Amendment

Russell City Energy Center

Hayward, California

(01-AFC-7)

Amendment No. 1

Submitted to

California Energy Commission

Submitted by

Russell City Energy Company, LLC

With Technical Assistance by

CH2MHILL

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Acronyms and Abbreviations

µg/kg	microgram per kilogram
µg/m^3	micrograms per cubic meter
AAQS	ambient air quality standard
ACDEH	Alameda County Department of Environmental Health
ACFCWCD	Alameda County Flood Control and Water Conservation District
acfm	actual cubic feet per minute
AFC	Application for Certification
amsl	above mean sea level
APE	Area of Potential Effect
APN	Assessor's parcel number
ARM	Ambient Ratio Method
AST	aboveground storage tank
ASTM	American Standard Test Method
AWT	advanced water treatment
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
bgs	below ground surface
bhp	brake horsepower
BMP	best management practice
btu/scf	British thermal unit per standard cubic foot
CAISO	California Independent System Operator
CalARP	California Accidental Release Program
Calpine	Calpine Corporation
CARB	California Air Resources Board
CAS	Chemical Abstracts Service
CCR	California Code of Regulations
CDFG	California Department of Fish and Game

CEC	California Energy Commission
CEDD	California Employment Development Department
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CPUC	California Public Utilities Commission
CSC	California Species of Concern
CTG	combustion turbine generator
CUPA	Certified Unified Program Agency
DAT	deposition analysis thresholds
dBA	decibel, A-weighted
DEM	Department of Emergency Managament
DPM	diesel particulate exhaust matter
DTSC	Department of Toxic Substances Control
EBDA	East Bay Dischargers Authority
EBRPD	East Bay Regional Parks District
EC	elemental carbon
EDR	Environmental Data Resources, Inc.
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
ESL	Environmental Screening Level
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FLM	Federal Land Manager
g/hp-hr	gallon per horse-power hour
g/s	gallons per second
GE	General Electric Company

GEP	good engineering practice
gpm	gallons per minute
g/s	gram(s) per second
HCM	Highway Capacity Manual
HHV	higher heating value
HI	hazard index
HMMP	Hazardous Materials Management Plan
HOV	High Occupancy Vehicle
hp	horsepower
HRA	health risk assessment
HRSG	Heat recovery steam generator
ICU	Intersection Capacity Utilization
kg/ha/yr	kilogram per hectare per year
kV	kilovolt
LAFCO	Local Agency Formation Commission
lb/hr	pound(s) per hour
LBNL	Lawrence Berkeley National Laboratory
LFR	LFR Incorporated (Levine, Fricke, Recon)
LLC	Limited Liability Corporation
LORS	laws, ordinances, regulations, and standards
LOS	Level of Service
LUST	leaking underground storage tank
m/s	meters per second
MACT	maximum achievable control technology
MD	Metropolitan Division
mg/kg	milligram per kilogram
mg/L	milligram per liter
mi^2	square miles
MIR	maximum impact receptor
MMBtu	million British thermal units

MSA	Metropolitan Statistical Area
MSDS	Material Safety Data Sheets
MTBE	methyl tertiary-butyl ether
MW	megawatts
NFPA	National Fire Protection association
ng/m^3	nanograms per cubic meter
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOR	Notice of Responsibility
NOx	nitrogen oxide
NPDES	National Pollution Discharge Elimination System
OC	organic carbon
OEHHA	Office of Environmental Health and Hazard Assessment
OLM	Ozone Limiting Method
PG&E	Pacific Gas and Electric Company
PM	particulate matter
PM10	particulate matter less then 10 micrometers in aerodynamic diameter
PM2.5	particulate matter less then 2.5 micrometers in aerodynamic diameter
POC	particulate organic carbon
POM	particulate organic matter
PPA	Power Purchase Agreement
ppb	parts per billion
ppmv	parts per million by volume
PRG	preliminary remediation goals
PSD	prevention of significant deterioration
PUC	Public Utility Commission
RCEC	Russell City Energy Center
RCRIS	Resource Conservation and Recovery Information System
REL	Reference Exposure Level
RMP	Risk Management Policy

RO	Reverse Osmosis
rpm	revolutions per minute
RQ	Reportable quantity
RWF	Recycled Water Facility
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization
SIS	System Impact Study
SO_2	sulfur dioxide
STG	steam turbine generator
SVOC	semi-volatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
T-BACT	best available control technology for air toxic compounds
TDS	total dissolved solids
TIBL	Thermal Internal Boundary Layer
TPH	total petroleum hydrocarbons
TPH-d	total petroleum hydrocarbons, diesel
TPH-g	total petroleum hydrocarbons, gasoline
TPH-mo	total petroleum hydrocarbons, motor oil
TQ	threshold quantities
UCMP	University of California Museum of Paleontology
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
UST	underground storage tank
V/C	volume-to-capacity ratio
VOC	volatile organic compound
WPCF	Water Pollution Control Facility
ZLD	Zero Liquid Discharge

Executive Summary

Russell City Energy Center, LLC, as project owner, petitions the California Energy Commission (CEC or Commission) to amend the certification for the Russell City Energy Center (RCEC) (01-AFC-7, issued September 11, 2002). This Amendment has several components:

- Moving the project facilities approximately 1,300 feet north and west of the location described in the Application for Certification (AFC) (300 feet boundary to boundary)
- Adding a Zero Liquid Discharge facility, significantly reducing wastewater discharge and slightly reducing recycled water use
- Adding a Title 22 Recycled Water Facility
- Removing the Advanced Water Treatment facility
- Removing the Standby Generator
- Relocating a small portion (approximately 500 to 1,000 feet) of the transmission line route from the RCEC to Pacific Gas and Electric Company's (PG&E) Grant-Eastshore existing transmission corridor (use of the existing PG&E transmission corridor remains unchanged)
- A new natural gas pipeline route that will run entirely in Depot Road
- New construction laydown and added worker parking areas in close proximity to the site

Section 1.0 provides an overview of the Amendment and a review of the ownership of the project, the necessity for the proposed change, and the consistency of the changes with the Commission Decision certifying the facility. Section 2.0 provides a complete description of the proposed modifications, including updated drawings. Section 3.0 assesses the potential environmental effects of the proposed changes in terms of 14 environmental discipline areas. This assessment indicates that adoption of the Amendment will not result in any significant, unmitigated adverse environmental impacts. Similarly, the project as amended will continue to comply with all applicable laws, ordinances, regulations and standards. The findings and conclusions contained in the September 11, 2002 Commission Decision granting certification of the RCEC are still applicable to the project, as amended. A few of the Conditions of Certification in the Commission Decision require minor revisions to reflect the proposed project changes. For the sections affected, a proposed markup of the Conditions of Certification is included.

The project owner has entered into a Letter of Intent with PG&E to enter into a long-term Power Purchase Agreement (PPA), and is prepared to begin construction on a schedule to support the commercial operation date of June 1, 2010 as soon as all regulatory approvals are complete. Similarly, because the project owner proposes to construct an energy center

with superior environmental performance at an already certified site, timely review of this Amendment by the Commission is requested.

Unlike many merchant power plants in the California market, this project will enter into a long-term PPA to secure the financing needed to fund construction. Financing cannot be secured until all regulatory approvals are complete. Construction must begin in spring 2008 in order to meet the summer loads of Northern California in 2010. Therefore, in order to complete financing and engineering prior to the start of construction, the Applicant requests a Commission determination on this Amendment no later the June 2007.

SECTION 1.0

Introduction

1.1 Overview of Amendment

Russell City Energy Company, LLC (the "Project Owner") hereby petitions to amend the certification for the Russell City Energy Center (RCEC) (01-AFC-07). This Amendment describes the following changes in the design, construction, and operation of the project:

- Moving the project facilities approximately 1,300 feet north and west of the location described in the Application for Certification (AFC) (300 feet boundary to boundary). As a result of this change, no facilities will be located on the KFAX radio tower parcel, thus eliminating the impact of a seasonal wetland on that parcel, and eliminating the impact that would have occurred from relocating the KFAX radio towers adjacent to East Bay Municipal Utility District facilities and trailhead.
- Replacing a proposed Advanced Water Treatment facility with a Title 22 Recycled Water Facility and a Zero Liquid Discharge system. As a result of this change, the project will greatly reduce wastewater and metal discharge into the San Francisco Bay.
- Removing the Standby Generator
- Slightly changing a small portion of the route of the proposed new 230 kilovolt (kV) transmission line that will run in Pacific Gas and Electric Company's (PG&E) existing 115 kV Grant-Eastshore transmission corridor between the RCEC Project and the Eastshore substation. (The use of the existing PG&E corridor remains unchanged.)
- Relocating the natural gas pipeline route so that it will run entirely under Depot Road
- Adding new construction laydown and worker parking areas in close proximity to the project site.

This Amendment contains all of the information that is required pursuant to the California Energy Commission's (CEC or Commission) Siting Regulations (California Code of Regulations [CCR] Title 20, Section 1769, Post Certification Amendments and Changes). The information necessary to fulfill the requirements of Section 1769 is contained in Sections 1.0 through 6.0 as summarized in Table 1.1-1. Figure 1.1-1 is a map showing the project location and vicinity.

TABLE 1.1-1
Informational Requirements for Post-Certification Amendments and Changes

Section 1769 Requirement	Section of Petition Fulfilling Requirement
(A) A complete description of the proposed modifications, including new language for any conditions that will be affected	Section 2.0—Proposed modifications Sections 3.1 to 3.15—Proposed changes to conditions of certification, where necessary, are located at the end of each technical section
(B) A discussion of the necessity for the proposed	Section 1.3

TABLE 1.1-1
Informational Requirements for Post-Certification Amendments and Changes

Section 1769 Requirement	Section of Petition Fulfilling Requirement
modifications	
(C) If the modification is based on information that was known by the petitioner during the certification proceeding, an explanation why the issue was not raised at that time	Section 1.3
(D) If the modification is based on new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision, an explanation of why the change should be permitted	Sections 1.4, 3.1 to 3.16
(E) An analysis of the impacts the modification may have on the environment and proposed measures to mitigate any significant adverse impacts	Section 3.1 to 3.15
(F) A discussion of the impact of the modification on the facility's ability to comply with applicable laws, ordinances, regulations, and standards;	Section 3.1 to 3.16
(G) A discussion of how the modification affects the public	Section 4.0
(H) A list of property owners potentially affected by the modification	Section 5.0
(I) A discussion of the potential effect on nearby property owners, the public and the parties in the application proceedings.	Section 6.0

1.2 Ownership of Russell City Energy Center

Russell City Energy Company, LLC, a wholly owned subsidiary of Calpine Corporation (Calpine) and GE Energy Financial Services (GE), is the project owner. On August 11, 2006, Calpine and GE entered into a Letter of Intent agreement that provides for GE to become a 35 percent equity partner in the project. The project owners will submit under separate cover an application for change of ownership.

1.3 Necessity of Proposed Changes

The Siting Regulations require a discussion of the necessity for the proposed revision to the RCEC project and whether the modification is based on information known by the petitioner during the certification proceeding (Title 20, CCR, Sections 1769 [a][1][B], and [C]). This Amendment will eliminate the need to move the KFAX radio towers, thereby eliminating impacts on seasonal wetlands, the endangered harvest salt marsh mouse, and the East Bay Regional Park District (EBRPD) operational facilities and a Hayward Shoreline Regional Park trailhead. Visually, the new site reduces visual impacts from State Route 92 and the Hayward Shoreline Interpretive Center, and eliminates the need for an architectural screen. In addition, the new site allows for an industrial renovation of a “brownfield” site.

By removing the Advanced Water Treatment facility and replacing it with a Title 22 Recycled Water Facility and adding a Zero Liquid Discharge system, less wastewater, metals, and other wastewater constituents will be discharged to San Francisco Bay.

The proposed addition of approximately 6 acres of construction worker parking in the vicinity of the project parcel will allow for construction workers to park near the project site.

These proposed changes are based on information that became known to the petitioner after the project was certified. Specifically, portions of the project location were no longer feasible to acquire. In addition, property became available that was not previously available, and in a location that will reduce environmental impacts and provide greater benefits to the local community.

1.4 Consistency of Changes with Certification

The Siting Regulations also require a discussion of the consistency of the proposed project revision with the applicable laws, ordinances, regulations, and standards (LORS) and whether the modifications are based upon new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision (Title 14, CCR Section 1769 [a][1][D]). If the project is no longer consistent with the certification, the Amendment must provide an explanation why the modification should be permitted.

The proposed project revisions are consistent with all applicable LORS. This Amendment is not based upon new information that changes or undermines any basis for the final decision. The findings and conclusions contained in the Commission Decision for the RCEC project (CEC, 2002) are still applicable to the project as modified.

1.5 Summary of Environmental Impacts

The CEC Siting Regulations require that an analysis be conducted to address the potential impacts the proposed Amendment may have on the environment and proposed measures to mitigate any potentially significant adverse impacts (Title 20, CCR, Section 1769 [a][1][E]). The regulations also require a discussion of the impact of the proposed Amendment on the facility's ability to comply with applicable LORS (Section 1769 [1][a][F]). Section 3.0 of this Amendment includes a discussion of the potential environmental impacts associated with the Amendment as well as a discussion of the consistency of the modification with LORS. For discipline areas affected by the proposed modifications, Section 3.0 also includes any information necessary to update environmental baseline information to reflect significant changes in baseline conditions that may have occurred between the time information submitted previously in support of the application was developed and the present. Section 3.0 concludes that there will be no significant environmental impacts associated with implementing the actions specified in the Amendment and that the project as modified will comply with all applicable LORS.

1.6 References Cited

California Energy Commission. 2002. Commission Decision, Russell City Energy Center, Application for Certification (01-AFC-7), Alameda County. California Energy Commission, Sacramento, California. September 11.

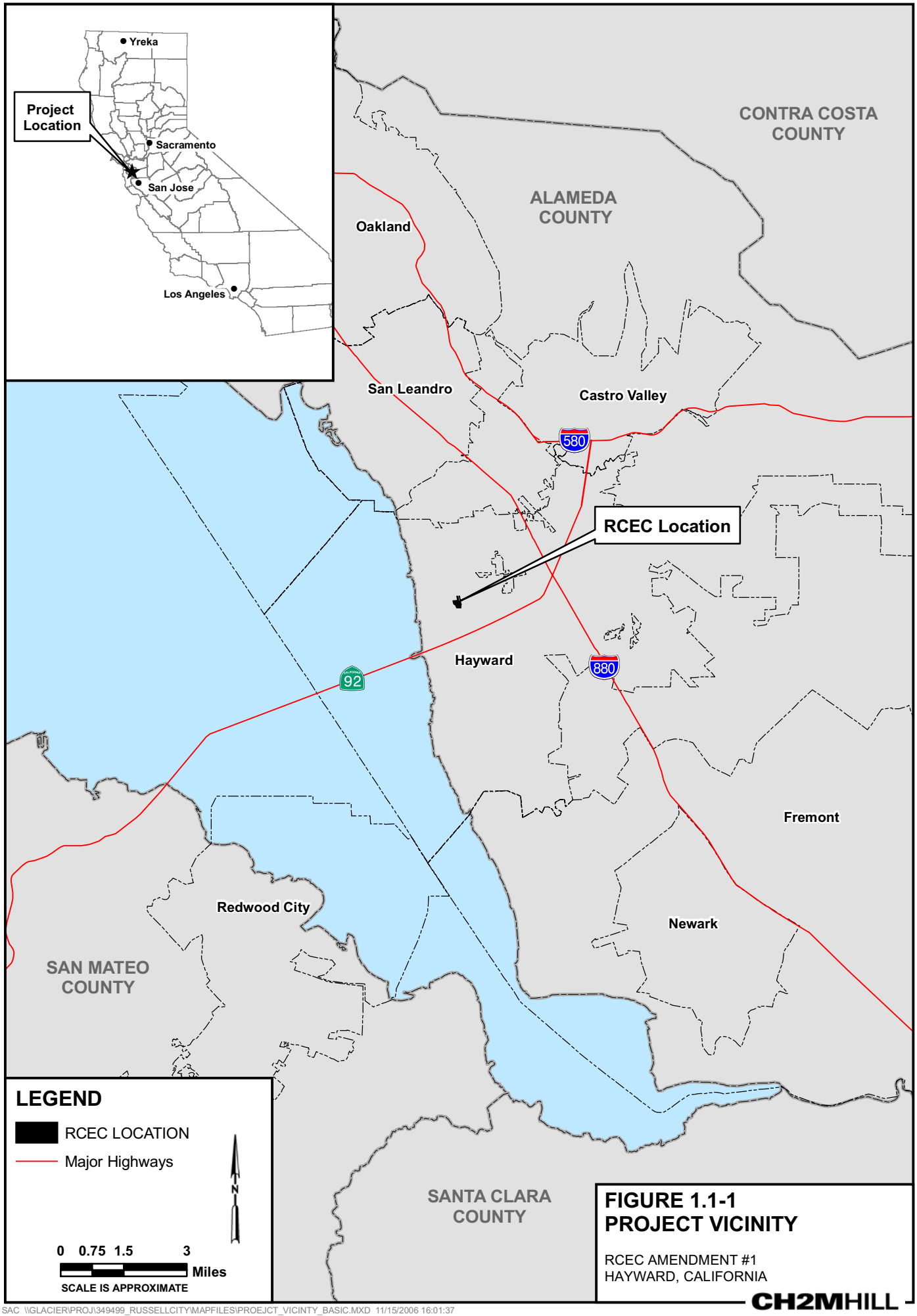

FIGURE 1.1-1
PROJECT VICINITY

RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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SECTION 2.0

Description of Project Amendment

This section includes a complete description of the proposed project Amendment consistent with California Energy Commission (CEC or Commission) Siting Regulations (Title 20, CCR, Section 1769 [a][1][A]).

2.1 Energy Center

2.1.1 Energy Center Site Arrangement

The project as amended will require a revised site located as shown in Figure 2.1-1 with power plant facilities as shown in the General Arrangement drawing Figure 2.1-2. The center property will now total approximately 18.8 acres located in both the City of Hayward and presently unincorporated Alameda County. The energy center fenced area has been increased from 14.7 acres to approximately 16.5 acres. Figure 2.1-3 shows the north and east elevations and Figure 2.1-4 shows the west and south elevations. New project parcels previously not part of the project are listed in Table 2.1-1 and shown in Figure 2.1-1.

TABLE 2.1-1
Russell City Energy Center Parcels

APN	Parcel Name	Street Frontage	Acres
439007000900	Eash (1)	Depot Road	8.6
439007000806	Aladdin Depot	Depot Road	3.0
439007001202	Eash (2)	Depot Road	1.8
439009900200	City of Hayward (partial)	Enterprise Avenue	5.4
Total acres			**18.8**

Key revisions to the site layout can be grouped into either (1) equipment additions or subtractions and (2) new equipment locations.

2.1.1.1 Equipment Additions or Subtractions

Equipment additions or subtractions, compared with the project as licensed, are as follows:

- The Advanced Water Treatment (AWT) facility has been removed and replaced with a Title 22 Recycled Water Facility (RWF), which will be located east of the power block, and a Zero Liquid Discharge (ZLD) system, which will be placed to the west of the switchyard
- The standby generator has been removed from the project.
- The architectural treatment has been removed from the project.

- A cooling tower chemical feed pavilion has been placed south of the ZLD area, to the east of the cooling tower.
- The stormwater retention basin has been removed from the project.
- A single recycled water storage tank replaces the two final product water storage tanks
- One of the two demineralized water storage tanks have been removed from the project
- The cooling tower now has nine cells instead of ten cells

2.1.1.2 New Equipment Locations

The following are changes in equipment locations, compared with the project as licensed:

- The facility has been moved approximately 1,300 feet to the northwest (less than 300 feet boundary to boundary).
- The cooling tower has been realigned from a north-south orientation to a northwest-southeast orientation.
- The administration/control building area has been moved to the southwestern corner of the project site.
- The ammonia tank has moved to the southeastern corner of the project in between the eastern combustion turbine and the RWF.
- A recycled water storage tank has been placed adjacent to the northeast corner of the power block, southeast of the proposed switchyard
- A reclaimed water storage tank has been placed adjacent to the northeast corner of the power block, south of the proposed switchyard.
- The demineralized water storage tank has been placed to the northwest of the power block, adjacent to the cooling tower.
- The fire water storage tank has been placed in the northwest corner of the power block.
- The fire pumps have been moved to the northwest corner of the power block adjacent to the fire water storage tank.
- The warehouse has been placed at the northern end of the project site.
- The fuel gas yard and compressor area has been moved to the north end of the project location, just north of the switchyard, and adjacent to the warehouse (a separate PG&E gas metering yard will be located adjacent to Depot Road).
- The gas compressors are now located outdoors instead of inside a building.
- The steam turbine has been moved north slightly so that it is parallel to the combustion turbines.

The laboratory and sample panel has been separated from the administration building and is now located in an enclosure under the east-west pipe rack.

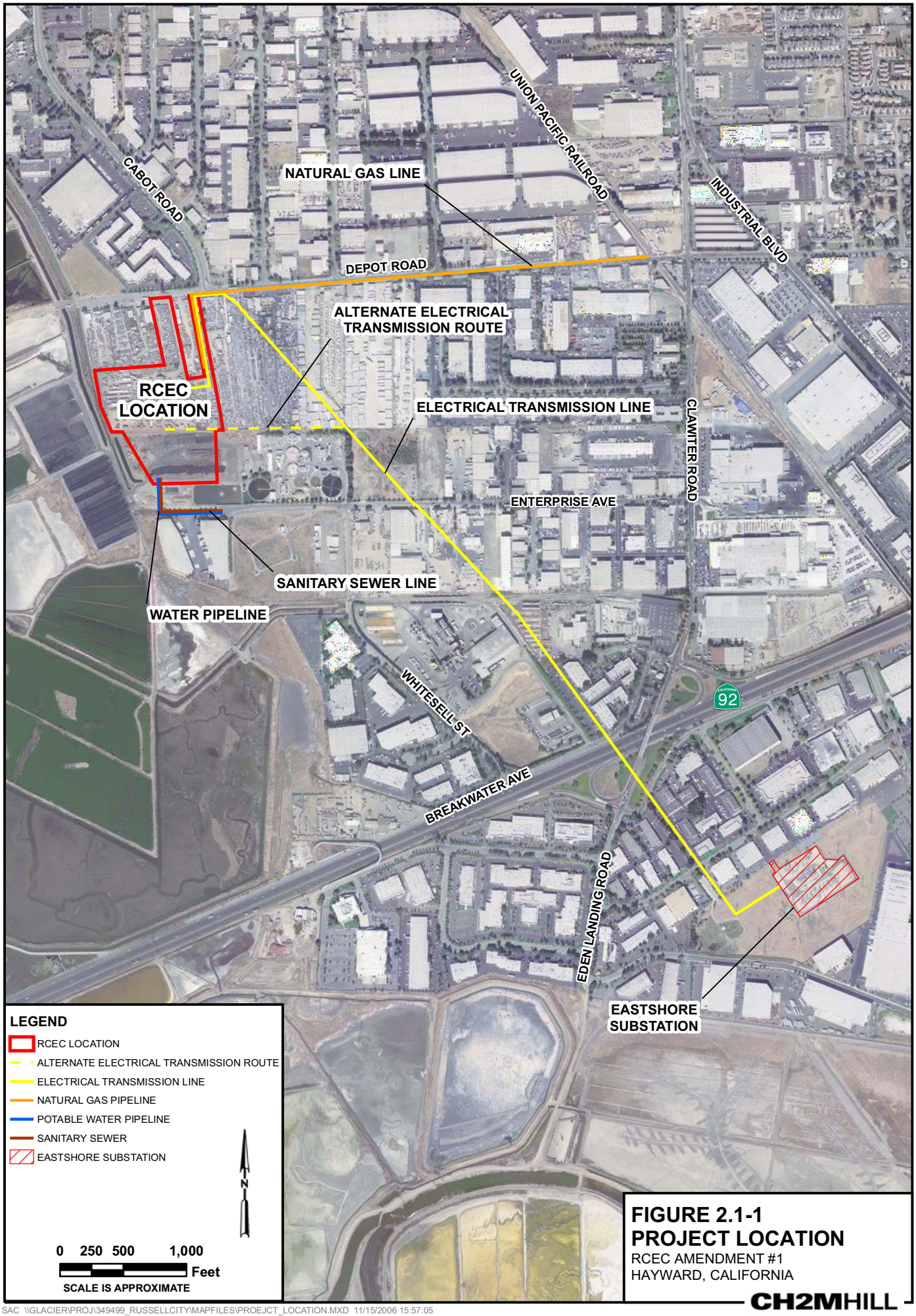

FIGURE 2.1-1
PROJECT LOCATION
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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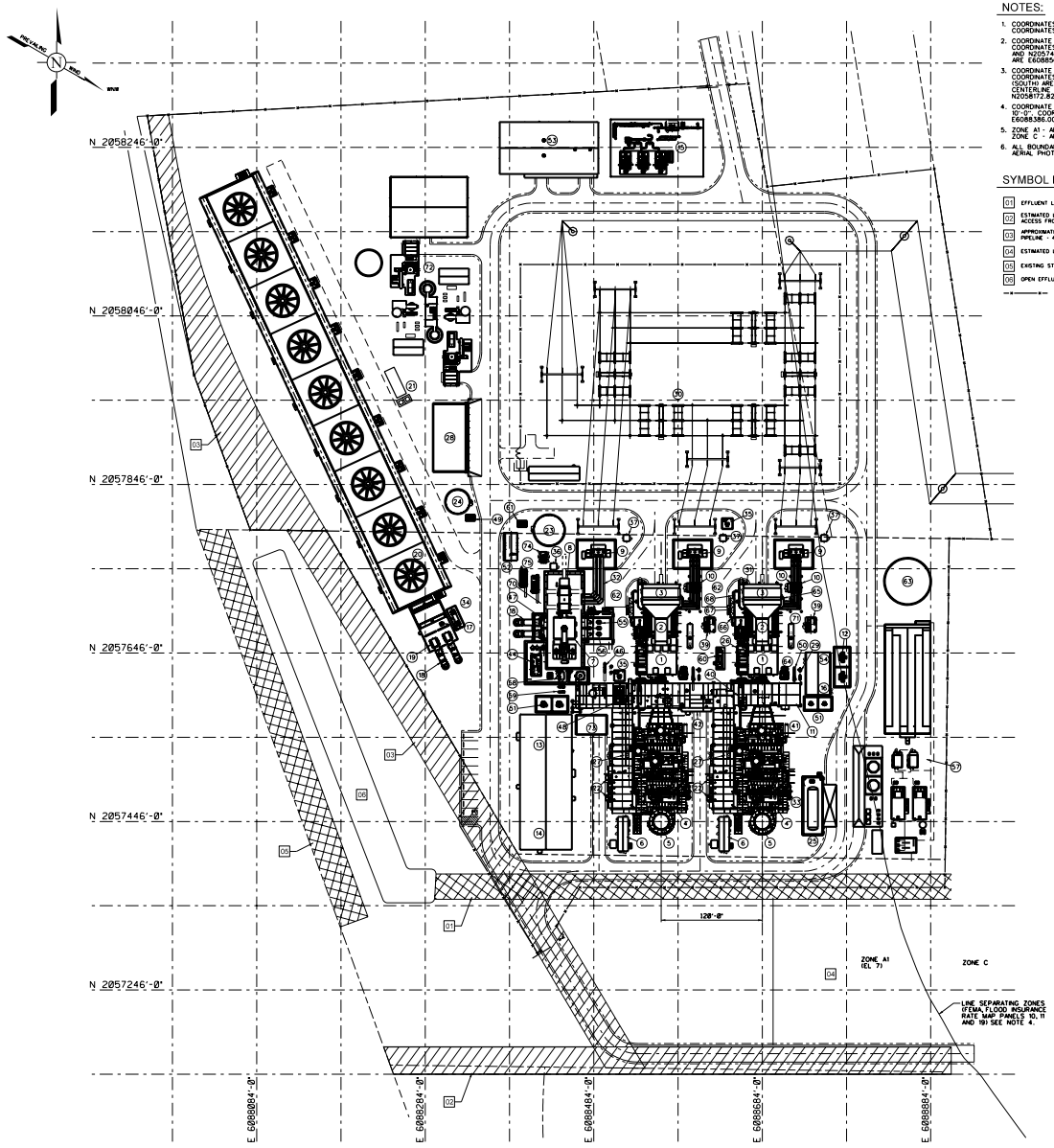


NOTES:

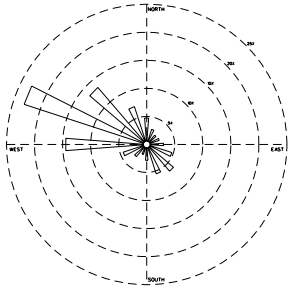
1. COORDINATES LISTED ARE STATE PLANE NAD83, CALIFORNIA, ZONE 3 COORDINATES.
2. COORDINATE FOR TOP OF HRSG FOUNDATION ELEVATION IS 10'-0". COORDINATES FOR CENTERLINE OF HRSG #1 STACK ARE E6088684.000' AND N2057446.000'. COORDINATES FOR CENTERLINE OF HRSG #2 STACK ARE E6088564.000' AND N2057446.000'.
3. COORDINATE FOR TOP OF COOLING TOWER FAN ELEVATION IS 67.177'. COORDINATES FOR CENTERLINE OF COOLING TOWER FAN #1 (SOUTH) ARE E6088266.960' AND N2057737.794'. COORDINATES FOR CENTERLINE OF COOLING TOWER FAN #9 (NORTH) ARE E6088064.103' AND N2058172.827'.
4. COORDINATE FOR TOP OF FIRE PUMP HOUSE FOUNDATION ELEVATION IS 10'-0". COORDINATES FOR CENTERLINE OF FIRE PUMP HOUSE ARE E6088386.000' AND N2057772.500'.
5. ZONE A1 - AREAS OF 100-YR FLOOD, BASE FLOOD ELEVATION OF 7 FT. ZONE C - AREAS OF MINIMAL FLOODING.
6. ALL BOUNDARY INFORMATION IS APPROXIMATE BASED ON PARCEL MAPS, AERIAL PHOTOS AND FIELD WORK.

