	0
10 Wheeler Dump Trucks	2	8	10	0.044	0
40 Ft Flat Bed Trucks	2	8	10	0.001	0
Phase 1 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.001	0
4000 Gallon Water Truck	1	6	2	0.001	0
10 Wheeler Dump Trucks	4	8	10	0.044	0
Excavator, Komatsu PC 400	1	8		0.033	0
Dozer, D6M	1	4		0.070	0
Roller/Compactor	1	8		0.030	0
Grader, Cat 14G	1	4		0.040	0
Dozer, D6M	1	4		0.070	0
Yard Crane, ATV	1	8		0.034	0
Loader/Forks Cat 966	1	8		0.034	0
Concrete Pump	1	2		0.032	0
Grove 25t Crane	1	8		0.034	0
Misc.	1	4		0.023	0
Phase 2 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.040	0
Loader/Forks Cat 966	1	6		0.034	0
Scissors Lift 20 ft	2	8		0.014	0
10 Wheel Dump Truck	1	8	10	0.044	0
Rock Wheel Trencher	1	8		0.036	0
Concrete Pump	1	8		0.032	0
Grove 25t Crane	1	6		0.034	0
Phase 3 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.014	0
10 Wheeler Dump Trucks	1	4	10	0.044	0
Cat950 Loader w/Forks	1	4		0.034	0
Phase 4 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.001	0
4000 gal Water Truck	1	6	2	0.001	0
Excavator, Komatsu PC 400	7	8		0.033	0
Yard Crane, ATV	1	8		0.034	0
Grove 25t Crane	1	8		0.034	0
500 T Crane	1	8		0.034	0
Loader/Forks Cat 966	5	8		0.034	0
Scissors lift 20 ft	5	8		0.014	0
Phase 5 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.014	0
Loader/Forks Cat 966	5	8		0.034	0
175 CFM Air Compressor	1	8		0.043	0

Table A-5g: Generation Scenario 2 (Siemens Option) - PM2.5 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM2.5 EmFac (lb/hr or lb/mi)	Peak Month (5/1/14) Emissions, lb/month
Concrete Pump	1	2		0.032	0
Grove 25t Crane	1	8		0.034	0
Phase 6 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	4.55E-04		Fugitive Dust - Equip	2.82E-02	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.030	0
Cat 14H Blade	1	8		0.040	0
Grader, Cat 14G	1	4		0.040	0
Dozer, D6M	1	4		0.070	0
4000Gal Water Truck	1	6	2	0.001	0
Phase 7 Peak Month				0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.067	0
CAT 14H Blade	3	8		0.040	0
MF 650B Skip	2	8		0.027	4
Water Truck	3	8	2	0.001	1
Kobelco 80 - Exc	2	8		0.033	11
10 Wheeler Dump Trucks	6	8	10	0.044	42
CAT 815F Compactor	4	8		0.030	19
CAT D6R Dozer	4	8		0.070	45
CAT TH103 Forklift	2	8		0.014	5
175 CFM Air Compressor	1	8		0.043	7
Truck Trips			Miles/month	0.001	9
Personnel			miles/month	0.000	16
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	1.80E+01
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.034	4
60-Ton Rough Terrain Crane	2	6		0.034	8
Scissors Lift 20 ft	4	8		0.014	9
1 Ton Parts Truck	1	6	1.3	0.001	0
175 CFM Air Compressor	2	8		0.043	7
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	1.6	0.001	1
1-Ton Flatbed Truck w/Trailer	2	6	1.5	0.001	0
6,000 # Forklift	2	8		0.014	5
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.032	16
90-Ton Rough Terrain Crane	4	8		0.034	22
60-Ton Rough Terrain Crane	2	8		0.034	11
Scissors Lift 20 ft	6	8		0.014	13
SJ 600 Man Lifts 66 ft	8	8		0.014	17
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	3.4	0.001	2
1-Ton Flatbed Truck w/Trailer	4	6	1.4	0.001	0
6,000 # Forklift	4	6		0.014	4
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.032	16
90-Ton Rough Terrain Crane	3	6		0.034	12
60-Ton Rough Terrain Crane	3	6		0.034	12
Scissors Lift 20 ft	8	8		0.014	10
SJ 600 Man Lifts 66 ft	8	8		0.014	6
500 Ton Crane	3	8		0.034	5
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00

Table A-5g: Generation Scenario 2 (Siemens Option) - PM2.5 Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	PM2.5 EmFac (lb/hr or lb/mi)	Peak Month (5/1/14) Emissions, lb/month
(v) Electrical					
Backhoe	2	8		0.027	0
Bobcat	3	8		0.013	0
175 CFM Air Compressor	2	8		0.043	0
Vaccum Trailers	2	6		0.032	4
Rock Wheel Trencher	2	6		0.036	4
Equipment Trailer (pullers, benders,ect	3	8		0.032	5
Generators	4	8		0.032	10
Scissors Lift 20 ft	6	6		0.014	2
SJ 600 Man Lifts 66 ft	4	6		0.014	0
Service Trucks-Conductor Splicing	3	6	0.4	0.001	0
Dump Truck	2	6	10	0.044	5
ForkLift	3	6		0.014	2
Truck Trips			Miles/month	0.001	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	4.10E-05		Fugitive Dust - Equip	2.82E-02	0.00E+00

Project Summary				
Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)
Total	4229	389	19	2
Onsite Exhaust	3636	346	17	2
Onsite Fugitive	344	18	1	0
Offsite Exhaust	249	25	1	0
Month	13	20	20	20

Regional PM2.5 Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	72	3.6
Site Preparation	326	16.3
Plant Construction	389	19.4
Switchyard Expansion	201	10.0
Unit 3 Pre-Demolition	1	0.1
Unit 3 Demolition	116	5.8
Unit 3 Basin Retaining wall	56	2.8
Unit 3 Basin Backfill, Compact and Grade	31	1.5

Localized PM2.5 Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demo	24	1
Switch	177	9
Unit 3 Demo	93	5
Plant	364	18

Table A-5e: Generation Scenario 2 (Siemens Option) - SOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	SOx EmFac (lb/hr or lb/mi)	Peak Month (6/1/14) Emissions, lb/month
(1) Demolition					
65 T Crane	1	8		0.001	0
Cat950 Loader w/Forks	1	8		0.001	0
Water Truck	1	4	2	0.000	0
60 Ft Manlift	1	8		0.000	0
Excavator	1	8		0.001	0
Shear	1	8		0.001	0
10 Wheeler Dump Trucks	2	8	10	0.002	0
40 Ft Flat Bed Trucks	2	8	10	0.000	0
Phase 1 Peak Month				0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(2) Site Prep					
Parts Truck	1	4	10	0.000	0
4000 Gallon Water Truck	1	6	2	0.000	0
10 Wheeler Dump Trucks	4	8	10	0.002	0
Excavator, Komatsu PC 400	1	8		0.001	0
Dozer, D6M	1	4		0.002	0
Roller/Compactor	1	8		0.001	0
Grader, Cat 14G	1	4		0.001	0
Dozer, D6M	1	4		0.002	0
Yard Crane, ATV	1	8		0.001	0
Loader/Forks Cat 966	1	8		0.001	0
Concrete Pump	1	2		0.001	0
Grove 25t Crane	1	8		0.001	0
Misc.	1	4		0.001	0
Phase 2 Peak Month				0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(3) Switchyard Expansion					
Grader, Cat 14G	1	8		0.001	0
Loader/Forks Cat 966	1	6		0.001	0
Scissors Lift 20 ft	2	8		0.000	0
10 Wheel Dump Truck	1	8	10	0.002	0
Rock Wheel Trencher	1	8		0.000	0
Concrete Pump	1	8		0.001	0
Grove 25t Crane	1	6		0.001	0
Phase 3 Peak Month				0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities					
Scissors Lift 20 ft	1	8		0.000	0
10 Wheeler Dump Trucks	1	4	10	0.002	0
Cat950 Loader w/Forks	1	4		0.001	0
Phase 4 Peak Month				0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(5) Unit 3 Demolition					
Parts Truck	1	4	10	0.000	0
4000 gal Water Truck	1	6	2	0.000	0
Excavator, Komatsu PC 400	7	8		0.001	0
Yard Crane, ATV	1	8		0.001	0
Grove 25t Crane	1	8		0.001	0
500 T Crane	1	8		0.001	0
Loader/Forks Cat 966	5	8		0.001	0
Scissors lift 20 ft	5	8		0.000	0
Phase 5 Peak Month				0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall					
Scissors lift 20 ft	5	8		0.000	0
Loader/Forks Cat 966	5	8		0.001	0
175 CFM Air Compressor	1	8		0.001	0

Table A-5e: Generation Scenario 2 (Siemens Option) - SOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	SOx EmFac (lb/hr or lb/mi)	Peak Month (6/1/14) Emissions, lb/month
Concrete Pump	1	2		0.001	0
Grove 25t Crane	1	8		0.001	0
Phase 6 Peak Month				0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade					
Roller/Compactor	1	8		0.001	0
Cat 14H Blade	1	8		0.001	0
Grader, Cat 14G	1	4		0.001	0
Dozer, D6M	1	4		0.002	0
4000Gal Water Truck	1	6	2	0.000	0
Phase 7 Peak Month				0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(8) Plant Construction					
(i) Civil Earthwork					
CAT 627F Scraper	6	8		0.002	0
CAT 14H Blade	3	8		0.001	0
MF 650B Skip	2	8		0.001	0
Water Truck	3	8	2	0.000	0
Kobelco 80 - Exc	2	8		0.001	0
10 Wheeler Dump Trucks	6	8	10	0.002	2
CAT 815F Compactor	4	8		0.001	0
CAT D6R Dozer	4	8		0.002	1
CAT TH103 Forklift	2	8		0.000	0
175 CFM Air Compressor	1	8		0.001	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	3
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(ii) Foundations					
90-Ton Rough Terrain Crane	1	6		0.001	0
60-Ton Rough Terrain Crane	2	6		0.001	0
Scissors Lift 20 ft	4	8		0.000	0
1 Ton Parts Truck	1	6	1.3	0.000	0
175 CFM Air Compressor	2	8		0.001	0
Electric, Welding Machine 400 Amps	1	4		0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iii) Structural Steel					
1-Ton Flatbed Truck	3	6	1.6	0.000	0
1-Ton Flatbed Truck w/Trailer	2	6	1.5	0.000	0
6,000 # Forklift	2	8		0.000	0
Electric, Welding Machine Six Pack	4	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.001	0
90-Ton Rough Terrain Crane	4	8		0.001	0
60-Ton Rough Terrain Crane	2	8		0.001	0
Scissors Lift 20 ft	6	8		0.000	0
SJ 600 Man Lifts 66 ft	8	8		0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00
(iv) Mechanical					
1-Ton Flatbed Truck	6	6	3.4	0.000	0
1-Ton Flatbed Truck w/Trailer	4	6	1.4	0.000	0
6,000 # Forklift	4	6		0.000	0
Electric, Welding Machine Six Pack	8	8		0.000	0
Gas/Diesel Compressor Combo	4	8		0.001	0
90-Ton Rough Terrain Crane	3	6		0.001	0
60-Ton Rough Terrain Crane	3	6		0.001	0
Scissors Lift 20 ft	8	8		0.000	0
SJ 600 Man Lifts 66 ft	8	8		0.000	0
500 Ton Crane	3	8		0.001	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Table A-5e: Generation Scenario 2 (Siemens Option) - SOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	SOx EmFac (lb/hr or lb/mi)	Peak Month (6/1/14) Emissions, lb/month
(v) Electrical					
Backhoe	2	8		0.001	0
Bobcat	3	8		0.000	0
175 CFM Air Compressor	2	8		0.001	0
Vaccum Trailers	2	6		0.001	0
Rock Wheel Trencher	2	6		0.000	0
Equipment Trailer (pullers, benders,ect	3	8		0.001	0
Generators	4	8		0.001	0
Scissors Lift 20 ft	6	6		0.000	0
SJ 600 Man Lifts 66 ft	4	6		0.000	0
Service Trucks-Conductor Splicing	3	6	0.4	0.000	0
Dump Truck	2	6	10	0.002	0
ForkLift	3	6		0.000	0
Truck Trips			Miles/month	0.000	0
Personnel			miles/month	0.000	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00

Phase 1	
Onsite Exhaust	0
Onsite Fugitive	0
Offsite exhaust	0
Phase 2	
Onsite Exhaust	0
Onsite Fugitive	0
Offsite exhaust	0
Phase 3	
Onsite Exhaust	0
Onsite Fugitive	0
Offsite exhaust	0
Phase 4	
Onsite Exhaust	0
Onsite Fugitive	0
Offsite exhaust	0
Phase 5	
Onsite Exhaust	0
Onsite Fugitive	0
Offsite exhaust	0
Phase 6	
Onsite Exhaust	0
Onsite Fugitive	0
Offsite exhaust	0
Phase 7	
Onsite Exhaust	0
Onsite Fugitive	0
Offsite exhaust	0
Phase 8 (i)	
Onsite Exhaust	3
Onsite Fugitive	0
Offsite exhaust	4
Phase 8 (ii)	
Onsite Exhaust	1
Onsite Fugitive	0
Offsite exhaust	0
Phase 8 (iii)	
Onsite Exhaust	2
Onsite Fugitive	0
Offsite exhaust	0
Phase 8 (iv)	
Onsite Exhaust	2
Onsite Fugitive	0
Offsite exhaust	0
Phase 8 (v)	
Onsite Exhaust	1
Onsite Fugitive	0
Offsite exhaust	0

Total Monthly Emissions (lb/Month)	12
Total Monthly Onsite Exhaust (lb/Month)	8
Total Monthly Onsite Fugitive (lb/Month)	0
Total Monthly Offsite Exhaust (lb/Month)	4
Total Monthly Onsite Emissions (lb/Month)	8
Total Monthly Emissions (lb/Month)	12

Project Summary

Table A-5e: Generation Scenario 2 (Siemens Option) - SOx Emissions Summary					
	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	SOx EmFac (lb/hr or lb/mi)	Peak Month (6/1/14) Emissions, lb/month
Maximum	Annual - 12 Month Rolling (lb/yr)	Peak Month, lb/month	Peak Day, lb/day	Average Hourly (lb/hr)	
Total	130	12	1	0	
Onsite Exhaust	91	8	0	0	
Onsite Fugitive	0	0	0	0	
Offsite Exhaust	39	4	0	0	
Month	15	23	23	23	

Regional SOx Emissions Summary		
Activity	Peak Month, lb/month	Peak Day, lb/day
Tank Demolition	3.0	0.2
Site Preparation	7.7	0.4
Plant Construction	12.1	0.6
Switchyard Expansion	8.2	0.4
Unit 3 Pre-Demolition	0.1	0.0
Unit 3 Demolition	3.3	0.2
Unit 3 Basin Retaining wall	1.4	0.1
Unit 3 Basin Backfill, Compact and Grade	0.6	0.0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG Emissions Summary																								
	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	CO2 EmFac (lb/hr or lb/mi)	CH4 EmFac (lb/hr or lb/mi)	10/1/12	11/1/12	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13	6/1/13	7/1/13	8/1/13	9/1/13	10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
(1) Demolition																								
65 T Crane	1	8		86.192	0.009	5182	10365	8637	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		72.770	0.008	1459	11669	7293	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	3.897	0.000	78	312	156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		23.264	0.003	233	3734	1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		80.119	0.008	0	6423	6423	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		44.758	0.005	1346	3589	2243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	174.255	0.014	0	20945	41890	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	3.897	0.000	4680	4680	4680	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3.897	0.000	65516	150921	150921	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	27148	49268	49268	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(2) Site Prep																								
Parts Truck	1	4	10	3.897	0.000	0	0	0	9359	0	0	9359	0	0	9359	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	3.897	0.000	0	0	0	936	936	936	936	936	936	936	936	936	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	174.255	0.014	0	0	0	76798	76798	34908	34908	111705	34908	55853	0	34908	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		80.119	0.008	0	0	0	8831	8831	4014	4014	12845	4014	6423	4014	4014	0	0	0	0	0	0	0
Dozer, D6M	1	4		160.195	0.019	0	0	0	8832	8832	12847	12847	12847	0	6424	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		44.926	0.006	0	0	0	3605	0	7209	7209	0	5407	5407	0	5407	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		88.938	0.009	0	0	0	7131	891	7131	7131	891	5348	5348	891	5348	0	0	0	0	0	0	0
Dozer, D6M	1	4		160.195	0.019	0	0	0	12847	0	12847	12847	0	9635	9635	0	9635	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		86.192	0.009	0	0	0	0	13820	13820	0	13820	13820	0	13820	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		72.770	0.008	0	0	0	0	11669	11669	0	11669	11669	0	11669	0	0	0	0	0	0	0	0
Concrete Pump	1	2		49.607	0.007	0	0	0	0	1990	1990	0	1990	1990	0	1990	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		86.192	0.009	0	0	0	0	13820	13820	0	13820	13820	0	13820	0	0	0	0	0	0	0	0
Misc.	1	4		82.206	0.006	0	0	0	6586	6586	6586	6586	6586	6586	6586	6586	6586	0	0	0	0	0	0	0
Phase 2 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3.897	0.000	0	0	0	17783	33694	46095	57794	51945	40012	37438	38842	14039	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	0	0	0	22925	29762	33784	41024	40822	33583	39857	37605	51722	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion																								
Grader, Cat 14G	1	8		88.938	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		72.770	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	174.255	0.014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		39.341	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		49.607	0.007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 3 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities																								
Scissors Lift 20 ft	1	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	174.255	0.014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		72.770	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition																								
Parts Truck	1	4	10	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 gal Water Truck	1	6	2	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		80.119	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 T Crane	1	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		72.770	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG

	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	5/1/14	6/1/14	7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16
				20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
(1) Demolition																									
65 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(2) Site Prep																									
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion																									
Grader, Cat 14G	1	8		0	0	0	0	0	0	0	0	0	7131	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	0	0	0	0	0	0	0	0	0	4376	0	0	4376	0	0	0	4376	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	3734	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	0	0	0	0	0	0	0	0	0	13963	0	0	0	0	0	0	0	13963	0	0	0	0
Rock Wheel Trencher	1	8		0	0	0	0	0	0	0	0	0	0	4744	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	0	0	0	0	0	0	0	0	0	1990	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	5182	0	0	0	0	0	0	0	0
Phase 3 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	2340	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	160877	120657	88482	55502	34588	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities																									
Scissors Lift 20 ft	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition																									
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG																										
	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	3/1/16	4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17	1/1/18
				42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
(1) Demolition																										
65 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(2) Site Prep																										
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion																										
Grader, Cat 14G	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 3 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities																										
Scissors Lift 20 ft	1	8		0	0	0	0	233	233	0	233	0	233	0	233	233	0	233	0	467	233	0	233	233	0	233
10 Wheeler Dump Trucks	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1745
Cat950 Loader w/Forks	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	234
Personnel			miles/month	0	0	0	0	3218	3218	3218	4826	4826	1609	1609	1609	1609	1609	1609	804	402	804	1609	1609	804	804	402
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition																										
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19	11/1/19	12/1/19
				65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
(1) Demolition																										
65 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(2) Site Prep																										
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion																										
Grader, Cat 14G	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 3 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities																										
Scissors Lift 20 ft	1	8		233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	1745	1745	0	0	1745	1745	0	0	1745	1745	1745	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		0	729	0	0	729	729	0	0	729	729	729	0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	234	234	234	234	234	234	234	234	234	234	234	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	1609	1609	1609	402	402	402	1609	1609	1609	402	402	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition																										
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	0
4000 gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	936	936	936	936	936	936	936	936	936	0
Excavator, Komatsu PC 400	7	8		0	0	0	0	0	0	0	0	0	0	0	0	0	89918	89918	89918	89918	89918	89918	89918	89918	89918	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	13820	13820	13820	13820	13820	13820	13820	13820	13820	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	13820	13820	13820	13820	13820	13820	13820	13820	13820	0
500 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	13820	13820	13820	13820	13820	13820	13820	13820	13820	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	58345	58345	58345	58345	58345	58345	58345	58345	58345	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	18669	18669	18669	18669	18669	18669	18669	18669	18669	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG															
	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
				88	89	90	91	92	93	94	95	96	97	98	99
(1) Demolition															
65 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0
60 Ft Manlift	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Excavator	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Shear	1	8		0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0
40 Ft Flat Bed Trucks	2	8	10	0	0	0	0	0	0	0	0	0	0	0	0
Phase 1 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(2) Site Prep															
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0
4000 Gallon Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	4	8	10	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Misc.	1	4		0	0	0	0	0	0	0	0	0	0	0	0
Phase 2 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(3) Switchyard Expansion															
Grader, Cat 14G	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	1	6		0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	2	8		0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	1	8	10	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0
Phase 3 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(4) Unit 3 Pre-Demolition Activities															
Scissors Lift 20 ft	1	8		0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0
Cat950 Loader w/Forks	1	4		0	0	0	0	0	0	0	0	0	0	0	0
Phase 4 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(5) Unit 3 Demolition															
Parts Truck	1	4	10	0	0	0	0	0	0	0	0	0	0	0	0
4000 gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0
Excavator, Komatsu PC 400	7	8		0	0	0	0	0	0	0	0	0	0	0	0
Yard Crane, ATV	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0
500 T Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG Emissions Summary	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	CO2 EmFac (lb/hr or lb/mi)	CH4 EmFac (lb/hr or lb/mi)	10/1/12	11/1/12	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13	6/1/13	7/1/13	8/1/13	9/1/13	10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Phase 5 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall																								
Scissors lift 20 ft	5	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		72.770	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		63.607	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		49.607	0.007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade																								
Roller/Compactor	1	8		44.926	0.006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Blade	1	8		88.938	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		88.938	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		160.195	0.019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000Gal Water Truck	1	6	2	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 7 Peak Month				0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction																								
(i) Civil Earthwork																								
CAT 627F Scraper	6	8		175.872	0.018	0	0	0	0	0	0	0	0	0	84596	105745	169193	169193	169193	84596	84596	28199	14099	7050
CAT 14H Blade	3	8		88.938	0.009	0	0	0	0	0	0	0	0	0	28522	28522	42784	42784	42784	42784	28522	28522	14261	7131
MF 650B Skip	2	8		44.758	0.005	0	0	0	0	0	0	0	0	0	7179	10768	14358	14358	14358	14358	14358	14358	14358	14358
Water Truck	3	8	2	3.897	0.000	0	0	0	0	0	0	0	0	0	1248	2496	3744	3744	3744	3744	3744	3744	3744	3744
Kobelco 80 - Exc	2	8		80.119	0.008	0	0	0	0	0	0	0	0	0	12845	19268	25691	25691	25691	25691	25691	25691	25691	25691
10 Wheeler Dump Trucks	6	8	10	174.255	0.014	0	0	0	0	0	0	0	0	0	83779	104724	167558	167558	167558	167558	167558	167558	167558	167558
CAT 815F Compactor	4	8		44.926	0.006	0	0	0	0	0	0	0	0	0	7209	21628	28837	28837	28837	28837	28837	28837	28837	28837
CAT D6R Dozer	4	8		160.195	0.019	0	0	0	0	0	0	0	0	0	25695	77084	102778	102778	102778	102778	102778	102778	102778	102778
CAT TH103 Forklift	2	8		36.445	0.004	0	0	0	0	0	0	0	0	0	5843	8765	11686	11686	11686	11686	11686	11686	11686	11686
175 CFM Air Compressor	1	8		63.607	0.009	0	0	0	0	0	0	0	0	0	10207	10207	10207	10207	10207	10207	10207	10207	10207	10207
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	9359	9359	20123	20591	20123	36502	36970
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	161681	161681	181791	181791	197878	197878	197878
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(ii) Foundations																								
90-Ton Rough Terrain Crane	1	6		86.192	0.009	0	0	0	0	0	0	0	0	0	6910	6910	6910	6910	10365	10365	10365	10365	10365	10365
60-Ton Rough Terrain Crane	2	6		86.192	0.009	0	0	0	0	0	0	0	0	0	6910	10365	15547	17275	20729	20729	20729	20729	20729	20729
Scissors Lift 20 ft	4	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	1867	2800	12135	14935	14935	14935
1 Ton Parts Truck	1	6	1.3	3.897	0.000	0	0	0	0	0	0	0	0	0	416	416	416	416	624	624	624	624	624	624
175 CFM Air Compressor	2	8		63.607	0.009	0	0	0	0	0	0	0	0	0	2552	2552	5103	5103	10207	10207	10207	10207	10207	10207
Electric, Welding Machine 400 Amps	1	4		0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel																								
1-Ton Flatbed Truck	3	6	1.6	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	728	1456	1456	1456	2184	2184	2184
1-Ton Flatbed Truck w/Trailer	2	6	1.5	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	702	702	1404	1404	1404	1404	1404
6,000 # Forklift	2	8		36.445	0.004	0	0	0	0	0	0	0	0	0	0	0	0	5843	5843	5843	5843	5843	11686	11686
Electric, Welding Machine Six Pack	4	8		0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0	9784	19568	19568	19568	29352	39136	39136
90-Ton Rough Terrain Crane	4	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	13820	27639	41459	41459	41459	55279	55279
60-Ton Rough Terrain Crane	2	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	10365	10365	10365	27639	27639	27639	27639
Scissors Lift 20 ft	6	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	3734	7468	11202	14935	18669	18669	22403
SJ 600 Man Lifts 66 ft	8	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	3734	7468	14935	14935	18669	22403	26137
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG				5/1/14	6/1/14	7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16
	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall																									
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade																									
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Blade	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000Gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction																									
(i) Civil Earthwork																									
CAT 627F Scraper	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		7179	7179	7179	7179	3589	3589	3589	3589	1795	1795	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	3	8	2	3744	3744	3744	3744	3744	3744	3744	3744	3744	3744	0	0	0	0	0	0	0	0	0	0	0	0
Kobelco 80 - Exc	2	8		25691	25691	25691	25691	25691	25691	12845	12845	12845	12845	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	6	8	10	167558	167558	167558	167558	167558	167558	83779	73307	41890	20945	20945	10472	0	0	0	0	0	0	0	0	0	0
CAT 815F Compactor	4	8		28837	28837	18023	14418	14418	14418	7209	7209	3605	3605	3605	3605	1802	0	0	0	0	0	0	0	0	0
CAT D6R Dozer	4	8		102778	77084	77084	51389	51389	38542	25695	12847	12847	12847	12847	6424	0	0	0	0	0	0	0	0	0	0
CAT TH103 Forklift	2	8		11686	11686	11686	11686	11686	11686	11686	8765	5843	5843	5843	5843	2922	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		10207	10207	10207	10207	7655	7655	7655	7655	7655	7655	7655	3828	3828	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	29014	21995	21527	21059	16379	15443	4680	4680	4680	7020	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	286360	310492	310492	390930	390930	407018	407018	390930	411844	379669	295209	271881	180986	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(ii) Foundations																									
90-Ton Rough Terrain Crane	1	6		10365	10365	10365	10365	10365	6910	6910	5182	2591	2591	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	6		20729	20729	20729	20729	20729	20729	10365	10365	10365	10365	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	4	8		14935	14935	14935	14935	14935	14935	7468	3734	1867	1867	933	933	933	0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	624	624	624	624	624	624	624	624	624	624	312	312	208	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		10207	10845	19138	19138	19138	20414	10207	5103	5103	5103	3828	2552	1914	0	0	0	0	0	0	0	0	0
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel																									
1-Ton Flatbed Truck	3	6	1.6	2184	2184	1699	1456	728	728	485	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	1.5	1404	1404	1053	702	702	702	468	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		11686	11686	10956	9495	7304	5843	5843	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		29352	19568	19568	9784	9784	9784	9784	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		55279	41459	27639	13820	13820	13820	13820	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		27639	15547	13820	10365	10365	10365	10365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		22403	18669	14935	11202	3734	3734	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		29871	29871	22403	11202	3734	3734	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG

	Number of pieces of equipment	Op Hrs/WD/piece	Op miles/hr/vehicle	3/1/16	4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17	1/1/18
				42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall																										
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade																										
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Blade	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000Gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction																										
(i) Civil Earthwork																										
CAT 627F Scraper	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	3	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kobelco 80 - Exc	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	6	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 815F Compactor	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT D6R Dozer	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT TH103 Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(ii) Foundations																										
90-Ton Rough Terrain Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel																										
1-Ton Flatbed Truck	3	6	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG																										
	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19	11/1/19	12/1/19
				65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	2340	1404	24335	24335	10295	10295	47733	47733	71132	936	936	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	14881	15283	35393	35393	35393	35393	31773	31773	31773	31773	15685	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall																										
Scissors lift 20 ft	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20536
Loader/Forks Cat 966	5	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58345
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10207
Concrete Pump	1	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1990
Grove 25t Crane	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13820
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1638
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19707
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade																										
Roller/Compactor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Blade	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grader, Cat 14G	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer, D6M	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000Gal Water Truck	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction																										
(i) Civil Earthwork																										
CAT 627F Scraper	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	3	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kobelco 80 - Exc	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	6	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 815F Compactor	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT D6R Dozer	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT TH103 Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(ii) Foundations																										
90-Ton Rough Terrain Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel																										
1-Ton Flatbed Truck	3	6	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG				1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	88	89	90	91	92	93	94	95	96	97	98	99
Phase 5 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(6) Unit 3 Basin Retaining Wall															
Scissors lift 20 ft	5	8		20536	20536	0	0	0	0	0	0	0	0	0	0
Loader/Forks Cat 966	5	8		58345	58345	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		10207	10207	0	0	0	0	0	0	0	0	0	0
Concrete Pump	1	2		1990	1990	0	0	0	0	0	0	0	0	0	0
Grove 25t Crane	1	8		13820	13820	0	0	0	0	0	0	0	0	0	0
Phase 6 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3510	5616	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	19707	19707	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Demo	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(7) Unit 3 Basin Backfill, Compact & Grade															
Roller/Compactor	1	8		0	0	7209	7209	7209	7209	7209	7209	7209	7209	7209	0
Cat 14H Blade	1	8		0	0	14261	14261	14261	14261	14261	14261	14261	14261	14261	0
Grader, Cat 14G	1	4		0	0	7131	7131	7131	7131	7131	7131	7131	7131	7131	0
Dozer, D6M	1	4		0	0	12847	12847	12847	12847	12847	12847	12847	12847	12847	0
4000Gal Water Truck	1	6	2	0	0	936	936	936	936	936	936	936	936	936	0
Phase 7 Peak Month				0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	936	936	936	936	936	936	936	936	936	936
Personnel			miles/month	0	0	11664	11664	11664	11664	11664	11664	11664	11664	11664	11664
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(8) Plant Construction															
(i) Civil Earthwork															
CAT 627F Scraper	6	8		0	0	0	0	0	0	0	0	0	0	0	0
CAT 14H Blade	3	8		0	0	0	0	0	0	0	0	0	0	0	0
MF 650B Skip	2	8		0	0	0	0	0	0	0	0	0	0	0	0
Water Truck	3	8	2	0	0	0	0	0	0	0	0	0	0	0	0
Kobelco 80 - Exc	2	8		0	0	0	0	0	0	0	0	0	0	0	0
10 Wheeler Dump Trucks	6	8	10	0	0	0	0	0	0	0	0	0	0	0	0
CAT 815F Compactor	4	8		0	0	0	0	0	0	0	0	0	0	0	0
CAT D6R Dozer	4	8		0	0	0	0	0	0	0	0	0	0	0	0
CAT TH103 Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	1	8		0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(ii) Foundations															
90-Ton Rough Terrain Crane	1	6		0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	6		0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	4	8		0	0	0	0	0	0	0	0	0	0	0	0
1 Ton Parts Truck	1	6	1.3	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine 400 Amps	1	4		0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iii) Structural Steel															
1-Ton Flatbed Truck	3	6	1.6	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	2	6	1.5	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	2	8		0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	4	8		0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	4	8		0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	2	8		0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	8		0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG Emissions Summary																								
	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	CO2 EmFac (lb/hr or lb/mi)	CH4 EmFac (lb/hr or lb/mi)	10/1/12	11/1/12	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13	6/1/13	7/1/13	8/1/13	9/1/13	10/1/13	11/1/13	12/1/13	1/1/14	2/1/14	3/1/14	4/1/14
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iv) Mechanical																								
1-Ton Flatbed Truck	6	6	3.4	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	1612	3224	3224	3224	3224	4836	4836
1-Ton Flatbed Truck w/Trailer	4	6	1.4	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	663	663	663	663	663	663	1326
6,000 # Forklift	4	6		36.445	0.004	0	0	0	0	0	0	0	0	0	0	0	0	4382	4382	4382	4382	4382	4382	8765
Electric, Welding Machine Six Pack	8	8		0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0	4892	4892	9784	9784	9784	9784	19568
90-Ton Rough Terrain Crane	3	6		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	6910	10365	10365	10365	10365	20729	20729
60-Ton Rough Terrain Crane	3	6		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	6910	6910	10365	10365	10365	10365	15547
Scissors Lift 20 ft	8	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3734	3734	7468	11202	11202
SJ 600 Man Lifts 66 ft	8	8		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3734	8868
500 Ton Crane	3	8		86.192	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13820	13820	13820
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical																								
Backhoe	2	8		44.758	0.005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bobcat	3	8		20.286	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		63.607	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccum Trailers	2	6		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		39.341	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ec	3	8		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generators	4	8		60.993	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		23.264	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	2	6	10	174.255	0.014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ForkLift	3	6		36.445	0.004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	3.897	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0.803	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																								