SYMBOL LEGEND:

- 01 EFFLUENT LINE - 30' WIDE.
- 02 ESTIMATED LOCATION AND WIDTH EASEMENT FOR CITY ACCESS FROM ENTERPRISE AVE TO SLUDGE BEDS - 30' WIDE
- 03 APPROXIMATE LOCATION FOR 60" EBDA EFFLUENT PIPELINE - 40' WIDE
- 04 ESTIMATED LOCATION OF EXISTING EQUALIZATION BASIN
- 05 EXISTING STORM CHANNEL TO REMAIN AN OPEN DITCH 35' WIDE
- 06 OPEN EFFLUENT DITCH
- FENCE

EQUIPMENT LEGEND:

1. COMBUSTION TURBINE
2. CT GENERATOR
3. CT AIR INLET SYSTEM
4. HRSG
5. HRSG STACK
6. CEM/HRSG POWER DISTRIBUTION CENTER
7. STEAM TURBINE
8. ST GENERATOR
9. GENERATOR STEPUP TRANSFORMER
10. GENERATOR BREAKER
11. PIPE RACK
12. UNIT AUXILIARY TRANSFORMERS
13. BOP ELECTRICAL CONTROL BLDG
14. ADMIN/CONTROL ROOM BLDG
15. FUEL GAS METERING & COMPRESSORS
16. AUX POWER DISTRIBUTION CENTER
17. AUXILIARY COOLING WATER PUMP
18. CIRCULATING WATER LINES
19. CIRCULATING WATER PUMPS
20. COOLING TOWER
21. AUXILIARY TRANSFORMERS & COOLING TOWER PDC
22. BOILER FEED PUMPS
23. SERVICE / FIRE WATER STORAGE TANK
24. DEMIN. WATER STORAGE TANK
25. AMMONIA STORAGE TANK, PUMPS & VAPORIZER
26. CT HYDRAULIC UNIT
27. BLOWDOWN TANK AND SUMP
28. COOLING TOWER CHEM FEED PAVILION
29. FUEL GAS KNOCKOUT DRUM/ DRAIN TANK
30. SWITCHYARD
31. WATER WASH SKID
32. ISO PHASE BUS DUCT
33. AMMONIA INJECTION SKID
34. OIL/WATER SEPARATOR (ABOVE GROUND)
35. OIL/WATER SUMP AND PUMPS
36. ST EQUIP DELUGE VALVE STATION
37. TRANSFORMER/FIRE PROTECTION DELUGE VALVE HOUSE
38. NOT USED
39. INLET FOGGING SKID
40. ROTOR AIR COOLER
41. DUCT BURNER SKID
42. SAMPLE PANEL & WATER LAB
43. NOT USED
44. STG LUBE OIL SKID
45. GLAND STEAM SKID (NOT SHOWN)
46. GLAND STEAM CONDENSER
47. CONDENSER
48. AIR COMPRESSORS (UNDER PIPE BRIDGE)
49. DEMIN. WATER PUMPS
50. FUEL GAS PERFORMANCE HEATER
51. SUS TRANSFORMERS
52. FIRE PUMP SKID ENCLOSURE
53. WAREHOUSE
54. DC AND UPS SYSTEM
55. CONDENSATE PUMPS
56. CONDENSATE STRAINERS
57. TITLE 22 AREA
58. STG EHC SKID
59. CLOSED COOLING WATER PUMPS & HEAT EXHCANGERS
60. FUEL GAS DEWPOINT HEATER
61. SERVICE WATER PUMPS
62. CRANE AREA / MANTENANCE
63. RECYCLED WATER STORAGE TANK
64. MAIN & PILOT FUEL GAS FILTER SEPARATOR
65. VT & SURGE CUBICLE
66. CT MECHANICAL PACKAGE
67. CT ELECTRICAL PACKAGE
68. CT STARTING PACKAGE
69. ST SEAL OIL SKID (NOT SHOWN)
70. BULK HYDROGEN & CO2 STORAGE (TRAILER MOUNT)
71. WATER WASH TANK (UNDERGROUND)
72. ZERO LIQUID DISCHARE (ZLD) AREA
73. HRSG CYCLE CHEM FEED PAVILION
74. THY/FCB CUBICLES
75. NON CONDENSABLE GAS REMOVAL SKIDS



60 0 60 120 180

SCALE: 1" = 60'

SOURCE: WorleyParsons, 2006

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FIGURE 2.1-2
GENERAL ARRANGEMENT
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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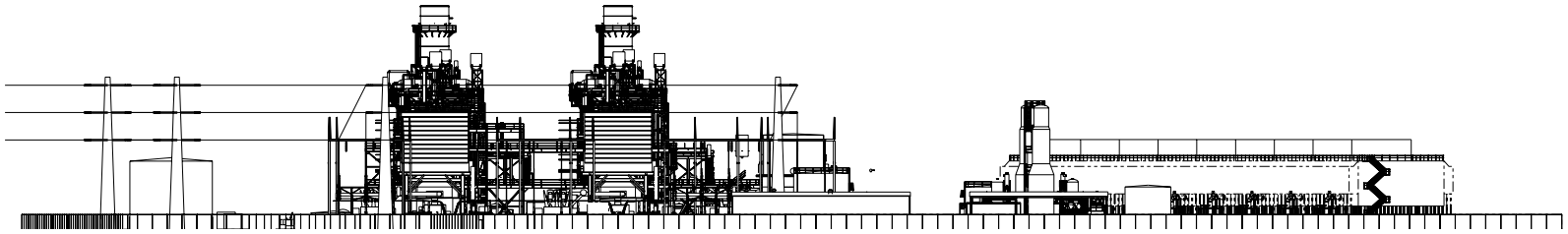
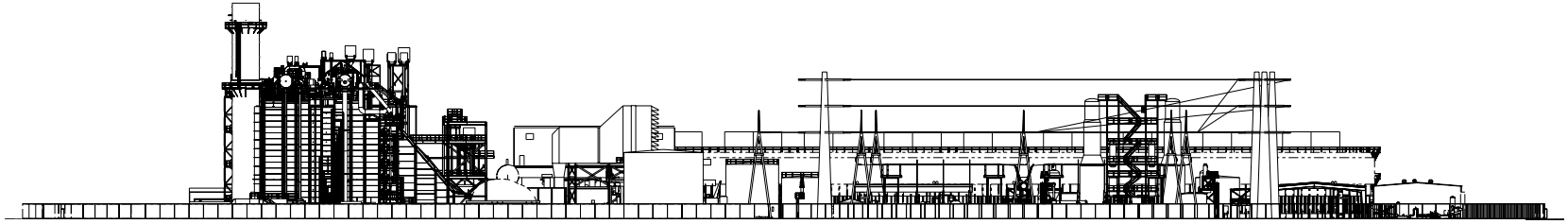
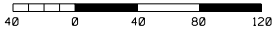


NORTH ELEVATION
LOOKING SOUTH



EAST ELEVATION
LOOKING WEST



SCALE: 1" = 40'

SOURCE: WorleyParsons, 2006

FIGURE 2.1-3
NORTH AND EAST ELEVATIONS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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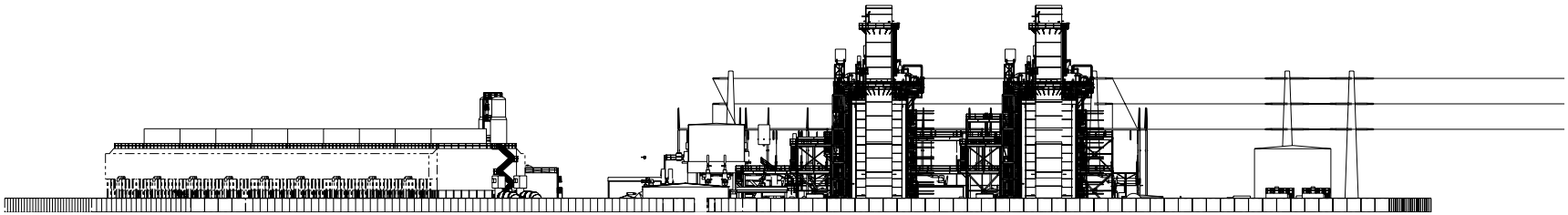
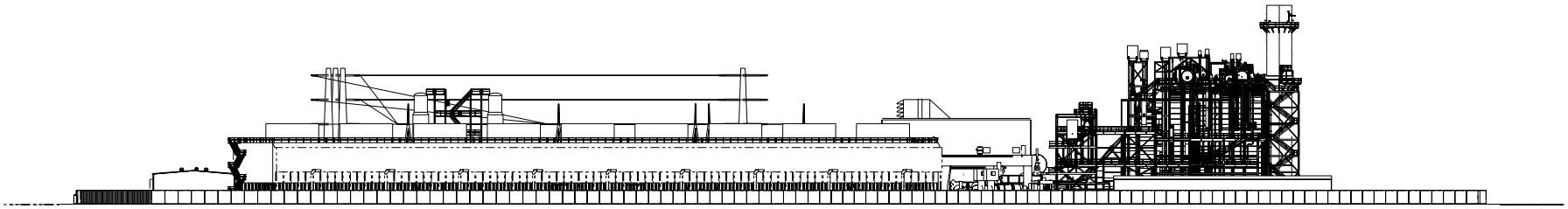
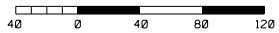


SOUTH ELEVATION
LOOKING NORTH



WEST ELEVATION
LOOKING EAST



SCALE: 1" = 40'

SOURCE: WorleyParsons, 2006

FIGURE 2.1-4
WEST AND SOUTH ELEVATIONS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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- The water treatment equipment has been separated from the administration building with water treatment equipment now located in a pavilion north of the ZLD area and cycle chemical feed systems located in a pavilion east of the administration building.
- The unit auxiliary transformers and power distribution center are now located at the east end of the east-west pipe rack, whereas previously they were located just south of the CTG generator step-up transformers.
- The combustion turbine inlet air filters are now located above the generators instead of east of the respective combustion turbines.

2.1.2 Process Description

The power generation process remains essentially the same with the following differences:

- Steam injection for combustion turbine generator (CTG) power augmentation has been removed from the project.
- 1-hour average NOx emissions will now be controlled to 2.0 ppmvd.
- 3-hour average carbon monoxide (CO) emissions will now be controlled to 4 ppmvd.
- The heat recovery steam generators (HRSGs) will contain oxidation catalysts.

2.1.3 Electrical Systems and Equipment

2.1.3.1 AC Power – Transmission

The 230kV connections from the high side of the generator step-up transformers will be routed overhead to the switchyard versus underground as previously shown. Also, the relative positions of the out-going transmission line within the switchyard have been revised such that the steam turbine generator connection is now located between the two outgoing transmission lines. This revision is intended to improve project reliability under certain conditions.

2.1.3.2 Standby Generators

The project as reconfigured will not include standby generators.

2.1.4 Fuel Supply and Use

Natural gas for the facility will be delivered to the site via a new gas line from Pacific Gas and Electric Company's (PG&E) line 153 located along the Union Pacific Railroad easement to the east of the project. The gas line will run east from the project site, along Depot Road to the easement for a distance of approximately 3,800 feet (0.7 mile) (Figure 2.1-1). Approximately 1,200 feet of this alignment is the same as certified. The remainder of the route (2,400 feet) is a new alignment in Depot Road.

The combustion turbines will be designed to burn only natural gas. The maximum natural gas requirement for the facility will increase to approximately 107,453 MMBtu/day, (HHV). The natural gas delivery pressure to the site is expected to be at least 250 psig.

2.1.5 Water Supply and Use

The City of Hayward Water Pollution Control Facility (WPCF) will provide secondary effluent for the process water supply for the RCEC. An onsite Title 22 RWF will treat the water onsite to Title 22 disinfected tertiary treatment standards and will use the water for all plant process uses. The secondary effluent will be delivered to the site via a new 50-foot-long 18- to 24-inch-diameter pipeline from the southeast corner of the project to the adjacent 48-inch secondary effluent pipeline which runs a long the south edge of the RCEC.

Water required for domestic uses and fire fighting will also be provided by the City of Hayward through a new connection from the southern boundary of the project site to the exiting 12-inch potable water line that runs along Enterprise Avenue (see Figure 2.1-1).

Water balances for the RCEC are shown in Figures 2.1-5a and 2.1-5b for base load and peak load operating conditions, respectively. Operation of the RCEC is projected to require up to 2,793 gallons per minute (gpm) (4.02 mgd) of secondary effluent from the City of Hayward, or approximately 3,600 acre-ft/year assuming reasonably conservative plant dispatch assumptions. Potable water uses are estimated to total an average demand of 3 gpm, or approximately 4 acre-feet/year.

2.1.6 Water and Wastewater Treatment

Because the AWT plant has been removed from the project, the City of Hayward will not own or operate any portion of the project. Instead of an AWT, the plant will include onsite Title 22 treatment equipment. The WPCF will provide secondary-treated water to the project, and the onsite treatment system will be designed to produce recycled water suitable for plant process use. The water quality of the secondary treated water from the WPCF is provided in Table 2.1-2. Cooling tower blowdown will be treated in a zero liquid discharge (ZLD) system.

TABLE 2.1-2
Summary of Average Water Quality Characteristics for Potential Sources of Project Water

Water Quality Parameter	Hayward Secondary Effluent (Primary Source) (mg/L, unless otherwise noted)	Hayward Potable Water Supply* (mg/L, unless otherwise noted) Average value (Range)
Turbidity	17 (11-33) NTU	0.24 (0.09-49) NTU
Color	-	12 (<5-25)
Odor Threshold	-	-
pH	7.8 s.u.	8.9 (7.6-9.8)
Total Alkalinity	255	54 (6-150)
Bicarbonate	255	-
Total Dissolved Solids	564	116 (20-210)
Total Suspended Solids	32	-
BOD	17	-
TOC	32	-
Phosphate	4	-
Total Nitrogen	28	-

TABLE 2.1-2
Summary of Average Water Quality Characteristics for Potential Sources of Project Water

Water Quality Parameter	Hayward Secondary Effluent (Primary Source) (mg/L, unless otherwise noted)	Hayward Potable Water Supply* (mg/L, unless otherwise noted) Average value (Range)
Nitrate as NO3	6.0	-
Nitrite	2.9	-
Fluoride	2.2	0.1 (<0.1-0.2)
Chloride	153	9 (<3-25)
Hardness	160	56 (8-150)
Ammonia	31	-
Arsenic	0.0017	-
Calcium	33	16 (3-30)
Magnesium	14	6.6 (<0.5-1.4)
Manganese	0.06	-
Sodium	133	15 (3-26)
Potassium	16	0.8 (<0.5-1.4)
Silica	13	6.3 (4.4-7.2)
Silver	0.002	-
Sulfate	44	19 (1-42)
Cadmium	9.0000	-
Chromium	0.0051	-
Copper	0.024	69 ppb
Cyanide	<0.003	-
Iron	1.4	-
Lead	0.0022	2.8 ppb
Mercury	0.00005	-
Nickel	0.012	-
Boron	0.5	73 (16-168) ppb
Selenium	0.0012	-
Thallium	-	-
Strontium	0.150	-
Zinc	0.073	-

Hayward potable water supply characteristics provided in the 2005 Water Quality Report located at http://www.hayward-ca.gov/departments/publicworks/documents/WaterQualityReport2005.pdf

mg/L = milligrams per liter
ppb = parts per billion

2.1.6.1 Recycled Water Facility

The Recycled Water Facility (RWF) will consist of the following components and processes:

- Influent pump station
- Coagulation, flocculation, and high-rate clarification
- Filtration
- Chlorine contact basins
- Recycled water pump station
- Recycled water storage tank
- Chemical storage and feed systems
- Plant electrical and control building

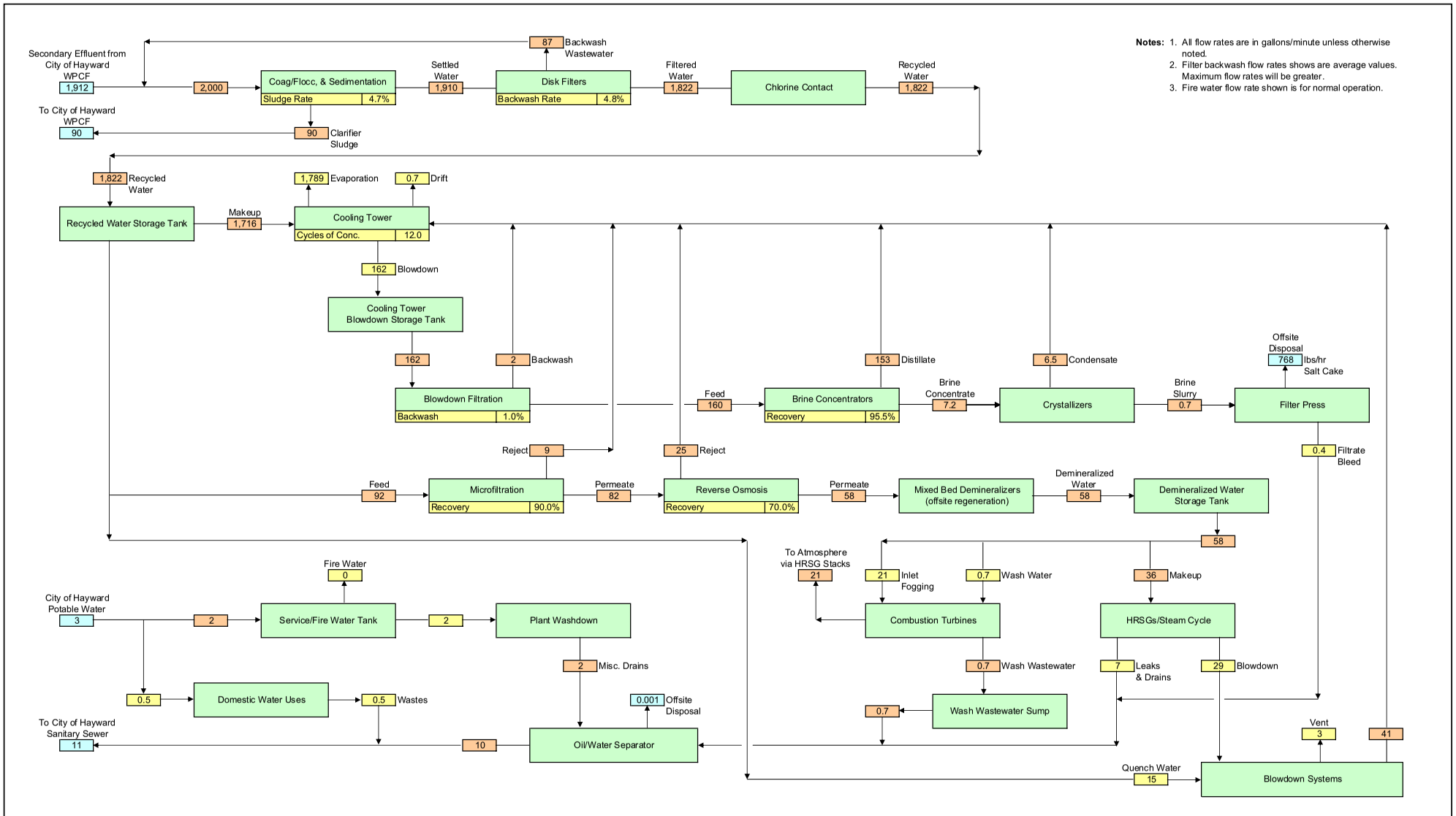
The influent pump station will pump secondary effluent from the existing 48-inch pipeline into the coagulation/flocculation/clarification units. Flow through the remainder of the treatment process will be by gravity. Sludge from the clarifiers will be returned to the WPCF. Effluent from the clarifiers will continue on to disk filters, which will provide the filtration required by Title 22. Filter backwash water will be recycled to the influent pump station. The filtered water will continue on to the chlorine contact basins. Sodium hypochlorite will be injected into the filtered water upstream of the basins. The basins will be designed to provide the disinfection contact time required by Title 22. Recycled water exiting the chlorine contact basin will be pumped into the recycled water storage tank. From the storage tank, the recycled water will flow to the cooling tower to replace losses due to evaporation, blowdown, and drift and to the water treatment pavilion where it will be the source water for the demineralized water system. The RWF chemical storage and feed systems will include storage tanks and feed systems to feed the sodium hypochlorite and various coagulants and polymers.

2.1.6.2 Demineralized Water System

The demineralized water system will consist of microfilters followed by reverse osmosis (RO) and then off-site regenerated mixed-bed demineralizers. Reject streams from the microfilters and RO systems will be recycled to the cooling tower basin. The demineralized water will be stored in a single storage tank for use as makeup water to the HRSGs, CTG inlet air fogging, and CTG water washes.

2.1.6.3 Zero Liquid Discharge System

The reconfigured RCEC will include a ZLD system that will eliminate the majority of wastewater discharges from plant process and cooling water. With the ZLD system, process wastewater will be recycled and reused, to the extent practicable, and the majority of the metals present in the secondary effluent will not be released offsite in the wastewater effluent.



Notes:
1. All flow rates are in gallons/minute unless otherwise noted.
2. Filter backwash flow rates shows are average values. Maximum flow rates will be greater.
3. Fire water flow rate shown is for normal operation.

SOURCE: Calpine, 2006

FIGURE 2.1-5A
WATER BALANCE DIAGRAM
AVERAGE LOAD
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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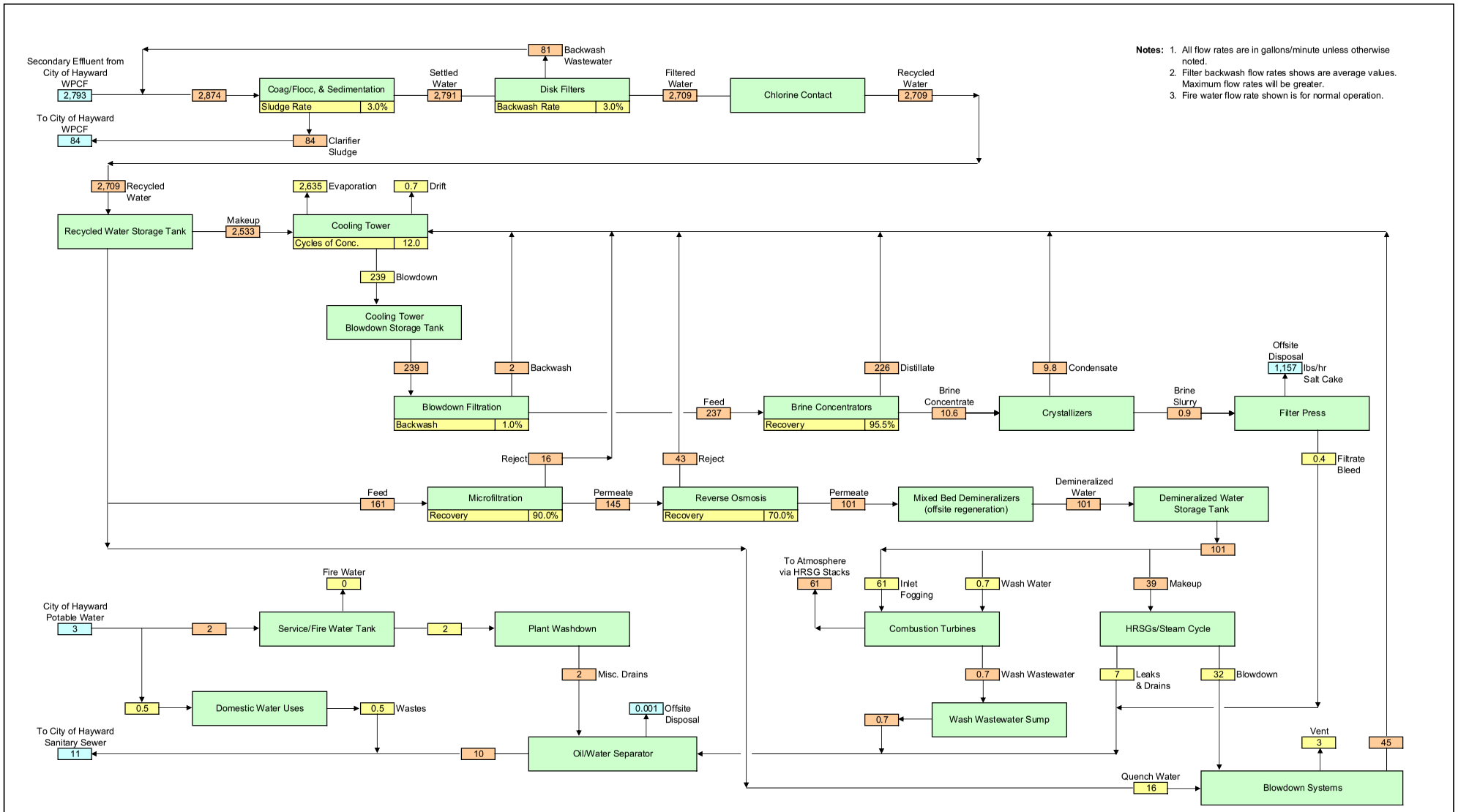

SOURCE: Calpine, 2006

FIGURE 2.1-5B
WATER BALANCE DIAGRAM
PEAK LOAD
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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Process waste streams (quenched HRSG blowdown, excess brine concentrator distillate, crystallizer condensate, microfilter reject, and RO reject) will be reclaimed and sent to the cooling tower. The cooling tower concentrates these streams to a point near the mineral solubility limit for the constituents of concern. A portion of this concentrated water will then be removed from the cooling tower via the blowdown to prevent the mineral scale formation on heat transfer surfaces.