GHG Emissions Summary				
Activity	**lbs CO2e/project**	**tons CO2e/project**	**metric tons (MT) CO2e/project**	**Amortized Project (30-year Project Lifetime)**
Tank Demolition	640925	320	291	10
Site Preparation	2991384	1496	1357	45
Plant Construction	20615196	10308	9349	312
Switchyard Expansion	3279831	1640	1487	50
Unit 3 Pre-Demolition	72275	36	33	1
Unit 3 Demolition	2474256	1237	1122	37
Unit 3 Basin Retaining wall	384582	192	174	6
Unit 3 Basin Backfill, Compact and Grade	507453	254	230	8
Project Summary	30965902	15483	14043	468

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG

	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	5/1/14	6/1/14	7/1/14	8/1/14	9/1/14	10/1/14	11/1/14	12/1/14	1/1/15	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	1/1/16	2/1/16
				20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iv) Mechanical																									
1-Ton Flatbed Truck	6	6	3.4	6448	7522	8597	9671	8060	6448	4836	3224	1612	1612	1612	1612	806	806	806	806	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	1.4	1326	1326	1878	2652	2652	1768	1326	884	442	221	221	221	221	221	221	221	0	0	0	0	0	0
6,000 # Forklift	4	6		10956	17529	17529	11686	8765	8765	8765	4382	4382	3652	2191	2191	2191	2191	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		29352	39136	39136	29352	19568	19568	9784	9784	9784	7338	7338	4892	4892	4892	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		31094	31094	20729	20729	17275	10365	10365	10365	10365	8637	8637	6910	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		31094	31094	20729	20729	19002	10365	10365	10365	10365	10365	6910	6910	6910	6910	5182	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		16802	16802	26604	29871	26604	21003	14002	11202	7001	3734	3734	3734	3734	1867	1867	1867	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		9801	16802	21003	29871	26604	21003	16802	11202	11202	7468	7468	5601	5601	5601	3734	1400	0	0	0	0	0	0
500 Ton Crane	3	8		13820	13820	27639	27639	27639	41459	41459	27639	13820	13820	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical																									
Backhoe	2	8		0	0	16152	16152	16152	16152	16152	16152	21536	21536	21536	32305	32305	32305	32305	26920	21536	21536	21536	0	0	0
Bobcat	3	8		0	0	3257	3257	3257	3257	3257	3257	3257	6513	6513	6513	6513	6513	6513	6513	2443	2443	1628	0	0	0
175 CFM Air Compressor	2	8		0	0	10207	10207	10207	10207	10207	10207	10207	10207	20414	20414	20414	20414	20414	20414	20414	20414	10207	0	0	0
Vaccum Trailers	2	6		7338	7338	7338	7338	11007	14676	14676	14676	14676	14676	14676	11007	11007	7338	3669	2446	2446	2446	0	0	0	0
Rock Wheel Trencher	2	6		4744	4744	4744	4744	7116	7116	7116	9488	9488	9488	7116	7116	4744	3163	3163	3163	3163	1581	791	0	0	0
Equipment Trailer (pullers, benders,ec	3	8		9784	9784	11007	11007	14676	14676	19568	19568	29352	29352	19568	14676	9784	9784	9784	9784	9784	4892	4892	0	0	0
Generators	4	8		19568	19568	29352	29352	29352	29352	39136	39136	39136	29352	22014	19568	14676	14676	9784	9784	9784	9784	7338	0	0	0
Scissors Lift 20 ft	6	6		2800	2800	2800	5601	8401	8401	11202	11202	14935	14935	16802	14935	11202	7468	5601	2800	2800	2800	1867	0	0	0
SJ 600 Man Lifts 66 ft	4	6		0	0	2800	2800	4201	5601	8401	8401	11202	11202	8401	8401	5601	2800	1400	1400	1400	1400	1400	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	208	208	173	173	208	208	277	312	416	624	624	624	416	208	139	104	104	104	104	0	0	0
Dump Truck	2	6	10	20945	20945	17454	17454	20945	27926	31417	34908	41890	41890	41890	41890	31417	17454	13963	10472	10472	10472	10472	0	0	0
ForkLift	3	6		4382	4382	4382	4382	4382	6574	8765	13147	13147	13147	13147	8765	6574	4382	2922	2922	2922	2922	2922	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																									

GHG Emissions Summary

Activity	lbs CO2e/project	tons CO2e/project	metric tons (MT) CO2e/project
Tank Demolition	640925	320	291
Site Preparation	2991384	1496	1357
Plant Construction	20615196	10308	9349
Switchyard Expansion	3279831	1640	1487
Unit 3 Pre-Demolition	72275	36	33
Unit 3 Demolition	2474256	1237	1122
Unit 3 Basin Retaining wall	384582	192	174
Unit 3 Basin Backfill, Compact and Grade	507453	254	230
Project Summary	30965902	15483	14043

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG

	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	3/1/16	4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17	1/1/18
				42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iv) Mechanical																										
1-Ton Flatbed Truck	6	6	3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 Ton Crane	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical																										
Backhoe	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bobcat	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccum Trailers	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ec	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generators	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	2	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ForkLift	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																										

GHG Emissions Summary

Activity	lbs CO2e/project	tons CO2e/project	metric tons (MT) CO2e/project
Tank Demolition	640925	320	291
Site Preparation	2991384	1496	1357
Plant Construction	20615196	10308	9349
Switchyard Expansion	3279831	1640	1487
Unit 3 Pre-Demolition	72275	36	33
Unit 3 Demolition	2474256	1237	1122
Unit 3 Basin Retaining wall	384582	192	174
Unit 3 Basin Backfill, Compact and Grade	507453	254	230
Project Summary	30965902	15483	14043

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG

	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	1/1/19	2/1/19	3/1/19	4/1/19	5/1/19	6/1/19	7/1/19	9/1/19	9/1/19	10/1/19	11/1/19	12/1/19
				65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iv) Mechanical																										
1-Ton Flatbed Truck	6	6	3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500 Ton Crane	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical																										
Backhoe	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bobcat	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccum Trailers	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ec	3	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Generators	4	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	2	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ForkLift	3	6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating																										

GHG Emissions Summary

Activity	lbs CO2e/project	tons CO2e/project	metric tons (MT) CO2e/project
Tank Demolition	640925	320	291
Site Preparation	2991384	1496	1357
Plant Construction	20615196	10308	9349
Switchyard Expansion	3279831	1640	1487
Unit 3 Pre-Demolition	72275	36	33
Unit 3 Demolition	2474256	1237	1122
Unit 3 Basin Retaining wall	384582	192	174
Unit 3 Basin Backfill, Compact and Grade	507453	254	230
Project Summary	30965902	15483	14043

Table A-5h: Generation Scenario 2 (Siemens Option) - GHG	Number of pieces of equipment	Op Hrs/WD/ piece	Op miles/hr/vehicle	1/1/20	2/1/20	3/1/20	4/1/20	5/1/20	6/1/20	7/1/20	8/1/20	9/1/20	10/1/20	11/1/20	12/1/20
				88	89	90	91	92	93	94	95	96	97	98	99
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(iv) Mechanical															
1-Ton Flatbed Truck	6	6	3.4	0	0	0	0	0	0	0	0	0	0	0	0
1-Ton Flatbed Truck w/Trailer	4	6	1.4	0	0	0	0	0	0	0	0	0	0	0	0
6,000 # Forklift	4	6		0	0	0	0	0	0	0	0	0	0	0	0
Electric, Welding Machine Six Pack	8	8		0	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel Compressor Combo	4	8		0	0	0	0	0	0	0	0	0	0	0	0
90-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0
60-Ton Rough Terrain Crane	3	6		0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	8	8		0	0	0	0	0	0	0	0	0	0	0	0
500 Ton Crane	3	8		0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(v) Electrical															
Backhoe	2	8		0	0	0	0	0	0	0	0	0	0	0	0
Bobcat	3	8		0	0	0	0	0	0	0	0	0	0	0	0
175 CFM Air Compressor	2	8		0	0	0	0	0	0	0	0	0	0	0	0
Vaccum Trailers	2	6		0	0	0	0	0	0	0	0	0	0	0	0
Rock Wheel Trencher	2	6		0	0	0	0	0	0	0	0	0	0	0	0
Equipment Trailer (pullers, benders,ec	3	8		0	0	0	0	0	0	0	0	0	0	0	0
Generators	4	8		0	0	0	0	0	0	0	0	0	0	0	0
Scissors Lift 20 ft	6	6		0	0	0	0	0	0	0	0	0	0	0	0
SJ 600 Man Lifts 66 ft	4	6		0	0	0	0	0	0	0	0	0	0	0	0
Service Trucks-Conductor Splicing	3	6	0.4	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	2	6	10	0	0	0	0	0	0	0	0	0	0	0	0
ForkLift	3	6		0	0	0	0	0	0	0	0	0	0	0	0
Truck Trips			Miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Personnel			miles/month	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive Dust - Soil	0.00E+00		Fugitive Dust - Equip	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Architectural Coating															

GHG Emissions Summary

Activity	lbs CO2e/project	tons CO2e/project	metric tons (MT) CO2e/project
Tank Demolition	640925	320	291
Site Preparation	2991384	1496	1357
Plant Construction	20615196	10308	9349
Switchyard Expansion	3279831	1640	1487
Unit 3 Pre-Demolition	72275	36	33
Unit 3 Demolition	2474256	1237	1122
Unit 3 Basin Retaining wall	384582	192	174
Unit 3 Basin Backfill, Compact and Grade	507453	254	230
Project Summary	30965902	15483	14043

Table 6a: SCAB Fleet Average Emission Factors (Diesel)

2012 Year

Air Basin **SC**

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**
Aerial Lifts	15	0.0068	0.0354	0.0430	0.0001	0.0020	0.0018	5.7973	0.0006
	25	0.0117	0.0346	0.0641	0.0001	0.0037	0.0034	7.3432	0.0011
	50	0.0435	0.1220	0.1284	0.0002	0.0113	0.0104	13.1405	0.0039
	120	0.0407	0.1642	0.2688	0.0003	0.0217	0.0200	25.5081	0.0037
	500	0.0855	0.3310	1.1090	0.0014	0.0329	0.0303	142.6135	0.0077
	750	0.1594	0.5983	2.0632	0.0026	0.0605	0.0556	257.7866	0.0144
Aerial Lifts Composite		0.0386	0.1324	0.2177	0.0003	0.0147	0.0135	23.2635	0.0035
Air Compressors	15	0.0129	0.0494	0.0768	0.0001	0.0052	0.0048	7.2231	0.0012
	25	0.0286	0.0779	0.1337	0.0002	0.0087	0.0080	14.4462	0.0026
	50	0.1010	0.2646	0.2310	0.0003	0.0239	0.0220	22.2713	0.0091
	120	0.0891	0.3287	0.5333	0.0006	0.0492	0.0453	46.9502	0.0080
	175	0.1135	0.5074	0.8954	0.0010	0.0512	0.0471	88.4831	0.0102
	250	0.1066	0.3052	1.2194	0.0015	0.0379	0.0349	131.2199	0.0096
	500	0.1709	0.5726	1.9077	0.0023	0.0623	0.0573	231.7415	0.0154
	750	0.2681	0.8849	3.0371	0.0036	0.0980	0.0901	358.1459	0.0242
	1000	0.4533	1.5617	5.4098	0.0049	0.1589	0.1462	486.3562	0.0409
Air Compressors Composite		0.0984	0.3445	0.6494	0.0007	0.0469	0.0432	63.6073	0.0089
Bore/Drill Rigs	15	0.0081	0.0423	0.0505	0.0001	0.0019	0.0018	6.9316	0.0007
	25	0.0130	0.0441	0.0826	0.0001	0.0036	0.0033	10.7124	0.0012
	50	0.0235	0.1564	0.1855	0.0003	0.0100	0.0092	20.7947	0.0021
	120	0.0344	0.3165	0.3368	0.0006	0.0220	0.0202	51.6716	0.0031
	175	0.0503	0.5050	0.5011	0.0011	0.0245	0.0226	94.5212	0.0045
	250	0.0561	0.2301	0.5844	0.0014	0.0180	0.0165	126.0282	0.0051
	500	0.0907	0.3702	0.8812	0.0020	0.0293	0.0269	208.5767	0.0082
	750	0.1799	0.7314	1.7634	0.0041	0.0579	0.0533	412.1125	0.0162
	1000	0.3009	1.1238	4.4303	0.0063	0.1138	0.1047	621.9495	0.0271
Bore/Drill Rigs Composite		0.0572	0.3395	0.6039	0.0012	0.0246	0.0226	110.5228	0.0052
Cement and Mortar Mixers	15	0.0075	0.0386	0.0475	0.0001	0.0023	0.0021	6.3202	0.0007
	25	0.0293	0.0852	0.1548	0.0002	0.0091	0.0083	17.5562	0.0026
Cement and Mortar Mixers Composite		0.0093	0.0425	0.0564	0.0001	0.0029	0.0027	7.2481	0.0008
Concrete/Industrial Saws	25	0.0199	0.0678	0.1261	0.0002	0.0050	0.0046	16.4777	0.0018
	50	0.1047	0.3015	0.2972	0.0004	0.0268	0.0246	30.2092	0.0094
	120	0.1155	0.4880	0.7625	0.0009	0.0639	0.0588	74.1498	0.0104
	175	0.1685	0.8723	1.4507	0.0018	0.0767	0.0706	160.2001	0.0152
Concrete/Industrial Saws Composite		0.1090	0.4148	0.5910	0.0007	0.0491	0.0452	58.4637	0.0098
Cranes	50	0.0738	0.1996	0.1660	0.0002	0.0173	0.0159	15.5351	0.0067
	120	0.0658	0.2446	0.3916	0.0004	0.0357	0.0329	33.5991	0.0059
	175	0.0729	0.3241	0.5534	0.0006	0.0321	0.0296	53.8309	0.0066
	250	0.0739	0.2079	0.7177	0.0008	0.0260	0.0239	75.1465	0.0067
	500	0.1095	0.3813	1.0269	0.0012	0.0383	0.0352	120.6679	0.0099
	750	0.1854	0.6401	1.7745	0.0020	0.0652	0.0600	203.0399	0.0167
	9999	0.6636	2.3929	7.3354	0.0065	0.2267	0.2086	650.3058	0.0599
Cranes Composite		0.0955	0.3314	0.8545	0.0009	0.0370	0.0341	86.1920	0.0086
Crawler Tractors	50	0.0845	0.2233	0.1818	0.0002	0.0194	0.0178	16.6693	0.0076
	120	0.0921	0.3287	0.5440	0.0005	0.0488	0.0449	44.0931	0.0083
	175	0.1178	0.5019	0.8874	0.0009	0.0513	0.0472	81.1958	0.0106
	250	0.1242	0.3501	1.1420	0.0013	0.0447	0.0411	111.3081	0.0112
	500	0.1782	0.6845	1.6022	0.0017	0.0631	0.0581	173.6837	0.0161
	750	0.3205	1.2226	2.9357	0.0031	0.1142	0.1051	311.3403	0.0289
	1000	0.4844	1.9402	5.2009	0.0044	0.1677	0.1543	440.9308	0.0437
Crawler Tractors Composite		0.1120	0.4054	0.8247	0.0008	0.0504	0.0463	76.3935	0.0101
Crushing/Proc. Equipment	50	0.1927	0.5215	0.4545	0.0006	0.0462	0.0425	44.0158	0.0174
	120	0.1525	0.5829	0.9172	0.0010	0.0851	0.0783	83.1410	0.0138
	175	0.2088	0.9654	1.6343	0.0019	0.0946	0.0870	167.2602	0.0188
	250	0.1953	0.5592	2.1896	0.0028	0.0682	0.0628	244.5324	0.0176
	500	0.2733	0.8961	2.9457	0.0037	0.0972	0.0894	373.6455	0.0247
	750	0.4361	1.3892	4.8387	0.0059	0.1560	0.1435	588.8340	0.0394
	9999	1.2112	4.0327	14.2648	0.0131	0.4203	0.3867	1307.7594	0.1093
Crushing/Proc. Equipment Composite		0.1872	0.6911	1.2633	0.0015	0.0819	0.0753	132.3097	0.0169
Dumpers/Tenders	25	0.0100	0.0324	0.0614	0.0001	0.0031	0.0029	7.6244	0.0009
Dumpers/Tenders Composite		0.0100	0.0324	0.0614	0.0001	0.0031	0.0029	7.6244	0.0009
Excavators	25	0.0133	0.0454	0.0840	0.0001	0.0032	0.0029	11.0149	0.0012
	50	0.0611	0.1965	0.1721	0.0002	0.0159	0.0146	16.7618	0.0055
	120	0.0792	0.3497	0.4891	0.0006	0.0441	0.0405	49.3275	0.0072
	175	0.0863	0.4474	0.6441	0.0008	0.0381	0.0351	75.1884	0.0078
	250	0.0872	0.2432	0.8334	0.0012	0.0278	0.0256	106.3174	0.0079
	500	0.1209	0.3680	1.0795	0.0015	0.0385	0.0354	156.6027	0.0109
	750	0.2019	0.6094	1.8496	0.0026	0.0649	0.0597	259.5678	0.0182
Excavators Composite		0.0871	0.3619	0.6578	0.0009	0.0359	0.0330	80.1192	0.0079
Forklifts	50	0.0344	0.1127	0.0997	0.0001	0.0091	0.0084	9.8302	0.0031
	120	0.0328	0.1471	0.2021	0.0002	0.0186	0.0171	20.9207	0.0030
	175	0.0418	0.2214	0.3125	0.0004	0.0186	0.0172	37.5564	0.0038

Table 6a: SCAB Fleet Average Emission Factors (Diesel)

2012 Year

Air Basin **SC**

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**
	250	0.0398	0.1098	0.3935	0.0006	0.0125	0.0115	51.6716	0.0036
	500	0.0540	0.1502	0.4862	0.0007	0.0169	0.0155	74.3567	0.0049
Forklifts Composite		0.0392	0.1512	0.2901	0.0004	0.0154	0.0142	36.4452	0.0035
Generator Sets	15	0.0157	0.0698	0.1063	0.0002	0.0061	0.0056	10.2077	0.0014
	25	0.0276	0.0951	0.1632	0.0002	0.0096	0.0088	17.6314	0.0025
	50	0.0959	0.2734	0.2966	0.0004	0.0255	0.0234	30.6230	0.0087
	120	0.1206	0.4956	0.8099	0.0009	0.0640	0.0589	77.9494	0.0109
	175	0.1460	0.7413	1.3131	0.0016	0.0644	0.0593	141.9793	0.0132
	250	0.1372	0.4502	1.8047	0.0024	0.0508	0.0467	212.5050	0.0124
	500	0.1952	0.7617	2.5896	0.0033	0.0756	0.0696	336.8528	0.0176
	750	0.3257	1.2296	4.3019	0.0055	0.1241	0.1142	543.7900	0.0294
	9999	0.8673	3.0642	10.8871	0.0105	0.3104	0.2856	1048.6052	0.0783
Generator Sets Composite		0.0832	0.3121	0.5779	0.0007	0.0351	0.0323	60.9927	0.0075
Graders	50	0.0792	0.2254	0.1931	0.0002	0.0191	0.0176	18.4505	0.0071
	120	0.0903	0.3588	0.5509	0.0006	0.0496	0.0456	50.2264	0.0081
	175	0.1041	0.4933	0.7994	0.0009	0.0461	0.0424	83.0274	0.0094
	250	0.1055	0.3020	1.0281	0.0013	0.0366	0.0337	115.3159	0.0095
	500	0.1304	0.4448	1.2189	0.0015	0.0449	0.0413	153.7545	0.0118
	750	0.2779	0.9395	2.6534	0.0033	0.0964	0.0887	325.4469	0.0251
Graders Composite		0.1027	0.4106	0.8377	0.0010	0.0435	0.0400	88.9379	0.0093
Off-Highway Tractors	120	0.1490	0.4870	0.8686	0.0007	0.0766	0.0705	62.8041	0.0134
	175	0.1431	0.5631	1.0777	0.0010	0.0618	0.0569	87.3796	0.0129
	250	0.1151	0.3280	1.0239	0.0010	0.0432	0.0397	87.3796	0.0104
	750	0.4565	2.0692	4.1149	0.0038	0.1685	0.1550	380.6473	0.0412
	1000	0.6865	3.2252	7.0404	0.0055	0.2425	0.2231	545.5765	0.0619
Off-Highway Tractors Composite		0.1454	0.5278	1.2039	0.0011	0.0584	0.0537	101.4640	0.0131
Off-Highway Trucks	175	0.1027	0.5088	0.7418	0.0009	0.0446	0.0411	83.8088	0.0093
	250	0.0984	0.2643	0.9054	0.0013	0.0309	0.0284	111.5854	0.0089
	500	0.1516	0.4463	1.3041	0.0018	0.0473	0.0435	182.4637	0.0137
	750	0.2475	0.7231	2.1850	0.0030	0.0780	0.0718	295.9647	0.0223
	1000	0.3879	1.1962	4.2896	0.0042	0.1295	0.1191	418.5650	0.0350
Off-Highway Trucks Composite		0.1501	0.4446	1.3506	0.0018	0.0479	0.0440	174.2553	0.0135
Other Construction Equipment	15	0.0079	0.0413	0.0494	0.0001	0.0019	0.0017	6.7719	0.0007
	25	0.0107	0.0365	0.0683	0.0001	0.0030	0.0027	8.8556	0.0010
	50	0.0564	0.1836	0.1814	0.0002	0.0153	0.0141	18.7530	0.0051
	120	0.0740	0.3565	0.5051	0.0006	0.0424	0.0390	54.1753	0.0067
	175	0.0675	0.3940	0.5761	0.0008	0.0313	0.0288	71.3656	0.0061
	500	0.1017	0.3636	1.1104	0.0017	0.0365	0.0336	170.3398	0.0092
Other Construction Equipment Composite		0.0620	0.2578	0.5762	0.0008	0.0245	0.0226	82.2062	0.0056
Other General Industrial Equipme	15	0.0044	0.0262	0.0312	0.0001	0.0012	0.0011	4.2850	0.0004
	25	0.0124	0.0423	0.0784	0.0001	0.0030	0.0028	10.2839	0.0011
	50	0.0727	0.1913	0.1562	0.0002	0.0170	0.0156	14.5689	0.0066
	120	0.0854	0.3043	0.4876	0.0005	0.0471	0.0433	41.5641	0.0077
	175	0.0904	0.3857	0.6701	0.0007	0.0401	0.0369	64.2744	0.0082
	250	0.0827	0.2198	0.8699	0.0010	0.0279	0.0257	90.8412	0.0075
	500	0.1496	0.4537	1.4986	0.0017	0.0508	0.0467	177.8259	0.0135
	750	0.2484	0.7478	2.5471	0.0029	0.0853	0.0785	293.0914	0.0224
	1000	0.3766	1.2364	4.2892	0.0038	0.1304	0.1200	374.9341	0.0340
Other General Industrial Equipmen Composi		0.1096	0.3592	0.9729	0.0011	0.0424	0.0390	102.0007	0.0099
Other Material Handling Equipme	50	0.1009	0.2647	0.2173	0.0003	0.0236	0.0217	20.3242	0.0091
	120	0.0830	0.2963	0.4759	0.0005	0.0459	0.0422	40.6483	0.0075
	175	0.1141	0.4886	0.8513	0.0009	0.0508	0.0468	81.7923	0.0103
	250	0.0874	0.2342	0.9288	0.0011	0.0297	0.0273	97.1594	0.0079
	500	0.1066	0.3267	1.0803	0.0013	0.0365	0.0336	128.3892	0.0096
	9999	0.5003	1.6345	5.6695	0.0049	0.1719	0.1581	496.7026	0.0451
Other Material Handling Equipment Composi		0.1049	0.3422	0.9464	0.0010	0.0410	0.0378	94.6000	0.0095
Pavers	25	0.0171	0.0544	0.1026	0.0002	0.0054	0.0050	12.5020	0.0015
	50	0.0972	0.2466	0.2035	0.0002	0.0219	0.0201	18.7530	0.0088
	120	0.0983	0.3422	0.5888	0.0005	0.0520	0.0478	46.3616	0.0089
	175	0.1249	0.5248	0.9712	0.0010	0.0548	0.0505	85.9513	0.0113
	250	0.1462	0.4264	1.3868	0.0015	0.0548	0.0504	130.2292	0.0132
	500	0.1597	0.6671	1.5020	0.0015	0.0592	0.0544	156.2750	0.0144
Pavers Composite		0.1069	0.3648	0.6016	0.0006	0.0430	0.0396	52.2160	0.0096

Table 6a: SCAB Fleet Average Emission Factors (Diesel)

2012 Year

Air Basin **SC**

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**
Paving Equipment	25	0.0103	0.0348	0.0652	0.0001	0.0028	0.0026	8.4607	0.0009
	50	0.0830	0.2093	0.1736	0.0002	0.0187	0.0172	16.0308	0.0075
	120	0.0770	0.2678	0.4621	0.0004	0.0408	0.0376	36.5146	0.0069
	175	0.0975	0.4097	0.7627	0.0008	0.0429	0.0394	67.6856	0.0088
	250	0.0904	0.2644	0.8694	0.0009	0.0340	0.0312	81.9351	0.0082
Paving Equipment Composite		0.0807	0.2924	0.5436	0.0005	0.0382	0.0352	46.1922	0.0073
Plate Compactors	15	0.0050	0.0263	0.0314	0.0001	0.0013	0.0012	4.3138	0.0005
Plate Compactors Composite		0.0050	0.0263	0.0314	0.0001	0.0013	0.0012	4.3138	0.0005
Pressure Washers	15	0.0075	0.0334	0.0509	0.0001	0.0029	0.0027	4.8906	0.0007
	25	0.0112	0.0385	0.0662	0.0001	0.0039	0.0036	7.1479	0.0010
	50	0.0349	0.1074	0.1339	0.0002	0.0102	0.0094	14.2957	0.0032
	120	0.0332	0.1458	0.2385	0.0003	0.0172	0.0158	24.0770	0.0030
Pressure Washers Composite		0.0173	0.0635	0.0921	0.0001	0.0063	0.0058	9.4135	0.0016
Pumps	15	0.0133	0.0508	0.0790	0.0001	0.0054	0.0050	7.4238	0.0012
	25	0.0386	0.1051	0.1803	0.0002	0.0117	0.0108	19.4874	0.0035
	50	0.1155	0.3229	0.3362	0.0004	0.0299	0.0275	34.3348	0.0104
	120	0.1250	0.5036	0.8226	0.0009	0.0669	0.0615	77.9494	0.0113
	175	0.1498	0.7431	1.3164	0.0016	0.0664	0.0611	140.1234	0.0135
	250	0.1357	0.4345	1.7375	0.0023	0.0501	0.0461	201.3693	0.0122
	500	0.2089	0.8032	2.6861	0.0034	0.0803	0.0739	345.2046	0.0188
	750	0.3557	1.3279	4.5700	0.0057	0.1350	0.1242	570.7010	0.0321
	9999	1.1456	4.0641	14.2305	0.0136	0.4081	0.3754	1354.8351	0.1034
Pumps Composite		0.0813	0.2983	0.4999	0.0006	0.0351	0.0323	49.6067	0.0073
Rollers	15	0.0049	0.0259	0.0309	0.0001	0.0012	0.0011	4.2345	0.0004
	25	0.0108	0.0368	0.0689	0.0001	0.0030	0.0028	8.9396	0.0010
	50	0.0740	0.2006	0.1794	0.0002	0.0176	0.0162	17.4087	0.0067
	120	0.0706	0.2746	0.4435	0.0005	0.0385	0.0354	39.5225	0.0064
	175	0.0885	0.4167	0.7186	0.0008	0.0396	0.0364	72.4578	0.0080
	250	0.0903	0.2736	0.9449	0.0012	0.0334	0.0307	102.5702	0.0081
	500	0.1176	0.4524	1.2122	0.0014	0.0437	0.0402	146.7977	0.0106
Rollers Composite		0.0695	0.2751	0.4647	0.0005	0.0327	0.0301	44.9260	0.0063
Rough Terrain Forklifts	50	0.0881	0.2619	0.2315	0.0003	0.0221	0.0204	22.6851	0.0079
	120	0.0695	0.2924	0.4305	0.0005	0.0392	0.0361	41.8414	0.0063
	175	0.0967	0.4870	0.7507	0.0009	0.0437	0.0402	83.6828	0.0087
	250	0.0907	0.2610	0.9435	0.0013	0.0307	0.0282	114.4336	0.0082
	500	0.1269	0.4010	1.2446	0.0017	0.0430	0.0396	171.9025	0.0114
Rough Terrain Forklifts Composite		0.0732	0.3136	0.4687	0.0005	0.0393	0.0362	47.0881	0.0066
Rubber Tired Dozers	175	0.1480	0.5714	1.0924	0.0010	0.0633	0.0582	86.7494	0.0134
	250	0.1705	0.4773	1.4730	0.0014	0.0631	0.0581	122.9364	0.0154
	500	0.2241	1.0198	1.9311	0.0017	0.0811	0.0746	177.4646	0.0202
	750	0.3378	1.5282	2.9547	0.0027	0.1227	0.1129	267.1883	0.0305
	1000	0.5231	2.4558	5.2137	0.0040	0.1828	0.1682	396.5689	0.0472
Rubber Tired Dozers Composite		0.2086	0.8369	1.8000	0.0016	0.0762	0.0701	160.1954	0.0188
Rubber Tired Loaders	25	0.0137	0.0467	0.0868	0.0001	0.0035	0.0032	11.3425	0.0012
	50	0.0881	0.2517	0.2172	0.0003	0.0214	0.0197	20.8703	0.0079
	120	0.0700	0.2806	0.4291	0.0005	0.0386	0.0355	39.4721	0.0063
	175	0.0879	0.4213	0.6790	0.0008	0.0391	0.0359	71.2312	0.0079
	250	0.0891	0.2571	0.8797	0.0011	0.0310	0.0285	99.8144	0.0080
	500	0.1314	0.4526	1.2432	0.0016	0.0454	0.0418	158.7956	0.0119
	750	0.2710	0.9254	2.6207	0.0033	0.0944	0.0868	325.3042	0.0244
	1000	0.3672	1.3094	4.2436	0.0040	0.1279	0.1177	397.8965	0.0331
Rubber Tired Loaders Composite		0.0852	0.3253	0.6723	0.0008	0.0374	0.0344	72.7702	0.0077
Scrapers	120	0.1333	0.4698	0.7872	0.0007	0.0706	0.0650	62.9133	0.0120
	175	0.1455	0.6136	1.1007	0.0011	0.0633	0.0583	99.2094	0.0131
	250	0.1586	0.4488	1.4639	0.0016	0.0575	0.0529	140.3451	0.0143
	500	0.2233	0.8710	2.0208	0.0021	0.0798	0.0734	215.3572	0.0202
	750	0.3872	1.4995	3.5665	0.0037	0.1390	0.1279	372.0353	0.0349
Scrapers Composite		0.1953	0.7359	1.7206	0.0018	0.0728	0.0670	175.8722	0.0176
Signal Boards	15	0.0072	0.0377	0.0450	0.0001	0.0017	0.0016	6.1697	0.0006
	50	0.1270	0.3587	0.3564	0.0005	0.0324	0.0298	36.1908	0.0115
	120	0.1284	0.5269	0.8360	0.0009	0.0703	0.0647	80.2066	0.0116
	175	0.1661	0.8370	1.4268	0.0017	0.0750	0.0690	154.5445	0.0150
	250	0.1746	0.5516	2.1599	0.0029	0.0639	0.0588	255.2919	0.0158
Signal Boards Composite		0.0203	0.0940	0.1470	0.0002	0.0083	0.0076	16.6983	0.0018
Skid Steer Loaders	25	0.0141	0.0426	0.0797	0.0001	0.0045	0.0041	9.2421	0.0013
	50	0.0399	0.1562	0.1609	0.0002	0.0121	0.0111	17.0978	0.0036
	120	0.0323	0.1855	0.2369	0.0003	0.0192	0.0176	28.6504	0.0029
Skid Steer Loaders Composite		0.0358	0.1581	0.1800	0.0003	0.0139	0.0127	20.2864	0.0032
Surfacing Equipment	50	0.0344	0.0965	0.0945	0.0001	0.0086	0.0079	9.4521	0.0031
	120	0.0697	0.2848	0.4620	0.0005	0.0373	0.0344	42.7236	0.0063
	175	0.0636	0.3179	0.5490	0.0006	0.0283	0.0260	57.4689	0.0057
	250	0.0734	0.2363	0.8035	0.0010	0.0277	0.0255	90.3623	0.0066

Table 6a: SCAB Fleet Average Emission Factors (Diesel)