Cooling tower blowdown will pass through a storage tank that will minimize flow variations in feeding blowdown to the brine concentrators. After the blowdown storage tank, the cooling tower blowdown will pass through a multimedia filter to remove suspended solids as required to minimize fouling of downstream ZLD equipment.

In the brine concentrators, heat will be applied to evaporate approximately 96 percent of the feed water. Evaporated water will be condensed producing a distillate very low in TDS. Some of the distillate will be used internally within the ZLD systems (e.g. flushing water), while the majority will be recycled to the cooling tower basin. The brine concentrate will be sent to crystallizers.

The crystallizers will further concentrate the brine solution, producing brine slurry which will be dewatered using filter presses. The salt cake exiting the presses will be discharged to dumpsters. The dumpsters will be periodically trucked offsite for disposal of the salt cake in a landfill. Naturally occurring substances, such as trace metals present in the WPCF secondary effluent, will become concentrated in the salt cake produced by the ZLD system. The salt cake will be characterized as to whether it is considered hazardous or non-hazardous and then disposed of in the appropriate landfill.

2.1.7 Hazardous Materials Management

The new RWF and ZLD system and removal of the AWT will involve changes to the list of chemicals previously specified for use at RCEC. See Section 3.5 for further discussion of these chemicals.

The storage locations of three of the hazardous materials have been revised as follows:

- The aqueous ammonia storage tank has been relocated from the southwestern side of the power block to the southeast corner of the power block.
- The water treatment building containing quantities of water treatment chemicals has moved from the eastern edge of the property to the northwestern corner of the project.
- A cooling tower chemical feed pavilion has been placed to the east of the cooling tower.
- A new HRSG cycle chemical feed pavilion has been added east of the administration building.
- The RWF will include a chemical storage and feed area located in the southeast corner of the project.

2.1.8 Air Emissions Control and Monitoring

HRSG stack NOx emissions will now be controlled to 2.0 ppmvd on a 1-hour average basis and CO emissions will be controlled to 4.0 ppmvd on a 3-hour average basis. An oxidation catalyst will be added to each HRSG to assist in the reduction of CO emissions.

2.2 Energy Center Civil/Structural Features

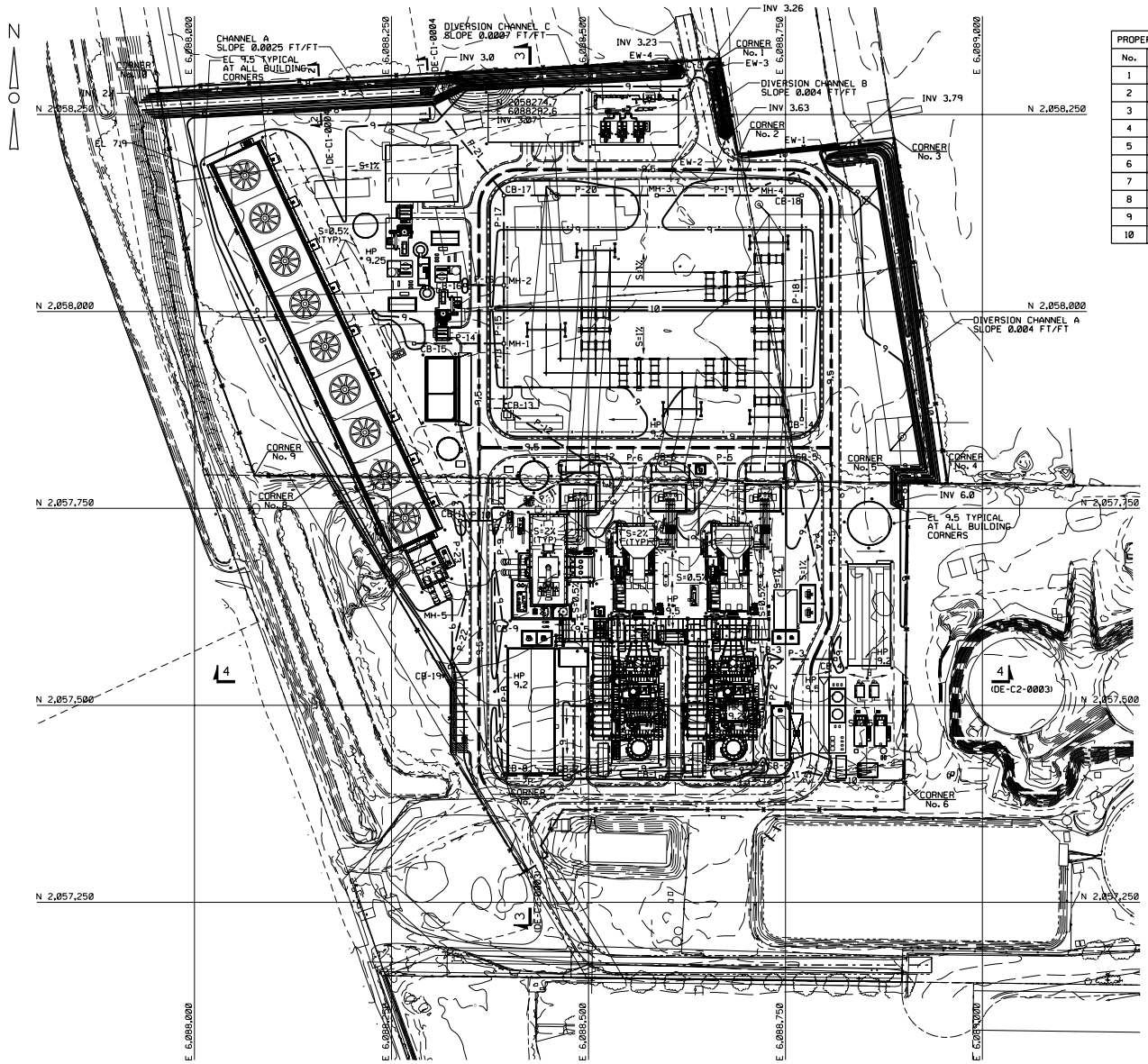
2.2.1 Site Drainage

The revised grading and drainage plan for the RCEC is shown in Figure 2.2-1. Off-site storm water runoff will be diverted around the improved facilities using a combination of berms and swales, generally draining from the east to the west, into an existing Alameda County Flood Control and Water Conservation District (ACFCWCD) stormwater drainage channel running along the western boundary of the project. On-site storm water runoff from non-contained areas will be diverted to a series of catch basins ultimately discharged to the same location as the off-site runoff. On-site storm water runoff from within the contained (e.g., curbed) generating and industrial areas of the site will be collected in the plant process drain system, routed through an oil-water separator, and then discharged to the sanitary sewer. A Stormwater Management Plan is provided in Appendix 2A, and an Erosion and Sediment Control Plan is provided in Appendix 2B. Stormwater drawings identifying the final site grading and drainage plan and grading details are provided in Appendix 2C.

2.3 Transmission Facilities

The project will require an amendment to the project description for the generation tie-line. This generation tie-line will connect with the Eastshore Substation, as described in the AFC, using a new set of support structures that will run parallel with the existing Grant-Eastshore 115 kV line within PG&E's existing corridor. Although the original design as depicted in the AFC proposed carrying the existing lines as well as the new lines for the RCEC on a single set of H-frame structures, this design changed during the licensing proceeding to a new double-circuit transmission line supported by tubular steel poles that will parallel the existing Grant-Eastshore 115 kV line. This new double-circuit transmission line is depicted in a visual simulation (Figure DR225-1) in response to Data Request 225 (7).

The RCEC's generation tie-line will run in the existing transmission corridor that extends north-northwest from the Eastshore Substation. Because the RCEC switchyard has been relocated to a position further north, the generation tie-line route between the RCEC switchyard and the Grant-Eastshore transmission corridor must also change. The AFC describes a connection between the RCEC and the Grant-Eastshore transmission line corridor that will run along Enterprise Avenue. The project's generation tie-line, as amended, will follow a different route from the RCEC switchyard to the Grant-Eastshore corridor and will extend the length of the portion of the route within the Grant-Eastshore corridor further north. There are two alternatives for this new route.



PROPERTY CORNER COORDINATE SCHEDULE		
No.	NORTH	EAST
1	2058321.5	6088667.5
2	2058199.4	6088690.1
3	2058220.4	6088888.1
4	2057781.1	6088956.2
5	2057781.8	6088905.8
6	2057401.0	6088901.2
7	2057407.2	6088394.3
8	2057790.8	6088166.8
9	2057791.9	6088076.5
10	2058283.4	6087954.3

LEGEND

- EXISTING GRADE CONTOUR
- FINAL GRADE CONTOUR
- FINAL GRADE SPOT ELEVATION
- PROPOSED FENCE
- PROPOSED STORM DRAIN
- PROPOSED CULVERT
- PROPOSED STORM CATCH BASIN
- PROPOSED ENDWALL
- PROPOSED DRAINAGE CHANNEL
- DIRECTION OF FLOW

NOTES:

1. COORDINATES LISTED ARE STATE PLANE NAD83, CALIFORNIA ZONE 3.
2. DRAIN INSERTS SHALL BE USED FOR ALL CATCH BASINS AND SHALL BE ACCORDING TO ULTRA DRAIN GUARD, OIL AND SEDIMENT MODEL, PART #9225, OR EQUAL.

REFERENCES:

DC-G1-0001	GENERAL ARRANGEMENT SITE PLAN
DE-C1-0002	SITE SURFACING PLAN
DE-C1-0004	GRADING DETAILS
DE-C2-0002	DRAINAGE STRUCTURES
DE-C2-0001	CATCH BASIN AND PIPE SCHEDULE
DE-C2-0003	SECTIONS

60 0 60 120 180
SCALE IN FEET

SOURCE: WorleyParsons, 2006

FIGURE 2.2-1
GRADING AND DRAINAGE PLAN
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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2.3.1 Electric Transmission Line Alternative 1

The RCEC transmission line Alternative 1 will extend from the RCEC switchyard east to the eastern edge of the RCEC property and then north towards Depot Road. It will then turn east and run approximately 230 feet to the existing Grant-Eastshore 115 kV corridor. The remaining portion of the generation tie-line will run parallel to the existing 115 kV line for approximately 6,780 feet to the Eastshore substation. The entire Alternative 1 generation tie-line route from the RCEC property to the Eastshore substation will thus be approximately 7,010 feet (1.33 miles) long (Figure 2.1-1).

The portion of the transmission line from Enterprise Avenue to the PG&E Eastshore Substation has already been permitted under the RCEC Commission Decision (CEC, 2002). For this amendment, the transmission line route Alternative 1 was analyzed for the 230-foot portion from the RCEC property to the Grant-Eastshore 115 kV corridor, and the an additional length of 1,820 feet within the Grant-Eastshore 115 kV corridor that extends beyond the portion previously permitted.

2.3.2 Electric Transmission Line Alternative 2

The RCEC transmission line Alternative 2 will run from the RCEC switchyard east to the eastern edge of the RCEC property, and then south to the southern edge of the RCEC property. It will then turn east and run approximately 950 feet along the southern boundary of several parcels that face Depot Road (also the northern boundary of the City of Hayward WPCF), to the Grant-Eastshore 115 kV transmission corridor. The segment from the existing Grant-Eastshore 115 kV transmission corridor to the Eastshore Substation will be approximately 5,460 feet. This entire route will be approximately 6,410 feet (1.21 miles) long (Figure 2.1-1).

The portion of the transmission line from Enterprise Avenue to the Eastshore Substation has already been permitted under the RCEC Commission Decision (CEC, 2002). For this amendment, the transmission line route Alternative 2 was analyzed for the 950-foot portion from the RCEC property to the Grant-Eastshore 115 kV corridor and an additional length of 520 feet within the Grant-Eastshore 115 kV corridor that extends beyond the portion previously permitted.

2.3.3 Transmission System Improvements

The original System Impact Study (SIS) for the RCEC identified impacts to the Eastshore-San Mateo 230 kV transmission line with the addition of the RCEC, and indicated that it will be necessary to reconductor this line. The updated SIS has, in addition, identified a need for reconductoring the Eastshore to Dumbarton 115 kV transmission line. Permitting of these actions lies outside the CEC's permit jurisdiction because they will take place beyond the first point of the RCEC's interconnection with the wider grid. California law assigns the permitting review of such transmission upgrade projects to the California Public Utilities Commission (CPUC).

In the RCEC licensing proceeding, CEC considered the Eastshore-San Mateo reconductoring as a reasonably foreseeable project related to the RCEC and conducted an environmental assessment of its effects in terms of potential cumulative impacts in combination with the construction of the RCEC. At the time of this analysis, PG&E had not conducted detailed

engineering studies for the reconductoring project. The Environmental Assessment for the reconductoring (Foster Wheeler Environmental, 2002) made some assumptions about the likely locations of pull and tensioning sites (that they would be located at turning towers) and about the construction methods that would be used. During the summer of 2006, however, PG&E conducted engineering and construction analyses for both reconductoring projects.

2.3.3.1 Eastshore to San Mateo Reconductoring

PG&E's Transmission Upgrade Evaluation Report (PG&E, 2006) indicates that the Eastshore to San Mateo reconductoring project will involve reconductoring 12.5 miles of 230 kV line from Eastshore to San Mateo with 954 kcmil ACSS conductor. The reconductoring will take place as described in the Environmental Assessment document with one exception. During the summer of 2006, PG&E conducted engineering and construction analyses for the reconductoring project and identified the proposed locations of all pull and tension sites for the reconductoring project. One of the pull and tension sites originally designated in the 2002 Environmental Assessment, on the shoulder of Highway 92, was relocated due to traffic safety concerns.

The Environmental Assessment assumed that the pull and tensioning of the conductors across the Hayward-San Mateo Bridge span from the Hayward (east) side would be staged from the shoulder area of State Route 92 near the toll plaza. PG&E has identified the need to stage pulling and tensioning of this span from a location immediately south of State Route 92 in a salt pond area. In order to assess the potential environmental impacts of this change, PG&E biologists conducted a site reconnaissance of this work site. Calpine will submit an environmental assessment for this transmission line upgrade project.

During this field investigation, PG&E biologists noted a narrow band of pickleweed (*Salicornia*) marsh lining the salt pond and determined that construction equipment would need to cross this area to access the pull and tensioning work area. PG&E biologists determined that this band of vegetation includes salt marsh plants, but did not qualify as habitat for the endangered salt marsh harvest mouse or any other endangered species. During actual construction, PG&E will cover this vegetation with wooden matting to avoid impacts to wetlands.

The project crosses habitat for the clapper rail and other nesting birds. Because nesting season must be avoided, construction will only take place from September through January in this area. As a result, the pull and tension site will likely be wet during the construction period. Although construction in 3 to 4 inches of water is not a problem, deeper water would hamper construction activities, and PG&E would prefer to create a temporary work pad that would likely be made of fabric and gravel. Such work would likely constitute "fill" in Waters of the United States, which would require a Section 404 Permit from the U.S. Army Corps of Engineers (Corps). A USACE permit would also require certification by the Regional Water Quality Control Board (after California Environmental Quality Act [CEQA] compliance), and concurrence by the San Francisco Conservation and Development Commission. PG&E estimates that these permits would take approximately 12 months to obtain. PG&E plans to obtain these permits as a precaution, so that the permits are in place in the event that this pull site is flooded and construction requires the placement of fabric

and gravel or other material. However, these project revisions will not result in any potentially significant adverse environmental impacts

With these changes to construction procedure, the conclusions of the 2002 Environmental Assessment remain applicable. The Eastshore to San Mateo 230 kV reconductoring will not cause any significant adverse environmental impacts with this construction plan.

2.3.3.2 Eastshore to Dumbarton Reconductoring

PG&E also plans to reconductor 7.0 miles of 115 kV line from Eastshore to Dumbarton with parallel 477 kcmil ACSS conductors. This transmission line extends south-southeast from the Eastshore Substation across the salt ponds and farther south through open space and agricultural lands west of Hayward, Union City, and Fremont. Six miles south of the Eastshore substation, the line turns east-northeast and runs one mile, mostly along a pedestrian trail, through suburban portions of Fremont to the Dumbarton Substation.

PG&E engineers have examined the constructability of this reconductoring project and PG&E and RCEC project biologists have evaluated this route for wetland and listed species. PG&E consulted the California Natural Diversity Data Base (California Department of Fish and Game) and conducted a field survey of the route. The PG&E and RCEC project biologists noted that several towers are located in pickleweed marsh that may be sensitive species habitat for the salt marsh harvest mouse or in potentially jurisdictional wetlands. PG&E determined that construction by helicopter will avoid impacts to these resources in these areas (towers 3/22, 3/23, 3/24, 4/29, 4/30, and 4/31).

PG&E also identified four locations where distribution lines passing underneath the Eastshore-Dumbarton 115 kV transmission line could pose a potential safety issue when the transmission line was being pulled during the reconductoring. PG&E determined that the distribution lines could be taken out of service during the pulls, eliminating the need to construct temporary crossing structures at the three locations that could affect wetlands (near towers 2/17, 3/22 and 3/24).

The project also crosses habitat for the clapper rail and other nesting birds. Because nesting season must be avoided, PG&E determined that construction will only take place from September through January in sensitive habitats.

2.3.4 Aviation Safety

Federal Aviation Administration (FAA) Regulations, 14 CFR Part 77, establish standards for determining obstructions in navigable airspace and set forth requirements for notification of proposed construction. These regulations require FAA notification for any construction over 200 feet high above ground level. In addition, notification is required if the obstruction is lower than specified heights and falls within any restricted airspace in the approaches to airports. For airports with runways longer than 3,200 feet, the restricted space extends 20,000 feet (3.3 nautical miles) from the runway. For airports with runways measuring 3,200 feet or less, the restricted space extends 10,000 feet (1.7 nautical miles). For heliports, the restricted space extends 5,000 feet (0.8 nautical mile). The nearest public airport is Hayward Executive Airport, the nearest runway of which is 1.60 miles (8,466 feet) north-northeast of RCEC.

FAA regulations stipulate that a project owner must notify the FAA if a proposed construction or alteration would penetrate an imaginary surface extending outward and upward at a slope of:

> 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport specified … with at least one runway more than 3,200 feet in actual length, excluding heliports (14 CFR 77.13[i]).

At the RCEC site, the elevation of this imaginary surface would be 846 feet tall. FAA regulations (14 CFR 77.25) also require FAA notification when a construction or alteration near a civil airport would penetrate an imaginary horizontal surface at a height of 150 feet and extending for 10,000 feet in all directions. Although the RCEC is less than 10,000 feet from the nearest Hayward Executive Airport runway, it has no structures taller than 150 feet. In addition, the Hayward Executive Airport runways are oriented in such a way that approach and takeoff flight paths do not pass near the RCEC.

None of the project's construction would be higher than the 200 feet required for notification and the RCEC does not meet any of the other FAA notification criteria. An FAA air navigation hazard review will therefore not be necessary.

2.4 Project Construction

2.4.1 Construction Schedule

Construction of the energy center from site preparation and grading to commercial operation is expected to take place from the spring of 2008 to the summer of 2010, a total of 25 months. The actual construction duration from the start of construction to substantial completion is estimated to be 23 months. Major milestones are listed in Table 2.4-1.

TABLE 2.4-1
Project Schedule Major Milestones

Activity	Date
Begin Construction	Second Quarter 2008
Begin Startup and Testing	Fourth Quarter 2009
Construction Substantially Complete	Second Quarter 2010
Commercial Operation	Second Quarter 2010

2.4.2 Construction Workforce

Construction by month and trade is shown in Table 2.4-2 (at the end of this section). The onsite workforce is expected to reach its peak of approximately 650 individuals during month 14 of construction. There will be an average monthly workforce of approximately 340 construction craft people, supervisory, support, and construction management personnel on site during construction.

2.4.3 Construction Traffic

Table 2.4-3 provides an estimate of the number of average and peak construction traffic during the construction period. Materials and equipment will be delivered by truck.

TABLE 2.4-3
Average and Peak Construction Traffic

Vehicle Type	Average Daily Round Trips	Peak Daily Round Trips[a]
Construction Workers[b]	292	585
Delivery	14	27
Heavy Trucks	6	26
Total	312	638

[a] "Peak" refers to scheduled peak months of construction (month14). Peak workforce during this month is expected to be up to 650 persons.

[b] Assumes that 10 percent of the workforce will carpool.

2.4.4 Construction Laydown and Parking

Figure 2.4-1 shows the construction laydown and parking areas and the general arrangement of temporary construction facilities. Construction parking and laydown will be located at several parcels listed in Table 2.4-4. This table lists the assessor's parcel numbers and acreages of these new laydown and parking areas. All construction-phase parking will be accessed from Enterprise Avenue.

TABLE 2.4-4
Proposed New Construction Laydown and Worker Parking Areas

APN	Parcel Name	Street Frontage	Acres
439009900307	Runnels Industries	Whitesell Street and Enterprise Avenue	3.9
439009900200	City of Hayward (portion)	Enterprise Avenue	4.1
439009900200	City of Hayward (portion)	Enterprise Avenue	1.7
Total acres			**8.7**

2.4.5 Construction Water

Average daily use of construction water is estimated to be about 15,000 gallons, primarily for dust control and soil compaction. The peak water demand is estimated to be about 1,000,000 gallons per day, which will occur during the filling of the recycled water storage tank.

2.4.6 Construction Disturbance Area

The temporary disturbance area for construction of the power generation facility will increase to approximately 45.73 acres. The permanent disturbance area will remain approximately 18.8 acres.

2.5 Energy Center Operation

The RCEC's operational workforce will not differ significantly from that described in the AFC. Section 3.9 (Socioeconomics) describes the operations workforce in greater detail.

2.6 Conditions of Certification

TSE-1 through TSE-8—These conditions reflect RCEC construction of the generation tie-lines. Since these lines will be located in PG&E's existing transmission line easement, PG&E will engineer, construct, and own and operate these lines. We propose modifying these conditions to reflect utility construction and ownership.

TLSN-1 through TLSN-5—These conditions reflect RCEC construction of the generation tie-lines. Since these lines will be located in PG&E's existing transmission line easement, PG&E will engineer, construct, and own and operate these lines. We propose modifying these conditions to reflect utility construction and ownership.

2.7 References Cited

California Energy Commission. 2002. Commission Decision, Russell City Energy Center, Application for Certification (01-AFC-7), Alameda County. California Energy Commission, Sacramento, California. September 11.

Foster Wheeler Environmental Corporation. 2002. Environmental Assessment of Reconductoring the Eastshore to San Mateo 230 kV Transmission Line. Prepared for Calpine Corporation, Pleasanton, California. Submitted to the California Energy Commission, Sacramento, California.

Pacific Gas and Electric Company (PG&E). 2006. Draft Transmission Upgrade Evaluation Report, Calpine Corporation Russell City Energy Center Project. September 3.

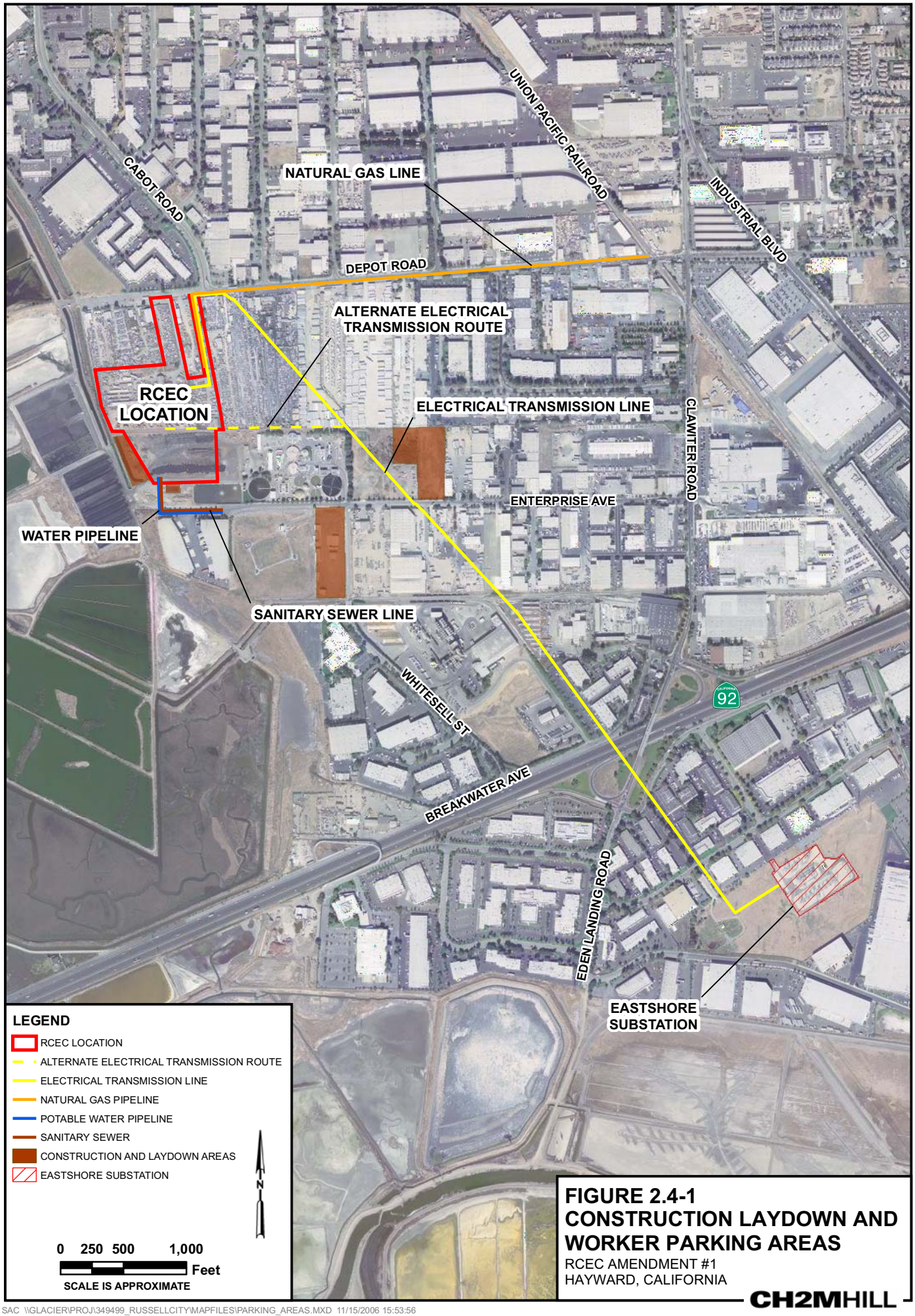

FIGURE 2.4-1
CONSTRUCTION LAYDOWN AND WORKER PARKING AREAS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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TABLE 2.4-2
Construction Workforce by Trade by Month

Craft/Trade	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
I. Project Site																									
Boilermakers	0	0	0	0	8	14	31	60	58	64	124	135	134	135	120	139	126	66	48	27	8	0	0	0	0
Carpenters	3	5	10	14	18	20	20	25	28	23	41	46	36	36	32	37	28	22	23	20	20	10	12	10	8
Electricians	0	0	9	14	18	28	32	38	33	30	60	71	83	87	63	73	76	71	92	93	79	60	81	45	34
Ironworkers	3	5	13	15	15	18	25	37	37	32	56	60	59	60	53	61	56	36	23	25	20	14	12	5	4
Laborers	10	15	17	15	20	25	30	32	23	20	37	40	40	40	36	41	35	32	38	31	20	9	12	14	11
Pipefitters	0	0	7	12	18	25	40	60	53	47	84	91	102	106	106	92	81	58	38	25	20	5	8	5	4
Painters/ insulation	0	0	0	0	0	0	0	0	0	0	0	0	10	36	32	37	40	38	48	51	40	27	22	18	16
Bricklayers/ masons	0	0	0	2	2	3	5	5	3	3	5	3	3	3	3	3	3	2	3	3	3	2	3	6	4
Millwrights	0	0	0	0	0	0	4	4	9	10	20	22	22	22	20	22	23	20	27	23	20	18	12	19	15
Operating engineers	3	5	5	7	12	10	17	18	15	14	25	27	27	27	25	28	27	25	30	25	25	14	14	14	11
Contractor staff	10	15	15	14	25	28	37	46	38	33	60	64	64	64	56	66	63	64	76	66	55	43	38	45	34
Total site staff	**28**	**46**	**76**	**94**	**135**	**171**	**242**	**326**	**297**	**277**	**511**	**558**	**579**	**616**	**545**	**599**	**559**	**433**	**446**	**388**	**311**	**204**	**214**	**181**	**141**
II. Project Linear Facilities																									
Natural gas pipeline	0	0	0	0	0	0	0	0	0	0	3	18	18	19	18	3	0	0	0	0	0	0	0	0	0
Transmission line	0	0	0	0	0	0	0	0	0	0	0	0	3	15	15	3	0	0	0	0	0	0	0	0	0
Total linear	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**18**	**21**	**34**	**33**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grand Total	**28**	**46**	**76**	**94**	**135**	**171**	**242**	**326**	**297**	**277**	**514**	**576**	**600**	**650**	**577**	**605**	**559**	**433**	**446**	**388**	**311**	**204**	**214**	**181**	**141**

SECTION 3.0

Environmental Analysis of Proposed Project Amendment

The following sections provide an environmental analysis for each of 14 different discipline areas that addresses: (1) significant changes to the project area environmental baseline if these changes have taken place since the certification was granted and have a bearing on the environmental impact analyses for the amended project, and (2) significant potential changes to environmental impacts of the project that are a result of the project redesign or the addition of construction parking and laydown areas. Each section includes an environmental analysis, followed by a list of any changes to the Conditions of Certification that are necessary because of the project Amendment changes, provided as a text mark-up.