2012 Year

Air Basin **SC**

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**
	500	0.1093	0.4565	1.1939	0.0015	0.0416	0.0383	148.2092	0.0099
	750	0.1743	0.7142	1.9190	0.0023	0.0661	0.0608	232.5221	0.0157
Surfacing Equipment Composite		0.0912	0.3663	0.9164	0.0011	0.0343	0.0316	111.2105	0.0082
Sweepers/Scrubbers	15	0.0083	0.0488	0.0583	0.0001	0.0023	0.0021	7.9986	0.0007
	25	0.0159	0.0541	0.1006	0.0002	0.0040	0.0037	13.1405	0.0014
	50	0.0801	0.2388	0.2130	0.0003	0.0203	0.0186	21.1391	0.0072
	120	0.0826	0.3487	0.5048	0.0006	0.0473	0.0435	50.2769	0.0075
	175	0.1055	0.5365	0.8182	0.0010	0.0480	0.0442	93.1265	0.0095
	250	0.0807	0.2309	0.8723	0.0012	0.0269	0.0248	108.5523	0.0073
Sweepers/Scrubbers Composite		0.0856	0.3494	0.4960	0.0006	0.0386	0.0355	52.6240	0.0077
Tractors/Loaders/Backhoes	25	0.0133	0.0443	0.0837	0.0001	0.0041	0.0038	10.6284	0.0012
	50	0.0674	0.2214	0.2030	0.0003	0.0179	0.0164	20.3326	0.0061
	120	0.0509	0.2383	0.3290	0.0004	0.0289	0.0266	34.6578	0.0046
	175	0.0709	0.3930	0.5557	0.0008	0.0320	0.0295	67.9292	0.0064
	250	0.0847	0.2516	0.8585	0.0013	0.0278	0.0256	115.0638	0.0076
	500	0.1599	0.5168	1.5156	0.0026	0.0525	0.0483	231.0519	0.0144
	750	0.2419	0.7747	2.3521	0.0039	0.0803	0.0739	346.5776	0.0218
Tractors/Loaders/Backhoes Composite		0.0577	0.2562	0.3897	0.0005	0.0292	0.0268	44.7580	0.0052
Trenchers	15	0.0066	0.0346	0.0413	0.0001	0.0016	0.0015	5.6713	0.0006
	25	0.0267	0.0908	0.1688	0.0003	0.0067	0.0062	22.0549	0.0024
	50	0.1109	0.2798	0.2369	0.0003	0.0250	0.0230	22.0549	0.0100
	120	0.0907	0.3170	0.5532	0.0005	0.0475	0.0437	43.4797	0.0082
	175	0.1373	0.5825	1.0925	0.0011	0.0604	0.0555	96.4116	0.0124
	250	0.1664	0.4970	1.5982	0.0017	0.0637	0.0586	149.3435	0.0150
	500	0.2100	0.9387	2.0247	0.0020	0.0797	0.0734	208.5767	0.0189
	750	0.3986	1.7626	3.8883	0.0040	0.1513	0.1392	393.2081	0.0360
Trenchers Composite		0.1010	0.3182	0.4687	0.0005	0.0390	0.0359	39.3408	0.0091
Welders	15	0.0111	0.0425	0.0660	0.0001	0.0045	0.0042	6.2074	0.0010
	25	0.0224	0.0609	0.1044	0.0001	0.0068	0.0062	11.2861	0.0020
	50	0.1071	0.2854	0.2637	0.0003	0.0260	0.0239	25.9581	0.0097
	120	0.0708	0.2687	0.4376	0.0005	0.0387	0.0356	39.5014	0.0064
	175	0.1183	0.5475	0.9688	0.0011	0.0531	0.0489	98.1892	0.0107
	250	0.0909	0.2704	1.0791	0.0013	0.0329	0.0303	119.0685	0.0082
	500	0.1154	0.4072	1.3538	0.0016	0.0431	0.0396	167.5987	0.0104
Welders Composite		0.0703	0.2150	0.2702	0.0003	0.0243	0.0224	25.6027	0.0063
Fugitive Dust - Soil		0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000
Fugitive Dust - Demo		0.0000	0.0000	0.0000	0.0000	0.0022	0.0005	0.0000	0.0000
Fugitive dust - Equip		0.0000	0.0000	0.0000	0.0000	0.1356	0.0282	0.0000	0.0000
HHD-Diesel Trucks		1.71E-03	7.95E-03	2.98E-02	3.74E-05	1.39E-03	1.16E-03	3.90E+00	1.17E-04
Offsite HHD-Diesel Trucks		**1.71E-03**	**7.95E-03**	**2.98E-02**	**3.74E-05**	**1.39E-03**	**1.16E-03**	**3.90E+00**	**1.17E-04**
Offsite Passenger Vehicle		**6.19E-04**	**5.52E-03**	**4.58E-04**	**8.53E-06**	**1.07E-04**	**4.63E-05**	**8.03E-01**	**7.17E-05**

Highest (Most Conservative) EMFAC2007 (version 2.3)
Emission Factors for On-Road Passenger Vehicles & Delivery Trucks
Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

Vehicle Class:
Passenger Vehicles (<8500 pounds) & Delivery Trucks (>8500 pounds)

Scenario Year: 2012
All model years in the range 1968 to 2012

	Passenger Vehicles (pounds/mile)							
Common Name	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**
On-Road Passenger Vehicle	**7.96E-04**	**7.65E-03**	**7.76E-04**	**1.07E-05**	**8.98E-05**	**5.75E-05**	**1.10E+00**	**7.17E-05**

	Delivery Trucks (pounds/mile)							
	ROG	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**
On-Road Delivery Truck	**2.24E-03**	**1.55E-02**	**1.73E-02**	**2.67E-05**	**6.50E-04**	**5.50E-04**	**2.77E+00**	**1.07E-04**

Table 6a: SCAB Fleet Average Emission Factors (Diesel)

2012 Year

Air Basin **SC**

Equipment	MaxHP	(lb/hr) ROG	(lb/hr) CO	(lb/hr) NOX	(lb/hr) SOX	(lb/hr) PM10	(lb/hr) PM2.5	(lb/hr) CO2	(lb/hr) CH4

Highest (Most Conservative) EMFAC2007 (version 2.3)
Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks
Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)
Scenario Year: 2012
All model years in the range 1968 to 2012

	HHDT-DSL (pounds/mile)							
Common Name	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4
Heavy Heavy Duty Diesel Truck	0	0.01021519	0.03092379	0.00004042	1.50E-03	0.00129354	4.21590774	0.00011651

	HHDT-DSL, Exh (pounds/mile)							
	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4
Heavy Heavy Duty Diesel Truck					0.00135537	0.00124837		

Table 6b: Earthwork and Fugitive PM Emission Factors

Demolition Debris Handling			
Uncontrolled PM10 Emission Factor	0.00042	lbs/cu. ft of demolished material	http://www.urbemis.com/software/URBEMIS9%20Users%20Manual%20Appendices.pdf
Density of Demolished Material	0.07	Tons/cu. ft concrete	Asumming that the demolished material is mainly concrete.
PM2.5 Fraction of PM10 in Construction Dust	0.208		SCAQMD Appendix A - Updated CEIDARS List with PM2.5 Fractions (www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html
Control Efficiency	61%		Control efficiency of 61% applied to account for BMPs employed per SCAQMD Rule 403, such as site watering.
Controlled PM10 Emission Factor	**0.0022**	**lb/ton of demolished material**	
Controlled PM2.5 Emission Factor	**0.0005**	**lb/ton of demolished material**	

Soil handling

Emission Factor [lb/cu. yd] = 0.00112 x (mean wind speed [mi/hr] / 5)$^{1.3}$ / (moisture [%] / 2)$^{1.4}$ x (number drops per ton) x (density [ton/cu. yd])

Reference: AP-42, Equation (1), Section 13.2.4, January 199

Table A Soil Handling Reference Data		
Parameter	**Value**	**Basis**
Mean Wind Speed	12	SCAQMD 1993 CEQA Air Quality Handbook, Default
Moisture	15	SCAQMD 1993 CEQA Air Quality Handbook, Moist Soil
Number Drops	2	Assumption - 2 drops each for cutting and filling operation
Soil Density	1.215	Table 2.46, Handbook of Solid Waste Management

Table B Soil Handling Emission Factors		
PM10 Emission Factor (Uncontrolled	5.06E-04	lb/cu. yd
Reduction from watering[a]	61%	
Controlled PM10 Emission Factor	**1.97E-04**	**lb/cu. yd**
Controlled PM2.5 Emission Factor[b]	**4.10E-05**	**lb/cu. yd**

Notes:

[a] The assumed moisture content is based on frequent watering of exposed surfaces. Assumed no control efficiency for watering so as to not double count.

[b] PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emissions [pounds per day] = Controlled emission factor [pounds per cubic yard] x Volume soil handled [cubic yards per day]

Table 6b: Earthwork and Fugitive PM Emission Factors

Bulldozing, Scraping and Grading

Emission Factor [lb/hr] = 0.75 x (silt content [%])$^{1.5}$ / (moisture)$^{1.4}$

Reference: AP-42, Table 11.9-1, October 1998

Table 4 Bulldozing, Scraping and Grading Reference Data			
Parameter	**Value**	**Units**	**Basis**
Silt Content	7.5	%	SCAQMD 1993 CEQA Air Quality Handbook, Overburden
Moisture	15	%	SCAQMD 1993 CEQA Air Quality Handbook, Moist Soil

Table 4 Bulldozing, Scraping and Grading Emission Factors		
PM10 Emission Factor (Uncontrolled)	0.348	lb/hr
Reduction from watering[e]	61%	
Controlled PM10 Emission Factor	**0.136**	**lb/hr**
Controlled PM2.5 Emission Factor[f]	**0.028**	**lb/hr**

Notes:

[e] The assumed moisture content is based on frequent watering of exposed surfaces. Assumed no control efficiency for watering so as to not double count.

[f] PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emissions [pounds per day] = Controlled emission factor [pounds per hour] x Bulldozing or grading time [hours/day]

Appendix B

Operational Emissions

LADWP Scattergood Generation Station Unit 3 Repowering Project

Appendix B - Operational Emissions

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Existing (Baseline) Conditions - Unit 1 Peak Daily Emissions Summary (lb/day)

Table B-1a: Existing (Baseline) Conditions - Unit 1 Peak Daily Emissions (lb/day)[1]

Description	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Combustion (Natural Gas)	1312.1	108.9	---	28.8	197.1	197.1
Combustion (Digester Gas)	25.2	75.7	---	126.1	50.4	50.4
Peak Daily Emissions	1,337.3	184.6	508.1	154.9	247.5	247.5

Notes:

1. Emissions calculated using the following equation:

E = EmFac (lb/MMscf) x Fuel Throughput (MMscf/day)

Where: E = emissions, lb/day

Emfac = emission factor (lb/MMscf)

lb/MMscf = pounds per million standard cubic foot

Table B-1b: Criteria Pollutant Emission Factors and Fuel Throughput (Unit 1)

Fuel	Criteria Pollutant Emissions Factors (lb/MMscf)						Fuel Thoughput (MMscf/day)[5]
	VOC[1,2]	CO[1,2]	NOx[3]	SOx[1,2]	PM_{10}[2,4]	$PM_{2.5}$[2,4]	
Natural Gas	50.60	4.20	---	1.11	7.60	7.60	25.93
Digester Gas	6.50	19.50	---	32.50	13.00	13.00	3.88

Notes:

1. Natural gas emission factors based on most recent source testing for CO (9/23/10), VOCs and SOx (7/11/02).
2. Digester gas emission factors based on source testing of 14 boilers burning digester gas in the SCAQMD, as provided by LADWP for annual emissions reporting.
3. NOx emissions based on continuous emissions monitoring (CEMS) data, representative of peak daily throughput (9/23/10)
4. Natural gas emission factors for PM_{10} and $PM_{2.5}$ obtained from AP-42, Chapter 1.4 Natural Gas Combustion, Table 1.4-2, and represent total particulate matter (TPM).
5. Natural gas and digester gas fuel usage based on peak NOx emissions, recorded on 9/23/2010.

Existing (Baseline) Conditions - Unit 3 Peak Daily Emissions Summary (lb/day)

Table B-2: Existing (Baseline) Condition - Unit 3 Peak Daily Emissions						
Pollutant	**VOC[1]**	**CO[1]**	**NOx[2]**	**SOx[1]**	**PM_{10}[3]**	**$PM_{2.5}$[3]**
Emission Factor (lb/MMscf)	1.26	115.51	---	0.32	7.60	7.60
Emissions Summary (lb/day)[4]	93.7	8,587.6	896.6	23.8	565.0	565.0

Fuel Throughput[5]	74.35	MMscf/day

Notes:

1. Natural gas emission factors based on source testing for CO (5/7/08), VOCs and SOx (9/20/01).

2. NOx emissions based on CEMS data (8/11/10)

3. Natural gas emission factors for PM10 and PM2.5 obtained from AP-42, Chapter 1.4 Natural Gas Combustion, Table 1.4-2, and represent total particulate matter (TPM).

4. Emissions calculated using the following equation:

E = EmFac (lb/MMscf) x Fuel Throughput (MMscf/day)

Where: E = emissions, lb/day

Emfac = emission factor (lb/MMscf)

lb/MMscf = pounds per million standard cubic foot

5. Natural gas fuel use usage based on August 11, 2010.

Generation Scenario 1 (GE Option) Operational Emissions Summary

Table B-3a: Peak Daily Emissions Summary - CCGS, lb/day[1]						
Mode Type	Criteria Pollutants					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Cold	20.00	376.00	111.00	3.23	30.00	30.00
Non-Cold	7.00	213.00	50.00	1.71	16.00	16.00
Shutdown	29.34	239.78	69.36	1.98	16.68	16.68
Normal	96.74	169.34	278.33	22.47	167.67	167.67
Peak Daily Emissions - CCGS, lb/day =	153.08	998.12	508.69	29.39	230.35	230.35

Notes:

1. Emissions calculated by multipling emission factor (Table B3b) x operating parameter (Table B3c)

Table B-3b: Emission Factors for CCGS[1]							
Operational Parameter	Criteria Pollutants						
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	Unit
Cold Start (166 minutes)	20.00	376.00	111.00	3.23	30.00	30.00	lb/event
Non Cold Start (88 minutes)	7.00	213.00	50.00	1.71	16.00	16.00	lb/event
Normal Operation at 23 deg F, 100% load, without EC	5.77	10.10	16.60	1.34	10.00	10.00	lb/hr
Shutdown (1 hour)	14.67	119.89	34.68	0.99	8.34	8.34	lb/event

Notes:

1. Emission factors obtained from GE manufacturer's specifications.

Table B-3c: Supplemental Information - CCGS Operating Parameters[1]			
Mode Type	Peak Daily		Minutes/day
	Factor	Unit	
Cold	1	event/day	166
Non-Cold	1	event/day	88
Normal	16.8	hours/day	1,006
Shutdown	2	event/day	120
Out of Service*	2	event/day	60
		Minutes/day =	1,440
		Hours/day =	24

* 30 minutes out-of-service/shutdown

Notes:

1. Operating parameters based on LADWP's Owner's Engineer guidance.

Table B-4a: Peak Daily Emissions Summary - SCGSs, lb/day						
Mode Type	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Startups	3.60	41.60	80.00	0.73	10.80	10.80
Shutdowns	1.20	2.00	12.00	0.13	4.40	4.40

Generation Scenario 1 (GE Option) Operational Emissions Summary						
Normal	47.53	166.57	170.91	10.95	117.80	117.80
Peak Daily Emission - SCGS (1 Unit)	52.3	210.2	262.9	11.8	133.0	133.0
Peak Daily Emissions - SCGS (2 Units), lb/day =	104.7	420.3	525.8	23.6	266.0	266.0

Notes:

1. Emissions calculated by multipling emission factor (Table B4b) x operating parameter (Table B4c)

Table B-4b: Emission Factors for SCGS[1]						
Mode Type	Criteria Pollutants					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Startup (25 minutes)	0.90	10.40	20.00	0.18	2.70	2.70
Shutdown (10 minutes)	0.30	0.50	3.00	0.03	1.10	1.10
Normal Operation at 63 deg F, 100% load, with EC	2.30	8.06	8.27	0.53	5.70	5.70

Notes:

1. Emission factors obtained from GE manufacturer's specifications.

Table B-4c: Supplemental Information - SCGS Operating Parameters[1]			
Mode Type	Peak Daily		Minutes/day
	Factor	Unit	
Startup	4	event/day	100
Normal	20.7	hours/day	1,240
Shutdown	4	event/day	40
Out of Service*	4	event/day	60
		Minutes/day =	1,440
		Hours/day =	24

* 15 minutes out-of-service/shutdown

Notes:

1. Operating parameters based on LADWP's Owner's Engineer guidance.

Generation Scenario 1 (GE Option) Operational Emissions Summary

Table B-5a: Peak Daily Emissions Summary - Other Sources, lb/day

Source	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Blackstart Generator	2.00	5.35	29.55	0.04	0.06	0.06
Diesel Tank	0.06	0.00	0.00	0.00	0.00	0.00
Oil Water Separators (2 units)	0.07	0.00	0.00	0.00	0.00	0.00
Wet Surface Air Cooler	0.00	0.00	0.00	0.00	1.68	0.00
Peak Day Total for Other Sources, lb/day	2.13	5.35	29.55	0.04	1.74	0.06

Notes:

1. Emissions calculated by multipling emission factor (Table B5b) x operating parameter (Table B5c)

Table B-5b: Hourly Emissions for Other Sources, lb/hr

Source	Criteria Pollutants					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Blackstart Generator[1]	2.00	5.35	29.55	0.04	0.06	0.06
Diesel Tank[2]	0.06	0.00	0.00	0.00	0.00	0.00
Oil Water Separators[3] (2 units)	0.003	0.00	0.00	0.00	0.00	0.00
Wet Surface Air Cooler[4]	0.00	0.00	0.00	0.00	0.07	0.00

Notes:

1. Hourly emissions based on Caterpillar ICE emissions certification for 3,622 brake horse power rating (Model 3516C-DITA (2,500kW) including

90% control efficiency of the diesel particulate filter and fuel use of 173.3 gallons/hour

2. Hourly emissions based on annual emissions of 2,800 gallon diesel fuel tank, estimated using USEPA's TANKS program (version 4.0.9d), divided by anticipated annual operations of the generator of 50 hours/year.

3. Hourly emissions based on two units with a capacity of 5,000 gallons each and a maximum flow rate of 500 gallons per minute.

4. Hourly emissions based on circulation rate of 10,700 gpm; TDS of 355 ppm; and drift rate of 0.0005%

Table B-5c: Supplemental Information - Other Sources Operating Parameters

Source	Hrs/day
Blackstart Generator	1
Diesel Tank	1
Oil Water Separator	24
Wet Surface Air Cooler	24

Generation Scenario 1 (GE Option) Operational Emissions Summary

Table B-6: Unit 1 Derated Peak Daily Emissions (lb/day)[1]						
Description	**VOC**	**CO**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Combustion (Natural Gas)	851.1	70.6	-	18.7	127.8	127.8
Combustion (Digester Gas)	16.4	49.1	-	81.8	32.7	32.7
Peak Daily Emissions	867.4	119.7	329.5	100.5	160.5	160.5

Generation Capacity with Unit 1 Derate & Unit 3 Repower			
Description	**Existing Gross MW**	**Proposed Gross MW**	
		Modified MW	**Modification**
Unit 1	185	120	Derate
Unit 3	460	525	Repower
Total MW =	645	645	

Notes:

1. Emissions (VOC, CO, SOx, and PM10/PM2.5) calculated using the following equation:

E = EmFac (lb/MMscf) x Unit 1 Max Fuel Capacity Fuel Throughput (Mmbtu/hr) x (Unit 1 Derated MW/Unit 1 Existing MW)

Where: E = emissions, lb/day

Emfac = emission factor (lb/MMscf)

Derated MW / Existing MW = 0.65

lb/MMscf = pounds per million standard cubic foot

Emissions of NOx calculuated using the following equation:

E = Peak Daily Measured (CEMS) lb/day x Unit Derated MW / Unit 1 Existing MW

Table B-7: Peak Daily Emissions Summary - Generation Scenario 1 (All Units + Unit 1 Derated), lb/day						
Source	**VOC**	**CO**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
CCGS (CTG & STG)	153.1	998.1	508.7	29.4	230.3	230.3
SCGS (2 CTG's)	104.7	420.3	525.8	23.6	266.0	266.0
Other Sources	2.1	5.4	29.5	0.0	1.7	0.1
Unit 1 Derated	867.4	119.7	329.5	100.5	160.5	160.5
Peak Daily Total (All Units) =	1,127.3	1,543.5	1,393.6	153.5	658.6	656.9
	0.01%				0.26%	

Generation Scenario 1 (GE Option) Operational Emissions Summary

Table B-8: Generation Scenario 1 (GE Option) - Regional Emissions Impact Summary

Existing (Baseline) Conditions, Peak Daily Emissions (lb/day)

Source	Criteria Pollutant					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Unit 1	1,337.3	184.6	508.1	154.9	247.5	247.5
Unit 3	93.7	8,587.6	896.6	23.8	565.0	565.0
Total	1,431.0	8,772.2	1,404.6	178.7	812.5	812.5

Generation Scenario 1 (GE Option), Peak Daily Emissions (lb/day)

Source	Criteria Pollutant					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
CCGS (CTG + STG)	153.1	998.1	508.7	29.4	230.3	230.3
SCGS (2 CTG's)	104.7	420.3	525.8	23.6	266.0	266.0
Other Sources	2.1	5.4	29.5	0.0	1.7	0.1
Unit 1 - Derated	867.4	119.7	329.5	100.5	160.5	160.5
Total =	1,127.3	1,543.5	1,393.6	153.5	658.6	656.9

Generation Scenario 1 - Mass-Daily Emissions Impact Summary (lb/day)

Description	Criteria Pollutant					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Existing Emissions	1,431.0	8,772.2	1,404.6	178.7	812.5	812.5
Proposed Project	1,127.3	1,543.5	1,393.6	153.5	658.6	656.9
Incremental Change in Emissions	(303.7)	(7,228.6)	(11.0)	(25.1)	(153.9)	(155.6)
SCAQMD Mass-Daily Emissions Threshold	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)?	No	No	No	No	No	No

Generation Scenario 1 (GE Option) Operational Emissions Summary

Table B-8: Generation Scenario 1 (GE Option) - Regional Emissions Impact Summa

Existing (Baseline) Conditions, Peak Daily Emissions (lb/day)				
Source	Criteria Pollutant			
	VOC	CO	NOx	SOx
Unit 1	1,337.3	184.6	508.1	154.9
Unit 3	93.7	8,587.6	896.6	23.8
Total	1,431.0	8,772.2	1,404.6	178.7

Generation Scenario 1 (GE Option), Peak Daily Emissions (lb/day)				
Source	Criteria Pollutant			
	VOC	CO	NOx	SOx
CCGS (CTG + STG)	153.1	998.1	508.7	29.4
SCGS (2 CTG's)	104.7	420.3	525.8	23.6
Other Sources	2.1	5.4	29.5	0.0
Unit 1 - Derated	867.4	119.7	329.5	100.5
Total =	1,127.3	1,543.5	1,393.6	153.5

Generation Scenario 1 - Mass-Daily Emissions Impact Summary (lb/day)				
Description	Criteria Pollutant			
	VOC	CO	NOx	SOx
Existing Emissions	1,431.0	8,772.2	1,404.6	178.7
Proposed Project	1,127.3	1,543.5	1,393.6	153.5
Incremental Change in Emissions	(303.7)	(7,228.6)	(11.0)	(25.1)
SCAQMD Mass-Daily Emissions Threshold	55	550	55	150
Exceed SCAQMD Threshold (Y/N)?	No	No	No	No

Generation Scenario 2 (Siemens Option) Operational Emissions Summary

Table B-9a: Peak Daily Emissions Summary - Flex Plant 30, lb/day[1]

Mode Type	Criteria Pollutants					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Cold	0.00	0.00	0.00	0.00	0.00	0.00
Non-Cold	216.00	544.00	260.00	4.82	48.00	48.00
Shutdown	64.42	154.98	81.04	2.30	19.28	19.28
Normal	89.37	156.23	256.77	21.08	141.60	141.60
Peak Daily Emissions - CCGS, lb/day =	369.79	855.21	597.81	28.20	208.88	208.88

Notes:

1. Emissions calculated by multipling emission factor (Table B9b) x operating parameter (Table B9c)

Table B-9b: Emission Factors for Flex Plant 30[1]

Operational Parameter	Criteria Pollutants						
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	Unit
Cold Start (315 minutes)	130.00	430.00	156.00	4.79	47.00	47.00	lb/event
Non Cold Start (158 minutes)	108.00	272.00	130.00	2.41	24.00	24.00	lb/event
EC	5.68	9.93	16.32	1.34	9.00	9.00	lb/hr
Shutdown (1 hour)	32.21	77.49	40.52	1.15	9.64	9.64	lb/event

Notes:

1. Emission factors obtained from Siemens manufacturer's specifications.

Table B-9c: Supplemental Information - Flex Plant 30 Operating Parameters[1]

Mode Type	Peak Daily		Minutes/day
	Factor	Unit	
Cold	0	event/day	0
Non-Cold	2	event/day	316
Normal	15.7	hours/day	944
Shutdown	2	event/day	120
Out of Service*	2	event/day	60
		Minutes/day =	1,440
		Hours/day =	24

* 30 minutes out-of-service/shutdown

Notes:

1. Operating parameters based on LADWP's Owner's Engineer guidance.

Generation Scenario 2 (Siemens Option) Operational Emissions Summary

Table B-10a: Peak Daily Emissions Summary - Flex Plant 10, lb/day[1]

Mode Type	Criteria Pollutants					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Cold	50.0	186.0	108.0	3.3	26.0	26.0
Non-Cold	96.0	364.0	204.0	5.6	46.0	46.0
Shutdown	59.4	138.2	89.7	3.6	29.6	29.6
Normal	70.4	123.3	202.6	16.6	111.8	111.8
Peak Daily Emissions - CCGS, lb/day =	275.8	811.4	604.4	29.2	213.3	213.3

Notes:

1. Emissions calculated by multipling emission factor (Table B3b) x operating parameter (Table B3c)

Table B-10b: Emission Factors for Flex Plant 10[1]

Operational Parameter	Criteria Pollutants						
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	Unit
Cold Start (155 minutes)	50.00	186.00	108.00	3.26	26.00	26.00	lb/event
Non Cold Start (135 minutes)	48.00	182.00	102.00	2.82	23.00	23.00	lb/event
Shutdown (1 hour)	19.79	46.05	29.91	1.21	9.85	9.85	lb/event
Normal Operation at 23 deg F without EC	5.67	9.93	16.32	1.34	9.00	9.00	lb/hr

Notes:

1. Emission factors obtained from Siemens manufacturer's specifications.

Table B-10c: Supplemental Information - Flex Plant 10 Operating Parameters[1]

Mode Type	Peak Daily		Minutes/day
	Factor	Unit	
Cold	1	event/day	155
Non-Cold	2	event/day	270
Shutdown	3	event/day	180
Normal	12.4	hours/day	745
Out of Service*	3	event/day	90
		Minutes/day =	1,440
		Hours/day =	24

* 30 minutes out-of-service/shutdown

Notes:

1. Operating parameters based on LADWP's Owner's Engineer guidance.

Generation Scenario 2 (Siemens Option) Operational Emissions Summary

Table B-11a: Peak Daily Emissions Summary - Other Sources, lb/day

Source	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Blackstart Generators (4 units)	2.00	5.35	29.55	0.04	0.06	0.06
Diesel Tank	0.06	0.00	0.00	0.00	0.00	0.00
Oil Water Separators (2 units)	0.07	0.00	0.00	0.00	0.00	0.00
Wet Surface Air Cooler	0.00	0.00	0.00	0.00	1.68	0.00
Peak Day Total for Other Sources, lb/day	2.13	5.35	29.55	0.04	1.74	0.06

Notes:

1. Emissions calculated by multipling emission factor (Table B5b) x operating parameter (Table B5c)

Table B-11b: Hourly Emissions for Other Sources, lb/hr

Source	Criteria Pollutants					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Blackstart Generators[1] (4 units)	2.00	5.35	29.55	0.04	0.06	0.06
Diesel Tank[2]	0.06	0.00	0.00	0.00	0.00	0.00
Oil Water Separators[3] (2 units)	0.003	0.00	0.00	0.00	0.00	0.00
Wet Surface Air Cooler[4]	0.00	0.00	0.00	0.00	0.07	0.00

Notes:

1. Hourly emissions based on Caterpillar ICE emissions certification for 3,622 brake horse power rating (Model 3516C-DITA (2,500kW) including

90% control efficiency of the diesel particulate filter and fuel use of 173.3 gallons/hour. Assumes only one generator operates in any given hour and in any given day.

2. Hourly emissions based on annual emissions of 2,800 gallon diesel fuel tank, estimated using USEPA's TANKS program (version 4.0.9d), divided by anticipated annual operations of the generator of 50 hours/year.

3. Hourly emissions based on two units with a capacity of 5,000 gallons each and a maximum flow rate of 500 gallons per minute.

4. Hourly emissions based on circulation rate of 10,700 gpm; TDS of 355 ppm; and drift rate of 0.0005%

Table B-11c: Supplemental Information - Other Sources Operating Parameters

Source	Hrs/day
Blackstart Generator	1
Diesel Tank	1
Oil Water Separator	24
Wet Surface Air Cooler	24

Generation Scenario 2 (Siemens Option) Operational Emissions Summary

Table B-12: Unit 1 Derated Peak Daily Emissions (lb/day)[1]

Description	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Combustion (Natural Gas)	387.2	32.1	-	8.5	58.2	58.2
Combustion (Digester Gas)	7.4	22.3	-	37.2	14.9	14.9
Peak Daily Emissions	394.7	54.5	149.9	45.7	73.0	73.0

Generation Capacity with Unit 1 Derate & Unit 3 Repower

Description	Existing Gross MW	Proposed Gross MW	
		Modified MW	Modification
Unit 1	185	54.6	Derate
Unit 3	460	590.4	Repower
Total MW =	645	645	

Notes:

1. Emissions (VOC, CO, SOx, and PM10/PM2.5) calculated using the following equation:

E = EmFac (lb/MMscf) x Unit 1 Max Fuel Capacity Fuel Throughput (Mmbtu/hr) x (Unit 1 Derated MW/Unit 1 Existing MW)

Where: E = emissions, lb/day

Emfac = emission factor (lb/MMscf)

Derated MW / Existing MW = 0.64

lb/MMscf = pounds per million standard cubic foot

Emissions of NOx calculuated using the following equation:

E = Peak Daily Measured (CEMS) lb/day x Unit Derated MW / Unit 1 Existing MW

Table B-13: Peak Daily Emissions Summary - Generation Scenario 2 (All Units), lb/day

Source	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Flex Plant 30	369.8	855.2	597.8	28.2	208.9	208.9
Flex Plant 10	275.8	811.4	604.4	29.2	213.3	213.3
Other Sources	2.1	5.4	29.5	0.0	1.7	0.1
Unit 1 Derated	394.7	54.5	149.9	45.7	73.0	73.0
Peak Daily Total (All Units) =	1,042.4	1,726.5	1,381.7	103.1	497.0	495.3

Generation Scenario 2 (Siemens Option) Operational Emissions Summary

Table B-14: Generation Scenario 2 (Siemens Option) - Regional Emissions Impact Summary

Existing (Baseline) Conditions, Peak Daily Emissions (lb/day)						
Source	Criteria Pollutant					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Unit 1	1,337.3	184.6	508.1	154.9	247.5	247.5
Unit 3	93.7	8,587.6	896.6	23.8	565.0	565.0
Total	1,431.0	8,772.2	1,404.6	178.7	812.5	812.5

Generation Scenario 2 (Siemens Option), Peak Daily Emissions (lb/day)						
Source	Criteria Pollutant					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Flex Plant 30	369.8	855.2	597.8	28.2	208.9	208.9
Flex Plant 10	275.8	811.4	604.4	29.2	213.3	213.3
Other Sources	2.1	5.4	29.5	0.0	1.7	0.1
Unit 1 - Derated	394.7	54.5	149.9	45.7	73.0	73.0
Total =	1,042.4	1,726.5	1,381.7	103.1	497.0	495.3

Generation Scenario 2 - Mass-Daily Emissions Impact Summary (lb/day)						
Description	Criteria Pollutant					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Existing Emissions	1,431.0	8,772.2	1,404.6	178.7	812.5	812.5
Proposed Project	1,042.4	1,726.5	1,381.7	103.1	497.0	495.3
Incremental Change in Emissions	(388.6)	(7,045.7)	(22.9)	(75.6)	(315.6)	(317.2)
SCAQMD Mass-Daily Emissions Threshold	55	550	55	150	150	55
Exceed SCAQMD Threshold (Y/N)?	No	No	No	No	No	No

Generation Scenario 2 (Siemens Option) Operational Emissions Summary

Table B-15: Generation Scenario 1 & 2 - Regional Emissions Impact Summary (lb/day)						
Description	**Criteria Pollutant**					
	VOC	**CO**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Existing Emissions	1,431.0	8,772.2	1,404.6	178.7	812.5	812.5
SCAQMD Mass-Daily Emissions Threshold	55	550	55	150	150	55
Proposed Project - Generation Scenario 1 (GE Option)	1,127.3	1,543.5	1,393.6	153.5	658.6	656.9
Incremental Change in Emissions	(303.7)	(7,228.6)	(11.0)	(25.1)	(153.9)	(155.6)
Exceed SCAQMD Threshold (Y/N)?	No	No	No	No	No	No
Proposed Project - Generation Scenario 2 (Siemens Option)	1,042.4	1,726.5	1,381.7	103.1	497.0	495.3
Incremental Change in Emissions	(388.6)	(7,045.7)	(22.9)	(75.6)	(315.6)	(317.2)
Exceed SCAQMD Threshold (Y/N)?	No	No	No	No	No	No

Table B-16: Commissioning (Generation Scenario 1 and 2)

Commissioning Emission Factors - Generation Scenario 1 (GE Option)							
GE	**VOC**	**CO**	**NOX**	**SOX**	**PM_{10}**	**$PM_{2.5}$**	**Units**
CCGS (CTG + STG)	86.7	4000.0	250.0	1.6	10.1	10.1	lbs/hr
SCGS (1 CTG's)	12.0	197.3	80.3	0.5	6.6	6.6	lbs/hr

Peak Daily Emissions - Generation Scernaio 1 Commissioning							
Source	**VOC**	**CO**	**NOX**	**SOX**	**PM_{10}**	**$PM_{2.5}$**	**Units**
CCGS (CTG + STG)	2,080.8	96,000.0	6,000.0	38.4	242.4	242.4	lbs/day
SCGS (2 CTG's)	552.0	9,075.8	3,693.8	23.0	303.6	303.6	lbs/day
Peak Daily =	2,080.8	96,000.0	6,000.0	38.4	303.6	303.6	lbs/day
SCAQMD Thresholds	55	550	55	150	150	55	lbs/day
Exceed Threshold (Y/N)?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**	lbs/day

Operating Parameters		
CCGS Commissioning	24	hrs/day
SCGS Commissioning (Per Unit)	23	hrs/day

Commissioning Emission Factors - Generation Scenario 2 (Siemens Option)							
Siemens	**VOC**	**CO**	**NOX**	**SOX**	**PM_{10}**	**$PM_{2.5}$**	**Units**
Flex Plant 30	552.0	4817.3	220.8	1.6	9.1	9.1	lbs/hr
Flex Plant 10	552.0	4817.3	222.6	1.6	9.3	9.3	lbs/hr

Peak Daily Emissions - Generation Scernaio 1 Commissioning							
Source	**VOC**	**CO**	**NOX**	**SOX**	**PM_{10}**	**$PM_{2.5}$**	**Units**
Flex Plant 30	13,248.0	115,615.2	5,299.2	38.4	218.4	218.4	lbs/day
Flex Plant 10	12,696.0	110,797.9	5,119.8	36.8	213.9	213.9	lbs/day
Peak Daily =	13,248.0	115,615.2	5,299.2	38.4	218.4	218.4	lbs/day
SCAQMD Thresholds	55	550	55	150	150	55	lbs/day
Exceed Threshold (Y/N)?	**Yes**	**Yes**	**Yes**	No	**Yes**	**-**	lbs/day

Operating Parameters		
Flex Plant 30	24	hrs/day
Flex Plant 10	24	hrs/day

Appendix C

Health Risk Assessment

LADWP Scattergood Generation Station Unit 3 Repowering Project

Appendix C – Health Risk Assessment

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1.0 **Introduction**

This technical memorandum (memo) presents the results of the health risk assessment (HRA) performed to evaluate the potential public health impacts resulting from short-term construction and operation of the proposed Scattergood Generating Station Unit 3 Repower Project (herein referred to as the "proposed project") in support of the environmental review and disclosure requirements pursuant to the California Environmental Quality Act (CEQA). As described in the Air Quality and Climate Change Technical Report, this environmental impact assessment of operational impacts includes two power generation scenarios. Both generation scenarios would generate toxic air contaminant (TAC) emissions during operations and therefore have been fully evaluated in this HRA. The methodology utilized to evaluate potential health risk impacts are presented in the following subsections.