The environmental disciplines are addressed in alphabetical order, as follows:

3.1 Air Quality
3.2 Biological Resources
3.3 Cultural Resources
3.4 Geology and Paleontology
3.5 Hazardous Materials Management
3.6 Land Use
3.7 Noise
3.8 Public Health
3.9 Socioeconomics
3.10 Soil and Water Resources
3.11 Traffic and Transportation
3.12 Visual Resources
3.13 Waste Management
3.14 Worker Safety and Fire Protection
3.15 Laws, Ordinances, Regulations, and Standards (LORS)

Table 3.0-1 identifies each of the changes and which of the different disciplines will be impacted by these items. For ease of readability, those items not identified as impacting a discipline will not be addressed in each of the individual disciplines.

TABLE 3.0-1
Proposed Project Changes and Impacted Environmental Disciplines

	Facility Location	Deletion of AWT, Addition of ZLD, Addition of Title 22 Facility	New Laydown and Construction Worker Parking Areas	New Gas Line Route, and Revised Transmission Line Route
3.1 Air Quality	✓	✓		
3.2 Biological Resources	✓			✓
3.3 Cultural Resources	✓			✓
3.4 Geology and Paleontology	✓			✓
3.5 Hazardous Materials Management		✓		
3.6 Land Use	✓		✓	✓
3.7 Noise	✓			
3.8 Public Health	✓			
3.9 Socioeconomics	✓			
3.10 Soil and Water Resources		✓		✓
3.11 Traffic and Transportation	✓		✓	✓
3.12 Visual Resources	✓	✓	✓	
3.13 Waste Management	✓	✓	✓	
3.14 Worker Safety and Fire Protection				

3.1 Air Quality

This section presents the evaluation of emissions and impacts resulting from the construction and operation of the Russell City Energy Center (RCEC) at a changed location, as well as the proposed mitigation measures to be used to minimize emissions and impacts below established significance thresholds. The analysis was prepared in accordance with the California Energy Commission (CEC) power plant siting regulations, and the rules and regulations of the Bay Area Air Quality Management District (BAAQMD). This analysis is but one part of a larger analysis which seeks an amendment to the project's certification from the CEC, and a Determination of Compliance from the BAAQMD.

The amendment is based on the following changes:

- Revising the Best Available Control Technology Determination
- Revising the short-term emissions rates and fuel use
- Changing the annual PM10 emissions limit
- Moving the project facilities approximately 1,300 feet north and west of the location described in the BAAQMD Permit Application (300 feet boundary to boundary)
- Adding a Zero Liquid Discharge facility, greatly reducing wastewater discharge
- Adding a Title 22 reclaimed water treatment facility
- Removing the Advanced Water Treatment facility
- Removing the Standby Generator
- Removing the architectural screening structure
- The cooling tower has been realigned from a north-south orientation to a northwest – southeast orientation

No other changes are proposed for the amendment. The project will include two turbines with heat recovery steam generators (HRSG) as well as a nine-cell cooling tower. Associated with the changes outlined above, the short-term emission rates for the turbine/HRSGs will also be revised to reflect recent Best Available Control Technology (BACT) determinations. The annual emissions limits are not proposed to change.

The proposed project will be rated at a nominal 600 megawatts (MW) of electricity, while minimizing emissions and impacts on ambient air quality. Additional environmental benefits include:

- Generation of electricity using clean fuels.
- Utilization of generation technology that minimizes pollutant emissions.
- Use of BACT to control emissions of nitrogen oxide (NOx), carbon monoxide (CO), volatile organic compounds (VOCs also referred to as POC), sulfur dioxide (SO_2), and PM10/2.5.

- Provide emissions mitigation pursuant to the BAAQMD regulations and CEQA provisions to minimize emissions increases.

The anticipated project schedule is as follows:

- Submittal of the petition to amend the CEC Commission Decision document on November 17, 2006.
- Submittal of the completed air quality permitting application to the BAAQMD on or about November 30, 2006.
- Construction commences on or about 2nd Quarter 2008.
- Construction is complete on or about 2nd Quarter 2010.
- Commissioning commences on or about 4th Quarter 2009.
- Facility becomes operational on or about 2nd Quarter 2010.

3.1.1 Environmental Baseline

3.1.1.1 Proposed Project

The proposed project is a nominal 600 MW power plant facility comprised of two combined-cycle combustion turbines with supplemental fired HRSGs, a wet mechanical-draft cooling tower, and an emergency fire pump engine. The facility will be operated as a base loaded plant providing power to the California power market via the California Independent System Operator (CAISO).

3.1.1.2 Combustion Turbines/Cooling Tower

The specifications for the combustion turbines are as follows:

- Engine manufacturer: Siemens-Westinghouse
- Engine model: 501FD
- Fuel: natural gas
- Nominal MW rating: 200 MW
- Number of turbines: 2
- Heat rating: 2038.8 MMBtu /hr (higher heating value [HHV])

Heat Recovery Steam Generators with Duct Burners

- Heat rating: 200 MMBtu/hr per HRSG
- Fuel: natural gas
- Number of HRSGs: 2

Steam turbine rating: 235 MW

Cooling Tower

- Type: Wet, mechanical draft
- Number of Cells: 9
- Actual cubic feet per minute (acfm) per cell: ~1,632.000
- Circulation rate: 141,352 gallons per minute (gpm)

- Drift rate: 0.0005 percent

The primary maximum operating scenario for each turbine/HRSG is 24 hours per day, 7 days per week, for a total of 8,364 hours per year per turbine/HRSG.

3.1.1.3 Ancillary Equipment

In addition, the facility will have a 300 horsepower (hp) (280 brake horsepower [bhp]) diesel fired emergency fire pump engine, as follows:

- Fuel: Diesel or distillate oil
- RPM: 2,350
- Useable HP: 300
- BHP: ~280
- Fuel Consumption: ~14.5 gph
- Exhaust Flow: ~2058 acfm
- Exhaust Temperature: ~738 F
- Pump rating: 2500 gpm

The facility will not have an emergency generator.

3.1.1.4 Fuels

The only fuel to be combusted on site by the combustion turbines/HRSGs is California Public Utility Commission- (CPUC-) grade natural gas supplied by the Pacific Gas and Electric Company gas system. The gas will have a higher heating value (HHV) of approximately 1023 btu/scf, and a sulfur content not to exceed 4 ppmv (0.25 grains/100scf). Typical analyses of the proposed natural gas and diesel fuel are presented in Appendix 3.1A. The emergency fire pump engine will fire only CPUC-standard low-sulfur low-aromatic diesel fuel.

Total fuel combustion for the facility is presented in Table 3.1-1. Fuel use values are based on the maximum heat rating of each system, fuel specifications, and maximum operational scenario.

TABLE 3.1-1
Fuel Use Summary

System	Units	Per Hour	Per Day	Per Year
Single Turbine/HRSG	mmscf	2.19	49.8	17500
All Turbines/HRSGs	mmscf	4.38	99.6	33899.42
Fire Pump Engine	gallons	14.5	14.5	754

Natural gas at 1,023 btu/scf HHV.
Diesel fuel use per manufacturer specification.
mmscf = million standard cubic feet

3.1.1.5 Project Emissions

Operation of the proposed process and equipment systems will result in emissions to the atmosphere of both criteria pollutants and toxic air pollutants. Criteria pollutant emissions

will consist primarily of nitrogen oxides, carbon monoxide, volatile organic gases, sulfur oxides, and particulate matter (PM10/2.5). Air toxic pollutants will consist of a combination of toxic gases and toxic particulate matter species. Table 3.1-2 delineates the anticipated pollutants to be emitted from the proposed facility.

TABLE 3.1-2
Criteria and Toxic Pollutants Emitted from RCEC Facility

NOx	Propylene Oxide
CO	Toluene
VOC*	Xylene
SOx	Diesel Particulate Matter
PM10/PM2.5	Arsenic
Ammonia	Aluminum
Polynuclear Aromatic Hydrocarbons (PAHs)	Cadmium
Acetaldehyde	Chromium III
Acrolein	Copper
Benzene	Iron
1-3 Butadiene	Lead
Ethylbenzene	Mercury
Formaldehyde	Manganese
Hexane	Nickel
Naphthalene	Silver
Propylene	Zinc

* BAAQMD uses POC. For purposes of this application, VOC = POC.

3.1.1.6 Criteria Pollutant Emissions

Tables 3.1-3 to 3.1-6 present data on the criteria pollutant emissions expected from the plant equipment and systems under normal operating scenarios.

TABLE 3.1-3
Maximum Hourly, Daily, and Annual Criteria Pollutant Emissions-Turbines and HRSGs

Pollutant	Exhaust Gas Concentration*	Emission Factor (lb/MMBtu)	Maximum Hourly Emissions (lb) (each)	Maximum Daily Emissions including startup (lb) (each)	Maximum Annual Emissions (tons) (each)
NOx	2.0 ppmvd	0.0072	16.17	771.1	67.26
CO	4.0 ppmvd	0.0088	19.69	5,382.4	292.09
VOC	2.0 ppmvd	0.00126	2.82	146.8	13.89
SOx	-	0.00277	6.20	148.8	6.10
PM10/PM2.5	-	0.0052	9.0	216.0	37.34
NH_3	5 ppmvd	-	14.97	359.3	60.66

TABLE 3.1-3
Maximum Hourly, Daily, and Annual Criteria Pollutant Emissions-Turbines and HRSGs

Pollutant	Exhaust Gas Concentration*	Emission Factor (lb/MMBtu)	Maximum Hourly Emissions (lb) (all)	Maximum Daily Emissions including startup (lb) (all)	Maximum Annual Emissions (tons) (all)
NOx			32.34	1,542.2	134.52
CO			39.38	10,764.8	584.18
VOC	Same factors as above.		5.64	293.6	27.78
SOx			12.40	297.6	12.20
PM10/PM2.5			18.0	432.0	74.68
NH3			29.94	718.6	121.33

* NOx, CO, VOC, and SOx at 15% O_2 dry. Startup/shutdown not included except where noted. PM2.5 = PM10.

The cooling tower will emit particulate emissions (PM10/2.5) at the following rates (total of all cells):

- 2.83 lbs/hr (maximum hourly)
- 67.92 lbs/day (maximum daily)
- 12.12 tons/year (maximum annual)

TABLE 3.1-4
Emergency Fire Pump Engine Emissions

Toxic	Emission Factor (units)	Maximum Hourly Emissions (lb)	Maximum Daily Emissions (lb)	Maximum Annual Emissions (tons)
PM10/2.5 *	0.12 g/hp-hr	0.079	0.079	0.002
NOx	4.27 g/hp-hr	2.824	2.824	0.073
CO	0.33 g/hp-hr	0.218	0.218	0.006
VOC	0.32 g/hp-hr	0.212	0.212	0.006
SOx	0.0047 g/hp-hr	0.003	0.003	0.0001

* All PM is classified as diesel particulate matter (DPM)

Table 3.1-5 presents a summary of total facility emissions.

TABLE 3.1-5
Summary of Facility Emissions

Pollutant	Lbs/Hour	Lbs/Day [a]	Tons/Year [b]
NOx	97.2	1,544.94	134.6
CO	1,348.8	10,765.06	584.2

TABLE 3.1-5
Summary of Facility Emissions

Pollutant	Lbs/Hour	Lbs/Day [a]	Tons/Year [b]
VOC	104.5	293.73	27.8
SOx	6.2	297.60	12.2
PM10/2.5	20.95	500.04	86.8

[a] Includes emissions from fire pump for 1 hour per week, 52 hours per year.

[b] Includes turbine startup and shutdown emissions.

Table 3.1-6 presents data on the startup and shutdown emissions for the combustion turbines.

TABLE 3.1-6
Facility Startup Emission Rates for Each Turbine

Scenario	NOx	CO	VOC
Cold Start (lb/hr)	97.2	1348.8	14.9
Cold Start (lb/start)	480.0	5,028.0	96.0
Hot Start (lb/hr)	83.8	1,154.2	48.0
Hot Start (lb/start)	240.0	2,514.0	48.0
Warm Start (lb/hr)	97.2	1,348.8	14.9
Warm Start (b/start)	240.0	2,514.0	48.0
Shutdown (lb/hr)	28.9	224.2	6.7
Shutdown (lb/start)	80.0	902.0	16.0

Estimates based on operational data.

3.1.1.7 Hazardous Air Pollutant Emissions

Tables 3.1-7 to 3.1-9 present data on the expected levels of the identified air toxic pollutant emissions from the facility equipment.

TABLE 3.1-7
Maximum Hourly, Daily, and Annual Air Toxic Emissions (all turbines/HRSGs)

Toxic	Emission Factor (lb/mmscf)*	Maximum Hourly Emissions (lb)	Maximum Daily Emissions (lb)	Maximum Annual Emissions (tons)
Total PAHs excluding Naphthalene	0.00066	0.00289	0.0657	0.0115
Naphthalene	0.00166	0.00727	0.165	0.029
Ethylbenzene	0.0179	0.0784	1.78	0.313
1-3 Butadiene	0.000127	0.000556	0.0126	0.00222

TABLE 3.1-7
Maximum Hourly, Daily, and Annual Air Toxic Emissions (all turbines/HRSGs)

Toxic	Emission Factor (lb/mmscf)*	Maximum Hourly Emissions (lb)	Maximum Daily Emissions (lb)	Maximum Annual Emissions (tons)
Acetaldehyde	0.0686	0.30	6.83	1.2
Acrolein	0.00643	0.0282	0.64	0.112
Benzene	0.0136	0.0595	1.35	0.238
Formaldehyde	0.110	0.482	11.09	1.92
Propylene	0.770	3.37	76.6	13.50
Toluene	0.071	0.311	7.07	1.24
Xylenes	0.0261	0.114	2.60	0.456
Propylene Oxide	0.0478	0.209	4.76	0.836
Hexane	0.259	1.13	25.80	4.53
Ammonia	5 ppm	29.97	719.2	125.3

* CARB-CATEF Database (mean values for source type and category)
ppm = parts per million

TABLE 3.1-8
Maximum Hourly, Daily, and Annual Air Toxic Emissions-Cooling Tower *

Toxic	Parts per million	Maximum Hourly Emissions (lb)	Maximum Daily Emissions (lb)	Maximum Annual Emissions (tons)
Ammonia	60	.0212	.509	.0928
Aluminum	1.5	.00053	.0127	.00232
Arsenic	.05	.0000177	.000424	.0000774
Cadmium	.08	.0000283	.000678	.000124
Chromium	.41	.000145	.00348	.000634
Copper	.61	.000215	.00517	.000944
Lead	.19	.0000671	.00161	.000294
Manganese	.84	.000297	.00712	.0013
Mercury	.0006	.000000212	.0000051	.000000928
Nickel	.47	.000166	.00398	.000727
Selenium	.07	.0000247	.000593	.000108
Silver	.06	.0000212	.00051	.0000928
Zinc	1.92	.000678	.0163	.00297

* Based on cooling tower drift calculations and water quality data.

TABLE 3.1-9
Maximum Hourly, Daily, and Annual Air Toxic Emissions-Emergency Fire Pump Engine

Toxic	Emission Factor (units)	Maximum Hour Emissions (lb)	Maximum Daily Emissions (lb)	Maximum Annual Emissions (lb)
Diesel Particulate Matter*	0.12 g/hp-hr	0.079	0.079	4.11

* Diesel particulate exhaust matter (DPM) per CARB is comprised of approximately 40 pollutants including VOC gases, metals, PAHs, POMs, etc. CARB currently employs the use of DPM to quantify the exposure to whole diesel exhaust.

g/hp-hr = gallon per horsepower hour

3.1.1.8 Exhaust Stacks and Emissions Points

Table 3.1-10 presents physical data on the various process equipment emissions points.

TABLE 3.1-10
Stack Data Summary

Parameter	Turbine/HRSG	Cooling Tower (each cell)	Fire Pump Engine
Exhaust Exit Height AGL (feet)	145	60	15
Exhaust Exit Diameter (feet)	18	32	0.5
Exhaust Flow Rate (acfm)	705,067 – 1,129,667	1,632,000	2058
Exhaust Exit Temperature (degree Fahrenheit)	172 – 199	67.5 – 90.7	738
Exhaust Velocity (feet/second)	46.2 – 74.0	33.8	175

3.1.1.9 Construction Emissions and Proposed Mitigation Measures

Construction-related emissions are expected to be minimal due to the following:

- The site is only 18.8 acres in size, and essentially flat.
- Minimal site preparation will be required prior to construction of the building pads, foundations, support structures, etc.
- Construction activity is expected to last for a total of 20 months.

Construction-related issues and emissions at the RCEC site are similar to other construction project sites. Compliance with the provisions of the following permits will generally result in minimal site emissions: (1) grading permit, (2) stormwater pollution prevention plan requirements (construction site provisions), (3) use permit, (4) building permits, and (5) the air district authority to construct permit, which will require compliance with the provisions of all applicable fugitive dust rules that pertain to the site construction phase. An analysis of

construction site emissions is presented in Appendix 3.1E. This analysis incorporates the following mitigation measures or control strategies:

- Construction equipment exhaust emissions will comply with all applicable U.S. Environmental Protection Agency (EPA) and California emissions standards for each equipment type and category.
- Construction equipment will use only California certified diesel (low sulfur, low aromatic content) and gasoline fuels.
- Each piece of equipment will be included in a preventative maintenance program to ensure correct operation and minimize exhaust emissions.
- Equipment use scheduling will be used to minimize equipment onsite time and idling time.
- Water will be used as the primary fugitive dust suppression control method. Water will applied to all disturbed portions of the site, including unpaved roads, parking and laydown areas, at a minimum of twice daily.
- Track-out sites will either be sweep or water flushed on a daily basis to remove track-out materials from all paved access roads.
- Vehicle speeds will be generally limited to 5 miles per hour (mph) onsite.
- Reasonable erosion control strategies will be implemented to prevent soil and silt runoff from the site.
- Disturbed areas will be re-vegetated as soon as practical.
- All trucks entering or leaving the site will cover all loads of soils, sands, and other loose materials, or provide a minimum freeboard height of 2 feet.
- Water or chemical surface stabilizers will be used on any storage piles or identified wind erosion areas.

Use of these mitigation measures and control strategies will typically ensure that the site does not cause any violations of existing air quality standards as a result of construction related activities.

3.1.1.10 Project Location

As discussed in Section 2.0 (Project Description), the site is located in Hayward, California. (Alameda County). The site is situated adjacent to and south of Depot Road in the east Hayward industrial area. Cabot Road has its southern terminus at Depot Road across from the northeast corner of the site. Enterprise Avenue lies to the south of the site boundary. The topography of the site is essentially flat, with a mean elevation of approximately 10 feet above mean sea level (amsl). The site and immediate surrounding area to the north, east, and south are primarily commercial and industrial in nature. West of the site lies a large area of tidal flats and vacant property. The site occupies approximately 18.8 acres of presently commercial land, and lies approximately 1.0 miles east of the eastern shoreline of South San Francisco Bay. Elevations to the north, west, and south of the site are relatively low, similar to site elevations. Elevations to the east tend to increase gradually toward the

east bay foothills. Elevations of 100 feet amsl or greater exist approximately 3.5 miles east from the site. See Section 2.0 for site location maps, plot plans, and process diagrams.

3.1.1.11 Population and Land Use

The site is situated in Alameda County census tract 4371. Figure 3.1D-1 (Appendix 3.1D) shows the approximate locations of identified sensitive receptors within a 6-mile radius of the plant site. Figure 3.1D-2 (Appendix 3.1D) shows the site and surrounding census tracts. Table 3.1D-11 in Appendix 3.1D presents data on census tract size and population data. (Both of these figures are presented on the CD-ROM provided separately to CEC Staff, at a scale of 1:24000.)

According to the Auer land use classification scheme, a 3-kilometer radius boundary around the proposed site yields a predominately rural classification. This is consistent with the current land use and zoning designation for the site and surrounding area as "industrial (I)". The site is located in the City of Hayward Industrial Corridor, which extends to Hayward Air Terminal to the north, and to the east for about 1 mile. To the west and south of the site lie predominately open lands and municipal properties. The nearest residence is approximately 0.96 miles east-northeast of the site. The total amount of residential housing in the immediate area is small. The General Plan designation for the site and surrounding area is "west industrial", as the site lies within the West Industrial Planning Area.

Table 3.1-11 presents a summary of Air Basin statistics by county.

TABLE 3.1-11
Air Basin Summary Statistics for 2004-2005 by County

County	Population ($x10^3$)	Land Area (mi^2)	Water Area (mi^2)	Total Area (mi^2)	Daily Natural Gas Use (mmscf)	Daily Gasoline Use ($x10^3$ gals)	Daily Vehicle Miles ($x10^6$)
Alameda	*1,517*	*738*	*84*	*822*	*143*	*1,714*	*31.4*
Contra Costa	1,016	720	82	802	817	1,111	23.1
Marin	251	520	308	828	24	332	6.1
Napa	134	754	35	789	11	163	2.9
San Francisco	798	47	185	232	139	953	10.5
San Mateo	723	449	292	741	68	940	18.9
Santa Clara	1,750	1,291	13	1305	184	2,102	40.7
Solano*	302	370	64	434	48	334	6.4
Sonoma*	419	664	4	668	29	485	8.5
Totals	6,910	5,553	1,067	6,620	1463	8,135	148.6

* Portion of county in Air Basin
Source: BAAQMD Website, June 7, 2006.
mi^2 = square miles
gals = gallons

3.1.1.12 Existing Air Quality

Each federal or state ambient air quality standard is comprised of two basic elements: (1) a numerical limit expressed as an allowable concentration, and (2) an averaging time which specifies the period over which the concentration value is to be measured. Table 3.1-12 presents the current federal and state ambient quality standards.

TABLE 3.1-12
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1 hour	0.09 ppm (180 μg/m^3)	-
	8 hour	0.07 ppm (137 μg/m^3)	0.08 ppm (157 μg/m^3) (3-year average of annual 4th-highest daily maximum)
Carbon monoxide	8 hour	9.0 ppm (10,000 μg/m^3)	9 ppm (10,000 μg/m^3)
	1 hour	20 ppm (23,000 μg/m^3)	35 ppm (40,000 μg/m^3)
Nitrogen dioxide	Annual Average	-	0.053 ppm (100 μg/m^3)
	1 hour	0.25 ppm (470 μg/m^3)	-
Sulfur dioxide	Annual Average	-	0.03 ppm (80 μg/m^3)
	24 hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)
	3 hour	-	0.5 ppm (1,300 μg/m^3)
	1 hour	0.25 ppm (655 μg/m^3)	-
Respirable particulate matter (10 micron)	24 hour	50 μg/m^3	150 μg/m^3
	Annual Arithmetic Mean	20 μg/m^3	50 μg/m^3
Fine particulate matter (2.5 micron)	Annual Arithmetic Mean	12 μg/m^3	15 μg/m^3 (3-year average)
	24 hour	-	65 μg/m^3 (3-year average of 98th percentiles)
Sulfates	24 hour	25 μg/m^3	-
Lead	30 day	1.5 μg/m^3	-
	Calendar Quarter	-	1.5 μg/m^3

μg/m^3 = micrograms per cubic meter

The nearest criteria pollutant air quality monitoring sites to the proposed project site would be the stations located in the east bay area as follows: Fremont-Chapel Way, Hayward-La Mesa, San Leandro-County Hospital, and Richmond. Ambient monitoring data for these sites for the most recent 3-year period is summarized in Table 3.1-13.

TABLE 3.1-13
Monitoring Data Summary (Highest Monitored Values)

Pollutant	Site	Avg. Time	2003	2004	2005
Ozone, ppm	Fremont	1 Hr	.123	,090	.105
	Hayward		.116	.088	.093
	San Leandro		.097	.104	.099
Ozone, ppm	Fremont	8 Hr	.090	.071	.078
	Hayward		.092	.070	.070
	San Leandro		.071	.066	.061
PM10, $\mu g/m^3$	Fremont	24 Hr	37.1	46.3	51.7
PM10, $\mu g/m^3$	Fremont	Annual	17.7	18.1	17.2
PM2.5, $\mu g/m^3$	Fremont	24 Hr	33.5	39.9	33.4
PM2.5, $\mu g/m^3$	Fremont	Annual	8.7	9.4	9.0
CO, ppm	Fremont	8 Hr	1.87	1.66	1.96
		1 Hr	3.2	3.0	-
NO_2, ppm	Fremont	1 Hr	.076	.060	.069
NO_2, ppm	Fremont	Annual	.017	.015	.015
SO_2, ppm	Oakland	24 Hr	.009	-	-
	Richmond		.005	.007	.006
SO_2, ppm	Oakland	Annual	.003	-	-
	Richmond		.001	.002	.001
SO_2, ppm	Oakland	1 Hr	.019	-	.025
	Richmond		-	.039	-
SO_2, ppm	Oakland	3 Hr	.013	-	.013
	Richmond		-	.019	-
SO_2, ppm	Oakland	24 Hr	.009	-	-
	Richmond		.005	.007	.006

NO_2 = nitrogen dioxide

Table 3.1-14 shows the background air quality values based upon the data presented in Table 3.1-13. The background values represent the highest values reported for any site during any single year of the most recent 3-year period.

TABLE 3.1-14
Background Air Quality Values

Pollutant and Averaging Time	Background Value, μg/m3
Ozone – 1 Hour	241.0
Ozone – 8 Hour	181.0
PM10 – 24 Hour	51.7
PM10 – Annual	18.1
PM2.5 – 24 Hour	39.9
PM2.5 – Annual	9.4
CO – 8 Hour	2,178.0
CO – 1 Hour	3,680.0
NO_2 – 1 Hour	143.0
NO_2 – Annual	32.0
SO_2 – 1 Hour	102.2
SO_2 – 3 Hour	49.4
SO_2 – 24 Hour	23.5
SO_2 – Annual	8.0

Table 3.1-15 presents a summary of historical air quality data for the air basin for the most recent 10-year period.

TABLE 3.1-15
San Francisco Bay Area Air Basin Historical Air Quality Data Summary

Air Basin Statistics										
Ozone (ppm)	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005***
Maximum 1-hour concentration	.138	.114	.147	.156	.152	.134	.160	.128	.113	.120
Maximum 8-hour concentration	.112	.084	.111	.122	.114	.102	.106	.101	.084	.090
Days above state standard	34	8	29	20	12	15	16	19	7	9
Days above national 1-hour standard	8	0	8	3	3	1	2	1	0	0
Days above national 8-hour standard	14	0	16	9	4	7	7	7	0	1
PM10 (μg/m3)	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Maximum 24-Hour concentration	76	95	92	114	76	109	80	58	63	ND
Annual Average (Federal)	24.9	25.8	25.1	28.7	26.8	28.9	25.4	24.2	25.3	ND
Days above state 24-hour standard	18	20	25	63	42	51	30	30	36	ND
Calculated days above national 24-hour standard	0	0	0	0	0	0	0	0	0	ND
Carbon Monoxide (ppm)	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Maximum 1-Hour Concentration	8.8	10.7	8.7	9.0	9.8	7.6	7.7	8.6	4.8	ND
Maximum 8-hour concentration	7.0	6.1	6.3	6.3	7.0	5.1	5.1	4.4	3.4	ND
Days above state 8-hour standard	0	0	0	0	0	0	0	0	0	ND
Days above national 8-hour standard	0	0	0	0	0	0	0	0	0	ND
Nitrogen Dioxide (ppm)	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Maximum 1-hour concentration	.108	.118	.098	.128	.114	.108	.080	.081	.073	ND
Maximum annual average	.025	.025	.025	.026	.025	.024	.019	.018	.017	ND
PM2.5 (μg/m3)	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Max 24 –Hour Concentration	ND	ND	ND	90.5	67.2	107.5	84.5	56.1	73.7	ND
Annual Average (State)	ND	ND	ND	ND	11.6	12.5	13.8	11.7	11.6	ND
Average of Qtrly Means (State)	ND	ND	ND	ND	13.6	12.5	13.8	11.7	11.6	ND

Sources: California Almanac of Emissions and Air Quality-2006
* Preliminary data only for January through October.
No trend data for SO_2. See Table 3.1-13 for last 3 years of summary data.

Table 3.1-16 presents the current data on the attainment status of the BAAQMD for each applicable pollutant.

TABLE 3.1-16
BAAQMD Attainment Status

Pollutant	Averaging Time	California Status	Federal Status
Ozone	8 Hour	Unclassified	Nonattainment
	1 Hour	Nonattainment	Ns
Carbon Monoxide	8 Hour	Attainment	Attainment
	1 Hour	Attainment	Attainment
Nitrogen Dioxide	Annual	Ns	Attainment
	1 Hour	Attainment	Ns
Sulfur Dioxide	Annual	Ns	Attainment
	24 Hour	Attainment	Attainment
	1 Hour	Attainment	Ns
PM10	Annual	Nonattainment	Attainment
	24 Hour	Nonattainment	Unclassified
PM2.5	Annual	Nonattainment	Attainment
	24 Hour	Ns	Attainment
Sulfates	24 Hour	Attainment	Ns
Lead	Quarter	Ns	Attainment
	30 Day	Attainment	Ns

Ns= no standard applies or not applicable

3.1.2 Environmental Consequences

3.1.2.1 Overview of Impact and Modeling Process

Several EPA models and programs were proposed for use to quantify pollutant impacts on the surrounding environment based on the emission sources operating parameters and their locations. The models used were Building Profile Input Program (BPIP, current version 04112), the SCREEN3 (version 96043) dispersion model, the Industrial Source Complex - Short Term dispersion model (ISCST3, current version 02035), the ISCST3 Ozone Limiting Method dispersion model for 1-hour NO_2 concentrations (ISC3OLM, current version 96113) and the Calpuff Long Range Transport Model (version 5.7). These models, along with options for their use and how they are used, are discussed below. These models were used to assess the following:

- Comparison of impacts to significant impact levels
- Compliance with state and federal ambient air quality standards (AAQS)
- Compliance with PSD Increments
- Impacts to Class I and Class II areas, including air quality-related values (AQRVs)

3.1.2.2 Simple and Complex Terrain Modeling Methods

For modeling the potential impact of the proposed project in terrain that is both below and above stack top (defined as simple terrain when the terrain is below stack top and complex terrain when it is above stack top) the ISCST3 model was used with five years (1990 through 1994) of hourly meteorological data from the Union City monitoring station.

Technical options selected for the ISCST3 model are listed below. Use of these options follows the EPA's (November 2005) modeling guidance, BAAQMD guidance, and/or sound scientific practice. An explanation of these options and the rationale for their selection is provided below.

- Gradual plume rise (BAAQMD requirement);
- Stack tip downwash;
- Model option HE>ZI to correct erroneously high concentrations when the plume centerline exceeds the mixing height for receptor elevations below the stack base elevation (not available in ISC3OLM);
- Default option for temperature gradients, wind profile exponents, and calm processing;
- Anemometer height = 20 meters;
- Rural dispersion parameters; and
- Elevated receptor terrain heights option.

As previously mentioned, based on the land use classification procedure of Auer (1978), land use within the area circumscribed by a 3-kilometer radius around the modified facility is greater than 50 percent rural. Therefore, in the modeling analyses supporting the permitting of the facility, rural coefficients were assigned.

3.1.2.3 Ambient Ratio Method and Ozone Limiting Method

Annual NO_2 concentrations will be calculated using the Ambient Ratio Method (ARM), adopted in Supplement C to the Guideline on Air Quality Models (EPA, 1994). The Guideline allows a nationwide default conversion rate of 75 percent for annual NO_2/NO_x ratios.

The Ozone Limiting Method (OLM) was used with hourly 1-hour ozone concentrations to calculate the 1-hour NO_2 concentrations using the EPA ISC3OLM dispersion model. The OLM involves an initial comparison of the estimated maximum NO_x concentration and the ambient ozone concentration to determine which is the limiting factor to NO_2 formation. If the ozone concentration is greater than the maximum NO_x concentration, total conversion is assumed. If the NO_x concentration is greater than the ozone concentration, the formation of NO_2 is limited by the ambient ozone concentration. In this case, the NO_2 concentration is set equal to the ozone concentration plus a correction factor that accounts for in-stack and near-stack thermal conversion. As discussed in Section 3.1.2.6 below, ozone data from the San Leandro monitoring site for the same period as the meteorological data (1990-1994) were used for the OLM analyses.

3.1.2.4 Fumigation

The SCREEN3 model was used to evaluate inversion breakup and shoreline fumigation impacts for all short-term averaging periods (24 hours or less). The methodology outlined in BAAQMD Modeling Guidance and EPA 454/R-92-019 (Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised) will be followed for this analysis. Combined impacts for all sources under fumigation conditions will be evaluated based on BAAQMD modeling guidelines.

Specifically, inversion breakup and shoreline fumigation (Type I and Type III) analyses were performed. The SCREEN3 model was used to perform both of these analyses. For the Type III analysis, the default Thermal Internal Boundary Layer (TIBL) factor in the SCREEN3 model is normally set at a value of 6. Shoreline fumigation for TIBL factors from 2 to 6 were also calculated. The highest impact result from varying the TIBL factor was then considered the maximum shoreline fumigation impact.

For sources with plume heights less than the TIBL height or not subject to inversion breakup fumigation, their contributions to fumigation impacts were determined using SCREEN3 with all meteorological conditions and ignoring terrain at the distance of the maximum fumigation concentration. The fumigation concentration is then combined with the maximum SCREEN3 concentration from the other sources. The combined fumigation concentrations are also compared to the maximum SCREEN3 concentrations under normal dispersion for all meteorological conditions. If fumigation impacts are less than SCREEN3 maxima under normal dispersion, no further analysis is required based on Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised (EPA-454/R-92-019).

If fumigation impacts exceed SCREEN3 maxima, then fumigation impacts longer than 1-hour averages were evaluated based on Section 4.5.3 of Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised (EPA-454/R-92-019) guidance on converting to 3-, 8- and 24-hour average concentrations.

Based upon land use classification, the following procedures were recommended for rural land use by the BAAQMD:

- Run SCREEN3 in rural mode, calculate fumigation impacts. For shoreline fumigation, vary TIBL factor between 2 and 6. For sources not subject to fumigation, also run SCREEN3 using flat terrain for downwind distances equal to maximum fumigation distances. Then, calculate the maximum combined impacts as discussed above.
- Calculate the SCREEN3 maximum impact for normal dispersion for all SCREEN3 meteorological conditions for flat terrain for all sources. For fumigation impacts greater than the SCREEN3 maxima under normal dispersion, multiply the distance dependent ratio times the highest fumigation impacts.
- Adjust concentration for appropriate averaging periods.

3.1.2.5 Good Engineering Practice Stack Height and Downwash

Good Engineering Practice (GEP) stack height was calculated at 200 feet based on existing onsite and offsite structure dimensions. The design stack height of 145 feet does not exceed

GEP stack height, thus downwash effects were included in the modeling analysis. The cooling tower and fire-pump were also assessed for GEP stack height.

BPIP was used to generate the wind direction specific building dimensions for input into ISCST3. All on-site and the nearby off-site structures were included for analysis with BPIP. Figure 3.1B-1, located in Appendix 3.1B, shows the buildings included in the downwash analysis.

3.1.2.6 Meteorological Data Used in the Impact Analysis

Five (5) years of meteorological data for Union City monitoring station were obtained from the BAAQMD for the years 1990-1994 and were used to assess the projects potential impacts to air quality. The data set includes all the necessary parameters required for the ISCST3 dispersion modeling analyses (i.e., wind speed and direction, temperature, stability, and mixing height which is set to 600 meters). The data will not be modified in any way. For the ISC3OLM analyses, 1-hour ozone data from the San Leandro monitoring site for the same period (1990-1994) were used to create a ozone file. Missing ozone data for periods of 1 or 2 hours were interpolated from the San Leandro data before/after the missing period. Missing data for longer periods were replaced with data from Hayward monitoring site or, if both San Leandro and Hayward data were missing, from the Fremont monitoring site.

3.1.2.7 Receptor Grids

Receptor and source base elevations were determined from USGS Digital Elevation Model (DEM) data using the 7-minute format data (i.e., 10-meter spacing between grid nodes). All coordinates were referenced to UTM North American Datum 1927 (NAD27), zone 10. The receptor locations and elevations from the DEM files will be placed exactly on the DEM nodes. Every effort will be made to maintain receptor spacing across DEM file boundaries.

Cartesian coordinate receptor grids are used to provide adequate spatial coverage surrounding the project area for assessing ground-level pollution concentrations, to identify the extent of significant impacts, and to identify maximum impact locations. The receptor grids used in this analysis are as follows:

- 10-meter resolution from the project fenceline and extending 500 meters outwards in all directions. This is called the downwash grid.
- 100-meter resolution that extends outwards from the edge of the downwash grid to 2 kilometers in all directions. This is referred to as the intermediate grid.
- 200-meter resolution that extends outwards from the edge of the intermediate grid to 10 kilometers in all directions. This is referred to as the coarse grid.
- 10-meter resolution around any location on the coarse grid where a maximum impact is modeled that is above the concentrations on the downwash grid. This “refined” grid will extend out 400 meters in all directions from the maximum coarse grid impact location.

Concentrations within the facility fenceline were not calculated. Figure 3.1B-2, located in Appendix 3.1B, displays the receptors grids used in the modeling assessment.

3.1.2.8 Background Ambient Air Quality

Historical background air quality data is presented in Section 8.1.3.4 of the AFC. Data is also presented on the most recent data from monitoring stations in close proximity to the site which are representative of site and regional air quality. Background air quality values were derived from the highest values which occurred over the last most recent 3 year monitoring period for each pollutant (i.e., highest value during any year at any monitoring site). These values are presented in Table 3.1-14 and reproduced here in Table 3.1-17, for convenience.

TABLE 3.1-17
Highest Background Air Quality Values

Pollutant and Averaging Time	Background Value, µg/m^3
Ozone – 1 Hour	241.0
Ozone – 8 Hour	181.0
PM10 – 24 Hour	51.7
PM10 – Annual	18.1
PM2.5 – 24 Hour	39.9
PM2.5 – Annual	9.4
CO – 1 Hour	3,680.0
CO – 8 Hour	2,178.0
NO_2 – 1 Hour	143.0
NO_2 – Annual	32.0
SO_2 – 1 Hour	102.2
SO_2 – 3 Hour	49.4
SO_2 – 24 Hour	23.5
SO_2 - Annual	8.0

3.1.2.9 PSD Applicability

Pursuant to the PSD regulations in 40 CFR 52.21, and the potential annual emissions values per Tables 3.1-3 through 3.1-6, the proposed facility is subject to PSD review. The proposed facility is not subject to the 250 ton per year applicability criteria under the PSD regulations. The proposed facility is subject to the 100 ton per year applicability criteria because the facility is one of the listed 28 special source categories per 40 CFR 52.21(b)(1)(i)(a). In addition, since the source is considered major for one or more applicable PSD pollutants, the significant emissions rates under the PSD rules also apply. These rates are listed in Table 3.1-18.

TABLE 3.1-18
PSD Significant Emissions Rates

Pollutant	Significant Emission Rate* (tons/year)
NO_2	40
SO_2	40
VOC	40
CO	100
PM10/PM2.5	15

* These rates apply to the proposed facility and are presented for information purposes.

3.1.2.10 Significant Impact and Threshold Levels

Table 8.1-19 presents data on the significant impact and/or threshold levels applied to the proposed facility.

TABLE 3.1-19
BAAQMD (PSD) Significant Impact Threshold Values[a]

Pollutant	Averaging Time	SIL ($\mu g/m^3$)
NO_2	1 Hour	19[b]
	Annual	1
SO_2	3 Hour	25
	24 Hour	5
	Annual	1
CO	1 Hour	2,000
	8 Hour	500
PM10/PM2.5	24 Hour	5
	Annual	1

[a] EPA PSD SIL (significant impact level) values.

[b] BAAQMD value only.

3.1.2.11 Air Quality Impact Analysis—Modeling Results

This section describes the results, in both magnitude and spatial extent of ground level concentrations, resulting from emissions from the RCEC project. The maximum modeled concentrations were added to the maximum background concentrations to calculate a total impact.

Potential air quality impacts were evaluated based on air quality dispersion modeling, as described in herein. All input and output modeling files are contained on the CD-ROM disk provided under separate cover. All modeling analyses were performed using the techniques

and methods as outlined in the modeling protocol submitted and approved by the BAAQMD, as well as in subsequent conversations with BAAQMD staff.

3.1.2.12 Screening Analysis

Operational characteristics of the turbine/HRSGs, such as emission rate, exit velocity, and exit temperature vary by operating load. A screening modeling analysis, using ISCST3 and five years of hourly meteorology was performed for the 100 percent load (with and without duct firing) and 60 percent load conditions in order to determine the turbine operating condition that will result in the highest modeled concentrations for averaging periods of 24 hours or less. These conditions were considered for three ambient temperature conditions: 38 degrees Fahrenheit (°F) (a cold December day), 59°F (ISO conditions), and 88°F (a hot July day). The 59°F condition represents annual average conditions. As such, load screening for annual average concentrations were only modeled for the 59°F case at 100 percent load (with duct firing). All other concentration averaging periods were modeled for all three ambient temperatures and operating loads.

The results of the load screening analysis are listed in Appendix 3.1B. The model calculates that the worst-case load and ambient temperature condition is 100 percent load with duct firing at 38°F) for 1-hour (CO, SO_2, and NO_2) and 3-hour (SO_2) averaging times and 60 percent load at 88°F for 8-hour (CO) and 24-hour (SO_2 and PM10) averaging times. Startup and shutdown turbine emissions were modeled with stack characteristics for the worst-case 1-hour screening condition (i.e., 100 percent load with duct firing at 38°F).

3.1.2.13 Refined Analysis

Facility sources, including the fire pump diesel engine, were modeled in the analysis for comparisons with SILs and CAAQS/NAAQS, as necessary.

For the turbines, startup and shutdown emissions were also accounted for in the analysis for all short-term (24 hours or less) and long-term (annual) averages in the air quality modeling. Because the startup time for each turbine is not less than 1-hour, the worst-case 1-hour impact analysis modeling for NOx and CO were based on which startup conditions produced the highest emissions for wither pollutant. In addition, both turbines were assumed to startup simultaneously. For longer averaging periods such as the 3-hour, 8-hour, and 24-hour averaging times, multiple startups/shutdowns along with full load operation for both turbine/HRSGs were modeled in order to calculate the worst-case impacts. Detailed emission calculations for all averaging periods are included in Appendix 3.1B.

The worst-case modeling input information for each pollutant and averaging period are shown in Table 3.1-20 for normal operating conditions and turbine startup/shutdown conditions. As discussed above, the combustion turbine/HRSG stack parameters used in modeling the impacts for each pollutant and averaging period reflected the worst-case operating condition for that pollutant and averaging period identified in the load screening analysis. Stack parameters associated with operation at 100 percent load with duct firing at the average temperature of 59°F were used in modeling annual average impacts.

TABLE 3.1-20
Stack Parameters and Emission Rates for Refined ISCST3 Modeling*

	Stack Height (meter)	Stack Diam. (meter)	Stack Temp (deg K)	Exhaust Velocity (m/s)	Emission Rates (g/s) for each turbine/HRSG and cooling tower cell			
					NOx	SO_2	CO	PM10/2.5
Averaging Period: 1-hour for Normal Operating Conditions								
Turbines/HRSGs	44.196	5.4864	355.39	22.175	2.0379	0.7812	2.4816	N/A
Fire Pump Diesel Engine	4.572	0.1524	665.37	53.340	0.3558	3.942E-4	0.0275	N/A
Averaging Period: 3-hours for Normal Operating Conditions								
Turbines/HRSGs	44.196	5.4864	355.39	22.175	N/A	0.7812	N/A	N/A
Fire Pump Diesel Engine	4.572	0.1524	665.37	53.340	N/A	1.314E-4	N/A	N/A
Averaging Period: 8-hours for Normal Operating Conditions								
Turbines/HRSGs	44.196	5.4864	350.68	14.075	N/A	N/A	1.3395	N/A
Fire Pump Diesel Engine	4.572	0.1524	665.37	53.340	N/A	N/A	0.0034	N/A
Averaging Period: 24 hours for Normal Operating Conditions								
Turbines/HRSGs	44.196	5.4864	350.68	14.075	N/A	0.4284	N/A	1.1340
Fire Pump Diesel Engine	4.572	0.1524	665.37	53.340	N/A	1.640E-5	N/A	4.167E-4
Cooling Tower	18.288	9.7536	298.17	10.308	N/A	N/A	N/A	0.0396
Averaging Period: Annual for Normal Operating Conditions								
Turbines/HRSGs	44.196	5.4864	356.83	21.655	1.9350	0.1755	N/A	1.0742
Fire Pump Diesel Engine	4.572	0.1524	665.37	53.340	2.112E-3	2.339E-6	N/A	5.936E-5
Cooling Tower	18.288	9.7536	300.27	10.308	N/A	N/A	N/A	0.0387
Averaging Period: 1-hour for Turbine Startup/Shutdown Conditions								
Turbines/HRSGs	44.196	5.4864	355.39	22.175	12.2464	N/A	169.946	N/A
Averaging Period: 8-hours for Turbine Startup/Shutdown Conditions								
Turbines/HRSGs	44.196	5.4864	355.39	22.175	N/A	N/A	80.2353	N/A

* Annual averaging periods include startup/shutdown emissions, where applicable.
deg K = degree Kelvin
g/s = grams per second
m/s = meters per second

3.1.2.14 Normal Operations Impact Analysis

In order to determine the magnitude and location of the maximum impacts for each pollutant and averaging period, the ISCST3 model was used with five years of hourly meteorological data (1990 through 1994) from Union City. The receptor grid used with the ISCST3 model was derived from 10-meter DEM data, 100-meter and 200-meter resolution intermediate and coarse receptor grids extend in all directions from the facility out to 10

kilometers. Within the intermediate grid, for the area immediately surrounding the project site, a finer downwash grid with 10-meter grid spacing extending from the facility out to 500 meters from the project site, and a set of receptors spaced at 10-meter intervals around the facility's fenceline were modeled.

Table 3.1-21 summarizes maximum modeled concentrations for each criteria pollutant and associated averaging periods. In order to assess the significance of the modeled concentrations, the maximum concentrations were modeled and compared to the Class II PSD SILs. All modeled facility pollutant concentrations with the exception of 1-hour NO_2 concentrations are less than the SILs for those pollutants.

The initial maximum impacts for NO_2 (annual), SO_2 (1-hour, 3-hour, and annual averages), and PM10/PM2.5 (annual averages) occurred in the intermediate or coarse receptor grids and were remodeled with 10-meter spaced refined grids (the results of which are included in the table below). All other impacts occurred in the immediate vicinity of the facility either on the fenceline or within the downwash grid in the 10-meter spaced receptor areas.

As discussed earlier, the project is located in a state PM10 nonattainment area. PM10 emissions are required to be mitigated (see Section 8.1.2.8). RCEC proposes to offset its emissions of PM10/2.5 during the fall and winter PM nonattainment season. Because both PM10 and SO_2 emissions may contribute to ambient PM10 concentrations, RCEC will be working with CEC staff to agree upon appropriate mitigation for project PM10 and SO_2 emissions impacts during nonattainment periods.

For CO, because the maximum modeled impacts are less than the significance levels, the RCEC facility would not significantly affect the Bay Area attainment area.

TABLE 3.1-21
Air Quality Impact Summary for Normal Operating Conditions

Pollutant	Avg. Period	Maximum[a] Concentration ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total ($\mu g/m^3$)	Class II Significance Level ($\mu g/m^3$)	BAAQMD SILs ($\mu g/m^3$)	Ambient Air Quality CAAQS/NAAQS ($\mu g/m^3$)	Ambient Air Quality CAAQS/NAAQS ($\mu g/m^3$)
NO_2	1-hour	226.83	143.0	369.83	-	19	470	-
	Annual	0.14	32.0	32.14	1	1	-	100
PM10	24-hour	2.94	51.7	54.64	5	5	50	150
	Annual	0.15	18.1	18.25	1	1	20	50
PM2.5	24-hour	2.94	39.9	42.84	5	5	-	65
	Annual	0.15	9.4	9.55	1	1	12	15
CO	1-hour	134.7	3,680.0	3,814.7	2,000	2,000	23,000	40,000
	8-hour	5.7	2,178.0	2,183.7	500	500	10,000	10,000
SO_2	1-hour	4.92	102.2	107.12	-	-	655	-
	3-hour	4.43	49.4	53.83	25	25	1300	1,300
	24-hour	1.10	23.5	24.6	5	5	105	365
	Annual	0.02	8.0	8.02	1	1	-	80

Based on the above modeling results, emissions from the proposed RCEC facility will not significantly affect the ambient air quality of the area.

3.1.2.15 Commissioning Impacts Analysis—Turbines

There are several scenarios that are possible during commissioning, which are expected to result in NO_x, CO, and POC emissions that are greater than during normal operations. (During commissioning, PM10/2.5 and SO_2 emissions are expected to be no greater than full load operations.) Typically, these commissioning activities occur prior to the installation of the abatement equipment, e.g., SCR and oxidation catalyst, while the turbines are being tuned to achieve optimum performance. During turbine tuning, NO_x, CO, and POC emission control systems would not be functioning.

For the purposes of air quality modeling, NO_2 and CO impacts could be higher during commissioning than under other operating conditions already evaluated.

The commissioning activities summarized below are based on the recent permit amendment for the Calpine Metcalf Energy Center. The commissioning procedures for each turbine are expected to consist of several phases. Though precise emission values during the phases of commissioning cannot be provided, given the consideration for contingencies during shakedown, the emissions profile during expected commissioning-period operating loads were based on recent data collected at the Calpine Metcalf Energy Center and are summarized in Table 3.1-22.

TABLE 3.1-22
Commissioning Emissions Used for Modeling Analysis for Both Turbines

Pollutant	Emission Rate
NO_x 1-hour	400 lb/hr
CO 1-hour	5,000 lb/hr
CO 8-hour	200,000 lb/8-hr

Each turbine's commissioning period (prior to SCR and CO catalyst loading), with an estimated duration of 50 operating hours total per turbine, is expected to consist of the following:

> ***Initial load testing and checkout of an engine (typical for both turbines)*** – Two to four operating days of unsynchronized operation, for approximately 2 to 4 hours per day, followed by approximately an average of 1 to 2 days per engine of low load checkout (low load checkout also is estimated at approximately 2 to 4 hours per day). The average operating load for this initial load testing is expected to be 5 to 10 percent, based on a range of 0 percent and 10 percent load.
>
> ***Initial tuning*** — Fifteen to thirty operating days of testing and tuning at various loads and up to full load per turbine for not more than an average of 8 operating hours per day. The average operating load is expected to be 75 percent, based on a typical commissioning range of 50 percent and 100 percent load.

Upon completion of initial tuning phase, the SCR and the oxidation catalyst will be loaded. The next tuning phase will have the SCR and CO catalyst operational and may include up to 250 hours of operation per turbine.

Final tuning – Fifteen to thirty operating days of SCR and oxidation catalyst tuning and pre-witness testing performance verification at an average of not more than 12 to 16 hours per day. The average operating load is expected to be 75 percent, based on a range of 50 percent and 100 percent load.

The expected daily emissions during commissioning will be:

- NO_x 4,805 pounds per calendar day
- CO 20,000 pounds per calendar day
- POC 495 pounds per calendar day
- PM10 432 pounds per calendar day
- SO_2 297.6 pounds per calendar day

During the commissioning period, only one turbine will be undergoing various phases of commissioning at the same time. However, both turbines may be in operation at the same time, with one turbine undergoing commissioning while the other turbine has finished commissioning and is in normal (non-commissioning) operation.