1.1 Project Location

The proposed project site is located at 12700 Vista Del Mar in Los Angeles, California, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The area immediately around the site is developed and populated. According to the SCAQMD, "sensitive receptors" are defined as groups of individuals that may be more susceptible to health risks upon TAC exposure. Such groups include infants and children, the elderly, the chronically ill, and any other member of the general population who is more susceptible to the effects of the exposure than the population at large. Sensitive receptors also typically include facilities where these groups are found, such as schools, day care facilities, convalescent homes and hospitals.

2.0 **Risk Definitions**

This HRA evaluates risk for cancer, non-cancer acute, and chronic health hazard for residential, off-site worker and sensitive receptor locations. The locations of maximum impact and excess population cancer burden have been identified. Risk definitions are presented below.

2.1 Cancer Risk

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 potential significant impact on public health. California's Assembly Bill (AB) 2588 Air Toxic "Hot Spots" Program and California's Proposition 65, for example, have developed a significance and public notification level for incremental cancer risk associated with TAC emissions from existing sources at ten-in-one million. The SCAQMD CEQA Guidelines state that health risk public notification thresholds adopted by the SCAQMD's Board of Directors for evaluating impacts from proposed projects be used. The adopted threshold for public notification recommended by the California Air Pollution Control Officers Association (CAPCOA) is similarly set at a cancer risk greater than ten-in-one million, or ten cases per one million exposures.

2.2 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 a hazard index (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 proposed project. RELs used in the HI calculations were those published in the CAPCOA AB 2588 Risk Assessment Guidelines, as updated by the Office of Environmental Health Hazard Assessment (OEHHA) in the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values*.

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 health risk, a chronic or acute HI exceeding 1.0 is considered significant.

2.3 Diesel Particulate Matter Risk

In 1990, the State of California administratively listed under Proposition 65 the particulates formed in the exhaust of diesel-powered equipment as a chemical known to the State to cause cancer. For estimating risks due to such so-called diesel particulate matter (DPM) emissions, the risk assessment methodology used was consistent with that employed by the California Air Resource Board (ARB) in the document titled *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*.

OEHHA has estimated that 130 to 2,400 excess cancer cases would be expected to occur in a population of one million people breathing an average concentration of DPM of 1 microgram per cubic meter ($\mu g/m^3$) over a 70-year lifetime. These excess cancer cases are beyond what would be expected to occur if there were no DPM in the air. An independent review by the ARB Scientific Review Panel (SRP) derived a best-estimate of the cancer unit risk factor as 300 excess cancer cases per million people breathing 1 $\mu g/m^3$ of DPM over a lifetime.

3.0 Significance Criteria

California has not established state-wide significance thresholds for cancer and non-cancer health risk impacts under CEQA. However, most air districts in California have adopted local significance thresholds for health risks in their policy guidance for project proponents. Under CEQA, the SCAQMD is the responsible agency for its discretionary activities on air quality and related matters within its jurisdiction or impacting on its jurisdiction.

The SCAQMD has developed risk guidelines (amended July 1, 2005) for implementation of CEQA for projects within its jurisdiction. The SCAQMD CEQA Guidelines state that the health risk public notification thresholds adopted by the SCAQMD's Board of Directors for evaluating impact from proposed projects will be applied (SCAQMD 2005). The SCAQMD's Board has adopted significance thresholds for public notification that are set at a cancer risk greater than ten-in-one-million (1 x 10^{-5}) and/or a non-cancer HI greater than 1.0.

4.0 Sources and Emissions of TACs

Construction and operation of both proposed generation scenarios would generate TAC emissions. Temporary construction activities would include operation of diesel-fueled non-road equipment resulting in emissions of DPM. Proposed OEHHA guidance released in November 2011 indicates that projects greater than two months be evaluated for cancer risk. The construction period for the proposed project will be six to seven years; therefore, the most applicable scenario and exposure duration would be nine years.

Construction activity including the operation of diesel-fueled off-road equipment will generate DPM emissions. DPM emissions were calculated for the duration of the proposed project as 7,674 and 8,197 pounds for Scenarios 1 and 2, respectively. The emissions were apportioned to the four construction/demolition areas on site and modeled for the 9, 40, and 70-year periods for cancer risk.

Sources of TAC emissions under Generation Scenario 1 include a combined cycle generating system (CCGS) (GE 7FA turbine), a simple cycle generating system (SCGS) (comprised of two GE LMS100 turbines), an emergency generator, one diesel fuel storage tank, and a wet surface air chiller (WSAC) comprised of six cells. Hourly and annual emissions for the SCGS include the Combustion Turbine Generator (CTG) and Steam Turbine Generator (STG). A summary of potential maximum hourly and annual TAC emissions from Generation Scenario 1 is presented in Tables 4-1 and 4-2, respectively.

Table 4-1: Generation Scenario 1 (GE Option) Potential Maximum Hourly TAC Emissions (lbs/hr)

TAC	CAS	CCGS	SCGS (CTG + STG)	Gen	Tank	WSAC	Total
1,3-Butadiene	106990	9.75E-04	7.76E-04	0.00E+00	0.00E+00	0.00E+00	1.75E-03
Acetaldehyde	75070	9.08E-02	7.24E-02	0.00E+00	0.00E+00	0.00E+00	1.63E-01
Acrolein	107028	8.21E-03	6.54E-03	0.00E+00	0.00E+00	0.00E+00	1.48E-02
Ammonia	7664417	1.53E+01	1.22E+01	0.00E+00	0.00E+00	0.00E+00	2.75E+01
Arsenic	7440382	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-06	1.13E-06
Benzene	71432	7.41E-03	5.90E-03	0.00E+00	2.49E-05	0.00E+00	1.33E-02
Benzo(a)anthracene	56556	5.04E-05	4.02E-05	0.00E+00	0.00E+00	0.00E+00	9.06E-05
Benzo(a)pyrene	50328	3.10E-05	2.48E-05	0.00E+00	0.00E+00	0.00E+00	5.58E-05
Benzo(b)fluoranthene	205992	2.52E-05	2.02E-05	0.00E+00	0.00E+00	0.00E+00	4.54E-05
Benzo(k)fluoranthene	207089	2.45E-05	1.96E-05	0.00E+00	0.00E+00	0.00E+00	4.41E-05
Chlorine	7782505	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.40E-07	6.40E-07
Chloroform	67663	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.90E-03	6.90E-03
Chrysene	218019	5.62E-05	4.48E-05	0.00E+00	0.00E+00	0.00E+00	1.01E-04
Diebenz(a,h)anthracene	53703	5.24E-05	4.18E-05	0.00E+00	0.00E+00	0.00E+00	9.42E-05
Diesel Exhaust Particulates	9901	0.00E+00	0.00E+00	5.60E-02	0.00E+00	0.00E+00	5.60E-02

Table 4-1: Generation Scenario 1 (GE Option) Potential Maximum Hourly TAC Emissions (lbs/hr)

TAC	CAS	CCGS	SCGS (CTG + STG)	Gen	Tank	WSAC	Total
Ethylbenzene	100414	7.25E-02	5.78E-02	0.00E+00	2.42E-06	0.00E+00	1.30E-01
Fluoride	1101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-04	1.51E-04
Formaldehyde	50000	8.17E-01	6.50E-01	0.00E+00	0.00E+00	0.00E+00	1.47E+00
Hexane (n-hexane)	110543	0.00E+00	0.00E+00	0.00E+00	7.96E-06	0.00E+00	7.96E-06
Indeno(1,2,3-cd)pyrene	193395	5.24E-05	4.18E-05	0.00E+00	0.00E+00	0.00E+00	9.42E-05
Naphthalene	91203	3.70E-03	2.96E-03	0.00E+00	3.40E-07	0.00E+00	6.66E-03
Propylene Oxide	75569	6.58E-02	5.24E-02	0.00E+00	0.00E+00	0.00E+00	1.18E-01
Toluene	108883	2.94E-01	2.34E-01	0.00E+00	1.42E-05	0.00E+00	5.28E-01
Xylenes	1330207	1.45E-01	1.16E-01	0.00E+00	8.65E-06	0.00E+00	2.61E-01

Table 4-2: Generation Scenario 1 (GE Option) Potential Maximum Annual TAC Emissions (lbs/yr)

TAC	CAS	CCGS	SCGS (CTG + STG)	Gen	Tank	WSAC	Total
1,3-Butadiene	106990	8.54E+00	4.02E+00	0.00E+00	0.00E+00	0.00E+00	1.26E+01
Acetaldehyde	75070	7.95E+02	3.74E+02	0.00E+00	0.00E+00	0.00E+00	1.17E+03
Acrolein	107028	7.19E+01	3.38E+01	0.00E+00	0.00E+00	0.00E+00	1.06E+02
Ammonia	7664417	1.34E+05	6.32E+04	0.00E+00	0.00E+00	0.00E+00	1.97E+05
Arsenic	7440382	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.94E-03	9.94E-03
Benzene	71432	6.49E+01	3.06E+01	0.00E+00	2.18E-01	0.00E+00	9.57E+01
Benzo(a)anthracene	56556	4.42E-01	2.08E-01	0.00E+00	0.00E+00	0.00E+00	6.50E-01
Benzo(a)pyrene	50328	2.72E-01	1.28E-01	0.00E+00	0.00E+00	0.00E+00	4.00E-01
Benzo(b)fluoranthene	205992	2.21E-01	1.04E-01	0.00E+00	0.00E+00	0.00E+00	3.25E-01
Benzo(k)fluoranthene	207089	2.15E-01	1.01E-01	0.00E+00	0.00E+00	0.00E+00	3.16E-01
Chlorine	7782505	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.60E-03	5.60E-03
Chloroform	67663	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.04E+01	6.04E+01
Chrysene	218019	4.92E-01	2.32E-01	0.00E+00	0.00E+00	0.00E+00	7.24E-01
Diebenz(a,h)anthracene	53703	4.59E-01	2.16E-01	0.00E+00	0.00E+00	0.00E+00	6.75E-01
Diesel Exhaust Particulates	9901	0.00E+00	0.00E+00	2.80E+00	0.00E+00	0.00E+00	2.80E+00
Ethylbenzene	100414	6.35E+02	2.98E+02	0.00E+00	2.12E-02	0.00E+00	9.33E+02
Fluoride	1101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E+00	1.33E+00
Formaldehyde	50000	7.15E+03	3.36E+03	0.00E+00	0.00E+00	0.00E+00	1.05E+04
Hexane (n-hexane)	110543	0.00E+00	0.00E+00	0.00E+00	6.97E-02	0.00E+00	6.97E-02
Indeno(1,2,3-cd)pyrene	193395	4.59E-01	2.16E-01	0.00E+00	0.00E+00	0.00E+00	6.75E-01
Naphthalene	91203	3.24E+01	1.53E+01	0.00E+00	3.00E-03	0.00E+00	4.77E+01
Propylene Oxide	75569	5.77E+02	2.72E+02	0.00E+00	0.00E+00	0.00E+00	8.49E+02

Table 4-2: Generation Scenario 1 (GE Option) Potential Maximum Annual TAC Emissions (lbs/yr)

TAC	CAS	CCGS	SCGS (CTG + STG)	Gen	Tank	WSAC	Total
Toluene	108883	2.58E+03	1.21E+03	0.00E+00	1.24E-01	0.00E+00	3.79E+03
Xylenes	1330207	1.27E+03	5.98E+02	0.00E+00	7.58E-02	0.00E+00	1.87E+03

Sources of TAC emissions under Generation Scenario 2 include: a Siemens Flex-Plant 30 turbine, a Flex-Plant 10 turbine, four emergency generators, four diesel fuel storage tanks, and WSAC comprised of six cells. A summary of maximum hourly and annual TAC emissions from Generation Scenario 2 is presented in Tables 4-3 and 4-4, respectively.

Table 4-3: Generation Scenario 2 (Siemens Option) Potential TAC Emissions (lb/hr)

TAC	CAS	Plant 30	Plant 10	Gen[(1)]	Tank	WSAC	Total
1,3-Butadiene	106990	9.73E-04	9.73E-04	0.00E+00	0.00E+00	0.00E+00	1.95E-03
Acetaldehyde	75070	9.06E-02	9.06E-02	0.00E+00	0.00E+00	0.00E+00	1.81E-01
Acrolein	107028	8.20E-03	8.20E-03	0.00E+00	0.00E+00	0.00E+00	1.64E-02
Ammonia	7664417	1.51E+01	1.51E+01	0.00E+00	0.00E+00	0.00E+00	3.02E+01
Arsenic	7440382	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E-06	1.16E-06
Benzene	71432	7.39E-03	7.39E-03	0.00E+00	9.96E-05	0.00E+00	1.49E-02
Benzo(a)anthracene	56556	5.03E-05	5.03E-05	0.00E+00	0.00E+00	0.00E+00	1.01E-04
Benzo(a)pyrene	50328	3.10E-05	3.10E-05	0.00E+00	0.00E+00	0.00E+00	6.20E-05
Benzo(b)fluoranthene	205992	2.52E-05	2.52E-05	0.00E+00	0.00E+00	0.00E+00	5.04E-05
Benzo(k)fluoranthene	207089	2.45E-05	2.45E-05	0.00E+00	0.00E+00	0.00E+00	4.90E-05
Chlorine	7782505	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.40E-07	8.40E-07
Chloroform	67663	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-03	8.00E-03
Chrysene	218019	5.61E-05	5.61E-05	0.00E+00	0.00E+00	0.00E+00	1.12E-04
Diebenz(a,h)anthracene	53703	5.23E-05	5.23E-05	0.00E+00	0.00E+00	0.00E+00	1.05E-04
Diesel Exhaust Particulates	9901	0.00E+00	0.00E+00	5.60E-02	0.00E+00	0.00E+00	5.60E-02
Ethylbenzene	100414	7.24E-02	7.24E-02	0.00E+00	9.68E-06	0.00E+00	1.45E-01
Fluoride	1101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E-04	1.54E-04
Formaldehyde	50000	8.15E-01	8.15E-01	0.00E+00	0.00E+00	0.00E+00	1.63E+00
Hexane (n-hexane)	110543	0.00E+00	0.00E+00	0.00E+00	3.18E-05	0.00E+00	3.18E-05
Indeno(1,2,3-cd)pyrene	193395	5.23E-05	5.23E-05	0.00E+00	0.00E+00	0.00E+00	1.05E-04
Naphthalene	91203	3.70E-03	3.70E-03	0.00E+00	1.36E-06	0.00E+00	7.40E-03
Propylene Oxide	75569	6.57E-02	6.57E-02	0.00E+00	0.00E+00	0.00E+00	1.31E-01
Toluene	108883	2.94E-01	2.94E-01	0.00E+00	5.68E-05	0.00E+00	5.88E-01
Xylenes	1330207	1.45E-01	1.45E-01	0.00E+00	3.46E-05	0.00E+00	2.90E-01
[(1)] No more than 1 emergency generator will run at a time							

Table 4-4: Generation Scenario 2 (Siemens Option) Potential TAC Emissions (lb/yr)

TAC	CAS	Plant 30	Plant 10	4 Gens	4 Tanks	WSAC	Total
1,3-Butadiene	106990	8.53E+00	8.53E+00	0.00E+00	0.00E+00	0.00E+00	1.71E+01
Acetaldehyde	75070	7.94E+02	7.94E+02	0.00E+00	0.00E+00	0.00E+00	1.59E+03
Acrolein	107028	7.18E+01	7.18E+01	0.00E+00	0.00E+00	0.00E+00	1.44E+02
Ammonia	7664417	1.32E+05	1.32E+05	0.00E+00	0.00E+00	0.00E+00	2.64E+05
Arsenic	7440382	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-02	1.01E-02
Benzene	71432	6.48E+01	6.48E+01	0.00E+00	8.72E-01	0.00E+00	1.30E+02
Benzo(a)anthracene	56556	4.41E-01	4.41E-01	0.00E+00	0.00E+00	0.00E+00	8.82E-01
Benzo(a)pyrene	50328	2.71E-01	2.71E-01	0.00E+00	0.00E+00	0.00E+00	5.42E-01
Benzo(b)fluoranthene	205992	2.20E-01	2.20E-01	0.00E+00	0.00E+00	0.00E+00	4.40E-01
Benzo(k)fluoranthene	207089	2.15E-01	2.15E-01	0.00E+00	0.00E+00	0.00E+00	4.30E-01
Chlorine	7782505	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.10E-03	6.10E-03
Chloroform	67663	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.36E+01	6.36E+01
Chrysene	218019	4.92E-01	4.92E-01	0.00E+00	0.00E+00	0.00E+00	9.84E-01
Diebenz(a,h)anthracene	53703	4.58E-01	4.58E-01	0.00E+00	0.00E+00	0.00E+00	9.16E-01
Diesel Exhaust Particulates	9901	0.00E+00	0.00E+00	1.12E+01	0.00E+00	0.00E+00	1.12E+01
Ethylbenzene	100414	6.34E+02	6.34E+02	0.00E+00	8.48E-02	0.00E+00	1.27E+03
Fluoride	1101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E+00	1.35E+00
Formaldehyde	50000	7.14E+03	7.14E+03	0.00E+00	0.00E+00	0.00E+00	1.43E+04
Hexane (n-hexane)	110543	0.00E+00	0.00E+00	0.00E+00	2.79E-01	0.00E+00	2.79E-01
Indeno(1,2,3-cd)pyrene	193395	4.58E-01	4.58E-01	0.00E+00	0.00E+00	0.00E+00	9.16E-01
Naphthalene	91203	3.24E+01	3.24E+01	0.00E+00	1.20E-02	0.00E+00	6.48E+01
Propylene Oxide	75569	5.76E+02	5.76E+02	0.00E+00	0.00E+00	0.00E+00	1.15E+03
Toluene	108883	2.58E+03	2.58E+03	0.00E+00	4.96E-01	0.00E+00	5.16E+03
Xylenes	1330207	1.27E+03	1.27E+03	0.00E+00	3.03E-01	0.00E+00	2.54E+03

5.0 **Health Risk Assessment Methodology**

The HRA contains three quantitative determinations: emission estimation, air dispersion analysis, and health risk characterization. With limited exceptions, source emissions of TAC from the proposed project were estimated based on Environmental Protection Agency (EPA) emission factors and quantification methods for construction and facility operations. 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 then applied to the emission estimates and, 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 that quantified individual health risks associated with predicted levels of exposure.

The HRA was performed using the Hotspots Analysis and Reporting Program (HARP) software package (Version 1.4d) developed by the ARB for conducting health risk assessments in California under the Air Toxics “Hot Spots” Program. Dispersion modeling was performed using the EPA guideline model AERMOD (version 12060). The proposed project HRA is a multi-pathway risk analysis. Air contaminant inhalation and plant ingestion are the dominant pathways for public exposure to chemical substances released by the proposed project. The multi-pathway assessment also includes an evaluation of soil ingestion, dermal absorption, and mother’s milk ingestion.

5.1 Health Risk Factors

Chemical substances were evaluated in this analysis using health values that have been approved by OEHHA and ARB for use in facility HRAs conducted for the AB 2588 Air Toxics “Hot Spots” Program. The chemical substances of concern that are addressed in this HRA are listed in Table 5-1, 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 5-1: OEHHA Risk Assessment Health Values for TACs of Concern

Compound	Inhalation Unit Risk Factor (µg/m3)-1	Cancer Risk		Non-cancer Effects	
		Inhalation Cancer Potency Factor (mg/kg-day)-1	Oral Slope Factor (mg/kg-day)-1	Chronic Inhalation REL (µg/m3)	Acute Inhalation REL (µg/m3)
1,3-Butadiene	1.70E-04	6.00E-01	--	2.00E+01	--
Acetaldehyde	2.70E-06	1.00E-02	--	1.40E+02	4.70E+02
Acrolein	--	--	--	3.50E-01	2.50E+00
Ammonia	--	--	--	2.00E+02	3.20E+03
Arsenic	3.30E-03	1.20E+01	1.50E+00	1.50E-02	2.10E-01
Benzene	2.90E-05	1.00E-01	--	6.00E+01	1.30E+03
Chlorine	--	--	--	2.00E-01	2.10E+02
Chloroform	5.30E-06	1.90E-02	--	3.00E+02	1.50E+02
Diesel Particulates[1]	3.00E-04	1.10E+00	--	5.00E+00	--
Ethylbenzene	2.50E-06	8.70E-03	1.10E-02	2.00E+03	--
Fluoride	--	--	--	1.30E+01	--
Formaldehyde	6.00E-06	2.10E-02	--	9.00E+00	5.50E+01
Hexane	--	--	--	7.00E+03	--
Propylene Oxide	3.70E-06	1.30E-02	2.40E-01	3.00E+01	3.10E+03
Toluene	--	--	--	3.00E+02	3.70E+04
Xylenes	--	--	--	7.00E+02	2.20E+04
Polycyclic aromatic hydrocarbons (PAHs)[2]					
Benzo(a)anthracene	1.10E-04	3.90E-01	1.20E+00	--	--

Table 5-1: OEHHA Risk Assessment Health Values for TACs of Concern

Compound	Inhalation Unit Risk Factor (µg/m3)-1	Cancer Risk		Non-cancer Effects	
		Inhalation Cancer Potency Factor (mg/kg-day)-1	Oral Slope Factor (mg/kg-day)-1	Chronic Inhalation REL (µg/m3)	Acute Inhalation REL (µg/m3)
Benzo(a)pyrene [B(a)P]	1.10E-03	3.90E+00	1.20E+01	--	--
Benzo(b)fluoranthene	1.10E-04	3.90E-01	1.20E+00	--	--
Benzo(k)fluoranthene	1.10E-04	3.90E-01	1.20E+00	--	--
Chrysene	1.10E-05	3.90E-02	1.20E-01	--	--
Dibenz(a,h)anthracene	1.20E-03	4.10E+00	4.10E+00	--	--
Indeno(1,2,3-cd)pyrene	1.10E-04	3.90E-01	1.20E+00	--	--
Naphthalene	3.40E-05	1.20E-01	--	9.00E+00	--

[1] Unspeciated DPM were modeled in the HRA per OEHHA guidance.

[2] Some individual PAH species are recognized TACs but do not have quantified health values.

Source: Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values, OEHHA 2011.

As noted in Table 5-1, for HRA purposes, unspeciated (whole) diesel exhaust particulate was used as the surrogate carcinogen for all TACs, in accordance with OEHHA guidance. Annual emissions of diesel particulate matter used in the HRA are shown in Table 4-2 and 4-4.

5.2 Dispersion Modeling Methodology

The methods and requirements used to conduct the air dispersion modeling analysis for estimating concentrations of TAC are presented below.

Air Dispersion Model. The dispersion analysis was performed outside the HARP modeling system using EPA regulatory model AERMOD (version 12060), which estimates both short-term and long-term average ambient concentrations at receptor locations to produce exposure estimates. AERMOD was used in the urban mode with all model option switches set to regulatory default settings. Modeling was performed using a Universal Transverse Mercator, zone 11, North American Datum 83 coordinate system. AERMOD accounts for site-specific terrain, meteorological conditions, and emissions parameters such as stack exit velocities and temperatures in order to estimate ambient concentrations. The emissions from the proposed project sources were modeled in AERMOD using a normalized ("unit") emission rate to later use with the actual emission rates for risk characterization in HARP. HARP On-Ramp (version 1), which allows use of AERMOD modeling files with HARP, was used to develop HARP required files from AERMOD dispersion modeling files to conduct the risk analysis in HARP.

Meteorological Data. Air dispersion analysis was conducted using 5 consecutive years (2005-2009) of sequential hourly meteorological data developed for the proposed project permitting analysis, following SCAQMD guidance. A detailed discussion of the methodology used to develop project-specific meteorological modeling data sets is provided in Appendix D-1 of this Air Quality and Climate Change Technical Report.

Modeled Source Release Parameters. Sources of TAC emissions from the operation of the turbines, emergency generator(s), fuel storage tank vent(s), and WSAC were modeled as point sources with release parameters consistent with those used for modeling air quality impact analysis of criteria pollutants (see Section 6.1, Air Quality and Climate Change Technical Report). For the HRA, worse-case release parameters (i.e., parameters that occur during shutdown conditions) were used to model 1-hour and annual ground-level concentrations from each turbine.

Building Downwash. The latest version of the EPA Building Profile Input Program (BPIP-PRIME) was run to determine dominant structures for building downwash in AERMOD for the point sources. Direction-specific building heights and widths of the dominant downwash structure(s) were included in the AERMOD model data input file directly from BPIP-PRIME results.

Terrain. Terrain elevations were included in the dispersion modeling analysis to evaluate receptors above stack height and above final plume height for point source releases. Terrain elevations from the United States Geological Service National Elevation Dataset were processed with AERMAP (version 11103) to develop the terrain elevations and corresponding hill height scale required by AERMOD.

Receptors. A Cartesian receptor grid was developed to identify the locations of the maximum modeled impact near the proposed project. Because the receptor grid was inclusive of all locations where a sensitive receptor may be located, no specific locations of sensitive receptors (i.e., locations where a sensitive population segment such as children, elderly, or the infirmed may be exposed to TACs from the proposed project) were identified or modeled as discrete receptors.

5.3 Health Risk Characterization

The HRA evaluated the cancer risk and non-cancer health hazards. The health risk methodology is based on the OEHHA Guidance Manual (OEHHA, 2003). Carcinogenic risks and potential non-carcinogenic chronic health effects were calculated using the annual ground-level concentrations; 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. The approved health values are incorporated into HARP Version 1.4e. The HARP software performs the necessary risk calculations following the OEHHA Risk Assessment Guidelines and the ARB Interim Risk Management Policy for risk management decisions.

The following HARP modeling options were used for the risk analysis to estimate cancer and non-cancer impacts at the maximum impact location on the receptor grid.

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

The Derived (OEHHA) risk analysis method uses the high-end point-estimates of exposure for the two dominant (driving) exposure pathways, while the remaining exposure pathways use average point estimates. The Derived (Adjusted) method is identical to the Derived (OEHHA) method but uses the breathing rate at the 80th percentile of exposure rather than the high-end point-estimate when the inhalation pathway is one of the dominant exposure pathways. The cancer risk estimates using the Derived equations/methods are based on a 70-year exposure (resident). The point-estimate analysis uses a single value rather than a distribution of values in the dose equation for each exposure pathway. The off-site worker exposure duration assumed a standard work schedule since the facility will operate full time, per OEHHA guidance. For the cancer and chronic HI impacts for workers, the HARP modeling option “modeled ground level concentration and default exposure assumptions” was used. This includes the highly conservative 40-year exposure duration for the worker receptors along with an OEHHA-defined 95th percentile breathing rate of 393 liters of air per kilogram per day (L/kg-day). Child cancer risk was evaluated for a 9-year exposure scenario. The simple acute HI method is a conservative approach where the maximum concentrations from each emission source are superimposed to impact receptors at the same time, irrespective of wind direction and/ or atmospheric stability, and is a health protective approach to assess acute impacts.

The modeled exposure pathways consisted of all pathways recommended for a health risk assessment. 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. Exposure routes for the ingestion of local fish, poultry, or livestock, and drinking water were not considered in this risk analysis because there are no such areas within the proposed project's area of influence. Long-term risks (i.e., cancer and chronic non-carcinogenic HI) and short-term risk (acute HI) were calculated at the identified off-site receptors.

5.3.1 **Exposure Assumptions**

The chief exposure assumption is one of continuous exposure to the TAC concentrations produced by continuous emissions at the maximum emission rates over a 70-year period at each receptor location. The actual risks are not expected to be any higher than the predicted risks and are likely to be substantially lower. The cancer risk for an inhaled TAC is estimated by multiplying the exposure concentration by the breathing rate (L/kg-day) times the inhalation cancer potency factor (milligrams per kilogram per day $[mg/kg\text{-}day])^{-1}$. The averaging time for the cancer risk estimate is usually 70 years, which is used to represent a lifetime exposure.

5.3.2 Analytical Uncertainties

Sources of uncertainty in the assessment of risks to public health include emissions estimates, dispersion modeling, exposure characteristics, and extrapolation of toxicity data in animals to humans used to develop unit risk factors (cancer) and RELs (non-cancer). To address this uncertainty, highly conservative assumptions were used in this HRA, as discussed below. In aggregate, these assumptions overestimate the predicted risks such that actual risks are unlikely to be higher, but could be considerably lower or non-existent.

Air Dispersion Modeling

In general, EPA-dispersion models such as AERMOD (used in this HRA) are designed to over-predict concentrations rather than under-predict. For example, the model algorithms assume chemical emissions are not transformed in the atmosphere into other chemical compounds (e.g., photochemical reactions). For certain pollutants, conversion may occur quickly enough to reduce concentrations substantially.

Exposure Assessment

Important uncertainties related to exposure include the identification of exposed populations and their exposure characteristics. The choice of a "residential" maximum exposed individual is very conservative in the sense that no real person is likely to spend 24 hours a day, 365 days a year over a 70-year period at exactly the point of highest toxicity-weighted annual average air concentration.

Toxicity Assessment

Another area of uncertainty is in the use of toxicity data in risk estimation. Estimates of toxicity for the HRA obtained from OEHHA are conservative compilations of toxicity information. Toxicity estimates are derived either from observations in humans or from projections derived from experiments with laboratory animals. When toxicity estimates are derived from animal data, they usually involve extra safety factors to account for possibly greater sensitivity in humans, and the less-than-human-lifetime observations in animals. Overall, the chemical toxicity factors (e.g., unit risk factors and RELs) used in the proposed project HRA are biased toward over-estimating risk. The amount of the bias is unknown, but could be substantial.

DPM Unit Risk Factor

The DPM inhalation potency factor is a best-estimate value established by the ARB SRP based on review of more than 30 DPM exposure studies. The established potency risk factor is a 95th percentile upper confidence limit value, meaning that there is only a five percent chance that the value is underestimated (too low). The most significant of these studies reviewed by the SRP are occupational studies of exposure to DPM by railroad workers. The occupational results were then extrapolated to the general population, which may include more sensitive individuals than the railroad workers evaluated in the study (ARB 2004). Only Generation Scenario 1 (GE Option) includes an engine that emits and requires the evaluation of DPM.

6.0 Health Risk Assessment Results

As noted above, the HRA provides results for the maximum exposed resident (MEIR) and worker (MEIW). The MEIR and MEIW were identified based on locations of maximum impact on the Cartesian grid i.e. the offsite point of maximum impact (PMI). A summary of cancer risk and non-cancer health impacts values at the MEIR and the MEIW from the construction, operation of Generation Scenario 1 (GE Option), and Generation Scenario 2 (Siemens Option) are presented below.