Under these scenarios, the maximum emission impacts (during commissioning) with ISCST3 modeling analysis are as follows:

- NO_x emissions can be conservatively estimated to be 383.8 lb/hr for one turbine with the other turbine at full load at 16.17 lb/hr. The maximum 1-hour NO_x impact during commissioning was calculated to be 119.2 $\mu g/m^3$ from the application of ozone limiting. With the maximum background 1-hour NO_2 concentration of 143 $\mu g/m^3$, the maximum total impact would be 262.2 $\mu g/m^3$, which is below the State 1-hour NO_2 standard of 470 $\mu g/m^3$.

- CO emissions can be conservatively estimated to be 5,000 lb/hr per turbine or with both turbines in operation, the emissions would be 4,980 lb/hr for the turbine undergoing commissioning and 19.7 lb/hr for the other turbine in normal operation. The maximum daily emissions of CO would not exceed 20,000 lbs/day. The maximum 1-hour and 8-hour CO impacts during commissioning were calculated to be 1977 $\mu g/m^3$ and 348.3 $\mu g/m^3$, respectively. With the maximum background 1-hour and 8-hour CO concentration of 3,680 $\mu g/m^3$ and 2,178 $\mu g/m^3$ the maximum total impacts would be 5,657.0 $\mu g/m^3$ and 526.8 $\mu g/m^3$, respectively. These impacts are each below the state and federal standards for CO. The CO concentrations from commissioning are also less than the PSD significance levels.

3.1.2.16 Startup and Shutdown Impacts Analysis

Startup and shutdown activities typically affect emissions of NO_x and CO. (During startup, PM10/PM2.5 and SO_2 emissions are expected to be no greater than full load operations.) A separate modeling assessment for startup emissions is presented as the startup emissions by themselves are greater than the worst-case hourly emissions. Modeling was performed with ISCST3 and ISC3OLM as discussed above for 1-hour and 8-hour CO and 1-hour NO_2 concentrations. The initial maximum startup impacts occurred in the coarse receptor grid

and were remodeled with 10-meter spaced refined grids (the results of which are included in the table below). CO concentrations due to startup/shutdown conditions are less than the SILs and 1-hour NO_2 concentrations due to startup/shutdown conditions are greater than the SIL.

Table 3.1-23 presents a summary of the startup and shutdown emission estimates for the turbines. Appendix 3.1-A presents more details with regards to startup/shutdown emissions and assumptions.

TABLE 3.1-23
Turbine Startup/Shutdown Emission Rates[a]

Scenario	NOx	CO	VOC
Cold Start (lb/hr)[b]	97.2	1,348.8	14.9
Warm Start (lb/hr) [c]	97.2	1,348.8	14.9
Hot Start (lb/hr) [c]	83.8	1,154.2	14.8
Shutdown (lb/hr) [d]	28.9	224.2	6.7

[a] Estimates from vendor and source test data.
[b] Cold start = 6 hours maximum
[c] Warm/Hot start = 3 hour maximum
[d] Shutdown = 0.5 hour maximum

Table 3.1-24 presents the results of the startup/shutdown modeling.

TABLE 3.1-24
Air Quality Impact Summary for Turbine Startup/Shutdown Conditions

Pollutant	Avg. Period	Maximum Concentration (µg/m^3)	Background (µg/m^3)	Total (µg/m^3)	Class II Significance Level (µg/m^3)	BAAQMD SILs (µg/m^3)	Ambient Air Quality CAAQS/NAAQS (µg/m^3)	Ambient Air Quality CAAQS/NAAQS (µg/m^3)
NO_2	1-hour	77.08	143.0	220.08	-	19	470	-
CO	1-hour	1,069.71	3,680.0	4,749.71	2,000	2,000	23,000	40,000
	8-hour	178.23	2,178.0	2,356.23	500	500	10,000	10,000

3.1.2.17 Fumigation Analyses

Fumigation analyses with the EPA Model SCREEN3 (version 96043) were conducted for both inversion breakup fumigation conditions and shoreline fumigation conditions.

Inversion breakup fumigation impacts of 1.237 µg/m^3 for a unitized emission rate (1 g/s) were predicted to occur 16,141 meters from the turbine stacks. At this distance, the maximum fire pump impact predicted by SCREEN3 under all meteorological conditions was 12.48 µg/m^3 for a 1 g/s emission rate. No inversion breakup fumigation impacts were predicted to occur by SCREEN3 for emissions from the much lower fire pump stack. These unitized impacts were used to calculate 1-hour inversion breakup impacts for all pollutants by

multiplying the unitized impacts by the pollutant emission rates (in g/s). The fumigation impacts predicted for the turbine emissions are added to the maximum fire pump impacts predicted to occur at the same location under all SCREEN3 meteorological conditions to obtain total pollutant impacts for the facility. The pollutant impacts are shown in Table 3.1-25.

TABLE 3.1-25
Inversion Breakup Fumigation Impact Summary

Pollutant /Avg. Time	Turbine Impacts ($\mu g/m^3$)	Fire Pump Impacts ($\mu g/m^3$)	Total Impacts ($\mu g/m^3$)
NOx / 1-hour	5.04	4.44	9.48
SO_2 / 1-hour	1.93	<0.005	1.93
CO / 1-hour	6.14	0.34	6.48

Shoreline fumigation impacts were evaluated for TIBL factors (A) from 6.0 (the SCREEN3 default factor) to 2.0 (by revising and recompiling SCREEN3 for TIBL factors of 2.0, 3.0, 4.0, and 5.0). The final effective plume centerline height for the turbine stacks is 164 meters for rural conditions of F stability and 2.5 meter/second (m/s) wind speeds at the turbine stack release height. TIBL heights at the nearest turbine stack to the shoreline of the San Francisco Bay (a distance of 1,670 meters) range from 82 to 163 meters for TIBL factors from 2.0 to 4.0, respectively (i.e., TIBL heights at the stack location are less than the final effective plume centerline height). For TIBL factors of 5.0 and 6.0, the TIBL heights at the turbine stack location are greater than the final effective plume centerline height, so no shoreline fumigation impacts would occur for these TIBL factors. Similarly, no shoreline fumigation impacts would occur for the much lower fire pump stack since TIBL heights at the facility are greater than the final effective plume centerline height for the fire pump for rural conditions of F stability and 2.5 m/s wind speeds at the fire pump stack release height.

The maximum unitized TIBL impact of 6.810 $\mu g/m^3$ (for turbine emissions of 1 g/second) was predicted to occur with a TIBL factor of 4.0 at a distance of 2,101 meters from the turbine stacks. At this distance, the maximum fire pump impact predicted by SCREEN3 under all meteorological conditions was 97.25 $\mu g/m^3$ for a 1 g/s emission rate. Like the inversion breakup fumigation conditions discussed above, these unitized impacts were used to calculate 1-hour shoreline fumigation impacts for the entire facility by multiplying the unitized impacts by the pollutant emission rates (in g/s) and adding the turbine and fire pump impacts together. These pollutant impacts are shown in the following table.

TABLE 3.1-26
Shoreline Fumigation Impact Summary

Pollutant/Avg. Time	Turbine Impacts ($\mu g/m^3$)	Fire Pump Impacts ($\mu g/m^3$)	Total Impacts ($\mu g/m^3$)
NOx / 1-hour	27.76	34.60	62.36
SO_2 / 1-hour	10.64	0.04	10.68
CO / 1-hour	33.80	2.67	36.47

SCREEN3 predicted a maximum offsite turbine unitized impact under all meteorological conditions of 4.111 µg/m³ (for turbine emissions of 1 g/s) at a distance of 179 meters. The maximum unitized fire pump SCREEN3 impact at this distance (assuming that the turbines and fire pump stacks are collocated) was 403.7 µg/m³. Similarly, SCREEN3 predicted a maximum offsite unitized fire pump impact under all meteorological conditions of 700.0 µg/m³ (for fire pump emissions of 1 g/s) at a distance of 74 meters. The maximum unitized turbine SCREEN3 impact at this distance was 3.502 µg/m³. Again, these unitized impacts were used to calculate maximum 1-hour pollutant impacts for the facility under all SCREEN3 meteorological conditions by multiplying the unitized impacts by the pollutant emission rates (in g/s) and adding the turbine and fire pump impacts together as shown in the following tables.

TABLE 3.1-27
SCREEN3 Impact Summary – Maximum Turbine Impacts for Normal Dispersion Conditions

Pollutant/Avg. Time	**SCREEN3 Maximum Impacts at Turbine Maximum**		
Pollutant/Avg. Time	**Turbine Impacts (µg/m³)**	**Fire Pump Impacts (µg/m³)**	**Total Impacts (µg/m³)**
NOx / 1-hour	16.76	143.64	160.40
SO_2 / 1-hour	6.42	0.16	6.58
CO / 1-hour	20.40	11.10	31.50

TABLE 3.1-28
SCREEN3 Impact Summary – Maximum Fire Pump Impacts for Normal Dispersion Conditions

Pollutant/Avg. Time	**Turbine Impacts (µg/m³)**	**Fire Pump Impacts (µg/m³)**	**Total Impacts (µg/m³)**
NOx / 1-hour	14.27	249.06	263.33
SO_2 / 1-hour	5.47	0.28	5.75
CO / 1-hour	17.38	19.25	36.63

The 1-hour inversion breakup fumigation impacts are less than the maximum overall SCREEN3 1-hour impacts for all pollutants, no further analysis of additional short-term averaging times (3-hour, 8-hour, or 24-hour) is required as described in Section 4.5.3 of *"Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised"* (EPA-454/R-92-019). The same is true of shoreline fumigation impacts for both NO_X and CO.

However, the 1-hour SO_2 shoreline fumigation impact for all facility sources is 10.68 µg/m³, which is greater than the maximum SCREEN3 impact of 6.58 µg/m³. Since shoreline fumigation can occur for some period of time (i.e., longer than the 90 minutes usually assumed to represent the limit for inversion breakup fumigation conditions), SO_2 impacts for longer averaging times (3-hours, 24-hour, and annual periods) were calculated by multiplying the total facility shoreline fumigation concentrations by the averaging time ratios described in Section 4.2 of *"Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised"* (EPA-454/R-92-019). This results in facility SO_2 fumigation

impacts as shown in Table 3.1-29 (compared to the maximum facility SO_2 impacts predicted by the ISCST3 modeling analyses).

TABLE 3.1-29
SO_2 Facility Impact Summary

Average Time	Shoreline Fumigation ($\mu g/m^3$)	ISCST3 Maxima ($\mu g/m^3$)
1-hour	10.68	4.92
3-hours	9.59	4.43
24-hours	4.26	1.10
Annual	0.24	0.02

These facility SO_2 shoreline fumigation impacts, while greater than the ISCST3 maxima, are still less than the Significant Impact Levels (SILs).

3.1.2.18 Impacts on Class I Areas

To assess the potential for air quality impacts at the nearest Class I areas, Point Reyes National Seashore (70 kilometers from the project site) and Pinnacles National Monument (145 kilometers from the project site), the CALPUFF long-range transport model was used. It should be noted that the RCEC project will offset the emissions increases of NO_x, POC, and PM10, such that any potential for air quality impacts at the Class I areas would me mitigated to a level of insignificance.

CALPUFF was run in a screening mode to assess the impacts to criteria pollutants, visibility and acid deposition on nearby wilderness areas. The screening mode of CALPUFF uses a 3-dimensional homogeneous meteorological field for simulating transport and dispersion of pollutants each hour. Worst-case time-averaged ambient impacts are assessed anywhere along a polar ring with a distance and elevation equivalent to the nearby Class I area or sensitive Class II area, as applicable. CALPUFF was used with the same meteorological data set that was approved in the May 2001 application for RCEC that was approved by the BAAQMD. Specifically, five years of hourly surface and upper air data from a single monitoring station are required to identify the worst-case impacts when applying CALPUFF in a screening model.

Surface observations from San Francisco International Airport and upper air data from Oakland for 1986-1990 were used in the analysis. The PCRAMMET meteorological preprocessor was used to process the data. Five years of SCRAM surface data was supplemented with precipitation, surface pressure, relative humidity, and precipitation type data from the NCDC SAMSON/HUSWO CD-ROMs data sets.

CALPUFF was run with the recommended defaults specified in the IWAQM Phase II summary report. User-defined options were specified as follows:

- Number of X grid cells = 2
- Number of Y grid cells = 2
- Grid spacing = 200 kilometers

- Number of vertical layers = 2
- Cell face heights = 0, 5000

Since the original application was made in May 2001, the application of CALPUFF has not changed. However, background extinction data from the Pinnacles and Point Reyes has changed for the revised analysis used the updated background data. The land use parameters of surface roughness length (Zo) and leaf index were calculated following FLM guidance.

The receptor grids are presented in Appendix 3.1B. This is consistent with EPA's recommended screening methodology to create 3 rings of receptors covering the range of distances to the class I area, irregardless of direction.

3.1.2.19 CALPOST Post-processing Options

Recognizing that the particulate matter consists of elemental and organic carbon, a weighted-average light extinction efficiency is used in the visibility analysis. The weighted-average extinction efficiency is calculated by first determining the proportional amount of elemental and organic carbon emissions, and then calculating the weighted-average based upon the emission rates and individual light extinction efficiencies of these species.

Following the FLAG guidance for natural-gas fired combustion turbines, (http://www2.nature.nps.gov/air/Permits/emissions_controltech.cfm), the following assumptions identified below were incorporated into the modeling.

The proportional amount of elemental and organic carbon emissions is calculated as follows:

- 25 percent of PM emissions are filterable and 75 percent of PM emissions are condensable.
- All filterable PM will be considered elemental carbon (EC).
- Condensable PM will be considered organic carbon.
- Sulfate emissions as supplied by the applicant are 0.59 lbs/hr for each turbine.

Although building downwash is unlikely to have an impact at the Class I areas (distances of greater than 125 kilometers), building downwash parameters were included for completeness. Building downwash parameters were also obtained from the Class II area source modeling files.

The weighted light extinction was then calculated and applied to the PM10 impacts, identified as PMC (particulate matter – coarse) in the CALPOST post-processor. The weighted-average light extinction applied to particulates was calculated as follows:

$$\{(Q_{EC} \times Bext_{EC}) + (Q_{OC} \times Bext_{OC})\} / (Q_{EC} + Q_{OC})$$

where:

Q_{EC} = elemental carbon emission rate
Q_{OC} = organic carbon emission rate
EF_{EC} = extinction efficiency of elemental carbon
EF_{OC} = extinction efficiency of organic carbon

PM10 is emitted at a maximum short-term rate of 9.0 lb/hr. EC was calculated as 25 percent of PM10, due to the filterable fraction:

EC = 0.25 * 9.0 lb/hr = 2.25 lb/hr

The remaining 75 percent of PM10 is considered condensable.

Condensable PM10 = 0.75 * 9.0 lb/hr = 6.75 lb/hr

0.59 lb/hr are SO_4 and based on the remaining portion is considered organic carbon (OC).

6.75 lb/hr – 0.59 lb/hr = 6.16 lb/hr = OC

The modeled amount of PM10 modeled with CALPUFF consists of the sum of EC and OC:

PM10 (modeled) = 2.25 lb/hr + 6.16 lb/hr = 8.41 lb/hr

A weighted light extinction efficiency was then applied to the model-predicted PM10 concentration as applied in CALPOST. The weighted extinction efficiency was based upon the following values EC = 10, OC = 4, and Soil = 1 (PM10 is counted as soil). Hence, the weighted extinction efficiency was modeled as:

[(2.25 lb/hr * 10) + (6.16 lb/hr * 4)] / 8.41 lb/hr = 5.61

CALPOST was used to compute light extinction, and calculate time-averaged deposition rates. The following options were selected for use in the post processing control file.

- Method 6: Compute Extinction from speciated PM measurements and user-specified RH factors.
- Monthly RH factors based upon seasonal values reported in FLAG Phase I guidance document
- Modeled species for visibility: sulfate, sulfuric acid nitrate, and PM10.

3.1.2.20 Nitrogen and Sulfur Deposition on Soils

Model-predicted deposition of nitrogen and sulfur from the proposed combustion turbine are compared with deposition analysis thresholds (DATs) as a method of determining if the impact from the proposed turbine will have an adverse effect upon resources located in nearby Class I areas that may be adversely affect by a change in air quality (i.e., air quality related values). The FLM's have established DATs, which are the additional amount of nitrogen or sulfur within a Class I area, below which estimated impacts from a proposed new or modified source are considered insignificant.

DATs are based upon natural background deposition, a variability factor, and a cumulative factor. Background values for both the Eastern and Western United States were determined from the range of deposition values that are both scientifically valid, as well as conservative. A background value of 0.25 kilogram per hectare per year (kg/ha/yr) was established for both nitrogen and sulfur in the Western United States. This value represents the low end of the regional range of values that are presented in estimates of regional natural background deposition.

Historical natural background values (i.e., before the influence of anthropogenic sources) are difficult to obtain. Hence, models are often used to estimate natural background values. The range of modeled historical deposition values often range + or – 50 percent or more between various studies for any given area. Hence, a 50 percent variability factor has been assigned to the natural background deposition values.

In developing the 1996 proposal for New Source Review Reform, the EPA determined that, as long as no individual source contribution exceeds 4 percent of a Class I increment, it is unlikely that the accumulation of source over time will exceed that increment. The FLMs have applied the 4 percent value used in the Class I increment significant impact levels to these new DATs.

Hence, the DATs for both nitrogen and sulfur (individually) in the Western United States are calculated as:

$$DAT = 0.25 \text{ kg/ha/yr} *(0.5) * (0.04) = 0.005 \text{ kg/ha/yr}$$

The DAT is deposition threshold, not necessarily an adverse impact threshold. The DAT is the additional amount of deposition that triggers a management concern, not necessarily the amount that constitutes an adverse impact to the environment.

Table 3.1-30 presents the results of the acid deposition analysis. The maximum model-predicted annual nitrogen and sulfur deposition rates (expressed in units of kilograms per hectare per year) are presented for each Class I and Class II area, as reported for each year modeled. In no cases did the maximum model-predicted impacts exceed the Federal Land Manager's Deposition Analysis Threshold of 0.005 kg/ha/yr for either nitrogen or sulfur. As such, a cumulative analysis is not warranted.

The maximum impacts are presented in Table 3.1-30, which demonstrate that all potential depositional impacts are less than significance.

TABLE 3.1-30
Summary of Acid Deposition Impacts

Class I Areas	Year	Nitrogen Deposition (kg/ha/yr)	Sulfur Deposition (kg/ha/yr)	UTM X (kilometer)	UTM Y (kilometer)	Elevation (meter)
Point Reyes	1986	1.09E-10	2.20E-11	630.009	4134.533	152.4
	1987	9.67E-11	1.91E-11	630.533	4135.467	152.4
	1988	1.09E-10	2.18E-11	628.903	4132.692	152.4
	1989	9.36E-11	1.87E-11	630.009	4135.533	152.4
	1990	9.53E-11	2.02E-11	634.163	4143.243	152.4
Pinnacles	1986	2.44E-11	6.53E-12	704.880	4094.258	457.2
	1987	2.33E-11	5.65E-12	699.613	4085.493	457.2
	1988	2.51E-11	6.53E-12	698.202	4083.361	457.2
	1989	2.26E-11	5.83E-12	698.202	4083.361	457.2
	1990	2.28E-11	6.15E-12	714.413	4115.177	457.2

3.1.2.21 Visibility Analysis

Visibility impacts, through the calculation of light extinction, are assessed using CALPUFF. CALPUFF is the IWAQM and FLAG recommended model for long-range transport. Since all Class I areas are more than 50 kilometers from the project site, a coherent plume analysis using VISCREEN was not performed for the Class I areas.

The methodology used to calculate the change in light extinction due to the proposed project followed the FLAG Phase I guidance (December 2000). Briefly, this method involves: calculating the reference level (also referred to as the natural background level), then calculating the single-source contribution (i.e., the contribution due to the proposed facility), and calculating the change in extinction. Reference levels were calculated by quantifying the hygroscopic component, non-hygroscopic component, and Rayleigh Scattering component. The hygroscopic component refers to the component of light extinction caused by sulfate and nitrates as a function of relative humidity. The non-hygroscopic component refers to those pollutants whose light extinction properties do not change as a function of relative humidity (e.g., organic carbon, soil, coarse particulate, and elemental carbon). Site-specific reference levels and *f*(RH) values used were obtained from the FLAG Phase I guidance. CALPUFF calculates the natural background level; that value was used in the comparative analysis.

The contribution to light extinction from the facility itself was then quantified and compared with the 5 percent de minimis level. If the contribution from the proposed project does not exceed 5 percent light extinction, then no further visibility analysis is necessary.

Table 3.1-31 presents the results of the visibility impact assessment.

TABLE 3.1-31
Maximum Modeled Impacts in Protected Areas

Class I Area	b_{NO3} (mm^{-1})	b_{SO4} (mm^{-1})	b_{fine} (mm^{-1})	24-hour Average Visibility Impact (mm^{-1})	Percent Change in Extinction
Point Reyes NS	0.560	0.136	0.461	1.157	7.02%
Pinnacles NM	0.304	0.081	0.251	0.635	3.91%

There were no exceedances of the five percent threshold at Pinnacles National Monument. There were 15 days in the entire five-year period where the five percent de minimus level was exceeded at Point Reyes. This is equivalent to 0.8 percent of the days in the five-year period, roughly the 99th percentile. The proposed BART threshold level for visibility has been defined as the 98th percentile delta-decview. This value is equal to two percent of the days in the modeled period, or 36 days for a five-year period. If we re-examine the visibility modeling with a reduced ARC of receptors as recommended by EPA (+/- 90 degrees offset from Class I receptors), the maximum percent change in extinction is lowered to 6.84 percent, and we have an occurrence rate of 13 days (0.7 percent) where the five percent de minimus level is reached. Again, this is much less than the proposed BART level of 98th percentile.

Thus, during operation of the proposed project, potential visibility impacts to Pinnacles National Monument will be less than the five percent level of acceptable change. For Point Reyes National Seashore, the five percent extinction significance threshold is exceeded, but for only 15 days or less. Since the project will provide emission reduction credits for NO_x, POC, and PM10, it is expected that any modeled impacts at Point Reyes National Seashore would be mitigated to a level of insignificance.

3.1.2.22 Impacts on Soils and Vegetation

The projected impacts from all proposed criteria pollutant emissions were modeled at both Class I areas. As listed in Table 3.1-32, all impacts are well below the Significant Impact Levels (SIL) for all criteria pollutants and averaging periods.

TABLE 3.1-32
Criteria Pollutant Class I SILs and Increments

Pollutant	Averaging Interval	Modeled Impact Pinnacle ($\mu g/m^3$)	Modeled Impact Point Reyes ($\mu g/m^3$)	Class I Significant Impact Level ($\mu g/m^3$)	Class I PSD Increment ($\mu g/m^3$)
NO_2	Annual	0.003	0.014	0.1	2.5
SO_2	3-Hour	0.07	0.014	1.0	25
	24-Hour	0.02	0.09	0.2	5
	Annual	0.001	0.014	0.1	2
PM10	24-Hour	0.05	0.09	0.3	10
	Annual	0.004	0.008	0.2	5

Impacts on soils and vegetation for Class II areas were determined to be "insignificant" for the following reasons:

- No soils were identified in the project area, which are recognized to have any known sensitivity to the types or amounts of air pollutants expected to be emitted by the proposed facility.
- No vegetation species were identified in the project area, which are recognized to have any known sensitivity to the types or amounts of air pollutants expected to be emitted by the proposed facility.
- The facility emissions are expected to be in compliance with all applicable air quality rules and regulations.
- The facility impacts result in no violations of existing air quality standards, nor will the emissions cause an exacerbation of an existing violation of any quality standard.

3.1.2.23 Impacts on Sensitive Animal Species

Impacts on animal species are determined to be "insignificant" for the following reasons:

- No animal species were identified in the project area, which are recognized to have any known sensitivity to the types or amounts of air pollutants expected to be emitted by the proposed facility.
- The facility emissions are expected to be in compliance with all applicable air quality rules and regulations.
- The facility impacts are predicted to result in no violations of existing air quality standards, nor will the emissions cause an exacerbation of an existing violation of any quality standard.

3.1.2.24 Summary of Health Risk Impacts

Section 3.8 (Public Health) and Appendix 8.1D presents a detailed discussion of public health and risk assessment issues pertaining to the proposed facility. Table 3.1-31 summarizes the health risk results as presented in Section 3.8.

3.1.2.25 CEQA Significance Assessment and Conformity Determination

Generally, project significance with respect to CEQA review is typically based on a set of "significant threshold levels" or "significant impact levels" established by the lead or responsible CEQA agency. In California, most of the local air districts have established such significance levels, in one or both of the following formats; (1) significance levels in terms of emissions expressed as a numerical emission value over a specified time period for a particular pollutant, or (2) significance levels in terms of impacts expressed as a concentration value over a specified time period. Examples of these values are as follows.

- The South Coast AQMD has established emissions based significance values for development projects via its' CEQA manual. Values have been established for both construction and operational phases of a project, and are expressed in terms of lbs per day for each specific pollutant.
- The South Coast AQMD has established concentration based significance values pursuant to its' NSR rule (Regulation 13). These values are expressed as an ambient impact value measured over a specified averaging time, i.e., similar to an air quality standard.

Presently, the BAAQMD has established the following CEQA significance thresholds:

- A local carbon monoxide concentration for addressing traffic impacts (not applicable to the proposed project).
- Project construction emissions and impacts are not subject to mass emissions significance criteria, but rather to the overall imposition of all feasible and reasonable control measures to reduce fugitive dust emissions. The AQMD's approach to construction impacts is to emphasize implementation of effective and comprehensive control measures rather than expending valuable time and resources on detailed emissions quantification.

- Project operations emission thresholds for ROG, NOx, and PM10. For each pollutant listed, two (2) separate threshold values apply, i.e., on a tons/yr and lbs/day basis.
- Odor significance thresholds based on facility type and distance to potential receptors (not applicable to the proposed facility).
- Accidental releases of acutely hazardous air emissions. Compliance is established through the RMP program which is administered by the local (county) administering agency. This program may or may not apply to the proposed facility.

Based on the above criteria, the proposed project would be considered "significant" for purposes of local CEQA review. Review pursuant to the CEC's certified equivalent CEQA program is considered to fulfill all the local CEQA requirements, including the BAAQMD provisions of its' CEQA guidance.

3.1.2.25.1 Conformity Determination

A conformity determination is not required for the proposed project due to the fact that the proposed project is presumed to be in conformance by virtue of the applicability and required review under the BAAQMD NSR, PSD, and general permitting rules contained within the SIP. Because the proposed project is required to have a permit from the BAAQMD, and will undergo review pursuant to the BAAQMD NSR and general permitting rules, conformance is established.

3.1.2.25.2 Cumulative Impacts Analysis

In order to adequately address the proposed project impacts in relationship to other projects in close proximity, a cumulative impacts analysis may be performed. Appendix 8.1H contains the protocol and assumptions that will be employed in performing the cumulative impacts analysis should such an analysis be required. This analysis will be submitted separately from the AFC due to the time period involved, at the air district, to gather and transmit the required data, i.e., source data, type, emissions, location data, physical release data, etc.

3.1.2.26 Facility Closure Impacts

Closure of the facility at the end of its useful lifetime will involve the complete removal, disassembly, and potential demolition of structures, processes, etc. These activities will be conducted and accomplished under the applicable rules and regulations in place at the time of such closure. Materials derived from the site may be sold for future use, or scrap value, etc. Disposal of all materials will be accomplished in compliance with applicable handling, transport, and disposal regulations in effect at the time of closure and removal.