6.1 Construction Scenarios

Cancer risk due to construction emissions was determined to be 1.43 to 6.39-in-one-million, as shown in Tables 6-1 and 6-2. Figure 1 presents the receptor locations identified with maximum risk greater than 1-in-one-million based on the most conservative case (9-year child exposure due to construction activities for Generation Scenario 2). It should be noted that this fenceline receptor is on the property boundary between the proposed project and the Hyperion Wastewater Treatment plant operated by the City of Los Angeles. The public does not have access to this location and no actual residential exposure could occur.

Table 6-1: Summary of Maximum Impacts for Construction – Generation Scenario 1

Receptor Type[1]		9-year Maximum Cancer Risk (per million)	30-year Maximum Cancer Risk (per million)	70-year Maximum Cancer Risk (per million)
MEIR[2]	Adult	4.05	4.05	3.11
	Child	5.98	--	--
MEIW[3]		--	1.43	--
Significance Threshold		10	10	10
Exceed Threshold (Y/N)?		N	N	N

[1] All impacts based on PMI on the Cartesian receptor grid.

[2] MEIR: Maximum exposed individual at an existing residential receptor; 70-year adult exposure scenario and 9-year child exposure scenario for cancer risk.

[3] MEIW: Maximum exposed individual at an existing occupational worker receptor; 40-year adult worker exposure scenario.

Table 6-2: Summary of Maximum Impacts for Construction – Generation Scenario 2

Receptor Type[1]		9-year Maximum Cancer Risk (per million)	30-year Maximum Cancer Risk (per million)	70-year Maximum Cancer Risk (per million)
MEIR[2]	Adult	4.32	4.32	3.32
	Child	6.39	--	--
MEIW[3]		--	1.53	--
Significance Threshold		10	10	10
Exceed Threshold (Y/N)?		N	N	N

[1] All impacts based on PMI on the Cartesian receptor grid.

[2] MEIR: Maximum exposed individual at an existing residential receptor; 70-year adult exposure scenario and 9-year child exposure scenario for cancer risk

[3] MEIW: Maximum exposed individual at an existing occupational worker receptor; 40-year adult worker exposure scenario

Figure 1 Point of Maximum Impact for Construction Phase (Siemens Option)

6.2 Generation Scenario 1 (GE Option)

Cancer risk at the MEIR was determined to be 0.33-in-one-million, as shown in Table 6-3. Non-cancer acute and chronic health impacts at the MEIR were determined to be a HI of less than 0.01. Cancer risk at the MEIW, based on a worker exposure, was determined to be 0.06-in-one million, which is well below the SCAQMD CEQA threshold. Non-cancer chronic and acute health impacts at the MEIW were the same as those estimated at the MEIR, which are considered to be negligible. Figure 2 presents the receptor locations identified with maximum risk based on Generation Scenario 1.

Table 6-3: Summary of Maximum Impacts for the Generation Scenario 1 (GE Option)

Receptor Type[1]		Maximum Cancer Risk (per million)	Maximum Acute Hazard Index	Maximum Chronic Hazard Index
MEIR[2]	Adult	0.33	0.01	0.01
	Child	0.08	--	--
MEIW[3]		0.06	0.01	0.01
Significance Threshold		10	1	1
Exceed Threshold (Y/N)?		N	N	N

[1] All impacts based on PMI on the Cartesian receptor grid.

[2] MEIR: Maximum exposed individual at an existing residential receptor; 70-year adult exposure scenario and 9-year child exposure scenario for cancer risk

[3] MEIW: Maximum exposed individual at an existing occupational worker receptor; 40-year adult worker exposure scenario

The maximum cancer risk among all the receptors evaluated in this HRA occurs at the MEIR. Tables 6-4 and 6-5 present the source and pollutant contribution to the 70-year cancer risk at the maximum receptor. As seen in Table 6-4, emissions from the CCGS (GE 7FA turbine) are the primary contributor to cancer risk impacts, accounting for approximately 66 percent of the total cancer risk at the MEIR. Risk analysis by individual TAC supports this conclusion, showing that approximately 39 percent of the cancer risk at the MEIR is due to Formaldehyde emissions from the CCGS and two SCGS. All other cancer risk exposures evaluated (i.e., other than the MEIR) show lower risks, and have a similar breakdown of contribution by source and TAC.

Table 6-4: Summary of Cancer Risk at MEIR by Source and Pathway (Generation Scenario 1)

Emission Source	Inhalation Pathway	Non-Inhalation Pathway					Total	Source Contribution
		Dermal	Soil	Mother's Milk	Home-grown Produce	Oral		
CCGS	0.119	0.041	0.006	--	0.052	0.100	0.219	66.0%
SCGS	0.026	0.009	0.001	--	0.012	0.022	0.048	14.5%
SCGS	0.015	0.005	0.001	--	0.007	0.013	0.028	8.3%
Emer. Generator	0.017	--	--	--	--	--	0.017	5.1%
Diesel Fuel Tank	0.001	--	--	--	--	--	0.001	0.4%
WSAC	0.010	0.006	0.003	--	0.001	0.009	0.019	5.7%
Total =	0.188	0.061	0.011	--	0.071	0.144	0.332	100%

Table 6-5: Summary of Cancer Risk at MEIR by TAC and Pathway (Generation Scenario 1)

Emission Source	Inhalation Pathway	Non-Inhalation Pathway					Total	TAC
		Dermal	Soil	Mother's Milk	Home-grown Produce	Oral		
SCGS - 1	0.0007	--	--	--	--	--	0.0007	1,3-Butadiene
SCGS - 1	0.0011	--	--	--	--	--	0.0011	Acetaldehyde
SCGS - 1	0.0009	--	--	--	--	--	0.0009	Benzene
SCGS - 1	0.0008	--	--	--	--	--	0.0008	Ethyl benzene
SCGS - 1	0.0207	--	--	--	--	--	0.0207	Formaldehyde
SCGS - 1	0.0010	--	--	--	--	--	--	Propylene Oxide
SCGS - 1	0.0000	0.0007	0.0001	--	0.0009	0.0017	0.0017	Benz[a]anthracene
SCGS - 1	0.0001	0.0044	0.0007	--	0.0055	0.0105	0.0107	Benzo[a]pyrene
SCGS - 1	0.0000	0.0004	0.0001	--	0.0004	0.0009	0.0009	Benzo[b]fluoranthene
SCGS - 1	0.0000	0.0003	0.0001	--	0.0004	0.0008	0.0008	Benzo[k]fluoranthene
SCGS - 1	0.0000	0.0001	0.0000	--	0.0001	0.0002	0.0002	Chrysene
SCGS - 1	0.0002	0.0025	0.0004	--	0.0032	0.0061	0.0063	Dibenz[a,h]anthracene
SCGS - 1	0.0000	0.0007	0.0001	--	0.0009	0.0018	0.0018	Indeno[1,2,3-cd]pyrene
SCGS - 1	0.0005	--	--	--	--	--	0.0005	Naphthalene
SCGS - 2	0.0004	--	--	--	--	--	0.0004	1,3-Butadiene
SCGS - 2	0.0006	--	--	--	--	--	0.0006	Acetaldehyde
SCGS - 2	0.0005	--	--	--	--	--	0.0005	Benzene
SCGS - 2	0.0004	--	--	--	--	--	0.0004	Ethyl benzene
SCGS - 2	0.0119	--	--	--	--	--	0.0119	Formaldehyde
SCGS - 2	0.0006	--	--	--	--	--	--	Propylene Oxide
SCGS - 2	0.0000	0.0004	0.0001	--	0.0005	0.0010	0.0010	Benz[a]anthracene
SCGS - 2	0.0001	0.0025	0.0004	--	0.0032	0.0061	0.0061	Benzo[a]pyrene
SCGS - 2	0.0000	0.0002	0.0000	--	0.0003	0.0005	0.0005	Benzo[b]fluoranthene
SCGS - 2	0.0000	0.0002	0.0000	--	0.0003	0.0005	0.0005	Benzo[k]fluoranthene
SCGS - 2	0.0000	0.0000	0.0000	--	0.0001	0.0001	0.0001	Chrysene
SCGS - 2	0.0001	0.0015	0.0002	--	0.0018	0.0035	0.0036	Dibenz[a,h]anthracene
SCGS - 2	0.0000	0.0004	0.0001	--	0.0005	0.0010	0.0010	Indeno[1,2,3-cd]pyrene
SCGS - 2	0.0003	--	--	--	--	--	0.0003	Naphthalene
CCGS	0.0032	--	--	--	--	--	0.0032	1,3-Butadiene

Table 6-5: Summary of Cancer Risk at MEIR by TAC and Pathway (Generation Scenario 1)

Emission Source	Inhalation Pathway	Non-Inhalation Pathway					Total	TAC
		Dermal	Soil	Mother's Milk	Home-grown Produce	Oral		
CCGS	0.0050	--	--	--	--	--	0.0050	Acetaldehyde
CCGS	0.0041	--	--	--	--	--	0.0041	Benzene
CCGS	0.0035	--	--	--	--	--	0.0035	Ethyl benzene
CCGS	0.0940	--	--	--	--	--	0.0940	Formaldehyde
CCGS	0.0047	--	--	--	--	--	--	Propylene Oxide
CCGS	0.0001	0.0032	0.0005	--	0.0041	0.0078	0.0079	Benz[a]anthracene
CCGS	0.0006	0.0198	0.0030	--	0.0251	0.0479	0.0485	Benzo[a]pyrene
CCGS	0.0000	0.0016	0.0002	--	0.0020	0.0039	0.0039	Benzo[b]fluoranthene
CCGS	0.0000	0.0016	0.0002	--	0.0020	0.0038	0.0038	Benzo[k]fluoranthene
CCGS	0.0000	0.0004	0.0001	--	0.0005	0.0009	0.0009	Chrysene
CCGS	0.0011	0.0114	0.0017	--	0.0145	0.0276	0.0287	Dibenz[a,h]anthracene
CCGS	0.0001	0.0033	0.0005	--	0.0042	0.0081	0.0082	Indeno[1,2,3-cd]pyrene
CCGS	0.0024	0.0000	0.0000	--	0.0000	0.0000	0.0024	Naphthalene
Emer. Generator	0.0168	0.0000	0.0000	--	0.0000	0.0000	0.0168	Diesel particulate matter
Diesel Fuel Tank	0.0014	--	--	--	--	--	0.0014	Benzene
Diesel Fuel Tank	0.0000	--	--	--	--	--	0.0000	Ethyl benzene
Diesel Fuel Tank	0.0000	--	--	--	--	--	0.0000	Naphthalene
WSAC	0.0008	0.0057	0.0028	--	0.0005	0.0089	0.0098	Arsenic
WSAC	0.0091	--	--	--	--	--	0.0091	Chloroform
Total =	0.1819	0.0613	0.0111	0.0000	0.0711	0.1435	0.33	

"—" indicates value of 0.00E+0

Figure 2 Point of Maximum Impact for Generation Scenario 1 (GE Option)

Cancer risks potentially associated with facility emissions were also assessed in terms of cancer burden. Cancer burden is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with emissions from the proposed project. Cancer burden is calculated as the worst-case product of any potential carcinogenic risk greater than one-in-one-million and the number of individuals at that risk level. Because the maximum individual cancer risk is less than one-in-one million, the potential cancer burden is zero.

In conclusion, estimated cancer risks at all receptors in the health risk analysis were very low, with a worst-case cancer risk of 0.33-in-one-million at the MEIR. All estimated health impacts were below the SCAQMD significance criteria of ten-in-one-million for cancer risk and HI of 1.0 for non-cancer chronic and acute health impacts. Based on results of the risk assessment, the operation of the proposed project poses insignificant incremental cancer risk and non-cancer health risk impacts, according to established regulatory guidelines.

6.3 Generation Scenario 2 (Siemens Option)

For Generation Scenario 2 (Siemens Option), cancer risk at the MEIR was determined to be 0.24-in-one-million as shown in Table 6-6. Non-cancer chronic and acute health impacts at the MEIR were determined to be negligible. Cancer risk at the MEIW, based on a worker exposure, was determined to be 0.39-in-one million. Non-cancer chronic and acute health impacts at the MEIW were also determined to be very negligible. Figure 3 presents the locations of the maximum risk for Generation Scenario 2.

Table 6-6: Summary of Maximum Impacts for Generation Scenario 2 (Siemens Option)

Receptor Type[1]		Maximum Cancer Risk (per million)	Maximum Acute Hazard Index	Maximum Chronic Hazard Index
MEIR[2]	Adult	0.39	0.01	0.01
	Child	0.09	--	--
MEIW[3]		0.08	0.01	0.01
Significance Threshold		10	1	1
Exceed Threshold (Y/N)?		N	N	N

[1] All impacts based on PMI on the Cartesian receptor grid.
[2] MEIR: Maximum exposed individual at an existing residential receptor; 70-year adult exposure scenario and 9-year child exposure scenario for cancer risk
[3] MEIW: Maximum exposed individual at an existing occupational worker receptor; 40-year adult worker exposure scenario

The maximum cancer risk among all the receptors evaluated in this HRA occurs at the MEIR. Table 6-7 and Table 6-8 present the source and pollutant contribution to the 70-year cancer risk at the maximum receptor. As shown in Table 6-7, emissions from the Flex-Plant 30 turbine are the primary contributor to cancer risk impacts, accounting for approximately 53 percent of the total cancer risk at the MEIR. Risk analysis by individual TAC supports this conclusion, showing that approximately 23 percent of the cancer risk at the MEIR is due to Formaldehyde emissions, which are primarily emitted from the Siemens Flex-Plant 30 turbine. All other cancer risk exposures evaluated show lower risks, and have a similar breakdown of contribution by source and TAC. HARP modeling results are presented in Appendix C, Attachment 1.

Table 6-7: Summary of Cancer Risk at MEIR by Source and Pathway (Generation Scenario 2)

Emission Source	Inhalation Pathway	Non-Inhalation Pathway					Total	Source Contribution
		Dermal	Soil	Mother's Milk	Home-grown Produce	Oral		
Flex Plant 30	0.1120	0.0390	0.0058	0.0000	0.0495	0.0944	0.2070	52.8%
Flex Plant 10	0.0773	0.0269	0.0040	0.0000	0.0341	0.0650	0.1420	36.2%
Emer. Generators	0.0300	0.0000	0.0000	0.0000	0.0000	0.0000	0.0300	7.6%
Diesel Fuel Tanks	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0021	0.5%
WSAC	0.0057	0.0032	0.0015	0.0000	0.0003	0.0050	0.0107	2.7%
Total =	0.2280	0.0690	0.0114	0.0000	0.0839	0.1640	0.3920	**100%**

Table 6-8: Summary of Cancer Risk at MEIR by TAC and Pathway (Generation Scenario 2)

Emission Source	Inhalation Pathway	Non-Inhalation Pathway					Total	TAC
		Dermal	Soil	Mother's Milk	Home-grown Produce	Oral		
Flex Plant 30	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030	1,3-Butadiene
Flex Plant 30	0.0047	0.0000	0.0000	0.0000	0.0000	0.0000	0.0047	Acetaldehyde
Flex Plant 30	0.0038	0.0000	0.0000	0.0000	0.0000	0.0000	0.0038	Benzene
Flex Plant 30	0.0033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	Ethyl benzene
Flex Plant 30	0.0889	0.0000	0.0000	0.0000	0.0000	0.0000	0.0889	Formaldehyde
Flex Plant 30	0.0044	0.0000	0.0000	0.0000	0.0000	0.0000	0.0044	Propylene oxide
Flex Plant 30	0.0001	0.0030	0.0005	0.0000	0.0039	0.0074	0.0075	Benz[a]anthracene
Flex Plant 30	0.0006	0.0187	0.0028	0.0000	0.0237	0.0452	0.0458	Benzo[a]pyrene
Flex Plant 30	0.0000	0.0015	0.0002	0.0000	0.0019	0.0037	0.0037	Benzo[b]fluoranthene
Flex Plant 30	0.0000	0.0015	0.0002	0.0000	0.0019	0.0036	0.0036	Benzo[k]fluoranthene
Flex Plant 30	0.0000	0.0003	0.0001	0.0000	0.0004	0.0008	0.0008	Chrysene
Flex Plant 30	0.0010	0.0108	0.0016	0.0000	0.0137	0.0261	0.0271	Dibenz[a,h]anthracene
Flex Plant 30	0.0001	0.0032	0.0005	0.0000	0.0040	0.0076	0.0077	Indeno[1,2,3-cd]pyrene
Flex Plant 30	0.0023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0023	Naphthalene
Flex Plant 10	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0021	1,3-Butadiene
Flex Plant 10	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0032	Acetaldehyde
Flex Plant 10	0.0027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0027	Benzene
Flex Plant 10	0.0023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0023	Ethyl benzene

Table 6-8: Summary of Cancer Risk at MEIR by TAC and Pathway (Generation Scenario 2)

Emission Source	Inhalation Pathway	Non-Inhalation Pathway					Total	TAC
		Dermal	Soil	Mother's Milk	Home-grown Produce	Oral		
Flex Plant 10	0.0612	0.0000	0.0000	0.0000	0.0000	0.0000	0.0612	Formaldehyde
Flex Plant 10	0.0031	0.0000	0.0000	0.0000	0.0000	0.0000	0.0031	Propylene oxide
Flex Plant 10	0.0001	0.0021	0.0003	0.0000	0.0027	0.0051	0.0051	Benz[a]anthracene
Flex Plant 10	0.0004	0.0129	0.0019	0.0000	0.0163	0.0311	0.0315	Benzo[a]pyrene
Flex Plant 10	0.0000	0.0010	0.0002	0.0000	0.0013	0.0025	0.0026	Benzo[b]fluoranthene
Flex Plant 10	0.0000	0.0010	0.0002	0.0000	0.0013	0.0025	0.0025	Benzo[k]fluoranthene
Flex Plant 10	0.0000	0.0002	0.0000	0.0000	0.0003	0.0006	0.0006	Chrysene
Flex Plant 10	0.0007	0.0074	0.0011	0.0000	0.0094	0.0180	0.0187	Dibenz[a,h]anthracene
Flex Plant 10	0.0001	0.0022	0.0003	0.0000	0.0028	0.0053	0.0053	Indeno[1,2,3-cd]pyrene
Flex Plant 10	0.0016	0.0000	0.0000	0.0000	0.0000	0.0000	0.0016	Naphthalene
Emer. Generator	0.0300	0.0000	0.0000	0.0000	0.0000	0.0000	0.0300	DPM
Diesel Fuel Tank	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0021	Benzene
Diesel Fuel Tank	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Ethyl benzene
Diesel Fuel Tank	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Naphthalene
WSAC	0.0005	0.0032	0.0015	0.0000	0.0003	0.0050	0.0055	Arsenic
WSAC	0.0053	0.0000	0.0000	0.0000	0.0000	0.0000	0.0053	Chloroform
Total =	**0.2280**	**0.0690**	**0.0114**	**0.0000**	**0.0839**	**0.1640**	**0.3920**	
"—" indicates value of 0.00E+0								

Figure 3 Point of Maximum Impact for Generation Scenario 2 (Siemens Option)

7.0 **References**

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Appendix D

Dispersion Modeling Files

LADWP Scattergood Generation Station Unit 3 Repowering Project

Appendix D – Dispersion Modeling Technical Memorandum, Supporting Tables And Modeling Files

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Appendix D.1 Technical Memorandum (Operations)

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1.0 Air Quality Impact Analysis

This Technical Memorandum documents the ambient air quality modeling analysis needed to meet the California Environmental Quality Act (CEQA) requirements and demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS). The analysis was conducted for each of the two Generation Scenarios in accordance with the South Coast Air Quality Management District's (SCAQMD's) *AQMD Modeling Guidance for AERMOD* (SCAQMD 2011)[1] and U.S. Environmental Protection Agency's (EPA's) *Guideline on Air Quality Models* (GAQM) (EPA 2008). The most recent version of SCAQMD Modeling Guidance and GAQM adopt AERMOD as a preferred general purpose (flat and complex terrain) dispersion model.

1.1 Overview of Modeling Methodology

The latest version of the EPA's AERMOD model (Version 11103) was used in the analysis. AERMOD was applied with the regulatory default options, the urban modeling option, and 5 years (2005-2009) of hourly meteorological data consisting of surface observations from Los Angeles International Airport, in Los Angeles, California, and concurrent upper air data from Miramar Marine Corps Air Station (MCAS) Airport in San Diego, California. The location of the Los Angeles International Airport relative to the Scattergood Generating Station site is shown in Figure D.1-1. The meteorological data processing is described in detail in Section 1.4 of this Appendix.

The SCAQMD Modeling Guidance requires that all air dispersion modeling performed in SCAQMD jurisdiction use the urban modeling option. This is accomplished by adding the AERMOD URBANOPT control keyword along with an appropriate value for the regional population. Per the *County Population to Use in AERMOD* table in the Modeling Guidance, a population of 9,862,049 for Los Angeles County was used. Also SCAQMD guidance specifies that the non-default option within AERMOD should be applied to assume flat, level terrain if all receptor elevations are lower than the base elevation of the source. If some receptors are lower and some receptors are higher than the base elevation of the source, AERMOD should be run twice – once using the default option and the second time using the non-default option. The maximum ground-level concentration from both runs should be reported. While some receptors are at slightly different elevations than the base elevation of the proposed sources, guidance from SCAQMD was provided for this specific project via phone conversation between Rich Hamel of AECOM and Jillian Baker of SCAQMD on August, 25, 2011, that allowed for only simple regulatory default options to be applied.

Based on CEQA requirements, cumulative modeling was conducted to demonstrate compliance against the NAAQS and CAAQS. Modeling was conducted for the criteria pollutants Sulfur Dioxode (SO_2), Particulate Matter of 2.5 Microns or Less ($PM_{2.5}$), Particulate Matter of 10 Microns or Less (PM_{10}), Nitrogen Dioxide (NO_2) and Carbon Monoxide (CO). Lead emissions were assumed negligible based on the type and quantity of fuel burned. Thus, lead was not modeled in this analysis. The cumulative modeling conducted involved assessing the cumulative air quality impacts of (1) the proposed combustion turbines and ancillary equipment in each Generation Scenario, and (2) existing monitored background concentrations to represent non-modeled sources in the area.

The modeling analysis was conducted for each of the two proposed combustion turbine scenarios. Generation Scenario 1 consists of a new Combined Cycle Generating System (CCGS) for base load, and a Simple Cycle Generating System (SCGS) for peak load. Specifically, equipment consists of one General Electric 7FA.05 combustion turbine generator (CTG) for base load and two individual General Electric LMS100 CTGs operating independently for peak load. An emergency generator is also proposed for this Generation Scenario. Generation Scenario 2 consists of a new CCGS similar to that described for Generation Scenario 1 for base load with peak load provided by a single additional CCGS

[1] http://www.aqmd.gov/smog/metdata/AERMOD_ModelingGuidance.html

unit. For this scenario, the equipment includes a Siemens SGT6-5000(4) Flex 30 CTG for base load and a Siemens SGT6-5000F(4) Flex 10 CTG for peak load. No emergency generator is proposed for Generation Scenario 2.

As documented in this section, the modeling analysis for each Generation Scenario demonstrates compliance with all NAAQS and CAAQS with the following exceptions: the 24-hour and annual PM_{10} and $PM_{2.5}$ CAAQS, and the 24-hour and annual $PM_{2.5}$ NAAQS. In these instances, however, the ambient background concentrations alone exceed the standards. In the case of the 24-hour and annual $PM_{2.5}$ NAAQS, project impacts alone are less than the applicable Class II Significant Impact Levels (SILs).

In the case of the CAAQS, SCAQMD Rule 1303 requires that in the event that the ambient background exceeds the applicable CAAQS, the modeled concentration for all permitted sources must be below the "Significant Change in Air Quality Concentration" value given in Table A.2 of the rule[2]. The ambient background pollutant concentrations for 24-hour PM_{10}/$PM_{2.5}$ and annual PM_{10} all exceed their respective CAAQS; therefore, the impacts from the project must be less than the significant change values for those periods given in the rule. The "Significant Change in Air Quality Concentration" value for 24-hour PM_{10}/$PM_{2.5}$ is 2.5 micrograms per cubic meter ($\mu g/m^3$) and the annual value is 1.0 $\mu g/m^3$. As documented in Appendix D.2, the modeled concentrations for all permitted sources for each Generation Scenario are below their respective "Significant Change in Air Quality Concentration", demonstrating compliance as required by SCAQMD Rule 1303.

Because all project impacts, when combined with the ambient background concentrations, are below the NAAQS/CAAQS, or in cases where the ambient background exceeds the NAAQS/CAAQS are below the Class II SIL or SCAQMD Air Quality Significance Threshold, compliance with all applicable NAAQS/CAAQS is demonstrated and no further analysis is required.

All model input and output files are provided in Appendix D.3 on the modeling archive CD to facilitate CEQA review of the modeling analysis. The following sub-sections detail the general aspects of the modeling analysis for each of the Generation Scenarios.

1.2 Model Selection

The suitability of an air quality dispersion model for a particular application is dependent upon several factors. The following selection criteria were evaluated:

- stack height relative to nearby structures,
- dispersion environment,
- local terrain, and
- representative meteorological data.

The EPA GAQM and the AQMD Modeling Guidance for AERMOD prescribe a set of approved models for regulatory applications for a wide range of source types and dispersion environments. Based on a review of the factors discussed below, the latest version of AERMOD (11103) was used to assess air quality impacts for the project.

1.3 Good Engineering Practice Stack Height

Good engineering practice (GEP) stack height is defined as the stack height necessary to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant as a result of

[2] http://www.aqmd.gov/rules/reg/reg13/r1303.pdf, Page 10

atmospheric downwash, wakes or eddy effects created by the source, nearby structures, or terrain features.

A GEP stack height analysis was performed for all proposed stacks for each modeling scenario in accordance with EPA's guidelines (EPA 1985). Per the guidelines, the physical GEP height, (H_{GEP}), is determined from the dimensions of all buildings which are within the region of influence using the following equation:

$$H_{GEP} = H_B + 1.5L$$

where:

H_B = height of the structure within 5L of the stack which maximizes H_{GEP}, and

L = lesser dimension (height or projected width) of the structure.

For a squat structure, i.e., height less than projected width, the formula reduces to:

$$H_{GEP} = 2.5H_B$$

In the absence of influencing structures, a "default" GEP stack height is credited up to 65 meters (213 feet).

1.3.1 Generation Scenario 1 (GE Turbines) GEP Specifics

A summary of the GEP stack height analyses for Generation Scenario 1 is presented Table D.1-1.

The maximum calculated GEP stack height for Generation Scenario 1 for all emission sources is 85.88 meters; the controlling structure for the General Electric LMS100 CTG proposed to be located the farthest north (modeling Source name LMS100_6) is Unit 2 Power Plant (32.22 meters); the controlling structure for all other emission sources is Unit 3 Power Plant (34.72 meters). The proposed stack heights for the emission sources are:

- General Electric 7FA.05 compressor turbine – 64.92 meters;
- General Electric LMS100 compressor turbines – 30.48 meters;
- Emergency generator – 5.27 meters; and
- Wet Surface Air Cooler – 4.27 meters.

All proposed stacks are less than the GEP formula height and therefore potentially subject to building downwash. Wind direction-specific building dimensions for input to AERMOD were developed with the US EPA's Building Profile Input Processor (BPIP-PRIME) for input to AERMOD. The BPIP input and output files are provided in the modeling archive.

Table D.1-1 Summary of GEP Analysis for Generation Scenario 1 (GE Turbines)

Emission Source	Model Source Name	Stack Height (m)	Controlling Buildings / Structures	Building Height (m)	Projected Width (m)	GEP Formula Height (m)
General Electric 7FA.05	GE_7FA	64.92	Unit 3 Power Plant	34.72	41.35	85.88
General Electric LMS100 #1	LMS100_6	30.48	Unit 2 Power Plant	32.22	72.12	59.21
General Electric LMS100 #2	LMS100_7	30.48	Unit 3 Power Plant	34.72	34.37	64.83
Emergency Generator	EGD	5.27	Unit 3 Power Plant	34.72	38.41	65.46
Wet Surface Air Cooler	WGF1-WGF6	4.27	Unit 3 Power Plant	34.72	40.11-41.60	65.46

1.3.2 Generation Scenario 2 (Siemens Turbines) GEP Specifics

A summary of the GEP stack height analyses for Generation Scenario 2 is presented Table D.1-2.

The maximum calculated GEP stack height for Generation Scenario 2 for all emission sources is 85.88 meters; the controlling structure is Unit 3 Power Plant (34.72 meters). The proposed stack heights for the emission sources are:

- Siemens SGT6-5000(4) Flex 30 compressor turbine – 64.92 meters;
- Siemens SGT6-5000(4) Flex 10 compressor turbine – 51.82 meters;
- Emergency Generators – 5.27 meters; and
- Wet Surface Air Cooler – 4.27 meters.

All proposed stacks are less than the GEP formula height and therefore potentially subject to building downwash. Wind direction-specific building dimensions for input to AERMOD were developed with the US EPA's Building Profile Input Processor (BPIP-PRIME) for input to AERMOD. The BPIP input and output files are provided in the modeling archive.

Table D.1-2 Summary of GEP Analysis for Generation Scenario 2 (Siemens Turbines)

Emission Source	Model Source Name	Stack Height (m)	Controlling Buildings / Structures	Building Height (m)	Projected Width (m)	GEP Formula Height (m)
Siemens SGT6-5000(4) Flex 30	SIA	64.92	Unit 3 Power Plant	34.72	41.35	85.88
Siemens SGT6-5000(4) Flex 10	SIB	60.96	Unit 3 Power Plant	34.72	39.03	65.46
Emergency Generators	EGC-EGF	5.27	Unit 3 Power Plant	34.72	34.77	72.17
Wet Surface Air Cooler	WSF1-WSF6	4.27	Unit 3 Power Plant	34.72	34.76-37.30	65.46

1.4 Representative Meteorological Data

AERMOD requires a sequential hourly record of dispersion meteorology representative of the region within which the proposed source would be located. Because the project will be subject to Prevention of Significant Deterioration (PSD) permitting, EPA requires the use of 5 years of meteorological data for air dispersion modeling analysis. The meteorological data file developed for the permitting analysis was also used for this CEQA evaluation. The methodology used to develop the 5-year data set is described below.

Because 5 years of meteorological data set is not available from the SCAQMD's website for air dispersion modeling, meteorological data set for the Scattergood Generating Station (SGS) site has been developed following the guidance provided by the SCAQMD (e-mail from Tom Chico to Krishna Nand, dated March 30, 2011). The following steps were followed for developing this meteorological data set (for the years 2005 through 2009):

1. Obtain Raw Hourly Meteorological Data – Wind speed, wind direction and temperature data from the SCAQMD "laxh" surface meteorological monitoring station was obtained from the SCAQMD. The "laxh" station is located at 7201 W Westchester Parkway, Los Angeles, California 90045 (Lat: 33o 57' 15" N, Long: 118o 25' 49" W).

   Fractional cloud coverage data was obtained from the National Weather Service (NWS) "KLAX" (Los Angeles International Airport) Station. This data was obtained from National Data Climate Center (http://www7.ncdc.noaa.gov/CDO/cdo).

   Incident surface solar radiation data from the California Irrigation Management Information System (CIMIS) 174 surface meteorological monitoring station was obtained from the CIMIS website (http://wwwcimis.water.ca.gov/cimis/welcome.jsp). This station is located in Long Beach, California (Lat: 33^{o} 47' 50" N, Long: 118^{o} 05' 38" W).

2. Process the Raw Data into an Input File for AERMET – The raw meteorological data obtained in Step 1 was processed into a single input file for AERMET, the EPA algorithm that produces the meteorological input files for running the AERMOD dispersion model. The following procedure was followed for processing the surface meteorological data:

   - Wind speed and wind direction data were first inspected to identify and flag hours of missing and questionable data. Short periods of missing data (a few hours or less) were filled using time interpolation following procedures contained in the EPA document *Procedures for Substituting Values for Missing NWS Meteorological Data for Use in Regulatory Air Quality Models,* (Atkinson and Lee, July 1992). Long periods of missing data and questionable data were set to missing value indicators. The resulting processed hourly data were ported into "laxh_inp.prn."

   - Temperature data were first inspected to identify and flag hours of missing and questionable data. Short periods of missing data (a few hours or less) as well as questionable data (if any, these were sparse and single hours) were filled using time interpolation. Long periods of missing data were replaced with data from the NWS KLAX station. The resulting processed hourly data were ported into "laxh_inp.prn."

   - Fractional cloud coverage data were first converted from NWS codes to fractional values in tenths as follows: "CLR" 0, "SCT" = 4.0, "BKN" = 8.0, "OVC" = 10.0. Hours of missing values were then identified and flagged. Missing data were filled using time interpolation. The resulting processed hourly data were ported into "laxh_inp.prn."

- Incident Surface Solar Radiation data were first inspected to identify hours in which low, non-zero values were reported during nighttime hours (values were sometimes reported as, for example: “1”, “2” or “3” watts per square meter during nighttime hours). Values for these hours were set to “0.” Hours of missing values were then indentified and flagged. Missing values were filled by time interpolation except for instances when large portions of a day were missing, where instead the average of the hourly values from the previous and subsequent days filled the missing data. The resulting processed hourly data were ported into “laxh_inp.prn.”