3.1.3 Mitigation Measures

3.1.3.1 Emissions Mitigations

BAAQMD regulations 2-2-215, 302 and 303 requires RCEC to provide emission offsets (emissions reduction credits, or ERCs) when emissions exceed specified levels on a pollutant-specific basis. Section 2-2-302 requires POC and NO_x emission reduction credits to be provided at an offset ratio of 1:1 or 1.15:1 dependent upon emissions levels. Because both POC (VOC) and NO_x contribute to the Bay Area Basin ozone levels, Section 2-2-302.2 allows emission reduction credits of POC's (VOCs) to be used to offset increased emissions of NO_x,

at the required offset ratios as stated above. Section 2-2-303 requires emissions offsets for emissions increases at facilities that emit more than 100 tpy of SO_2 and PM10. As facility emissions of SO_2 and PM10 will be below 100 tpy, SO_2 and PM10 offsets are not required.

Sections 2-2-304 and 2-2-305 impose emissions offset requirements, or require project denial, if SO_2, NO_2, PM10, or CO air quality modeling results indicate emissions will interfere with the attainment or maintenance of the applicable ambient air quality standards or will exceed PSD increments. For many of the pollutants and averaging periods, District regulations do not require RCEC to conduct these analyses, since the modeled impacts of the proposed facility are not significant under District rules. However, modeling for these pollutants has been conducted to satisfy CEC requirements. The modeling analyses show that facility emissions will not interfere with the attainment or maintenance of the applicable air quality standards.

Emissions offset requirements are shown in Table 3.1-32. The project Applicant will provide all necessary documentation to show control or ownership of the required emissions offsets prior to issuance of the facility Permit to Operate by the BAAQMD per AQMD regulation 2-2-410. Offsets may be acquired from the District bank or from other sources such as shutdowns, or non-traditional sources of emissions reductions credits.

TABLE 3.1-32
Cumulative Emissions Increases and Required Offsets per Regulation 2-2-215, 2-2-302, 2-2-303

Pollutant	Cumulative Offset Threshold	Offset Ratio	Cumulative Increase Since April 5, 1991	RCEC Emission Rates	Cumulative Emissions Increase	Offsets Required
VOC	10/35 tpy	>10 but < 35 1:1 => 35 1.15:1	27.8	27.8	27.8	27.8
NOx	10/35 tpy	>10 but < 35 1:1 => 35 1.15:1	134.6	134.6	134.6	154.8
PM10	100 tpy	If major and increase is > 1 tpy, then 1:1	86.8	86.8	86.8	0
CO	100 tpy	> 100 tpy increase Modeling plus offsets to show attainment and maintenance of standard	584.2	584.2	584.2	0
SO_2	100 tpy	If major and increase is > 1 tpy, then 1:1	12.2	12.2	12.2	0

Emissions offset requirements for CO per regulation 2-2-305 are implied at a 1:1 ratio for sources with emissions above the stated major source thresholds which cannot show compliance, through modeling, with the CO ambient air quality standards.

A current listing of deposits in the BAAQMD offset bank is included in Appendix 3.1G. Should the project applicant decide to acquire offsets from the District bank, negotiations on

amounts and market prices will be undertaken with various certificate owners. Because of the highly competitive nature of the offset market, confidential treatment of negotiations with the various owners is requested. Such information will be supplied to the CEC and BAAQMD under separate cover.

TABLE 3.1-33
Offset Requirements for the RCEC per Regulation 2-2-302 and 2-2-303.

Pollutant	New Facility Offset Threshold	RCEC Emission Rates, tpy	Offsets Required	Offset Ratio	Amount of Offsets Required, tpy
VOC	10/35 tpy	27.8	Yes	1:1/1.15:1	27.8
NO_x	10/35 tpy	134.6	Yes	1:1/1.15:1	154.8
PM10	100 tpy	86.8	No	1:1	0
CO	100 tpy	584.2	No	1:1	0
SO_2	100 tpy	12.2	No	1:1	0

3.1.3.1.1 BACT Analysis for Process Equipment Systems

Best Available Control Technology as defined in the BAAQMD regulations means:

"For any new or modified source, except cargo carriers, the more stringent of:

- The most effective emissions control device or technique which has been successfully utilized for the type of equipment comprising such a source; or,
- The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or
- Any emission control device or technique determined to be technologically feasible and cost-effective by the APCO; or,
- The most effective emission control limitation for the type of equipment comprising such a source which the EPA states, prior to or during the public comment period, is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitations are not achievable. Under no circumstances shall the emission control required be less stringent than the emission control required by any applicable provision of federal, state, or District laws, rules or regulations.

The APCO shall publish and periodically update a BACT/TBACT Workbook specifying the requirements for commonly permitted sources. BACT will be determined for a source by using the workbook as a guidance document, or on a case-by-case basis, using the most stringent definition of this Section 2-2-206."

3.1.3.2 BACT for NOx

In the original application document, turbine/HRSG BACT for NOx was proposed at a level of 2.5 ppmvd (at 15% O_2). BACT for NOx is now being proposed at a level of 2.0 ppmv (15% O_2), 3 hour averaging time. This level is based on recent permitting and testing of

similar designed turbines with duct fired HRSGs. This level of BACT will be achieved by internal design incorporating low NOx combustors, and the use of selective catalytic reduction using ammonia as the catalyst reactant.

BACT for NOx for the emergency fire pump IC engine is based upon the use of California certified low sulfur, low aromatic diesel fuel, and compliance with all state and federal Tier emissions standards for compression ignition engines in effect at the time of engine purchase.

3.1.3.3 BACT for CO

In the original application document, turbine/HRSG BACT for CO was proposed at a level of 6.0 ppmvd (at 15% O_2). BACT for CO is now being proposed at a level of 4.0 ppmv (15% O_2), 3 hour averaging time. This level is based on recent permitting and testing of similar designed turbines with duct fired HRSGs. This level of BACT will be achieved by internal design incorporating low NOx combustors, with the use of an oxidation catalyst and good combustion practices.

BACT for CO for the emergency fire pump IC engine is based upon the use of California certified low sulfur, low aromatic diesel fuel, and compliance with all state and federal Tier emissions standards for compression ignition engines in effect at the time of engine purchase.

3.1.3.4 BACT for VOC

BACT for VOC for the turbines/HRSGs is being proposed at a level of 1.0 ppmv (15% O_2), 3-hour averaging time. This level is based on recent permitting and testing of similar designed turbines with duct fired HRSGs. This level of BACT will be achieved by internal design incorporating low NOx combustors, use of an oxidation catalyst, and good combustion practices.

BACT for VOC for the emergency fire pump IC engine is based upon the use of California certified low sulfur, low aromatic diesel fuel, and compliance with all state and federal Tier emissions standards for compression ignition engines in effect at the time of engine purchase.

3.1.3.5 BACT for SO_2

Turbine/HRSG BACT for SOx remains unchanged, and is based upon the use of low sulfur fuels, i.e., PUC grade natural gas, with sulfur contents less than or equal to 4 ppm (0.25 grains S/100 scf) or 0.0007 lbs SO_2/MMBtu.

BACT for SOx for the emergency fire pump IC engine is based upon the use of California certified low sulfur, low aromatic diesel fuel, and compliance with all state and federal Tier emissions standards for compression ignition engines in effect at the time of engine purchase.

3.1.3.6 BACT for PM10 and PM2.5

Turbine/HRSG BACT for PM10/PM2.5 is the use of PUC grade natural gas with sulfur contents less than or equal to 4 ppm. Based on recent permitting and source test data, the hourly PM10/PM2.5 emission rate for the chosen turbines/HRSG dust burners is being revised from a value of 12.0 lbs/hr to a value of 9.0 lbs/hr.

BACT for PM10/PM2.5 for the proposed cooling tower remains unchanged, and is based upon the use of high efficiency drift eliminators rated at 0.0005 percent.

BACT for PM10/PM2.5 for the emergency fire pump IC engine is based upon the use of California certified low sulfur, low aromatic diesel fuel, and compliance with all state and federal Tier emissions standards for compression ignition engines in effect at the time of engine purchase.

Since all of the above noted or revised values represent current BACT, i.e., from both an emissions level and technology standpoint, for the size, type, and class of equipment and processes, data on cost effectiveness is not required for the BACT analysis.

3.1.4 Consistency with LORS

3.1.4.1 LORS

Table 3.1-34 presents data on the applicable laws, ordinances, and regulations (LORs) which affect the proposed facility. LORs which were identified as clearly "not applicable" to the proposed facility were not included in this listing. The table delineates the LORs citation, agency responsible for compliance or oversight, basic LORs requirement, and the proposed facility's compliance strategy. The required discussion of conformance is contained in Table 3.1-35.

TABLE 3.1-34
Summary of Federal, State, and Local LORs

LORs Citation	Agency	LORs Requirement	Compliance Strategy
Federal			
CAAA of 1990, 40 CFR 50	EPA Region IX, CARB, BAAQMD	National Ambient Air Quality Standards	RCEC operations will not cause violations of state or federal AAQS.
40 CFR 52.21, AQMD Regulation 2 Rule 2	EPA Region IX, CARB, BAAQMD	Prevention of Significant Deterioration Program	Impact analysis shows compliance with NAAQS, facility is subject to PSD
40 CFR 72-75, AQMD Regulation 2 Rule 7	BAAQMD	CAAA Acid Rain Program	RCEC will submit all required applications for inclusion to the Acid Rain program and allowance system, CEMS will be installed as required.
40 CFR 60 AQMD Regulation 10	BAAQMD	New Source Performance Standards	RCEC will determine subpart applicability and comply with all emissions, monitoring, and reporting requirements
40 CFR 70, AQMD Regulation 2 Rule 6	BAAQMD	CAAA Title V Operating Permit Program	Title V application will be submitted within 12 months of commencement of operation

TABLE 3.1-34
Summary of Federal, State, and Local LORs

LORs Citation	Agency	LORs Requirement	Compliance Strategy
40 CFR 68	Alameda County DEH	RMP Program	RCEC will evaluate substances and amounts stored, determine applicability, and comply with all program level requirements
40 CFR 63	EPA Region IX, BAAQMD	MACT Provisions-NESHAPs	RCEC will determine subpart applicability and comply with all emissions, monitoring, and reporting requirements
40 CFR 64	EPA Region IX, BAAQMD	CAM Rule	RCEC will determine applicability and comply with all monitoring and reporting requirements
State			
CHSC 44300 et seq.	CARB, BAAQMD	Air Toxics Hot Spots Program	RCEC will determine applicability, and prepare inventory plans and reports as required
CHSC 41700	CARB, BAAQMD	Public Nuisance Provisions	CEC conditions of certification and AQMD ATC will ensure that no public nuisance results from operation of facility
CCR Title 14, 15002	CEC	Siting Provisions	AFC document satisfies all CEC requirements
Local			
Regulation 1 Section 301	BAAQMD	Prohibits public nuisances	CEC conditions of certification and AQMD ATC will ensure that no public nuisance results from operation of facility
Regulation 2 Rule 3	BAAQMD	ATC and PTO required	An ATC application based upon the contents of the AFC will be submitted for District processing within 10 days of the AFC submittal to CEC
Regulation 2 Rule 2	BAAQMD	NSR Provisions	Section 8.1 and 8.9 of the AFC indicate compliance with all NSR rule provisions.
Regulation2 Rule 5	BAAQMD	Air Toxics NSR	A refined HRA will be performed using the HARP model. See Section 8.9.

TABLE 3.1-34
Summary of Federal, State, and Local LORs

LORs Citation	Agency	LORs Requirement	Compliance Strategy
Regulation 6	BAAQMD	Visible emissions and particulate matter limits	Use of natural gas, good combustion practices, and properly maintained equipment will ensure compliance
Regulation 7	BAAQMD	Odorous substance discharges	Design and operation of the ammonia based SCR system will ensure that odors are not generated
Regulation 8 Rule 3	BAAQMD	Architectural coating VOC limits	Facility will use compliant coatings or establish applicable exemption prior to use
Regulation 8 Rule 4	BAAQMD	VOC emissions limits	Cleaning solvents used at the proposed facility per Rule 4 will result in emissions well below the 5 tpy limit
Regulation 8 Rule 16	BAAQMD	Cold solvent cleaner requirements	Facility will evaluate any use of cold solvent devices per Reg 8 Rule 16 and comply accordingly
Regulation 9 Rule 1	BAAQMD	SO_2 ground level concentration limits	Use of natural gas will ensure compliance, modeling analysis also shows predicted compliance
Regulation 9 Rule 3	BAAQMD	NOx limits from heat transfer equipment	Application of BACT for NOx will result in NOx emissions well below the rule limit of 125 ppm
Regulation 9 Rule 8	BAAQMD	IC engine NOx and CO limits	Application of BACT and use of natural gas will ensure compliance with NOx and CO limits
Regulation 9 Rule 9	BAAQMD	Combustion Turbine NOx	Application of BACT and use of natural gas will ensure compliance with NOx limits

TABLE 3.1-35
Compliance Analysis for Applicable LORs

LORs Citation	Compliance Analysis
CAAA 1990, 40 CFR 50	RCEC will comply with all permit conditions limiting emissions and operations. Modeling indicates that the proposed facility will not cause violations of any state or federal air quality standard.
40 CFR 52.21 Regulation 2 Rule 2	The project will undergo review per the District NSR rule, and will comply with the BACT, modeling, offset, reporting, and monitoring provisions as outlined in the District ATC and PTO. The facility is subject to PSD review.
40 CFR 72-75 Regulation 2 Rule 7	The facility is subject to the acid rain program and will comply with all the provisions of District Regulation 2 Rule 7 (Title IV Acid Rain Program). The facility will submit the required program applications to EPA Region IX for inclusion into the SO_2 allowance and tracking system. CEMS will be installed as required, and monitoring and reporting will be accomplished as required.
40 CFR 60 Regulation 10	Subpart KKK (Combustion Turbines) will apply to the turbines and duct burners.
40 CFR 70 Regulation 2 Rule 6	Regulation 2, Rule 6, Major Facility Review (Title V permit program), applies to facilities that emit greater than 100 tons per year on a pollutant-specific basis. RCEC will be an affected facility under the Title V rules and will be required to file an application for a Title V operating permit within 12 months of facility startup.
40 CFR 68	The facility will work with the Alameda County DEH to ascertain if any substances stored or used on site trigger the requirements for RMP development and submission. If an RMP is required, the documentation will be prepared prior to any affected substances being brought on site.
40 CFR 63	The facility is not expected to be a major source of HAPs. As such, MACT or NESHAPs regulations are not expected to apply.
40 CFR 64	RCEC will determine the applicability of the CAM rules provisions and comply accordingly.
CHSC 44300	The facility will develop the required AB2588 air toxics inventory plan and report as directed by the BAAQMD.
Regulation 1 Section 301	Regulation 1-301 addresses Public Nuisance. The RCEC will emit insignificant quantities of odorous or visible substances; therefore, the RCEC will comply with this regulation.
Regulation 2 Rule 3	An application for the ATC/PTO from the air district will be submitted separately from the AFC, but will be based on the AFC materials in Sections 2, 3.1, 3.8, and applicable appendices.
Regulation 2 Rule 2	Rule 2-2-414.1 requires that the modeling be conducted with appropriate meteorological and topographic data necessary to estimate impacts. The RCEC modeling analyses used District-approved U.S. Geological Service topographic data for the surrounding area and District-approved weather data gathered from the Union City meteorological monitoring station. As discussed above, the meteorological data meet the requirements of EPA guidance. Rule 2-2-304 and 2-2-412.2 require a demonstration that emission increases subject to the PSD program not interfere with the attainment or maintenance of any State or national ambient air quality standards for each applicable pollutant, unless adequate emissions offsets are provided. As shown herein, the RCEC will not exceed any BAAQMD PSD significance levels. In addition, offsets will be provided for increases in NO_x emissions. Therefore, project impacts on state and federal ambient air quality standards are not considered significant. Additionally, the modeling analysis results do not show an exceedance of State or national

TABLE 3.1-35
Compliance Analysis for Applicable LORs

LORs Citation	Compliance Analysis
	ambient air quality standards, with the exception of the state 24-hour average PM10 standard, which is already being exceeded. For an application that triggers PSD modeling requirements, Rules 2-2-211 and 2-2-413.3 require that ambient monitoring data be gathered for one year preceding the submittal of a complete application, or a District-approved representative time period. However, if the air quality impacts of the RCEC do not exceed the specified *de minimis* levels on a pollutant-specific basis, the RCEC is exempted from the preconstruction monitoring requirement. The air quality impacts of the RCEC's NOx, CO, SO_2 and PM10 emissions were below their respective *de minimis* levels, and therefore the exemption applies to the proposed project. The District-operated ambient monitoring stations in Fremont, San Leandro, Hayward, and Richmond are representative of existing air quality in the vicinity of the project, and were used to determine existing ambient concentrations. Rule 2-2-308 requires applicants to demonstrate that emissions from a project located within 10 kilometers (6.2 miles) of a Class I area will not cause or contribute to the exceedance of any national ambient air quality standard or any applicable Class I PSD increment. Because the nearest Class I areas, Point Reyes National Seashore and Pinnacles National Park, are over 80 kilometers from the RCEC, this section is not applicable to the proposed facility. Notwithstanding the above, the RCEC has provided modeling impact data for the Class I areas in Appendix 3.1B. Rule 2-2-417 requires an applicant for a permit subject to a PSD air quality analysis to provide additional analysis of the impact of the facility on visibility, soils and vegetation. The visibility analysis and the soils and vegetation analyses are provided in Section 3.1. Rule 2-2-306 is also not applicable to the RCEC. This section requires modeling analyses for specific noncriteria pollutants (lead, asbestos, beryllium, mercury, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur and reduced sulfur compounds) if they are emitted in significant quantities and if the facility emits more than 100 tons per year of any criteria pollutant. As the RCEC will not emit significant quantities of the specific noncriteria pollutants, a noncriteria pollutant modeling analysis under this section is not required. However, a screening health risk assessment has been conducted for potential emissions of toxic air contaminants. The analysis methodology and results are discussed in Section 3.8. Rule 2-2-418 requires the use of GEP stack height. Conformance with the GEP stack height requirement was demonstrated in the modeling analysis conducted for the RCEC.
Regulation2 Rule 5	The facility will prepare a refined multiple-pathway, multiple pollutant health risk assessment using the HARP (HarpExpress) model (CARB/OEHHA). See Section 3.8.
Regulation 6	Regulation 6 pertains to particulate matter and visible emissions. Any visible emissions from the project will not be darker than No. 1 when compared to a Ringlemann Chart for any period(s) aggregating 3 minutes in any hour. Because the RCEC will burn clean fuels, the opacity standard of not greater than 20 percent for a period or periods aggregating 3 minutes in any hour and the particulate emission concentrations limit of 0.15 grains per standard cubic feet of exhaust gas volume will not be exceeded.
Regulation 7	Regulation 7, Odorous Substances, may be applicable to the RCEC. Gas fired turbine/HRSG operations do not result in odor complaints. But the ammonia based SCR system may generate some odors. System design and operation

TABLE 3.1-35
Compliance Analysis for Applicable LORs

LORs Citation	Compliance Analysis
	should be sufficient to minimize odors.
Regulation 8 Rule 3	Use of architectural coatings as defined within the rule will be limited to compliant coatings. The facility will establish the justification for the use of any exemptions prior to invoking such exemptions.
Regulation 8 Rule 4	Emissions of VOCs from the use of cleaning solvents will be well below the rule limit of 5 tons per year.
Regulation 8 Rule16	The facility will evaluate the need for any cold solvent cleaners and use, and will comply with the rules provisions accordingly.
Regulation 9 Rule1	Regulation 9, Rule 1, Sulfur Dioxide, specifies an emission standard of less than 300 ppm SO_2. Because of the insignificant quantities of sulfur in natural gas, this limit will be achieved. In addition, the ambient air quality modeling analysis shows that ground-level concentrations of SO_2 from the RCEC will not result in ground-level concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours.
Regulation 9 Rule 3	Regulation 9, Rule 3, Nitrogen Oxides From Heat Transfer Operations, imposes a NO_x limit of 125 ppm. The RCEC turbine/HRSGs will easily comply with this rule as a result of the application of BACT for NOx.
Regulation 9 Rule 8	Regulation 9 Rule 8 applies to IC engines and limits NOx and CO for such engines based upon the firing design (lean or rich burn). Application of BACT for NOx and CO will ensure compliance with the rule limits.
Regulation 9 Rule 9	Regulation 9 Rule 9 applies to stationary gas turbine NOx emissions. Use of natural gas, SCR, and dry low NOx combustors (BACT) will ensure compliance with rule limits. The facility will comply with all of the monitoring, recording, and recordkeeping requirements of the rule.

3.1.4.2 Jurisdictional Agencies, Contacts, and Permit Requirements

Table 3.1-36 presents updated data on the following: (1) air quality agencies which may or will exercise jurisdiction over air quality issues resulting from the proposed power plant, (2) the most appropriate agency contact for the proposed project, (3) contact address and phone information, and (4) the agency involvement in required permits or approvals.

TABLE 3.1-36
Agencies, Contacts, Jurisdictional Involvement, Required Permits

Agency	Contact	Jurisdictional Area	Permit Status
California Energy Commission	Assigned Project Manager Assigned CEC Member 1516 Ninth St. Sacramento, CA 95814	Primary reviewing and certification agency.	Will certify the proposed facility under the energy siting regulations and CEQA. Certification will contain a variety of conditions pertaining to emissions and operation.

TABLE 3.1-36
Agencies, Contacts, Jurisdictional Involvement, Required Permits

Agency	Contact	Jurisdictional Area	Permit Status
Bay Area Air Quality Management District	Brian Bateman Dir. Engineering Div. 939 Ellis St. San Francisco, CA 94109 415-771-4653	Prepares DoC for CEC, Issues AQMD Permit to Construct and Operate, Primary air regulatory and enforcement agency.	DoC will be prepared subsequent to AFC submittal. ATC application will be submitted to AQMD within 10 days of AFC submittal to CEC.
California Air Resources Board	Mike Tollstrup Chief, Project Assessment Br. 1001 I St., 6th Floor Sacramento, CA. 95814 916-322-6026	Oversight of AQMD stationary source permitting and enforcement program	CARB staff will provide comments on applicable AFC sections affecting air quality and public health. CARB staff will also have opportunity to comment on draft ATC.
Environmental Protection Agency, Region IX	Gerardo Rios Chief, Permits Section EPA Region IX 75 Hawthorne St. San Francisco, CA 94105 415-947-3974	Oversight of all AQMD programs, including permitting and enforcement programs	EPA Region IX staff will receive a copy of the DoC. EPA Region IX staff will have opportunity to comment on draft ATC.

3.1.5 References

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3.1.6 Conditions of Certification

This section presents revised versions of the original facility Conditions of Certification. The proposed revisions address changes due to site location, site arrangement, equipment changes, and operational and emissions changes. The amendment and the proposed revisions to the Conditions of Certification are based on the following changes:

- Revising the BACT limits

- Increasing the short-term emission limits, but maintaining the existing annual limits except for PM10. The PM10 emissions will increase slightly based upon a slightly higher TDS content in the cooling tower water
- The short-term sulfur content in the fuel has been increased to 1.0 grain/dscf
- Revising the startup/shutdown emission limits
- Revising the commissioning activities to reflect the recent MEC amendment
- Moving the project facilities approximately 1,200 feet north and west of the location described in the BAAQMD Permit Application (500 feet boundary to boundary)
- Adding a Zero Liquid Discharge facility, greatly reducing wastewater discharge
- Adding a Title 22 reclaimed water treatment facility
- Removing the Advanced Water Treatment facility
- Removing the Standby Generator and Auxiliary Boiler
- The architectural treatment has been removed from the project
- The cooling tower has been realigned from a north-south orientation to a northwest – southeast orientation

No other changes are proposed for the amendment. The project will include two turbines with HRSGs as well as a nine-cell cooling tower. Associated with the changes outlined above, the short-term emission rates for the turbine/HRSGs will also be revised to reflect recent Best Available Control Technology (BACT) determinations. The annual emissions limits are not proposed to change.

Table 3.1-37 delineates the revised BAAQMD identification numbers for the proposed equipment, stacks, processes, and control systems.

TABLE 3.1-37
Identification Numbers (BAAQMD Permitting Forms)

System	Identification Numbers
Power Train 1	Combustion Turbine, S-1 HRSG Duct Burners, S-2 SCR, A-1 CO Catalyst, A-3 Stack, P-1
Power Train 2	Combustion Turbine, S-3 HRSG Duct Burners, S-4 SCR, A-2 CO Catalyst, A-4 Stack, P-2

TABLE 3.1-37
Identification Numbers (BAAQMD Permitting Forms)

System	Identification Numbers
Cooling Tower	Tower (all cells), S-5 Drift Eliminators (all cells), A-6 Stack (all cells), P-3
Fire Pump	Engine, S-6 Stack, P-4

OPERATIONS CONDITIONS OF CERTIFICATION

All definitions presented in the Bay Area Air Quality Management District's Final Determination of Compliance for the Russell City Energy Center apply to the following Conditions of Certification.

Process Equipment

S-1 Combustion Turbine Generator (CTG) #1, Westinghouse 501F, 2,038.6 ~~1979.4~~ MMBtu/hr maximum rated capacity, natural gas fired only; Abated by A-1 Selective Catalytic Reduction (SCR) System A-3 Oxidation Catalyst.

S-2 Heat Recovery Steam Generator (HRSG) #1, with Duct Burner Supplemental Firing System, 200 MMBtu/hr maximum rated capacity; Abated by A-1 Selective Catalytic Reduction (SCR) System A-3 Oxidation Catalyst.

S-3 Combustion Turbine Generator (CTG) #2, Westinghouse 501F, 2,038.6 ~~1979.4~~ MMBtu/hr maximum rated capacity, natural gas fired only; Abated by A-2 Selective Catalytic Reduction (SCR) System A-4 Oxidation Catalyst.

S-4 Heat Recovery Steam Generator (HRSG) #2, with Duct Burner Supplemental Firing System, 200 MMBtu/hr maximum rated capacity; Abated by A-2 Selective Catalytic Reduction (SCR) System A-4 Oxidation Catalyst.

S-5 Cooling Tower, Nine ~~Ten~~ Cells, 141,352 ~~135,000~~ gallons per minute abated by A-6 high efficiency drift eliminators.