3. Run AERMET to Produce the “laxh.sfc” and “laxh.pfl” Files – The surface meteorological inputs provided in “laxh_inp.prn” and upper air data from the Miramar MCAS with surface roughness length = 0.26m; noontime surface albedo = 0.16; and Bowen Ratio = 1.0 were input to AERMET program to produce “laxh.sfc” and “laxh.pfl” files. Lakes Environmental AERMOD-View software, Version 7.0.3 was used to produce “laxh.sfc” and “laxh.pfl” files. This version of the AERMOD_View incorporates the most recent versions of AERMET (Version 11059) and AERMOD (Version 11103) released by EPA.

   AECOM used the Plume Volume Molar Ratio Method (PVMRM) option of the AERMOD model for estimating maximum 1-hour average NO_2 concentrations. This modeling option requires ozone concentration data from a representative monitoring station for the same period which was used for developing “laxh.sfc” and “laxh.pfl” files. SCAQMD provided raw hourly ozone concentration data measured at the “laxh” surface monitoring station for the period 2005 through 2009 for developing ozone data files for performing PVMRM modeling analysis. These data were first processed to fill the missing hours using the procedure described below. Following completion of this procedure, the filled data were then organized into the AERMOD input file “ozone_laxh.txt.” which contains the processed (filled) ozone concentration data as hourly records.

4. Procedure to Fill Three or Less Consecutive Hours of Missing Data – Three or less consecutive hours of missing ozone data was filled by linear interpolation between non-missing ozone data on either side of the missing period. This procedure was followed unless the short period of missing hours was judged to possibly contain a diurnal ozone peak. In those instances, the procedure described below for more than three consecutive missing hours was applied.

5. Procedure to Fill More than Three Consecutive Hours of Missing Data (or Situations with Possible Diurnal Peak Ozone Concentrations) – To fill more than three consecutive hours of missing data, the maximum ozone concentration value for each hour of the day and month of the year was determined in the 5 years of data. This step resulted in 12 sets (for each month of the year) of 24 hourly ozone values representing the maximum ozone concentration for the corresponding month and hour that occurred over the 5-year period. Missing values were then filled using the data from this 12-by-24 table corresponding to the month and hour of the missing data.

The meteorological data files developed for performing air dispersion modeling for the Scattergood Repowering Project have already been provided on a CD to the SCAQMD.

A wind rose of the 5 years of data is shown in Figure D.1-4. The wind rose indicates that the predominant wind direction is west-southwest.

1.5 Terrain and Receptor Data Processing with AERMAP

To identify the maximum impacted receptors, appropriate model receptors must be selected. The modeling grid will consist of three parts: (1) receptors along the perimeter of the SGS with a spacing of approximately 50 meters, (2) receptors spaced 100 meters apart extending from the previous receptors to approximately 3,000 meters from the property line, and (3) receptors spaced 500 meters apart from the previous receptors to approximately 2,000 meters. Thus, receptors up to about 5,000 meters from the facility boundary will be selected for modeling analysis. Discrete receptors within 1 mile (1,609 meters) of the SGS will also be located at sensitive receptors (e.g., schools, day-care centers, hospitals, etc.). No receptors will be placed within the SGS property line. Receptors will also not be placed on roadways and over water. All coordinates for sources and receptors will be specified in North American Datum (NAD) 83, Universal Transverse Mercator (UTM) Zone 11. Receptor grid points outside the facility boundary with grid spacing of 100 meters or more will be placed so that individual grid points are placed at UTM coordinates ending in “00”. The full extent of the receptor grid, and the near field receptor grid used around the facility property, as shown on Figures D.1-5 and D.1-6, respectively.

Receptor elevations and hill heights will be assigned using EPA AERMAP and commercially available digital terrain elevations developed by the United States Geological Survey by using its National Elevation Dataset (NED). The NED data provides terrain elevations with 1-meter vertical resolution and (1 arc-second) 30 meters horizontal resolution based on a UTM coordinate system. For each receptor location, the terrain elevation will be set to the elevation for the closest NED grid point. The U.S. Geological Survey specifies coordinates in NAD83, UTM Zone 11. Lakes Environmental software will be used for assigning elevations to various receptors and hill heights.

1.6 Stack and Emissions Data

1.6.1 Generation Scenario 1 (GE Turbines)

Turbine Information

The dispersion modeling analysis was conducted with emission rates and flue gas exhaust characteristics (flow rate and temperature) that are expected to represent the range of possible values for the natural gas fired turbines under consideration. Because turbine emission rates and flue gas characteristics for a given turbine load vary as a function of the type of operation, ambient temperature, and fuel use, data was derived for a number of ambient temperature cases for natural gas fuel under normal operations at 100%, 75% and 50% operating loads and for hourly cold start, non-cold start, and shutdown scenarios. Temperatures evaluated for normal operations were 23degrees Fahrenheit (°F), 63°F and 83°F.

A detailed summary of the stack exhaust and emissions data for all operation scenarios, loads and ambient temperatures cases are provided in Appendices D.1 and D.2. To be conservative and limit the number of cases to be modeled, the short-term modeling analysis was conducted using the lowest stack exhaust temperature and exit velocity coupled with the maximum emission rate over all ambient temperature cases for each operating load scenario. Annual modeling was based on the 100% load 63°F case, assumed to be the most typical operating scenario. Table D.1-3 through Table D.1-6 summarizes the stack parameters and emission rates used in the modeling for the combustion turbines.

Table D.1-3 Stack Parameters and Emission Rates

(General Electric 7FA.05 Combustion Turbine, Normal Operations)

Parameter		Values			
Load		50%	75%	100%	Annual(1)
Stack Height (m)		64.92			
Stack Diameter (m)		5.79			
Exhaust Velocity (m/s)		14.03	16.38	20.74	20.74
Exhaust Temperature (K)		366.48	366.48	366.48	366.48
Pollutant Emissions (lb/hr)/tpy(2)	NO_x	10.37	13.17	16.60	85.41
	CO	6.31	8.02	10.10	---

Table D.1-3 Stack Parameters and Emission Rates

(General Electric 7FA.05 Combustion Turbine, Normal Operations)

Parameter		Values			
Load		50%	75%	100%	Annual(1)
	SO_2	0.85	1.06	1.34	5.26
	PM10/PM2.5	10.00	10.00	10.00	43.71

(1) Based on representative annual average exhaust parameters for 63°F.
(2) Emissions are given in lb/hr for the short-term load cases and tpy for the annual case.

Table D.1-4 Stack Parameters and Emission Rates (General Electric 7FA.05 Combustion Turbine, Cold Start/Non-Cold Start/Shutdown)

Parameter		Values		
Load		Cold Start	Non-Cold Start	Shutdown
Stack Height (m)		64.92		
Stack Diameter (m)		5.79		
Exhaust Velocity (m/s)		19.45	19.43	16.41
Exhaust Temperature (K)		366.48	366.48	366.48
Pollutant Emissions (lb/hr)	NO_x	40.12	34.09	34.68
	CO	135.90	145.23	119.89
	SO_2	1.17	1.17	0.99

Table D.1-5 Stack Parameters and Emission Rates (General Electric LMS100 Combustion Turbines, Normal Operations)

Parameter		Values (per turbine)			
Load		50%	75%	100%	Annual(1)
Stack Height (m)		30.48			
Stack Diameter (m)		4.11			
Exhaust Velocity (m/s)		23.45	28.15	32.75	33.24
Exhaust Temperature (K)		691.48	669.82	662.59	680.93
Pollutant Emissions (lb/hr)/tpy(2)	NO_x	5.09	6.70	8.27	34.64
	CO	4.96	6.52	8.06	---
	SO_2	0.32	0.42	0.53	1.30
	PM10/PM2.5	5.50	5.60	5.80	15.08

(1) Based on representative annual average exhaust parameters for 63°F.
(2) Emissions are given in lb/hr for the short-term load cases and tpy for the annual case.

Table D.1-6 Stack Parameters and Emission Rates (General Electric LMS100 Combustion Turbines, Cold Start/Non-Cold Start/Shutdown)

Parameter		Values (per turbine)	
Load		Startup	Shutdown
Stack Height (m)		30.48	
Stack Diameter (m)		4.11	
Exhaust Velocity (m/s)		29.92	28.75
Exhaust Temperature (K)		661.48	661.48
Pollutant Emissions (lb/hr)	NO_x	24.82	9.85
	CO	15.10	7.18
	SO_2	0.49	0.48

Ancillary Combustion Unit

In addition to the three combustion turbines, the proposed facility under Generation Scenario 1 will include a diesel-fired emergency generator. The emergency generator was modeled at its peak capacity for short-term average impacts. For annual average impacts, the emission rate modeled was based on total emissions assuming 200 hours per year of operation.

Since the emergency generator will be limited in the amount of annual hours of operation, in accordance with EPA guidance for intermittent sources, the emergency generator was not included in the modeling for 1-hour NO_2 NAAQS as described in Section 1.7 below. However, the emergency generator was included in the modeling for all other pollutants and averaging periods as well as annual NO_2. It was also included in modeling for 1-hour NO_2 CAAQS. For those short-term modeling standards that are longer than 1 hour (3-hour SO_2, 8-hour CO, and 24-hour SO_2, PM_{10}, and $PM_{2.5}$), the emission rate determined for the short-term modeling was divided by the number of hours in the averaging period to simulate that the engine will only be tested for 60 minutes on any given day. Table D.1-7 presents the stack parameters and emission data for the emergency generator.

Table D.1-7 Stack Parameters and Emission Rates (Emergency Generator)

Parameter		Values				
Stack Height (m)		5.27				
Stack Diameter (m)		0.70				
Exhaust Velocity (m/s)		23.29				
Exhaust Temperature (K)		767.54				
Averaging Period		**1-hr**	**3-hr**	**8-hr**	**24-hr**	**Annual**
Pollutant Emissions (lb/hr)/tpy(1)(2)	NO_x	29.545	--	--	--	2.955
	CO	5.350	--	0.669	--	--
	SO_2	0.0374	0.0125	--	0.0016	0.0037
	$PM_{10}/PM_{2.5}$	--	--	--	0.0023	0.0056

Table D.1-7 Stack Parameters and Emission Rates (Emergency Generator)

Parameter	Values
Notes: 1) For the 3-, 8- and 24-hour period the hourly emission rate is further divided by the number of hours in the period. 2) Emissions are given in lb/hr for the short-term load cases and tpy for the annual case.	

Wet Surface Air Cooler

The excess heat from the auxiliary cooling system of the GE-7FA combustion turbine will be managed by installing a Wet Surface Air Cooler (WSAC). The WSAC will have 6 fans, each of which is a source of PM10/PM2.5. Therefore, these sources were included in the PM10/PM2.5 modeling. The stack parameters and emissions for the WSAC are presented in Table D.1-8.

Table D.1-8 Stack Parameters and Emission Rates – Wet Surface Air Cooler

Parameter	Values	
Fan Height (m)	4.27	
Fan Diameter (m)	3.66	
Exhaust Velocity (m/s)	9.21	
Exhaust Temperature (K)	297.37	
Averaging Period	**lb/hr**	**tpy**
PM10/PM2.5 Emissions Total	0.07	0.31
PM10/PM2.5 Emissions Per Fan (6)	0.012	0.05

1.6.2 Stack and Emissions Data – Generation Scenario 2 (Siemens Turbines)

Turbine Information

As with Generation Scenario 1, dispersion modeling analysis was conducted with emission rates and flue gas exhaust characteristics (flow rate and temperature) that are expected to represent the range of possible values for the natural gas fired turbines under consideration. Because turbine emission rates and flue gas characteristics for a given turbine load vary as a function of the type of operation, ambient temperature, and fuel use, data was derived for a number of ambient temperature cases for natural gas fuel under normal operations at 100%, 75% and 50% operating loads and for hourly cold start, non-cold start, and shutdown operating scenarios. Temperatures evaluated for normal operations were 23°F, 63°F and 83°F.

A detailed summary of the stack exhaust and emissions data for all operation scenarios, loads and ambient temperatures cases are provided in Appendices D.1 and D.2. To be conservative and limit the number of cases to be modeled, the short-term modeling analysis was conducted using the lowest stack exhaust temperature and exit velocity coupled with the maximum emission rate over all ambient temperature cases for each operating load and each operating scenario. Annual modeling was based on the 100% load 63°F case. Table D.1-8 through Table D.1-11 summarizes the stack parameters and emission rates used in the modeling for the compressor turbines.

Table D.1-9 Stack Parameters and Emission Rates (Siemens SGT6-5000(4) Flex 30 Combustion Turbine, Normal Operations)

Parameter		Values (per turbine)			
Load		50%	75%	100%	Annual[(1)]
Stack Height (m)		64.92			
Stack Diameter (m)		6.10			
Exhaust Velocity (m/s)		12.91	14.86	17.93	18.34
Exhaust Temperature (K)		366.48	366.48	366.48	366.48
Pollutant Emissions (lb/hr)/tpy[(2)]	NO_x	9.63	12.93	16.32	108.32
	CO	5.86	7.87	9.93	---
	SO_2	0.82	1.06	1.34	5.03
	PM10/PM2.5	9.00	9.00	9.00	39.75

(1) Based on representative annual average exhaust parameters for 63°F.
(2) Emissions are given in lb/hr for the short-term load cases and tpy for the annual case.

Table D.1-10 Stack Parameters and Emission Rates (Siemens SGT6-5000(4) Flex 30 Combustion Turbine, Cold Start/Non-Cold Start/Shutdown)

Parameter		Values (per turbine)		
Load		Cold Start	Non-Cold Start	Shutdown
Stack Height (m)		64.92		
Stack Diameter (m)		6.10		
Exhaust Velocity (m/s)		14.37	14.41	18.14
Exhaust Temperature (K)		366.48	366.48	366.48
Pollutant Emissions (lb/hr)	NO_x	29.71	49.37	40.52
	CO	81.90	103.29	77.49
	SO_2	0.91	0.92	1.15

Table D.1-11 Stack Parameters and Emission Rates (Siemens SGT6-5000(4) Flex 10 Combustion Turbine, Normal Operations)

Parameter	Values			
Load	50%	75%	100%	Annual[(1)]
Stack Height (m)	51.82			
Stack Diameter (m)	6.49			
Exhaust Velocity (m/s)	13.80	15.88	19.15	19.60
Exhaust Temperature (K)	444.26	444.26	444.26	444.26

Table D.1-11 Stack Parameters and Emission Rates (Siemens SGT6-5000(4) Flex 10 Combustion Turbine, Normal Operations)

Parameter		Values			
Pollutant Emissions (lb/hr)/tpy[2]	NO_x	9.63	12.93	16.32	117.61
	CO	5.86	7.87	9.93	---
	SO_2	0.82	1.06	1.34	5.37
	PM10/PM2.5	9.00	9.00	9.00	41.28

(1) Based on representative annual average exhaust parameters for 63°F.

(2) Emissions are given in lb/hr for the short-term load cases and tpy for the annual case.

Table D.1-12 Stack Parameters and Emission Rates (Siemens SGT6-5000(4) Flex 10 Combustion Turbine, Cold Start/Non-Cold Start/Shutdown)

Parameter		Values		
Load		Cold Start	Non-Cold Start	Shutdown
Stack Height (m)		51.82		
Stack Diameter (m)		6.49		
Exhaust Velocity (m/s)		21.19	21.05	20.32
Exhaust Temperature (K)		444.26	444.26	444.26
Pollutant Emissions (lb/hr)	NO_x	41.81	45.33	29.91
	CO	72.00	80.89	46.05
	SO_2	1.26	1.25	1.21

Ancillary Combustion Units

In addition to the three combustion turbines, the proposed facility under Generation Scenario 2 will include four diesel-fired emergency generators. The emergency generators were modeled at their peak capacity for short-term average impacts. However, no more than one of the emergency generators will be tested at a given time. To represent the testing in the modeling, each model run that includes emergency generator emissions has four source groups, each of which represents all of the facility sources operating plus one of the four emergency generators being tested. The results of those runs were then compared and the worst case impacts of the four reported in the modeling results. For annual average impacts, the emission rate modeled was based on total emissions assuming 200 hours/year operation.

Since the emergency generators will be limited in the amount of annual hours of operation, in accordance with US EPA guidance for intermittent sources, the emergency generators wer not included in the modeling for 1-hour NO_2 NAAQS as described in Section 1.7 of this Appendix D. However, the emergency generators were included in the modeling for all other pollutants and averaging periods as well as annual NO_2. They were also included in modeling for 1-hour NO_2 CAAQS. For those short-term modeling standards that are longer than 1 hour: 3-hour SO_2, 8-hour CO, and 24-hour SO_2, PM10, and PM2.5, the emission rate determined for the short term modeling was divided by the number of hours in the averaging period to simulate that the engine will only be tested for 60 minutes on any given day. Table D.1-13 presents the stack parameters and emission data for each emergency generator.

Table D.1-13 Stack Parameters and Emission Rates – Emergency Generators

Parameter		Values				
Stack Height (m)		5.27				
Stack Diameter (m)		0.70				
Exhaust Velocity (m/s)		23.29				
Exhaust Temperature (K)		767.54				
Averaging Period		**1-hr**	**3-hr**	**8-hr**	**24-hr**	**Annual**
Pollutant Emissions Per Engine (lb/hr)/tpy(1)(2)	NO_x	29.545	--	--	--	2.955
	CO	5.350	--	0.669	--	--
	SO_2	0.0374	0.0125	--	0.0016	0.0037
	PM10/PM2.5	--	--	--	0.0023	0.0056

(1) For the 3-, 8- and 24-hour period the hourly emission rate is further divided by the number of hours in the period.
(2) Emissions are given in lb/hr for the short-term load cases and tpy for the annual case.

Wet Surface Air Cooler

The excess heat from the auxiliary cooling system of the Siemens Flex Plant 30 and Flex Plant 10 combustion turbines will be managed by installing a Wet Surface Air Cooler (WSAC). The WSAC will have 6 fans, each of which is a source of PM10/PM2.5. Therefore, these sources were included in the PM10/PM2.5 modeling. The stack parameters and emissions for the WSAC are presented in Table D.1-14.

Table D.1-14 Stack Parameters and Emission Rates – Wet Surface Air Cooler

Parameter	Values	
Fan Height (m)	4.27	
Fan Diameter (m)	3.66	
Exhaust Velocity (m/s)	8.88	
Exhaust Temperature (K)	298.59	
Averaging Period	**lb/hr**	**tpy**
PM10/PM2.5 Emissions Total	0.07	0.31
PM10/PM2.5 Emissions Per Fan (6)	0.012	0.05

1.7 NO_2 Modeling

On March 1st, 2011, US EPA released a memorandum with final guidance for the modeling of the new 1-hour NO_2 NAAQS. The memorandum presents a tiered approach for modeling NO_2 from NO_x emissions that provides for increased levels of refinement:

- Tier 1: full conversion of NO_x to NO_2;

- Tier 2: use of 0.8 as a default ambient ratio for the 1-hour NO_2 standard and 0.75 for the annual NO_2 standard (no further justification needed); and
- Tier 3: apply the ozone limiting method (OLM) or Plume Volume Molar Ratio Method (PVMRM).

For all 1-hour and annual NO_2 NAAQS and CAAQS modeling for normal operations, the Tier 2 approached was applied.

Note that modeling for 1-hour NO_2 for NAAQS compliance determination in Generation Scenario 1 excluded the emergency generator. The exclusion of the emergency generator for the 1-hour NO_2 modeling is based on US EPA guidance provided in the March 1, 2011 memorandum, "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" for intermittent sources such as emergency generators. In the memo, US EPA states the following:

> *"Given the implications of the probabilistic form of the 1-hour NO_2 NAAQS discussed above, we are concerned that assuming continuous operation of intermittent emissions would effectively impose an additional level of stringency beyond that level intended by the standard itself. As a result, we feel it would be inappropriate to implement the 1-hour NO_2 standard in such a manner and recommend that compliance demonstrations for the 1-hour NO_2 NAAQS be based on emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations."*

The above approach was agreed to at a face to face meeting of LADWP, AECOM, and SCAQMD staff held on 8/31/11.

As an additional refinement in the 1-hour NO_2 CAAQS modeling, 11 receptors located on along the northern fence line of the Scattergood Generating Station were removed from the 1-hour NO2 CAAQS modeling for both generation scenarios per CEQA LST guidance[3]:

> *"Receptor locations are off-site locations where persons may be exposed to the emissions from project activities. Receptor locations include residential, commercial and industrial land use areas; and any other areas where persons can be situated for an hour or longer at a time. These other areas include parks, bus stops, and sidewalks but would not include the tops of buildings, roadways, or permanent bodies of water such as, oceans or lakes."*

Those 11 receptors are located either along a fence line or a berm alongside the fence line that is not accessible by the public and therefore it can be reasonably assumed that no member of the public would ever be at any of those locations for an hour or longer. While these receptors could have been removed from all of the CEQA modeling runs, they were left in place for all other modeling runs in order to keep the CEQA modeling as consistent as possible with the air permitting modeling runs in order to simplify SCAQMD's review of both sets of files.

1.8 Ambient Air Impact Criteria

The NAAQS and CAAQS, along with the PSD Class II SIL's are summarized for each pollutant and averaging period in Table D.1-15.

[3] http://www.aqmd.gov/ceqa/handbook/lst/Method_final.pdf Page 3-2

Table D.1-15 Ambient Air Impact Criteria (μg/m^3)

Pollutant	Averaging Period	PSD Class II SILs	NAAQS		CAAQS
			Primary	Secondary	Primary
NO_2	1-hour	7.5	188	--	339
	Annual	1	100	100	57
CO	1-hour	2,000	40,000	--	23,000
	8-hour	500	10,000	--	10,000
PM10	24-hour	5	150	150	50
	Annual	1	(50) (1)	(50) (1)	20
PM2.5	24-hour	1.2	35	35	35
	Annual	0.3	15	15	12
SO_2	1-hour	7.8	196	--	655
	3-hour	25	--	1300	--
	24-hour	5	365	--	105
	Annual	1	80	--	--

(1) US EPA rescinded the annual PM10 standard.

1.9 Representative Ambient Background Concentrations

For the cumulative analysis required by CEQA for compliance demonstrations against the CAAQS, and in cases where initial modeling show that impacts from project sources alone exceed the applicable class II SIL's, cumulative modeling is required. For this project, SCAQMD required only that the appropriate ambient background for each pollutant be added to the modeled impacts from project to account for impacts from nearby non-project sources. The background concentrations used in this analysis are summarized in Table D.1-13. In order to simplify the analysis, the appropriate ambient background concentrations were also added to each pollutant in the NAAQS analysis regardless of whether the project impacts exceeded the applicable SIL.

1.10 Modeling Results

AERMOD was applied with the 5 years of meteorological data to determine each Generation Scenario's maximum impacts to demonstrate compliance with the NAAQS and CAAQS considering the varying load conditions for the proposed turbines.

A summary of the overall maximum project impacts for each operating scenario is provided in Tables D.1-17 through D.1-21 (Generation Scenario 1) and D.1-22 through D.1-26 (Generation Scenario 2).

Detailed modeling result summaries showing the modeled results for every year modeled for each load scenario are provided in Appendices D-1 and D-3.

1.10.1 Generation Scenario 1 (GE Turbines)

The results of the NAAQS analysis for the GE turbine scenarios are shown in Table D.1-17 for the normal operation load cases and Table D.1-18 for the startup / shutdown cases. As seen in the tables, the modeled impacts from project sources are below their respective Class II SIL in all cases. As a result, compliance with the NAAQS is demonstrated and no further analysis is required.

Similarly, the results of the CAAQS analysis for the GE turbine scenarios are shown in Table D.1-19 for the normal operation load cases and Table D.1-20 for the startup / shutdown cases. In this analysis, the tables show that the modeled impacts from project sources, when added to the appropriate ambient background concentration, are below their respective CAAQS in all cases with the exception of 24-hour PM2.5, and 24-hour and annual PM10. Again, in all three of those cases, the ambient background concentrations alone exceed the CAAQS. SCAQMD rule 1303 requires that in the event that the ambient background exceeds the applicable CAAQS, the modeled concentration for all permitted sources must be below the "Significant Change in Air Quality Concentration" value given in Table A.2 of the rule. As stated above, the ambient backgrounds for 24-hour and annual PM10, and 24-hour PM2.5 all exceed their respective CAAQS. Therefore, the impacts from the project must be less than the significant change values for those periods and pollutants given in the table. The "Significant Change in Air Quality Concentration" value for 24-hour PM10 and PM2.5 is 2.5 $\mu g/m^3$, while the annual value for PM10 is 1.0 $\mu g/m^3$ (there is no annual PM2.5 CAAQS).

The modeled operational impacts of all project sources are compared to the applicable Significant Change in Air Quality Concentration values in Table X.1-21. As shown in the table, all modeled impacts are below their respective Significant Change in Air Quality Concentration, demonstrating compliance as required by SCAQMD rule 1303.

1.10.2 Generation Scenario 2 (Siemens Turbines

The results of the NAAQS analysis for the Siemens turbine scenarios are shown in Table D.1-22 for the normal operation load cases and Table D.1-23 for the startup / shutdown cases. As seen in the tables, the modeled impacts from project sources are below their respective Class II SIL in all cases. As a result, compliance with the NAAQS is demonstrated and no further analysis is required.

Similarly, the results of the CAAQS analysis for the Siemens turbine scenarios are shown in Table D.1-24 for the normal operation load cases and Table D.1-25 for the startup / shutdown cases. In this analysis, the tables show that the modeled impacts from project sources, when added to the appropriate ambient background concentration, are below their respective CAAQS in all cases with the exception of 24-hour PM2.5, and 24-hour and annual PM10. Again, in all three of those cases, the ambient background concentrations alone exceed the CAAQS. SCAQMD rule 1303 requires that in the event that the ambient background exceeds the applicable CAAQS, the modeled concentration for all permitted sources must be below the "Significant Change in Air Quality Concentration" value given in Table A.2 of the rule. As stated above, the ambient backgrounds for 24-hour and annual PM10, and PM2.5 all exceed their respective CAAQS. Therefore, the impacts from the project must be less than the significant change values for those periods and pollutants given in the table. The "Significant Change in Air Quality Concentration" value for 24-hour PM10 and PM2.5 is 2.5 $\mu g/m^3$, while the annual value for PM10 is 1.0 $\mu g/m^3$ (there is no annual PM2.5 CAAQS).

The modeled operational impacts of all project sources are compared to the applicable Significant Change in Air Quality Concentration values in Table D.1-26. As shown in the table, all modeled impacts are below their respective Significant Change in Air Quality Concentration, demonstrating compliance as required by SCAQMD rule 1303.

As the results tables indicate, all project impacts, when combined with the ambient background concentrations, are below the NAAQS/CAAQS, or in cases where the ambient background exceeds the NAAQS/CAAQS are below the appropriate Class II SIL or SCAQMD Air Quality Significance Threshold, Therefore, compliance with all applicable NAAQS/CAAQS is demonstrated and no further analysis is required.

Table D.1-16 Representative Background Concentrations

Pollutant	Averaging Period	Concentration (ppm)			Concentration (µg/m^3)			Background (µg/m^3)
		2007	2008	2009	2007	2008	2009	
CO	1 hour	3	4	2	3,448.28	4,597.70	2,298.85	4,597.70
	8 hour	2.4	2.5	1.9	2,758.62	2,873.56	2,183.91	2,873.56
NO2	1 hour (NAAQS)	---	---	---	---	---	---	127.84
	1 hour (CAAQS)	0.08	0.09	0.08	150.40	169.20	150.40	169.20
	Annual	0.014	0.0143	0.0159	26.32	26.88	29.89	29.89
SO2	1 hour	0.02	0.02	0.02	52.40	52.40	52.40	52.40
	24 hour	0.009	0.005	0.006	23.58	13.10	15.72	23.58
	Annual	0.0028	0.0014	---	7.34	3.67	---	7.34
PM10	24 hour	---	---	---	96.00	50.00	52.00	96.00
	Annual	---	---	---	27.70	25.60	25.40	27.70
PM2.5	24 hour (NAAQS)	---	---	---	51.20	40.40	34.00	41.87
	24 hour (CAAQS)	---	---	---	64.20	78.30	61.70	78.30
	Annual	---	---	---	16.80	15.70	14.30	16.80

Source: Annual NO_2, 1-hr NO_2 (CAAQS), CO, SO_2, PM10, PM2.5 came from http://www.aqmd.gov/smog/historicaldata.htm. Annual NO_2, 1-hr NO_2 (CAAQS), CO, SO_2 and PM10 used Site Location 3 (Southwest Coastal LA County) and PM2.5 used Site Location 1 (Central LA). 1-hr NO_2 (NAAQS) provided by SCAQMD (Hawthorne monitor, Stn # 820). In most cases, maximum monitor concentrations were chosen. However, average concentrations were chosen for 1-hr NO_2 (NAAQS) and 24-hour PM2.5 (NAAQS).

Table D.1-17 Generation Scenario 1 (GE Turbines) Normal Operation Maximum Project Impacts - NAAQS

		Normal Operations AERMOD Modeling Results (μg/m³)							
Pollutant	**Averaging Period**	**Modeled Conc.**	**Class II SIL**	**PCT. of SIL**	**NAAQS Conc.**	**Ambient Bkgrd.[1]**	**Total Conc.**	**NAAQS**	**PCT. of NAAQS**
SO_2	1-hour	0.24	7.9	3.0%	N/A	52.4	N/A	196.5	N/A
	3-hour	0.24	25	0.9%	N/A	52.4	N/A	1300	N/A
	24-hour	0.07	5	1.5%	N/A	23.6	N/A	356	N/A
	Annual	0.02	1	2.3%	N/A	7.3	N/A	80	N/A
CO	1-hour	45.36	2000	2.3%	N/A	4597.7	N/A	40000	N/A
	8-hour	2.72	500	0.5%	N/A	2873.6	N/A	10000	N/A
NO_2[2]	1-hour	2.60	7.5	34.7%	N/A	127.8	N/A	188	N/A
	Annual	0.41	1	40.8%	N/A	29.9	N/A	100	N/A
PM10	24-hour	0.93	5	18.6%	N/A	96.0	N/A	150	N/A
PM2.5	24-hour	0.85	1.2	70.5%	N/A	41.9	N/A	35	N/A
	Annual	0.21	0.3	70.5%	N/A	16.8	N/A	15	N/A

(1) To be conservative, the 3-hour SO_2 background value applied was the maximum 1-hour SO_2 value. The maximum 1-hour SO_2 value is conservatively used. For NO_2, the average monitor design value was taken from the Hawthorne monitor (Stn # 820).

(2) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80 and modeled annual NO_x concentration was multiplied by 0.75.

Table D.1-18 Generation Scenario 1 (GE Turbines) Startup/Shutdown Maximum Project Impacts - NAAQS

		AERMOD Modeling Results ($\mu g/m^3$) - Startup / Shutdown										
Pollutant	**Averaging Period**	**Cold Start**	**Non-Cold Start**	**Shut-down**	**Modeled Conc.**	**Class II SIL**	**PCT. of SIL**	**NAAQS Conc.**	**Ambient Bkgrd.[1]**	**Total Conc.**	**NAAQS**	**PCT. of NAAQS**
SO_2	1-hour	0.22	0.22	0.22	0.22	7.9	2.8%	N/A	52.4	N/A	196.5	N/A
CO	1-hour	45.38	45.38	45.36	45.38	2000	2.3%	N/A	4597.7	N/A	40000	N/A
NO_2[2]	1-hour	7.15	6.63	5.08	7.15	7.5	95.3%	N/A	127.8	N/A	188	N/A

(1) The maximum 1-hour SO_2 monitor value is conservatively used. For NO_2, the average monitored design value was taken.
(2) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80.

Table D.1-19 Generation Scenario 1 (GE Turbines) Normal Operation Maximum Project Impacts - CAAQS

Pollutant	Averaging Period	Normal Operations AERMOD Predicted Concentrations (μg/m³)				Background (μg/m³)	Cumulative Concentration (μg/m³)	CAAQS (μg/m³)
		50% Load	75% Load	100% Load	Maximum			
SO_2	1-hour	0.34	0.34	0.34	0.34	52.40	52.74	655
	24-hour	0.07	0.07	0.07	0.07	23.58	23.65	105
CO	1-hour	45.36	45.36	45.36	45.36	4,597.70	4,643.06	23,000
	8-hour	2.70	2.71	2.72	2.72	2,873.56	2,876.28	10,000
NO_2 (1)	1-hour	114.49	114.49	114.49	114.49	169.20	283.70	339
	Annual	NA	NA	NA	0.41	29.89	30.30	57
PM10	24-hour	0.93	0.81	0.67	0.93	96.00	96.93	50
	Annual	NA	NA	NA	0.22	27.70	27.92	20
PM2.5	24-hour	0.93	0.81	0.67	0.93	78.30	79.23	35
	Annual	NA	NA	NA	0.22	16.80	17.02	12

(1) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80 and modeled annual NO_x concentration was multiplied by 0.75.

Table D.1-20 Generation Scenario 1 (GE Turbines) Startup/Shutdown Maximum Project Impacts - CAAQS

Pollutant	Averaging Period	Startup/Shutdown AERMOD Predicted Concentrations (μg/m³)				Background (μg/m³)	Cumulative Concentration (μg/m³)	CAAQS (μg/m³)
		Cold Start	Non-Cold Start	Shutdown	Maximum Design Value			
SO_2	1-hour	0.34	0.34	0.34	0.34	52.40	52.74	655
CO	1-hour	45.38	45.38	45.36	45.38	4,597.70	4,643.09	23,000
NO_2 (1)	1-hour	114.50	114.50	114.50	114.50	169.20	283.70	339

Notes:

1) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80.

Table D.1-21 Generation Scenario 1 (GE Turbines) SCAQMD Rule 1303 Modeling Results for $PM_{10}/PM_{2.5}$

Pollutant	Averaging Period	Concentrations (μg/m³)	
		AERMOD Result	Significant Change in Air Quality Concentration(1)
$PM_{10}/PM_{2.5}$	24-hr	0.93	2.5
	Annual	0.22	1

Notes:

1) Values given in Table A.2 of SCAQMD Rule 1303

Table D.1-22 Generation Scenario 2 (Siemens Turbines) Normal Operation Maximum Project Impacts - NAAQS

Pollutant	Averaging Period	Normal Operations AERMOD Predicted Concentrations ($\mu g/m^3$)				Background ($\mu g/m^3$)[1]	Cumulative Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	PCT. of NAAQS
		50% Load	75% Load	100% Load	Maximum Design Value				
SO_2	1-hour	0.25	7.9	3.2%	N/A	52.4	N/A	196.5	N/A
	3-hour	0.24	25	1.0%	N/A	52.4	N/A	1300	N/A
	24-hour	0.08	5	1.6%	N/A	23.6	N/A	356	N/A
	Annual	0.03	1	2.8%	N/A	7.3	N/A	80	N/A
CO	1-hour	27.26	2000	1.4%	N/A	4597.7	N/A	40000	N/A
	8-hour	2.25	500	0.5%	N/A	2873.6	N/A	10000	N/A
NO_2[3]	1-hour	2.43	7.5	32.4%	N/A	127.8	N/A	188	N/A
	Annual	0.49	1	49.0%	N/A	29.9	N/A	100	N/A
PM10	24-hour	0.74	5	14.7%	N/A	96.0	N/A	150	N/A
PM2.5	24-hour	0.66	1.2	55.0%	N/A	41.9	N/A	35	N/A
	Annual	0.22	0.3	72.2%	N/A	16.8	N/A	15	N/A

Notes:

(1) One run with each of the 4 emergency generators being tested was performed. The worst case impact from those 4 runs is presented in this table.

(2) To be conservative, the 3-hour SO_2 background value applied was the maximum 1-hour SO_2 value. The maximum 1-hour SO_2 value is conservatively used. For NO_2, the average monitor design value was taken from the Hawthorne monitor (Stn # 820).

(3) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80 and modeled annual NO_x concentration was multiplied by 0.75.

Table D.1-23 Generation Scenario 2 (Siemens Turbines) Startup/Shutdown Maximum Project Impacts - NAAQS

Pollutant	Averaging Period	Startup/Shutdown AERMOD Predicted Concentrations (μg/m^3)				Background (μg/m^3)[1]	Cumulative Concentration (μg/m^3)	NAAQS (μg/m^3)	PCT. of NAAQS
		Cold Start	Non-Cold Start	Shutdown	Maximum Design Value				
SO_2	1-hour	0.20	0.20	0.21	0.21	7.9	2.7%	N/A	52.4
CO	1-hour	27.26	27.26	27.26	27.26	2000	1.4%	N/A	4597.7
NO_2[2]	1-hour	5.33	7.48	5.23	7.48	7.5	99.8%	N/A	127.8

Notes:

1) The maximum 1-hour SO_2 monitor value is conservatively used. For NO_2, the average monitored design value was taken.

2) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80.

Table D.1-24 Generation Scenario 2 (Siemens Turbines) Normal Operation Maximum Project Impacts - CAAQS

Pollutant	Averaging Period	Normal Operations AERMOD Predicted Concentrations ($\mu g/m^3$)				Background ($\mu g/m^3$)	Cumulative Concentration ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
		50% Load	75% Load	100% Load	Maximum Design Value			
SO_2	1-hour	0.25	0.28	0.29	0.29	52.40	52.69	655
	24-hour	0.06	0.07	0.08	0.08	23.58	23.66	105
CO	1-hour	27.26	27.26	27.26	27.26	4,597.70	4,624.96	23,000
	8-hour	2.08	2.23	2.25	2.25	2,873.56	2,875.82	10,000
NO_2 (1)	1-hour	120.47	120.47	120.47	120.47	169.20	289.67	339
	Annual	NA	NA	NA	0.49	29.89	30.38	57
PM10	24-hour	0.74	0.65	0.57	0.74	96.00	96.74	50
	Annual	NA	NA	NA	0.23	27.70	27.93	20
PM2.5	24-hour	0.74	0.65	0.57	0.74	78.30	79.04	35
	Annual	NA	NA	NA	0.23	16.80	17.03	12

Notes:

1) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80 and modeled annual NO_x concentration was multiplied by 0.75.

Table D.1-25 Generation Scenario 2 (Siemens Turbines) Startup/Shutdown Maximum Project Impacts - CAAQS

Pollutant	Averaging Period	Startup/Shutdown AERMOD Predicted Concentrations (µg/m³)				Background (µg/m³)	Cumulative Concentration (µg/m³)	CAAQS (µg/m³)
		Cold Start	Non-Cold Start	Shutdown	Maximum			
SO_2	1-hour	0.25	0.25	0.25	0.25	52.40	52.65	655
CO	1-hour	27.26	27.26	27.26	27.26	4,597.70	4,624.96	23,000
NO_2 (1)	1-hour	120.47	120.47	120.47	120.47	169.20	289.67	339

Notes:

1) To apply the Tier II method for converting modeled NO_x concentrations to NO_2 concentrations, the modeled 1-hr NO_x concentration was multiplied by 0.80 and modeled annual NO_x concentration was multiplied by 0.75.

Table D.1-26 Generation Scenario 2 (Siemens Turbines)

SCAQMD Rule 1303 Modeling Results for PM_{10}/$PM_{2.5}$

Pollutant	Averaging Period	Concentrations (µg/m³)	
		AERMOD Result	Significant Change in Air Quality Concentration (1)
PM_{10}/$PM_{2.5}$	24-hr	0.74	2.5
	Annual	0.23	1

Notes:

1) Values given in Table A.2 of SCAQMD Rule 1303

1.11 References

SCAQMD 2011. AQMD Modeling Guidance for AERMOD. <http://www.aqmd.gov/smog/metdata/AERMOD_ModelingGuidance.html>. Last updated March 19, 2011.

US EPA 1985. Guideline for Determination of Good Engineering Practice Stack Height. EPA Document No. EPA-450/4-80-023R. Office of Air Quality Planning and Standards, Research Triangle Park, NC. June 1985.

US EPA 2008. Guideline on Air Quality Models (Revised). Codified in the Appendix W to 40 CFR Part 51. Office of Air Quality Planning and Standards, Research Triangle Park, NC. November.

US EPA 2009. AERMOD Implementation Guide (AIG). Office of Air Quality Planning and Standards, Research Triangle Park, NC. March.

US EPA 2011. Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard. Memorandum dated March 1, 2011.

Figure D1-1 Relative Location of Los Angeles International Airport and Scattergood Generating Station

Figure D1-2 Buildings and Stacks Used in GEP Analysis for Generation Scenario 1 (GE Turbines)

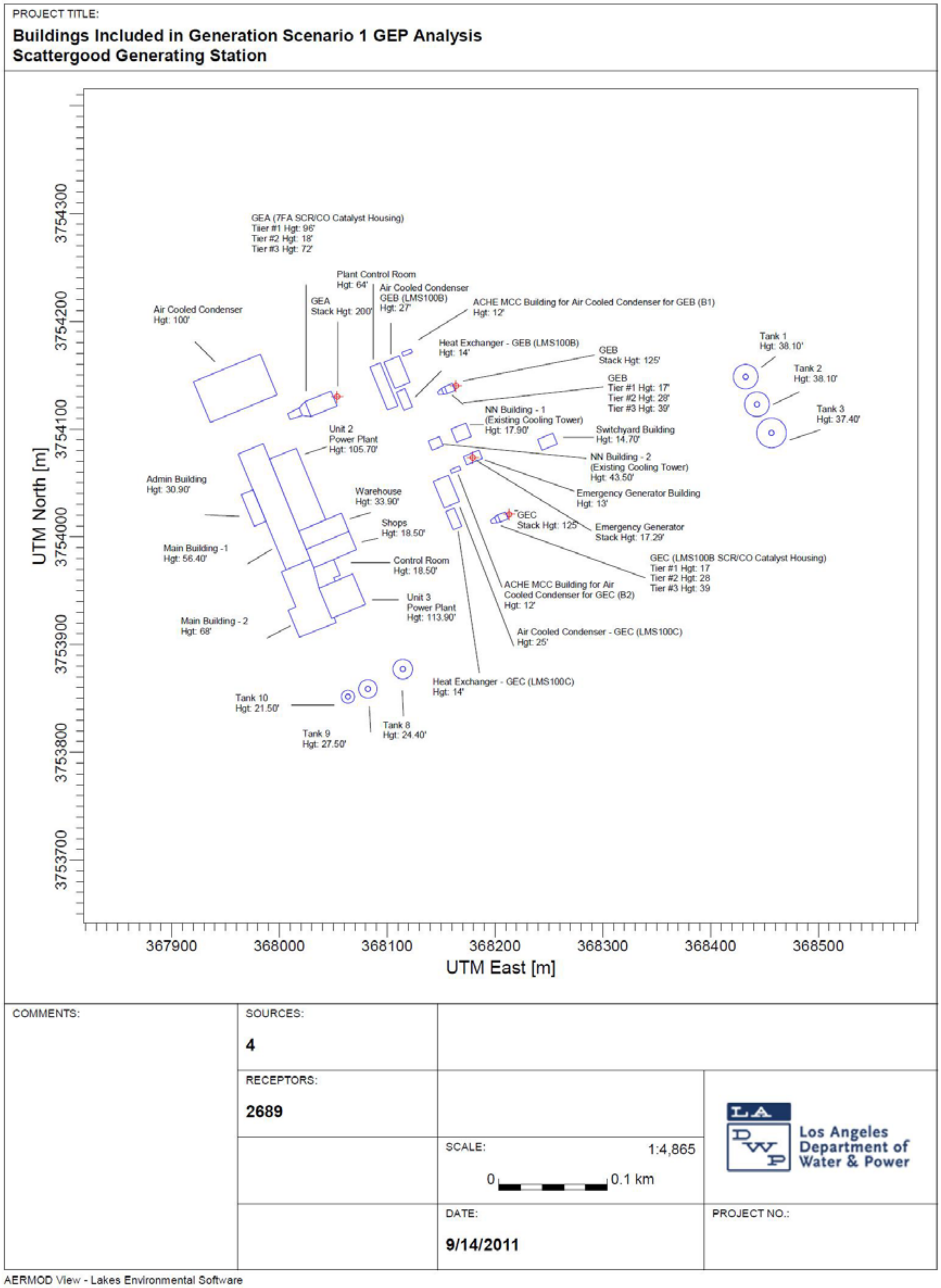
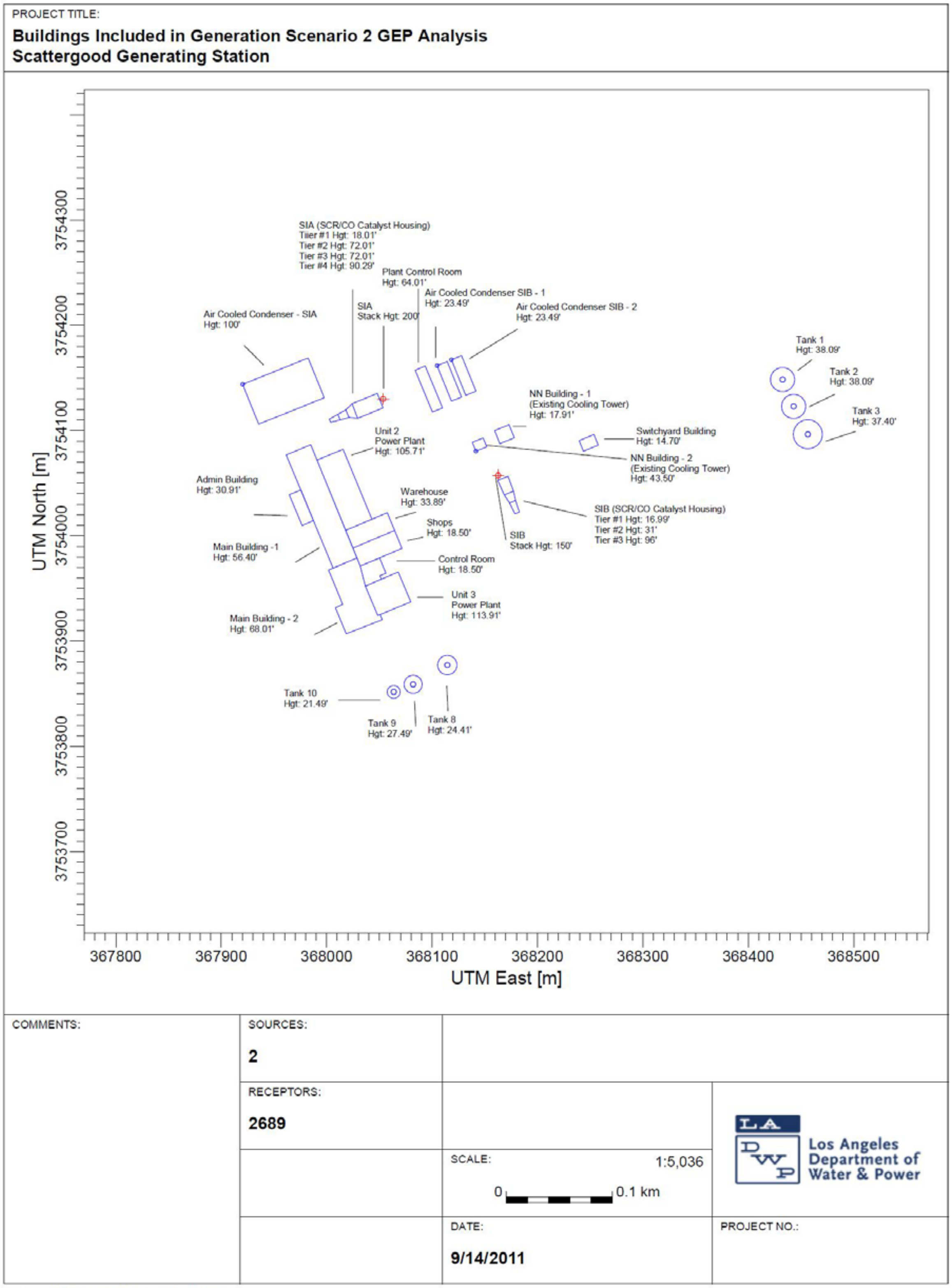
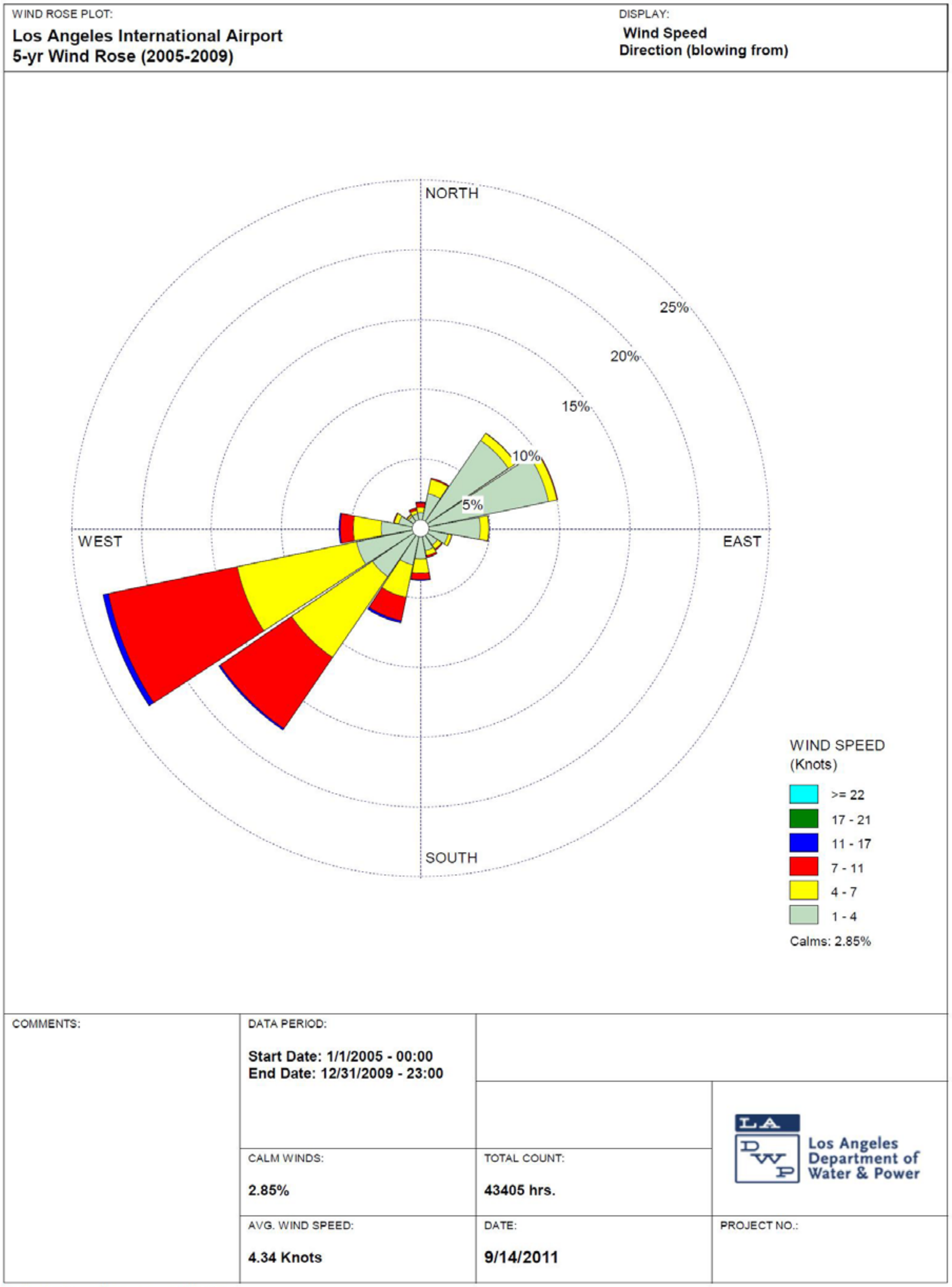


Figure D1-3 Buildings and Stacks Used in GEP Analysis for Generation Scenario 2 (Siemens Turbines)



AERMOD View - Lakes Environmental Software

Figure D1-4 Los Angeles International Airport Wind Rose



WRPLOT View - Lakes Environmental Software

Figure D1-5 Extended Receptor Grid Used in SGS CEQA Analysis

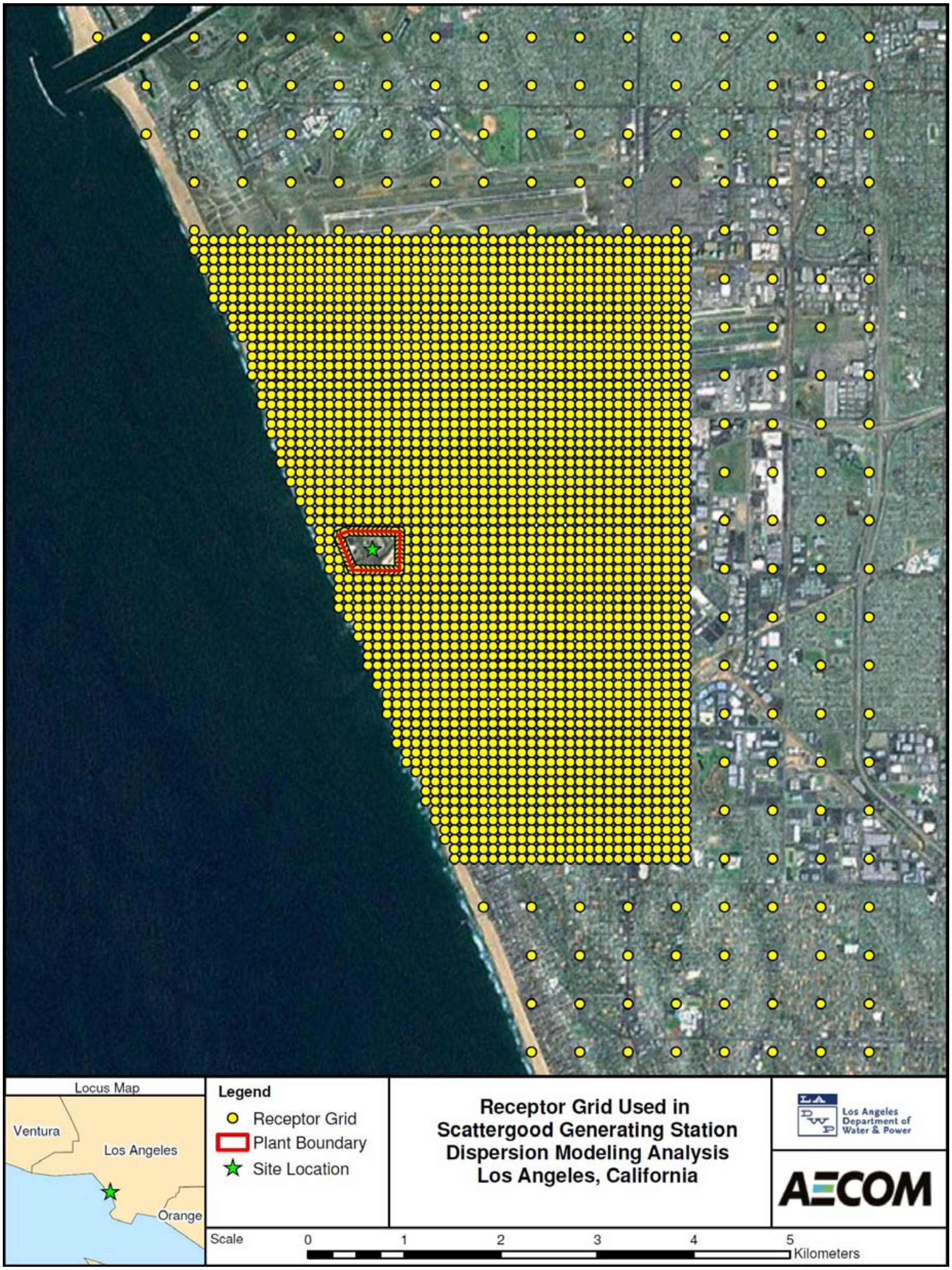
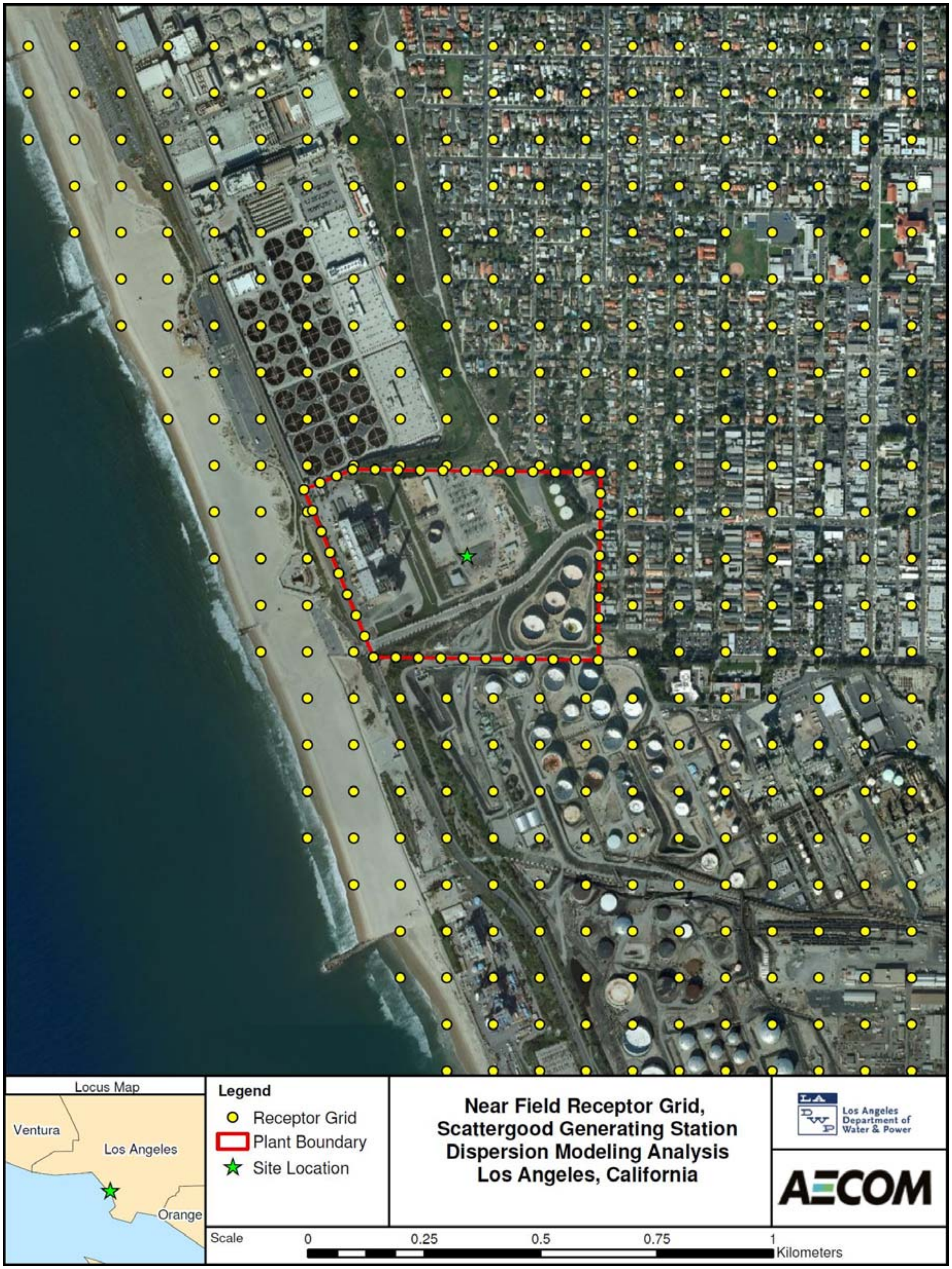


Figure D1-6 Near-Field Receptor Grid Used in Modeling Analysis



Appendix D.2 Technical Memorandum (Commissioning)

1.0 Air Quality Impact Analysis – Turbine Commissioning

This section documents the ambient air quality modeling analysis needed to meet the California Environmental Quality Act requirements and demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) during the commissioning and construction phases of the project. The analysis was conducted for each of the two Generation Scenarios for commissioning, and the worst case construction emissions for construction in accordance with the South Coast Air Quality Management District's (SCAQMD's) *AQMD Modeling Guidance for AERMOD* (SCAQMD 2011)[1] and U.S. Environmental Protection Agency's (US EPA's) *Guideline on Air Quality Models* (GAQM) (US EPA 2008). The most recent version of AQMD Modeling Guidance and GAQM adopt AERMOD as a preferred general purpose (flat and complex terrain) dispersion model.

1.1 Overview of Modeling Methodology

The modeling methodology used was as described in section 1.1 of the Air Quality Impact Analysis, which documents model selection, meteorological data selection, and the development of the receptor grid, except as noted below. The modeling of the construction phase in particular is handled somewhat differently than normal operations and turbine commissioning because of the difference in emission source types.

1.2 Turbine Commissioning

Following construction of the project and prior to commercial operation, the combustion turbines, steam turbine, emissions control equipment, heat recovery steam generators, and other plant equipment will be tested and tuned. Further, the turbines, steam piping, condensers, and other equipment handling steam and condensate will be cleaned of dirt, oil, mill scale and debris. This cleaning is usually accomplished with steam blows. According to EPA guidance (EPA 1980), steam blows are considered a construction activity. All of these commissioning operations will require operation of the combustion turbines at loads from zero percent to 100 percent of full load. During much of this period, the emissions from the project will be higher than the normal operating and startup emissions because the combustion turbine burners may not yet be tuned for optimal emissions and the post-combustion emissions control equipment (e.g., selective catalytic reduction and oxidation catalyst) will not yet be in operation. During commissioning, the combustion turbines will normally be run intermittently.

Maximum short-term emissions of Nitrogen Oxides and Carbon Monoxide (CO) during the initial tuning and testing of the combustion turbines at the end of the construction of the project will be higher than normal operations. As such, short-term commissioning conditions were modeled with AERMOD for comparison to the 1-hour Nitrogen Dioxide (NO_2) CAAQS and 1-hour and 8-hour NAAQS. Turbine commissioning is an intermittent activity and involves several different operations, all of which have different load and stack conditions. Because of the short-term nature of commissioning and the intermittent nature of the emissions, the results of the commissioning modeling was not compared to the 1-hour NO_2 NAAQS. The exclusion of turbine commissioning from the 1-hour NO_2 modeling is based on US EPA guidance provided in the March 1, 2011, memorandum, "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" for intermittent sources such as emergency generators and other short-term, temporary emissions. In the memo, US EPA states the following:

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[1] http://www.aqmd.gov/smog/metdata/AERMOD_ModelingGuidance.html

> *"Given the implications of the probabilistic form of the 1-hour NO_2 NAAQS discussed above, we are concerned that assuming continuous operation of intermittent emissions would effectively impose an additional level of stringency beyond that level intended by the standard itself. As a result, we feel it would be inappropriate to implement the 1-hour NO_2 standard in such a manner and recommend that compliance demonstrations for the 1-hour NO_2 NAAQS be based on emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations."*

As documented in this section, the modeling analysis for turbine commissioning in each Generation Scenario demonstrates compliance with all applicable NAAQS and CAAQS.

Generation Scenario 1 (GE Turbines)

Turbine Information

As documented in Section 3 of the "Application for Permit to Construct and Operate Scattergood Generating Station – Units 4 through 7 (GE)", the GE 7FA.05 will be commissioned in 24 different phases. The two GE LMS100 simple-cycle turbines will be commissioned in nine phases. The dispersion characteristics (flow rate and temperature) and pollutant emissions vary greatly from phase to phase. In order to be conservative, the maximum emission rate for each pollutant over all phases of commissioning was modeled using the worst-case dispersion characteristics for any of the commissioning phases for that turbine type. The stack parameters and emissions for the 7FA.05 and LMS100 combustion turbines are shown in Table D.2-1. Note that the emergency generator was not included in the commissioning modeling because it is assumed that the emergency generator will not be tested at the same time as the turbines are being commissioned. As an additional measure of conservatism, it is assumed that all three of the turbines are being commissioned at the worst-case emission rate simultaneously, which is highly unlikely to occur. Lastly, for the 8-hour CO runs, it was assumed that the maximum emission rate was maintained for all turbines for all 8-hours, a highly conservative measure.

Table D.2-1 Stack Parameters and Emission Rates – General Electric 7FA.05 and LMS100 Combustion Turbines – Commissioning

Parameter		**Values**	
Turbine Type		7FA.05	LMS100
Stack Height (m)		64.92	30.48
Stack Diameter (m)		5.79	4.11
Exhaust Velocity (m/s)		11.17	5.96
Exhaust Temperature (K)		366.48	673.15
Pollutant Emissions (lb/hr)	NOx	250	80.3
	CO	4000	197.3

Generation Scenario 2 (Siemens Turbines)

Turbine Information

As documented in Section 3 of the "Application for Permit to Construct and Operate Scattergood Generating Station – Units 4 through 7 (SI)", the Siemens Flex-Plant 30 CCGS combustion turbine will be commissioned in 24 different phases. The Siemens Flex-Plant 30 CCGS will also be commissioned in 24 phases. The dispersion characteristics (flow rate and temperature) and pollutant emissions vary greatly from phase to phase. In order to be conservative, the maximum emission rate for each pollutant over all phases of commissioning was modeled using the worst-case dispersion characteristics for any of the commissioning phases for that turbine type. The stack parameters and emissions for the Flex-Plant 30 and Flex-Plant 10 combustion turbines are shown in Table D.2-2. Note that the emergency generators were not included in the commissioning modeling because it is assumed that the emergency generators will not be tested at the same time as the turbines are being commissioned. As an additional measure of conservatism, it is assumed that both of the turbines are being commissioned at the worst-case emission rate simultaneously, which is highly unlikely to occur. Lastly, for the 8-hour CO runs, it was assumed that the maximum emission rate was maintained for all turbines for all 8-hours, a highly conservative measure.

Table D.2-2 Stack Parameters and Emission Rates – Siemens Flex-Plant 30 and Flex-Plant 10 Combustion Turbines – Commissioning

Parameter		**Values**	
Turbine Type		Flex-Plant 30	Flex-Plant 10
Stack Height (m)		64.92	51.82
Stack Diameter (m)		6.10	6.49
Exhaust Velocity (m/s)		10.27	10.98
Exhaust Temperature (K)		366.48	444.26
Pollutant Emissions (lb/hr)	NOx	220.8	222.6
	CO	4817.3	4817.3

1.3 Modeling Results

AERMOD was applied with the 5 years of meteorological data to determine each Generation Scenario's maximum impacts to demonstrate compliance with the 1-hour NO_2 CAAQS and 1-hour and 8-hour CO NAAQS and CAAQS.

1.3.1 Generation Scenario 1 (GE Turbines)

The results of the 1-hour and 8-hour CO NAAQS analysis for the GE combustion turbine commissioning scenario are shown in Table D.2-3. As seen in the table, the modeled impacts from the turbines are below the Class II significant impact level (SIL) for 1-hour CO but exceed the SIL for 8-hour CO. As a result, compliance with the NAAQS is demonstrated and no further analysis is required for 1-hour CO. For 8-hour CO, the modeled impacts were then added to the ambient background concentration and the results compared to the 8-hour CO NAAQS. As shown in the table, the modeled impacts plus ambient background concentration equal only 36% of the NAAQS. Therefore, compliance with the NAAQS is demonstrated.

Similarly, the results of the 1-hour and 8-hour CO and 1-hour NO_2 CAAQS analysis for the GE combustion turbine commissioning scenario are shown in Table D.2-4. In this analysis, the tables show that the modeled impacts from project sources, when added to the appropriate ambient background concentration, are below their respective CAAQS in all cases.

Because SCAQMD is designated attainment for both CO and NO_2, the Rule 1303 significance thresholds do not apply to this analysis. Therefore, the modeled impacts for the GE combustion turbine commissioning scenario are below all applicable standards and no further analysis is necessary.

1.3.2 Generation Scenario 2 (Siemens Turbines)

The results of the 1-hour and 8-hour CO NAAQS analysis for the Siemens combustion turbine commissioning scenario are shown in Table D.2-5. As seen in the table, the modeled impacts from the turbines are below the Class II SIL for 1-hour CO but exceed the SIL for 8-hour CO. As a result, compliance with the NAAQS is demonstrated and no further analysis is required for 1-hour CO. For 8-hour CO, the modeled impacts were then added to the ambient background concentration and the results compared to the 8-hour CO NAAQS. As shown in the table, the modeled impacts plus ambient background concentration equal only 39% of the NAAQS. Therefore, compliance with the NAAQS is demonstrated.

Similarly, the results of the 1-hour and 8-hour CO and 1-hour NO_2 CAAQS analysis for the Siemens combustion turbine commissioning scenario are shown in Table D.2-6. In this analysis, the tables show that the modeled impacts from project sources, when added to the appropriate ambient background concentration, are below their respective CAAQS in all cases.

Because SCAQMD is designated attainment for both CO and NO_2, the Rule 1303 significance thresholds do not apply to this analysis. Therefore, the modeled impacts for the Siemens combustion turbine commissioning scenario are below all applicable standards and no further analysis is necessary.

Table D.2-3 Generation Scenario 1 (GE Turbines) Combustion Turbine Commissioning – NAAQS

		Commissioning AERMOD Modeling Results ($\mu g/m^3$)							
Pollutant	**Averaging Period**	**Maximum Concentration**	**Class II SIL**	**Percent of SIL**	**NAAQS Concentration**	**Ambient Background.**	**Total Concentration**	**NAAQS**	**Percent of NAAQS**
CO	1-hour	1337.2	2000	66.9%	N/A	4,597.7	N/A	40000	N/A
	8-hour	802.1	500	160.4%	751.9	2,873.6	3625.5	10000	36%

Table D.2-4 Generation Scenario 1 (GE Turbines) Combustion Turbine Commissioning – CAAQS

Pollutant	**Averaging Period**	**Commissioning AERMOD Predicted Concentrations ($\mu g/m^3$)**						**Background ($\mu g/m^3$)**	**Cumulative Concentration ($\mu g/m^3$)**	**CAAQS ($\mu g/m^3$)**
		2005	**2006**	**2007**	**2008**	**2009**	**Maximum Design Value**			
CO	1-hour	1264.50	1326.48	1309.71	1064.99	1337.22	1337.22	4,597.70	5,934.92	23,000
	8-hour	783.46	780.74	712.75	670.33	802.10	802.10	2,873.56	3,675.67	10,000
NO_2*	1-hour	85.33	85.37	85.45	75.48	86.49	86.49	169.20	255.69	339

* Modeled 1-hr NO_x concentration was multiplied by 0.80. Assumed 80% of 1-hr NOx converts to NO_2.

Table D.2-5 Generation Scenario 2 (Siemens Turbines) Combustion Turbine Commissioning – NAAQS

		Commissioning AERMOD Modeling Results ($\mu g/m^3$)							
Pollutant	**Averaging Period**	**Maximum Concentration**	**Class II SIL**	**Percent of SIL**	**NAAQS Concentration**	**Ambient Background**	**Total Concentration**	**NAAQS**	**Percent of NAAQS**
CO	1-hour	1488.75	2000	74.4%	N/A	4,597.70	N/A	40000	N/A
	8-hour	1093.83	500	218.8%	999.07	2,873.56	3872.63	10000	39%

Table D.2-6 Generation Scenario 2 (Siemens Turbines) Combustion Turbine Commissioning – CAAQS

Pollutant	**Averaging Period**	**Commissioning AERMOD Predicted Concentrations ($\mu g/m^3$)**						**Background ($\mu g/m^3$)**	**Cumulative Concentration ($\mu g/m^3$)**	**CAAQS ($\mu g/m^3$)**
		2005	**2006**	**2007**	**2008**	**2009**	**Maximum Design Value**			
CO	1-hour	1330.22	1367.77	1358.05	1358.97	1488.75	1488.75	4,597.70	6,086.46	23,000
	8-hour	1093.83	1032.39	1044.91	964.56	1077.24	1093.83	2,873.56	3,967.39	10,000
NO^{2*}	1-hour	48.94	50.35	49.98	50.01	54.73	54.73	169.20	223.93	339

* Modeled 1-hr NO_x concentration was multiplied by 0.80. Assumed 80% of 1-hr NOx converts to NO_2.

Appendix D-3

Detailed Modeling Results Tables

Appendix D-3 presents all of the modeling runs that are summed in order to present the worst case modeling results in the technical report. These tables show the results for the individual years for every load case modeled. For the Siemens cases that include the individual runs for each emergency generator, each of the sub-runs is shown, along with the summary table where the highest impact from the four different emergency generator sub-runs as tabulated. The results from each summary table are further summed to show the worst case result from each operating scenario in the technical report.

Table D3-1 Generation Scenario 1 (GE Turbines) Cold Start Maximum Project Impacts NAAQS

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23					0.23
CO	1-hour	42.20	42.42	39.41	45.39	42.18	45.39
NO_2	1-hour	7.46					7.46

Table D3-2 Generation Scenario 1 (GE Turbines) Non-Cold Start Maximum Project Impacts NAAQS

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23					0.23
CO	1-hour	42.20	42.42	39.41	45.39	42.18	45.39
NO_2	1-hour	6.92					6.92

Table D3-3 Generation Scenario 1 (GE Turbines) Shutdown Maximum Project Impacts NAAQS

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22					0.22
CO	1-hour	45.08	42.29	39.38	45.36	42.00	45.36
NO_2	1-hour	5.24					5.24

Table D3-4 Generation Scenario 1 (GE Turbines) Cold Start Maximum Project Impacts CAAQS

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.32	0.32	0.29	0.34	0.32	0.34
CO	1-hour	42.20	42.42	39.41	45.39	42.18	45.39
NO_2	1-hour	114.50	104.59	111.38	92.20	90.34	114.50

Table D3-5 Generation Scenario 1 (GE Turbines) Non-Cold Start Maximum Project Impacts CAAQS

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.32	0.32	0.29	0.34	0.32	0.34
CO	1-hour	42.20	42.42	39.41	45.39	42.18	45.39
NO_2	1-hour	114.50	104.59	111.38	92.20	90.34	114.50

Table D3-6 Generation Scenario 1 (GE Turbines) Shutdown Maximum Project Impacts CAAQS

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.32	0.32	0.29	0.34	0.32	0.34
CO	1-hour	42.08	42.29	39.38	45.36	42.00	45.36
NO_2	1-hour	114.50	104.59	111.38	92.20	90.33	114.50

Table D3-7 Generation Scenario 1 (GE Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts NAAQS

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations (µg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
	3-hour	0.20	0.19	0.19	0.18	0.19	0.20
	24-hour	0.07	0.07	0.05	0.06	0.06	0.07
CO	1-hour	42.07	42.27	39.38	45.36	41.97	45.36
	8-hour	2.70	2.22	2.19	2.33	2.58	2.70
NO_2	1-hour	2.13					2.13
PM_{10}	24-hour	0.91	0.93	0.75	0.78	0.86	0.93
$PM_{2.5}$	24-hour	0.85					0.85

Table D3-8 Generation Scenario 1 (GE Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts NAAQS

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations (µg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22					0.22
	3-hour	0.22	0.21	0.22	0.20	0.22	0.22
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	42.08	42.28	39.38	45.36	41.98	45.36
	8-hour	2.71	2.22	2.33	2.35	2.58	2.71
NO_2	1-hour	2.38					2.38
PM_{10}	24-hour	0.78	0.81	0.67	0.68	0.76	0.81
$PM_{2.5}$	24-hour	0.74					0.74

Table D3-9 Generation Scenario 1 (GE Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts NAAQS

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.24					0.24
	3-hour	0.24	0.22	0.23	0.22	0.23	0.24
	24-hour	0.07	0.07	0.06	0.07	0.07	0.07
CO	1-hour	42.08	42.28	39.38	45.36	41.98	45.36
	8-hour	2.72	2.27	2.36	2.38	2.58	2.72
NO_2	1-hour	2.60					2.60
PM_{10}	24-hour	0.66	0.67	0.58	0.59	0.64	0.67
$PM_{2.5}$	24-hour	0.62					0.62

Table D3-10 Generation Scenario 1 (GE Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts CAAQS

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.32	0.32	0.29	0.34	0.32	0.34
	24-hour	0.07	0.07	0.05	0.06	0.06	0.07
CO	1-hour	42.07	42.27	39.38	45.36	41.97	45.36
	8-hour	2.70	2.22	2.19	2.33	2.58	2.70
NO_2	1-hour	114.49	104.59	111.38	92.20	90.33	114.49
PM_{10}	24-hour	0.91	0.93	0.75	0.78	0.86	0.93
$PM_{2.5}$	24-hour	0.91	0.93	0.75	0.78	0.86	0.93

Table D3-11 Generation Scenario 1 (GE Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts CAAQS

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.32	0.32	0.29	0.34	0.32	0.34
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	42.08	42.28	39.38	45.36	41.98	45.36
	8-hour	2.71	2.22	2.33	2.35	2.58	2.71
NO_2	1-hour	114.49	104.59	111.38	92.20	90.33	114.49
PM_{10}	24-hour	0.78	0.81	0.67	0.68	0.76	0.81
$PM_{2.5}$	24-hour	0.78	0.81	0.67	0.68	0.76	0.81

Table D3-12 Generation Scenario 1 (GE Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts CAAQS

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.32	0.32	0.29	0.34	0.32	0.34
	24-hour	0.07	0.07	0.06	0.07	0.07	0.07
CO	1-hour	42.08	42.28	39.38	45.36	41.98	45.36
	8-hour	2.72	2.27	2.36	2.38	2.58	2.72
NO_2	1-hour	114.49	104.59	111.38	92.20	90.33	114.49
PM_{10}	24-hour	0.66	0.67	0.58	0.59	0.64	0.67
$PM_{2.5}$	24-hour	0.66	0.67	0.58	0.59	0.64	0.67

Table D3-13 Generation Scenario 1 (GE Turbines) Normal Operation Annual Maximum Project Impacts NAAQS

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	Annual	0.02	0.02	0.02	0.02	0.02	0.02
NO_2	Annual	0.41	0.38	0.36	0.38	0.38	0.41
$PM_{2.5}$	Annual	0.21					0.21

Table D3-14 Generation Scenario 1 (GE Turbines) Normal Operation Annual Maximum Project Impacts CAAQS

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
NO_2	Annual	0.41	0.38	0.36	0.38	0.38	0.41
PM_{10}	Annual	0.22	0.21	0.20	0.21	0.21	0.22
$PM_{2.5}$	Annual	0.22	0.21	0.20	0.21	0.21	0.22

Table D3-15 Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts NAAQS – Summary Table

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
NO_2	1-hour	5.33					5.33

Table D3-15a Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts NAAQS - Emergency Generator EGC

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
NO_2	1-hour	5.33					5.33

Table D3-15b Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts NAAQS - Emergency Generator EGD

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
NO_2	1-hour	5.33					5.33

Table D3-15c Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts NAAQS - Emergency Generator EGE

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
NO_2	1-hour	5.33					5.33

Table D3-15d Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts NAAQS - Emergency Generator EGF

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
NO_2	1-hour	5.33					5.33

Table D3-16 Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts NAAQS – Summary Table

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	27.26	22.81	26.22	24.41	26.35	27.26
NO_2	1-hour	7.48					7.48

Table D3-16a Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts NAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	24.84	22.17	24.85	23.59	25.82	25.82
NO_2	1-hour	7.48					7.48

Table D3-16b Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts NAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	27.26	22.64	26.22	23.78	26.34	27.26
NO_2	1-hour	7.48					7.48

Table D3-16c Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts NAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	25.10	22.81	25.01	24.41	25.80	25.80
NO_2	1-hour	7.48					7.48

Table D3-16d Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts NAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.20					0.20
CO	1-hour	26.36	22.64	26.22	23.12	26.35	26.36
NO_2	1-hour	7.48					7.48

Table D3-17 Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts NAAQS – Summary Table

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21					0.21
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
NO_2	1-hour	5.23					5.23

Table D3-17a Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts NAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21					0.21
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
NO_2	1-hour	5.23					5.23

Table D3-17b Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts NAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21					0.21
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
NO_2	1-hour	5.23					5.23

Table D3-17c Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts NAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21					0.21
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
NO_2	1-hour	5.23					5.23

Table D3-17d Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts NAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21					0.21
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
NO_2	1-hour	5.23					5.23

Table D3-18 Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts CAAQS – Summary Table

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.23	0.25	0.25
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
NO_2	1-hour	120.47	98.30	115.87	84.46	111.69	120.47

Table D3-18a Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts CAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.23	0.24	0.24
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
NO_2	1-hour	109.79	97.02	109.81	79.84	105.06	109.81

Table D3-18b Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts CAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.23	0.25	0.25
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
NO_2	1-hour	120.47	95.64	115.87	84.35	111.69	120.47

Table D3-18c Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts CAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.22	0.24	0.24
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
NO_2	1-hour	110.90	98.30	110.53	83.57	104.05	110.90

Table D3-18d Generation Scenario 2 (Siemens Turbines) Cold Start Maximum Project Impacts CAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Cold Start AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.22	0.25	0.25
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
NO_2	1-hour	116.48	96.93	115.84	84.46	107.00	116.48

Table D3-19 Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts CAAQS – Summary Table

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.23	0.25	0.25
CO	1-hour	27.26	22.81	26.22	24.41	26.35	27.26
NO_2	1-hour	120.47	98.30	115.87	84.46	111.69	120.47

Table D3-19a Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts CAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.23	0.24	0.24
CO	1-hour	24.84	22.17	24.85	23.59	25.82	25.82
NO_2	1-hour	109.79	97.02	109.81	79.84	105.06	109.81

Table D3-19b Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts CAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.23	0.25	0.25
CO	1-hour	27.26	22.64	26.22	23.78	26.34	27.26
NO_2	1-hour	120.47	95.64	115.87	84.35	111.69	120.47

Table D3-19c Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts CAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.22	0.24	0.24
CO	1-hour	25.10	22.81	25.01	24.41	25.80	25.80
NO_2	1-hour	110.90	98.30	110.53	83.57	104.05	110.90

Table D3-19d Generation Scenario 2 (Siemens Turbines) Non-Cold Start Maximum Project Impacts CAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Non-Cold Start AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.22	0.22	0.23	0.22	0.25	0.25
CO	1-hour	26.36	22.64	26.22	23.12	26.35	26.36
NO_2	1-hour	116.48	96.93	115.84	84.46	107.00	116.48

Table D3-20 Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts CAAQS – Summary Table

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23	0.23	0.24	0.23	0.25	0.25
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
NO_2	1-hour	120.47	98.30	115.87	84.46	111.69	120.47

Table D3-20a Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts CAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23	0.23	0.24	0.23	0.25	0.25
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
NO_2	1-hour	109.79	97.02	109.81	79.84	105.06	109.81

Table D3-20b Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts CAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23	0.23	0.24	0.23	0.25	0.25
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
NO_2	1-hour	120.47	95.64	115.87	84.35	111.69	120.47

Table D3-20c Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts CAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23	0.23	0.24	0.23	0.25	0.25
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
NO_2	1-hour	110.90	98.30	110.53	83.57	104.05	110.90

Table D3-20d Generation Scenario 2 (Siemens Turbines) Shutdown Maximum Project Impacts CAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Shutdown AERMOD Predicted Concentrations (mg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23	0.23	0.24	0.23	0.25	0.25
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
NO_2	1-hour	116.48	96.93	115.84	84.46	107.00	116.48

Table D3-21 Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts NAAQS – Summary Table

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.19					0.19
	3-hour	0.19	0.18	0.18	0.18	0.18	0.19
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
	8-hour	2.08	1.25	2.07	1.30	1.88	2.08
NO_2	1-hour	1.82					1.82
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.66					0.66

Table D3-21a Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts NAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.19					0.19
	3-hour	0.19	0.18	0.18	0.18	0.18	0.19
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
	8-hour	1.95	1.25	2.06	1.29	1.85	2.06
NO_2	1-hour	1.82					1.82
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.66					0.66

Table D3-21b Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts NAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.19					0.19
	3-hour	0.19	0.18	0.18	0.18	0.18	0.19
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
	8-hour	2.06	1.23	2.07	1.26	1.74	2.07
NO_2	1-hour	1.82					1.82
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.66					0.66

Table D3-21c Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts NAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.19					0.19
	3-hour	0.19	0.18	0.18	0.18	0.18	0.19
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
	8-hour	2.01	1.25	1.98	1.30	1.88	2.01
NO_2	1-hour	1.82					1.82
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.66					0.66

Table D3-21d Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts NAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.19					0.19
	3-hour	0.19	0.18	0.18	0.18	0.18	0.19
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
	8-hour	2.08	1.23	2.06	1.27	1.73	2.08
NO_2	1-hour	1.82					1.82
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.66					0.66

Table D3-22 Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts NAAQS – Summary Table

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23					0.23
	3-hour	0.22	0.21	0.22	0.21	0.22	0.22
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
	8-hour	2.08	1.45	2.23	1.45	1.88	2.23
NO_2	1-hour	2.22					2.22
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.59					0.59

Table D3-22a Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts NAAQS - Emergency Generator EGC

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23					0.23
	3-hour	0.22	0.21	0.22	0.21	0.22	0.22
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
	8-hour	1.95	1.45	2.21	1.44	1.85	2.21
NO_2	1-hour	2.22					2.22
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.59					0.59

Table D3-22b Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts NAAQS - Emergency Generator EGD

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23					0.23
	3-hour	0.22	0.21	0.22	0.21	0.22	0.22
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
	8-hour	2.06	1.43	2.23	1.42	1.74	2.23
NO_2	1-hour	2.22					2.22
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.59					0.59

Table D3-22c Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts NAAQS - Emergency Generator EGE

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23					0.23
	3-hour	0.22	0.21	0.22	0.21	0.22	0.22
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
	8-hour	2.01	1.45	2.13	1.45	1.88	2.13
NO_2	1-hour	2.22					2.22
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.59					0.59

Table D3-22d Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts NAAQS - Emergency Generator EGF

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.23					0.23
	3-hour	0.22	0.21	0.22	0.21	0.22	0.22
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
	8-hour	2.08	1.43	2.18	1.42	1.73	2.18
NO_2	1-hour	2.22					2.22
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.59					0.59

Table D3-23 Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts NAAQS – Summary Table

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.25					0.25
	3-hour	0.24	0.22	0.24	0.23	0.24	0.24
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
	8-hour	2.08	1.53	2.25	1.50	1.88	2.25
NO_2	1-hour	2.43					2.43
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.51					0.51

Table D3-23a Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts NAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.25					0.25
	3-hour	0.24	0.22	0.24	0.23	0.24	0.24
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
	8-hour	1.95	1.53	2.23	1.49	1.85	2.23
NO_2	1-hour	2.43					2.43
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.51					0.51

Table D3-23b Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts NAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.25					0.25
	3-hour	0.24	0.22	0.24	0.23	0.24	0.24
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
	8-hour	2.06	1.50	2.25	1.47	1.74	2.25
NO_2	1-hour	2.43					2.43
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.51					0.51

Table D3-23c Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts NAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.25					0.25
	3-hour	0.24	0.22	0.24	0.23	0.24	0.24
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
	8-hour	2.01	1.53	2.16	1.50	1.88	2.16
NO_2	1-hour	2.43					2.43
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.51					0.51

Table D3-23d Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts NAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations (μg/m³)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.25					0.25
	3-hour	0.24	0.22	0.24	0.23	0.24	0.24
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
	8-hour	2.08	1.50	2.20	1.47	1.73	2.20
NO_2	1-hour	2.43					2.43
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.51					0.51

Table D3-24 Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts CAAQS – Summary Table

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21	0.22	0.24	0.23	0.25	0.25
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
	8-hour	2.08	1.25	2.07	1.30	1.88	2.08
NO_2	1-hour	120.47	98.30	115.87	84.46	111.69	120.47
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.72	0.74	0.62	0.62	0.67	0.74

Table D3-24a Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21	0.21	0.23	0.23	0.24	0.24
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
	8-hour	1.95	1.25	2.06	1.29	1.85	2.06
NO_2	1-hour	109.79	97.02	109.81	79.84	105.06	109.81
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.72	0.74	0.62	0.62	0.67	0.74

Table D3-24b Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21	0.22	0.24	0.23	0.25	0.25
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
	8-hour	2.06	1.23	2.07	1.26	1.74	2.07
NO_2	1-hour	120.47	95.64	115.87	84.35	111.69	120.47
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.72	0.74	0.62	0.62	0.67	0.74

Table D3-24c Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21	0.22	0.24	0.22	0.24	0.24
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
	8-hour	2.01	1.25	1.98	1.30	1.88	2.01
NO_2	1-hour	110.90	98.30	110.53	83.57	104.05	110.90
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.72	0.74	0.62	0.62	0.67	0.74

Table D3-24d Generation Scenario 2 (Siemens Turbines) Normal Operation (50% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Normal Operations - 50% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.21	0.22	0.24	0.22	0.25	0.25
	24-hour	0.06	0.06	0.05	0.06	0.06	0.06
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
	8-hour	2.08	1.23	2.06	1.27	1.73	2.08
NO_2	1-hour	116.48	96.93	115.84	84.46	107.00	116.48
PM_{10}	24-hour	0.72	0.74	0.62	0.62	0.67	0.74
$PM_{2.5}$	24-hour	0.72	0.74	0.62	0.62	0.67	0.74

Table D3-25 Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts CAAQS – Summary Table

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.24	0.24	0.26	0.25	0.28	0.28
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
	8-hour	2.08	1.45	2.23	1.45	1.88	2.23
NO_2	1-hour	120.47	98.30	115.87	84.46	111.69	120.47
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.65	0.65	0.56	0.56	0.60	0.65

Table D3-25a Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.24	0.24	0.26	0.25	0.27	0.27
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
	8-hour	1.95	1.45	2.21	1.44	1.85	2.21
NO_2	1-hour	109.79	97.02	109.81	79.84	105.06	109.81
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.65	0.65	0.56	0.56	0.60	0.65

Table D3-25b Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.24	0.24	0.26	0.25	0.28	0.28
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
	8-hour	2.06	1.43	2.23	1.42	1.74	2.23
NO_2	1-hour	120.47	95.64	115.87	84.35	111.69	120.47
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.65	0.65	0.56	0.56	0.60	0.65

Table D3-25c Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.24	0.24	0.26	0.25	0.27	0.27
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
	8-hour	2.01	1.45	2.13	1.45	1.88	2.13
NO_2	1-hour	110.90	98.30	110.53	83.57	104.05	110.90
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.65	0.65	0.56	0.56	0.60	0.65

Table D3-25d Generation Scenario 2 (Siemens Turbines) Normal Operation (75% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Normal Operations - 75% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.24	0.24	0.26	0.25	0.28	0.28
	24-hour	0.07	0.07	0.06	0.06	0.07	0.07
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
	8-hour	2.08	1.43	2.18	1.42	1.73	2.18
NO_2	1-hour	116.48	96.93	115.84	84.46	107.00	116.48
PM_{10}	24-hour	0.65	0.65	0.56	0.56	0.60	0.65
$PM_{2.5}$	24-hour	0.65	0.65	0.56	0.56	0.60	0.65

Table D3-26 Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts CAAQS – Summary Table

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.27	0.27	0.28	0.27	0.29	0.29
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	27.26	22.81	26.22	24.41	25.27	27.26
	8-hour	2.08	1.53	2.25	1.50	1.88	2.25
NO_2	1-hour	120.47	98.30	115.87	84.46	111.69	120.47
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.56	0.57	0.48	0.48	0.52	0.57

Table D3-26a Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.27	0.26	0.28	0.27	0.28	0.28
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	24.84	22.17	24.85	23.59	24.04	24.85
	8-hour	1.95	1.53	2.23	1.49	1.85	2.23
NO_2	1-hour	109.79	97.02	109.81	79.84	105.06	109.81
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.56	0.57	0.48	0.48	0.52	0.57

Table D3-26b Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.26	0.26	0.27	0.27	0.29	0.29
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	27.26	22.11	26.22	23.00	25.27	27.26
	8-hour	2.06	1.50	2.25	1.47	1.74	2.25
NO_2	1-hour	120.47	95.64	115.87	84.35	111.69	120.47
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.56	0.57	0.48	0.48	0.52	0.57

Table D3-26c Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.27	0.27	0.28	0.27	0.28	0.28
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	25.10	22.81	25.01	24.41	24.64	25.10
	8-hour	2.01	1.53	2.16	1.50	1.88	2.16
NO_2	1-hour	110.90	98.30	110.53	83.57	104.05	110.90
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.56	0.57	0.48	0.48	0.52	0.57

Table D3-26d Generation Scenario 2 (Siemens Turbines) Normal Operation (100% Load) Short Term Maximum Project Impacts CAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Normal Operations - 100% Load AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	1-hour	0.26	0.26	0.27	0.27	0.29	0.29
	24-hour	0.08	0.08	0.07	0.07	0.08	0.08
CO	1-hour	26.36	21.93	26.22	22.33	24.21	26.36
	8-hour	2.08	1.50	2.20	1.47	1.73	2.20
NO_2	1-hour	116.48	96.93	115.84	84.46	107.00	116.48
PM_{10}	24-hour	0.56	0.57	0.48	0.48	0.52	0.57
$PM_{2.5}$	24-hour	0.56	0.57	0.48	0.48	0.52	0.57

Table D3-27 Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts NAAQS – Summary Table

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	Annual	0.03	0.03	0.03	0.03	0.03	0.03
NO_2	Annual	0.49	0.47	0.44	0.47	0.47	0.49
$PM_{2.5}$	Annual	0.22					0.22

Table D3-27a Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts NAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	Annual	0.03	0.03	0.03	0.03	0.03	0.03
NO_2	Annual	0.49	0.47	0.44	0.47	0.47	0.49
$PM_{2.5}$	Annual	0.22					0.22

Table D3-27b Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts NAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	Annual	0.03	0.03	0.03	0.03	0.03	0.03
NO_2	Annual	0.49	0.47	0.44	0.47	0.47	0.49
$PM_{2.5}$	Annual	0.22					0.22

Table D3-27c Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts NAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	Annual	0.03	0.03	0.03	0.03	0.03	0.03
NO_2	Annual	0.49	0.47	0.44	0.47	0.47	0.49
$PM_{2.5}$	Annual	0.22					0.22

Table D3-27d Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts NAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
SO_2	Annual	0.03	0.03	0.03	0.03	0.03	0.03
NO_2	Annual	0.49	0.47	0.44	0.47	0.47	0.49
$PM_{2.5}$	Annual	0.22					0.22

Table D3-28 Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts CAAQS – Summary Table

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
NO_2*	Annual	0.49	0.47	0.44	0.47	0.47	0.49
PM_{10}	Annual	0.23	0.22	0.20	0.22	0.22	0.23
$PM_{2.5}$	Annual	0.23	0.22	0.20	0.22	0.22	0.23

Table D3-28a Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts CAAQS – Emergency Generator EGC

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
NO_2	Annual	0.49	0.47	0.44	0.47	0.47	0.49
PM_{10}	Annual	0.23	0.22	0.20	0.22	0.22	0.23
$PM_{2.5}$	Annual	0.23	0.22	0.20	0.22	0.22	0.23

Table D3-28b Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts CAAQS – Emergency Generator EGD

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations (μg/m^3)					
		2005	2006	2007	2008	2009	Maximum Design Value
NO_2	Annual	0.49	0.47	0.44	0.47	0.47	0.49
PM_{10}	Annual	0.23	0.22	0.20	0.22	0.22	0.23
$PM_{2.5}$	Annual	0.23	0.22	0.20	0.22	0.22	0.23

Table D3-28c Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts CAAQS – Emergency Generator EGE

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
NO_2	Annual	0.49	0.47	0.44	0.47	0.47	0.49
PM_{10}	Annual	0.23	0.22	0.20	0.22	0.22	0.23
$PM_{2.5}$	Annual	0.23	0.22	0.20	0.22	0.22	0.23

Table D3-28d Generation Scenario 2 (Siemens Turbines) Normal Operation Annual Maximum Project Impacts CAAQS – Emergency Generator EGF

Pollutant	Averaging Period	Typical Operations - Annual AERMOD Predicted Concentrations ($\mu g/m^3$)					
		2005	2006	2007	2008	2009	Maximum Design Value
NO_2	Annual	0.49	0.47	0.44	0.47	0.47	0.49
PM_{10}	Annual	0.23	0.22	0.20	0.22	0.22	0.23
$PM_{2.5}$	Annual	0.23	0.22	0.20	0.22	0.22	0.23

Appendix E

GHG Emissions Performance Evaluation

LADWP Scattergood Generation Station Unit 3 Repowering Project

Appendix E - Operational GHG Emissions and Emissions Performance Evaluation

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Table 1a: Generation Scenario 1 - Annual GHG Emissions Summary (Generator and Circuit Breakers)		
Source	**GHGs**	**$MTCO_2e/yr$**
Amortized Construction[1]	CO_2, N_2O	447.6
Blackstart Generator Combustion	CO_2, CH_4, N_2O	97
Circuit Breakers	SF_6	51
Annual Mass GHG Summary - Operation =		148
Notes: Detailed emission calcualtions are presented in Appendix A, Table A-4h and A-5h		

Table 1b: Generation Scenario 2 - Annual GHG Emissions Summary (Generator and Circuit Breakers)		
Source	**GHG**	**$MTCO_2e/yr$**
Amortized Construction[1]	CO_2, N_2O	469.2
Blackstart Generator Combustion	CO_2, CH_4, N_2O	391
Circuit Breakers	SF_6	51
Annual GHG Summary - Operation =		442
Notes: Detailed emission calcualtions are presented in Appendix A, Table A-4h and A-5h		

Table 2: GHG Emissions Performance Evaluation

Scenerio 1: General Electric

Unit	Gross Output (MW)	Annual Capacity Factor (percent)[1]	Annualized Output (MW)[2]	Fraction of Total Annualized Output	Emissions Performance (lb CO_2/MW-hr)[3]	Weighted Emissions Performance (lb CO_2/MW-hr)[4]
Unit 4 - GE 7FA CCGS	319	100%	319	0.724	936	677.8
Unit 6 - GE LMS100 SSGS	103	59%	61	0.138	1,260	173.8
Unit 7 - GE LMS100 SSGS	103	59%	61	0.138	1,260	173.8
Total =			**441**	**1.00**		**1,025.4**

Notes:
1. Annual capacity factor = Maximum percentage of time that unit could operate during a year
2. Annualized output = Gross output x Annual capacity factor
3. Conservative estimate that accounts for potential periods with GHG emissions but no electrical generation, such as start-ups, and periods with operation at reduced loads
4. Weighted emissions performance = Fraction of total annualized output x Emissions performance

Scenerio 2: Siemens

Unit	Gross Output (MW)	Annual Capacity Factor (percent)[1]	Annualized Output (MW)[2]	Fraction of Total Annualized Output	Emissions Performance (lb CO_2/MW-hr)[3]	Weighted Emissions Performance (lb CO_2/MW-hr)[4]
Unit 4 - Siemens Flex-Plant 30	314	100%	314	0.532	906	482.2
Unit 7 - Siemens Flex-Plant 10	276	100%	276	0.468	1,092	510.8
Total =			**590**	**1.00**		**993.0**

Notes:
1. Annual capacity factor = Maximum percentage of time that unit could operate during a year
2. Annualized output = Gross output x Annual capacity factor
3. Conservative estimate that accounts for potential periods with GHG emissions but no electrical generation, such as start-ups, and periods with operation at reduced loads
4. Weighted emissions performance = Fraction of total annualized output x Emissions performance

Table 3: Circuit Breaker Release GHG Emissions Summary

Equipment Type	Number	SF_6 per Breaker	SF6 Leakage (lbs/yr)	CO2e	
				TPY	MT/Yr
230 kV Transmission Circuit Breaker(s)	3	270	4.1	48.4	43.9
Low Side Generator Circuit Breaker(s)	4	31.7	0.6	7.6	6.9
			Annual GHG Subtotal =	**55.97**	**50.77**

Conversion Factor	
2000	lbs/short ton
Global Warming Potentials (GWP)	
Gas	**GWP**
SF_6	23,900

Maximum BACT SF_6 Emission Rate
0.5%