~~S-6 Emergency Generator, with Caterpillar G3512-90-LE natural gas-fired engine, 660 kW, 6.44 MMBtu/hr input~~

S-6 Diesel Engine, Clarke JW6H-UF40 ~~Cummins 6CTA8.3-F3~~, 300 ~~400~~ hp, 2.02 ~~2.11~~ MMBtu/hr input

AQ-4 Coincident with the as-designed operation of A-1 & A-2 SCR Systems and A-3 and A-4 oxidation Catalyst systems, pursuant to Conditions **AQ-3, AQ-10, AQ-11,** and **AQ-12,** the Gas Turbines (S-1 & S-3) and the HRSGs (S-2 & S-4) the owner/operator shall operate the facility in a manner such that comply with the NOx and CO emission limitations specified in Conditions **AQ-20(a)** through **AQ-20(d).**

Verification: The project owner/operator shall propose a schedule of compliance with this Condition of Certification in the Commissioning Plan required by Condition **AQ-5** and document continuing compliance with this Condition of Certification in each Monthly Emissions Report required by Condition **AQ-11.**

AQ-6 During the commissioning period, the owner/operator of the RCEC shall demonstrate compliance with Conditions **AQ-8** through **AQ-11** through the use of properly operated and maintained continuous emission monitors and data recorders for the following parameters:

a. Firing hours for each gas turbine (S-1 and S-3) and each HRSG (S-2 and S-4)

b. Fuel flow rates to each train

c. Stack gas nitrogen oxide emission concentrations at P-1 and P-2~~d~~. Stack gas carbon monoxide emission concentrations P-1 and P-2

d. Stack gas ~~carbon dioxide~~ oxygen concentrations P-1 and P-2

The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the Gas Turbines (S-1 & S-3) and HRSGs (S-2 & S-4). The owner/operator shall use District-approved methods to calculate heat input rates, NOx mass emission rates, carbon monoxide mass emission rates, and NOx and CO emission concentrations, summarized for each clock hour and each calendar day. All records shall be retained on site for at least 5 years from the date of entry and made available to District personnel upon request.

Verification: The project owner/operator shall propose a schedule of compliance with this Condition of Certification in the Commissioning Plan required by Condition **AQ-5** and document continuing compliance with this Condition of Certification in each Monthly Emissions Report required by Condition **AQ-11.**

AQ-8 The owner/operator shall not operate the facility such that the total number of firing hours of S-1 Gas Turbine and S-2 Heat Recovery Steam Generator without abatement of nitrogen oxide emissions by A-1 SCR System and abatement of CO emissions by A-3 oxidation Catalyst shall not exceed 300 hours during the commissioning period. Such operation of S-1 Gas Turbine and S-2 HRSG without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR or Oxidation Catalyst Systems fully operational. Upon completion of these activities, the owner/operator shall provide written notice to the District Permit Services and Enforcement Divisions and the unused balance of the 300 firing hours without abatement shall expire.

Verification: The project owner/operator shall submit documentation of compliance with this Condition of Certification in the Monthly Emissions Report required by Condition **AQ-11.**

AQ-9 The total number of firing hours of S-3 Gas Turbine and S-4 Heat Recovery Steam Generator without abatement of nitrogen oxide emissions by A- 2 SCR System and abatement of CO emissions by A-4 oxidation Catalyst shall not exceed 300 hours

during the commissioning period. Such operation of S-3 Gas Turbine and S-4 HRSG without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR or Oxidation Catalyst Systems fully operational. Upon completion of these activities, the owner/operator shall provide written notice to the District Permit Services and Enforcement Divisions and the unused balance of the 300 firing hours without abatement shall expire.

Verification: The project owner/operator shall submit documentation of compliance with this Condition of Certification in the Monthly Emissions Report required by Condition **AQ-11.**

AQ-11 Combined pollutant mass emissions from the Gas Turbines (S-1 & S-3) and Heat Recovery Steam Generators (S-2 & S-4) shall not exceed the following limits during the commissioning period. These emission limits shall include emissions resulting from the start-up and shutdown of the Gas Turbines (S-1 & S-3).

NOx (as NO_2)	7,880 pounds per calendar day	400 pounds per hour
CO	20,000 ~~17,716~~ pounds per calendar day	5,000 ~~584~~ pounds per hour
POC (as CH_4)	495 ~~230~~ pounds per calendar day	
PM_{10}	432 ~~456~~ pounds per calendar day	
SO_2	298~~77~~ pounds per calendar day	

Verification: During the Commissioning Period, as defined in the district FDOC, the project owner/operator shall submit to the CPM for approval, a Monthly Emissions Report that includes, but is not limited to, fuel use, turbine operation, post combustion control operation, ammonia use and CEM readings on an hourly and daily basis. The Monthly Emissions Report for each month must be submitted by the 15th (or the following Monday if the 15th is a Saturday or Sunday) of the following month.

AQ-12 Prior to the end of the Commissioning Period, the Owner/Operator shall conduct a District and Energy Commission approved source test using external continuous emission monitors to determine compliance with Condition AQ-20. The source test shall determine NOx, CO, and POC emissions during start-up and shutdown of the gas turbines. The POC emissions shall be analyzed for methane and ethane to account for the presence of unburned natural gas. The source test shall include a minimum of three start-up and three shutdown periods.

Verification: No later than twenty (20) working days before the execution of the source tests, the Owner/Operator shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this Condition. The District and the CPM will notify the Owner/Operator of any necessary modifications to the plan within twenty (20) working days of receipt of the plan; otherwise, the plan shall be deemed approved. The Owner/Operator shall incorporate the District and CPM comments into the test plan. The Owner/Operator shall notify the District and the CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CPM within thirty (60) ~~(30)~~ days of the source testing date.

AQ-14 The owner/operator shall not exceed 2,238.6 ~~2,179.4~~ MM Btu per hour, averaged over any rolling 3-hour period from the combined heat input rate to each

power train consisting of a Gas Turbine and its associated HRSG (S-1 & S- 2 and S-3 & S-4). (PSD[1] for NOx)

Verification: A detailed report of fuel use and equipment operation shall be included in the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-15 The owner/operator shall not exceed 53,726 ~~52,306~~ MM Btu per calendar day from the combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-1 & S-2 and S-3 & S-4). (PSD for PM_{10})

Verification: A detailed report of fuel use and equipment operation shall be included in the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-18 The owner/operator shall properly operate and properly maintain A-1 Selective Catalytic Reduction (SCR) System A-3 oxidation Catalyst system except as provided in Condition **AQ-8,** whenever fuel is combusted at S-1 Gas Turbine and/or S-2 HRSG and A-1 catalyst bed has reached minimum operating temperature. (BACT for NOx)

Verification: The project owner/operator shall make the project site available for inspection at any time by representatives of the District, ARB, USEPA and Energy Commission.

AQ-19 The owner/operator shall properly operate and properly maintain A-2 Selective Catalytic Reduction (SCR) System A-4 oxidation Catalyst except as provided in Condition AQ-9, whenever fuel is combusted at S-2 Gas Turbine and/or S-4 HRSG and A-2 catalyst bed has reached minimum operating temperature. (BACT for NOx)

Verification: The project owner/operator shall make the project site available for inspection at any time by representatives of the District, ARB, USEPA and Energy Commission.

AQ-20 The owner/operator of Gas Turbines (S-1 & S-3) and HRSGs (S-2 & S-4) shall comply with requirements (a) through (h) under all operating scenarios, including duct burner firing mode ~~and steam injection power augmentation mode~~. Requirements (a) through (h) do not apply during a gas turbine start-up or shutdown, or a combustor tuning period. (BACT, PSD, and Toxic Risk Management Policy)

(a) Nitrogen oxide mass emissions (calculated in accordance with District approved methods as NO_2) at P-1 (the combined exhaust point for the S-1 Gas Turbine and the S-2 HRSG after abatement by A-1 SCR System) shall not exceed 16.2 ~~19.5~~ pounds per hour ~~or 0.0090 lb/MM Btu (HHV) of natural gas fired.~~ Nitrogen oxide mass emissions (calculated in accordance with District approved methods as NO_2) at P-2 (the combined exhaust point for the S-~~2~~ 3Gas Turbine and the S-4 HRSG after abatement by A-2 SCR System) shall not exceed 16.2 ~~19.5~~ pounds per hour ~~or 0.0090 lb./MM Btu (HHV) of natural gas fired~~. (PSD for NOx)

[1] PSD is the prevention of significant deterioration.

(b) The nitrogen oxide emission concentration at emission points P-1 and P-2 each shall not exceed 2.0 ~~2.5~~ ppmv, on a dry basis, corrected to 15% O_2, averaged over any 1-hour period. (BACT for NOx)

(c) Carbon monoxide mass emissions at P-1 and P-2 each shall not exceed ~~0.0087 lb/MM Btu (HHV) of natural gas fired or~~ 19.7 ~~28.3~~ pounds per hour, averaged over any rolling 3-hour period. (PSD for CO)

(d) The carbon monoxide emission concentration at P-1 and P-2 each shall not exceed 4 ppmv, on a dry basis, corrected to 15% O_2, averaged over any rolling 3-hour period. (BACT for CO)

(e) Ammonia (NH3) emission concentrations at P-1 and P-2 each shall not exceed 5 ppmv, on a dry basis, corrected to 15% O_2, averaged over any rolling 3-hour period. The ammonia emission concentration shall be verified by a District-approved ammonia slip calculation method. ~~The continuous recording of the ammonia injection rate to A-1 and A-2 SCR Systems shall verify this ammonia emission concentration.~~ The factors to be used in the calculation method ~~correlation between the gas turbine and HRSG heat input rates, A-1 and A-2 SCR System ammonia injection rates, and corresponding ammonia emission concentration at emission points P-1 and P-2~~ shall be determined in accordance with permit Condition **AQ-31.** (TRMP for NH3)

(f) Precursor organic compound (POC) mass emissions (as CH4) at P-1 and P-2 each shall not exceed 2.82 ~~2.72~~ pounds per hour ~~or 0.00125 lb/MM Btu~~ of natural gas fired. (BACT)

(g) Sulfur dioxide (SO2) mass emissions at P-1 and P-2 each shall not exceed 6.20 ~~1.51~~ pounds per hour ~~or 0.0007 lb/MM Btu of natural gas fired~~. **Sulfur content of the natural gas shall not exceed 1** ~~0.25~~ **grains/100 scf.** (BACT)

(h) Particulate matter (PM_{10}) mass emissions at P-1 and P-2 each shall not exceed 9 pounds per hour. ~~or 0.00455 lb/MM Btu of natural gas fired when the HRSG duct burners are not in operation. Particulate matter (PM_{10}) mass emissions at P-1 and P-2 each shall not exceed 12 pounds per hour or 0.00551 lb/MM Btu of natural gas fired when the HRSG duct burners are in operation~~. (BACT)

Verification: The project owner/operator shall submit documentation of compliance with all emission limits specified in this Condition of Certification as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-21 The owner/operator shall operate the facility such that the regulated air pollutant mass emission rates from each of the Gas Turbines (S-1 and S-3) during a start-up, combustor tuning period, or a shutdown does not exceed the following limits: (PSD)

	Cold Start-Up or Combustor Tuning (lb/period ~~start-up~~)	**~~Hot~~ Start-Up (lb/start-up)**	**Shutdown (lb/shutdown)**
Oxides of Nitrogen (as NO_2)	480 ~~240~~	240 ~~80~~	80 ~~18~~
Carbon Monoxide (CO)	5,028 ~~2,514~~	2,514 ~~902~~	902 ~~43.8~~
Precursor Organic Compounds (as CH_4)	96 ~~48~~	48 ~~16~~	16 ~~5~~

Verification: The project owner/operator shall submit documentation of compliance with the emission limits in this Condition of Certification as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

~~**AQ-22** The owner/operator shall not operate in start-up mode for both Gas Turbines (S-1 and S-3) simultaneously. (PSD)~~

~~**Verification:** The project owner/operator shall submit documentation of all startup events as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**~~

~~**AQ-23** The owner/operator shall design and construct the heat recovery steam generators (S-2 & S-4) and associated ducting such that an oxidation catalyst can be readily installed and properly operated if deemed necessary by the APCO **or CPM** to ensure compliance with the CO **and/or POC** emission rate limitations of Conditions **AQ-20(c), AQ-20(d)** and **AQ-20(f).** (BACT)~~

~~**Verification:** Prior to the first firing of natural gas in either turbine the owner/operator shall provide as built drawings or other suitable proof of compliance with this Condition of Certification to the District and the CPM.~~

AQ-24 The owner/operator shall not exceed the total combined emissions from the Gas Turbines and HRSGs (S-1, S-2, S-3, and S-4), including emissions generated during Gas Turbine start-ups, combustor tuning activities, and shutdowns for the following limits during any calendar day:

(a)	1,586 ~~1,364~~ pounds of NOx (as NO_2) per day	(CEQA)
(b)	10,819 ~~7,882~~ pounds of CO per day	(PSD)
(c)	301 ~~230~~ pounds of POC (as CH_4) per day	(CEQA)
(d)	432 ~~456~~ pounds of PM_{10} per day	(PSD)
(e)	298 ~~8~~ pounds of SO_2 per day	(BACT)

Verification: The project owner/operator shall submit documentation of compliance with all emission limits specified in this Condition of Certification as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-25 The owner/operator shall not exceed the cumulative combined emissions from the Gas Turbines and HRSGs (S-1, S-2, S-3, and S-4), Cooling Tower (S-5), ~~Emergency Generator (S-6)~~ and Fire Pump Engine (S-7), including emissions generated during gas turbine start-ups, combustor tuning activities, and shutdowns for the following limits during any consecutive twelve-month period:

(a) 134.6 tons of NOx (as NO_2) per year (Offsets, PSD)
(b) 584.2 tons of CO per year (Cumulative Increase, PSD)
(c) 27.8 tons of POC (as CH_4) per year (Offsets)
(d) 86.8 ~~86.4~~ tons of PM_{10} per year (Cumulative Increase, PSD)
(e) 12.2 tons of SO_2 per year (Cumulative Increase)

Verification: The project owner/operator shall submit documentation of compliance with all emission limits specified in this Condition of Certification as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-28 The owner/operator shall demonstrate compliance with Conditions **AQ-14** through **AQ-17, AQ-20(a)** through **AQ-20(d), AQ-21, AQ-24(a), AQ-24(b), AQ-25(a),** and **AQ-25(b)** by using properly operated and maintained continuous monitors (during all hours of operation including equipment Start-up, Combustor Tuning, and Shutdown periods) for all of the following parameters:

(a) Firing Hours and Fuel Flow Rates for each of the following sources: S-1 & S-3 combined and S-2 & S-4 combined.

(b) Carbon Dioxide (CO_2) or Oxygen (O_2) concentrations, Nitrogen Oxides (NOx) concentrations, and Carbon Monoxide (CO) concentrations at each of the following exhaust points: P-1 and P-2.

(c) Ammonia injection rate at A-1 and A-2 SCR Systems

~~(d) Steam injection rate at S-1 & S-3 Gas Turbine Combustors~~

The owner/operator shall record all of the above parameters every fifteen (15) minutes (excluding normal calibration periods) and shall summarize all of the above parameters for each clock hour. For each calendar day, the owner/operator shall calculate and record the total firing hours, the average hourly fuel flow rates, and average hourly pollutant emission concentrations.

The owner/operator shall use the parameters measured above and District-approved calculation methods to calculate the following parameters:

(e) Heat Input Rate for each of the following sources: S-1 & S-3 combined and S-2 & S-4 combined.

(f) Corrected NOx concentrations, NOx mass emissions (as NO_2), corrected CO concentrations, and CO mass emissions at each of the following exhaust points: P-1 and P-2. Applicable to emission points P-1 and P-2, the owner/operator shall record the parameters specified in Conditions **AQ-28(e)** and **AQ-28(f)** at least once every

fifteen (15) minutes (excluding normal calibration periods). As specified below, the owner/operator shall calculate and record the following data:

g) Total Heat Input Rate for every clock hour and the average hourly Heat Input Rate for every rolling 3-hour period.

(h) On an hourly basis, the cumulative total Heat Input Rate for each calendar day for the following: each Gas Turbine and associated HRSG combined and all four sources (S-1, S-2, S-3, and S-4) combined.

(i) The average NOx mass emissions (as NO_2), CO mass emissions, and corrected NOx and CO emission concentrations for every clock hour and for every rolling 3-hour period.

(j) On an hourly basis, the cumulative total NOx mass emissions (as NO_2) and the cumulative total CO mass emissions, for each calendar day for the following: each Gas Turbine and associated HRSG combined, and all four sources (S-1, S-2, S-3, and S-4) combined.

(k) For each calendar day, the average hourly ~~Heat Input Rates~~, Corrected NOx emission concentrations, NOx mass emissions (as NO_2), corrected CO emission concentrations, and CO mass emissions for each Gas Turbine and associated HRSG combined.

(l) On a daily basis, the cumulative total NOx ~~Nox~~ mass emissions (as NO_2) and cumulative total CO mass emissions, for the previous consecutive twelve-month period for all four sources (S-1, S-2, S-3, and S-4) combined.

(1-520.1, 9-9-501, BACT, Offsets, NSPS, PSD, Cumulative Increase)

Verification: The project owner/operator shall submit documentation of each of the parameters specified in this Condition of Certification as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-29 To demonstrate compliance with Conditions **AQ-20(f), AQ-20(g), AQ-20(h), AQ-24(c)** through **AQ-24(e), AQ-25(c)** through **AQ-25(e),** and **AQ-26,** the owner/operator shall calculate and record on a daily basis, the Precursor Organic Compound (POC) mass emissions, Fine Particulate Matter (PM_{10}) mass emissions (including condensable particulate matter), Sulfur Dioxide (SO_2) mass emissions, and sulfuric acid mist (SAM) mass emissions from each power train. The owner/operator shall use the actual Heat Input Rates calculated pursuant to Condition **AQ-28,** actual Gas Turbine Start-up Times, actual Gas Turbine Shutdown Times, actual Gas Turbine Combustor Tuning Times, and Energy Commission and District-approved emission factors to calculate these emissions. The calculated emissions shall be presented as follows:

(a) For each calendar day, POC, PM_{10}, SO_2, and SAM emissions shall be summarized for: each power train (Gas Turbine and its respective HRSG combined) and all four sources (S-1, S-2, S-3, and S-4) combined and

(b) On a daily basis, the 365-day rolling average cumulative total POC, PM_{10}, SO_2, and SAM mass emissions, for all four sources (S-1, S-2, S-3, and S-4) combined.

Verification: The project owner/operator shall submit documentation of each of the parameters specified in this Condition of Certification as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-31 After start-up of the RCEC, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 to establish the factors to be used ~~determine the corrected ammonia (NH3) emission concentration~~ to determine compliance with Condition **AQ-20(e).** ~~The source test shall determine the correlation between the heat input rates of the gas turbine and associated HRSG, A-1 or A-2 SCR System ammonia injection rate, and the corresponding NH3 emission concentration at emission point P-1 or P-2.~~ The source test shall be conducted over the expected operating range of the turbine and HRSG (including, but not limited to minimum, 70%, 85%, and 100% load) to establish the correction factors that will be used to calculate ~~range of ammonia injection rates necessary to achieve NOx emission reductions while maintaining~~ ammonia slip levels. Continuing compliance with Condition AQ-20(e) shall be demonstrated through calculations of corrected ammonia concentrations based upon the District-approved calculation method ~~source test correlation and continuous records of ammonia injection rate~~. (TRMP)

Verification: Initial source testing shall be completed within ninety (90) ~~sixty (60)~~ days of start-up. No later than twenty (20) working days before the execution of the source tests, the Owner/Operator shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this Condition. The District and the CPM will notify the Owner/Operator of any necessary modifications to the plan within twenty (20) working days of receipt of the plan; otherwise, the plan shall be deemed approved. The Owner/Operator shall incorporate the District and CPM comments into the test plan. The Owner/Operator shall notify the District and the CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CPM within sixty (60) days of the source testing date.

AQ-32 After start-up of the RCEC and on an annual basis thereafter the owner/operator shall conduct a District-approved source test on exhaust points P-1 and P-2 while each Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum load ~~(including steam injection power augmentation mode)~~ to determine compliance with Conditions **AQ-20(a), (b), (c), (d), (f), (g),** and **(h)**, while each Gas Turbine and associated Heat Recovery Steam Generator are operating at minimum load to determine compliance with Conditions **AQ-20(c)** and **(d),** and to verify the accuracy of the continuous emission monitors required in Condition **AQ-27.** The owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and mass emissions, nitrogen oxide concentration and mass emissions (as NO_2), carbon monoxide concentration and mass emissions, sulfur dioxide concentration and mass emissions, methane, ethane, and particulate matter (PM_{10}) emissions including condensable particulate matter. (BACT, offsets)

Verification: Initial source testing shall be completed within ninety (90) ~~sixty (60)~~ days of start-up. No later than twenty (20) working days before the execution of the source tests, the Owner/Operator shall submit to the District and the CPM a detailed

source test plan designed to satisfy the requirements of this Condition. The District and the CPM will notify the Owner/Operator of any necessary modifications to the plan within twenty (20) working days of receipt of the plan; otherwise, the plan shall be deemed approved. The Owner/Operator shall incorporate the District and CPM comments into the test plan. The Owner/Operator shall notify the District and the CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CPM within sixty (60) days of the source testing date.

AQ-33 After start-up of the RCEC and on a ~~quarterly~~ annual basis thereafter, the owner/operator shall conduct a District approved source test on exhaust points P-1 and P-2 while each Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum load ~~(including steam injection power augmentation mode)~~ to demonstrate compliance with the SAM levels in Condition **AQ-26.** The owner/operator shall test for (as a minimum) SO_2, SO_3, SAM and ammonium sulfates. ~~After acquiring one year of source test data on these units, the owner/operator may petition the District to switch to annual source testing if test variability is low.~~ (Basis: PSD Avoidance, SAM Periodic Monitoring)

Verification: Initial source testing shall be completed within ninety (90) ~~sixty (60)~~ days of start-up. No later than twenty (20) working days before the execution of the source tests, the Owner/Operator shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this Condition. The District and the CPM will notify the Owner/Operator of any necessary modifications to the plan within twenty (20) working days of receipt of the plan; otherwise, the plan shall be deemed approved. The Owner/Operator shall incorporate the District and CPM comments into the test plan. The Owner/Operator shall notify the District and the CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CPM within sixty (60) days of the source testing date.

AQ-34 After start-up of the RCEC and on a~~n~~ biennial basis (once every two years) thereafter, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 while the Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum allowable operating rates to demonstrate compliance with Condition **AQ-27.** If three consecutive biennial source tests demonstrate that the annual emission rates calculated pursuant to Condition **AQ-30** for any of the compounds listed below are less than the BAAQMD Toxic Risk Management Policy (TRMP) trigger levels shown, then the owner/operator may discontinue future testing for that pollutant:

Acetaldehyde	≤	72 pounds/year
Acrolein	≤	3.9 pounds/year
Benzene	≤	26.8 pounds/year
Formaldehyde	<	132 pounds/year
Specified PAHs	≤	0.18 pounds/year

Verification: Initial source testing shall be completed within ninety (90) ~~sixty (60)~~ days of start-up. No later than twenty (20) working days before the execution of the source tests, the Owner/Operator shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this Condition. The District and the CPM will notify the Owner/Operator of any necessary modifications to the plan within

twenty (20) working days of receipt of the plan; otherwise, the plan shall be deemed approved. The Owner/Operator shall incorporate the District and CPM comments into the test plan. The Owner/Operator shall notify the District and the CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CPM within sixty (60) days of the source testing date.

AQ-38 The owner/operator of the RCEC shall notify the District and the CPM of any violations of these permit Conditions. Notification shall be submitted in a timely manner, in accordance with all applicable District Rules, Regulations, and the Manual of Procedures~~. Notwithstanding the notification and reporting requirements given in any District Rule, Regulation, or the Manual of Procedures, the owner/operator shall submit written notification (facsimile is acceptable) to the Enforcement Division within 96 hours of the violation of any permit Condition.~~ (Regulation 2-1-403)

Verification: The owner/operator shall include a compliance matrix in the Quarterly Air Quality Report required by the verification of Condition AQ-36. The Compliance Matrix shall summarizing the project's compliance status for each Condition during the reporting period.

AQ-47 The owner/operator shall install and maintain the high-efficiency mist eliminators with a maximum guaranteed drift rate of ~~at least~~ 0.0005 percent such that S-5 Cooling Tower minimizes the drift losses. The maximum total dissolved solids (TDS) measured at the base of the cooling towers or at the point of return to the wastewater facility shall not be higher than 8,000 ~~2,000~~ ppmw (mg/l). The owner/operator shall sample the water at least once per day. (PSD)

Verification: The project owner/operator shall submit documentation of compliance with this Condition of Certification, including a summary of all data collected in relation to this Condition, as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-48 The owner/operator shall perform a visual inspection of the cooling tower drift eliminators at least once per calendar year, and repair or replace any drift eliminator components that are broken or missing. Prior to the initial operation of the Russell City Energy Center, the owner/operator shall have the cooling tower vendor's field representative inspect the cooling tower drift eliminators and certify that the installation was performed in a satisfactory manner. Within ninety (90) ~~sixty (60)~~ days of the initial operation of the cooling tower, the owner/operator shall perform an initial performance source test to determine the PM_{10} emission rate from the cooling tower to verify compliance with the vendor-guaranteed drift rate specified in Condition **AQ-47.** The CPM may, in years five (5) and fifteen (15) of cooling tower operation, require the owner/operator to perform source tests to verify continued compliance with the vendor-guaranteed drift rate specified in Condition **AQ-47.** (PSD)

Verification: The project owner/operator shall submit documentation of compliance with this Condition of Certification, including color photographs, as part of the January Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

~~**AQ-49** The owner/operator shall fire the S-6 Emergency Generator exclusively on natural gas. (Toxics, Cumulative Increase).~~

~~**Verification:** The project owner/operator shall include documentation of natural gas fuel use of the S-6 Emergency Generator as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**~~

~~**AQ-50** The owner/operator shall operate the S-6 Emergency Generator for no more than 100 hours per year for the purpose of reliability testing or in anticipation of imminent emergency Conditions. Emergency Conditions are: (1) Failure of a regular power supply, or (2) involuntary curtailment of a power supply (where the utility that provides regular power has been instructed by the ISO to shed firm load, or where the utility has actually shed firm load). (Cumulative Increase)~~

~~**Verification:** The project owner/operator shall submit documentation of compliance with this Condition of Certification as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**~~

~~**AQ-51** The owner/operator equip the S-6 Emergency Generator with a non-resettable totalizing counter that records hours of operation. (BACT)~~

~~**Verification:** The project owner/operator shall make the project site available for inspection at any time by representatives of the District, ARB, USEPA and Energy Commission.~~

~~**AQ-52** The owner/operator shall maintain the following monthly records in a District-approved log for at least 5 years and shall be made available to the District upon request: (BACT)~~

~~a. Total number of hours of operation for S-6 Emergency Generator~~
~~b. Fuel usage at S-6 Emergency Generator~~

~~**Verification:** The project owner/operator shall submit documentation of S-6 Emergency Generator hours of operation and fuel use as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**~~

AQ-53 The owner/operator shall fire the S-~~7~~ 6 Fire Pump Engine exclusively on diesel fuel having a sulfur content no greater than 0.015 ~~.05~~ percent by weight. (Toxics, Cumulative Increase)

Verification: The project owner/operator shall submit documentation S-~~7~~ 6 Fire Pump Engine diesel fuel use and sulfur content certification as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-54 The owner/operator shall operate the S-~~7~~ 6 Fire Pump Engine for no more than 52 ~~30~~ hours per year for the purpose of reliability testing and non-emergency operation. (Toxics)

Verification: The project owner/operator shall submit documentation S-~~7~~ 6 Fire Pump Engine hours of operation as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-55 The owner/operator shall equip the S-~~7~~ 6 Fire Pump Engine with a nonresettable totalizing counter that records hours of operation. (BACT)

Verification: The project owner/operator shall make the project site available for inspection at any time by representatives of the District, ARB, USEPA and Energy Commission.

AQ-56 The owner/operator shall maintain the following monthly records in a District-approved log for at least five (5) years and shall make such records readily available for District inspection upon request: (BACT)

a. Total number of hours of operation for S-~~7~~ 6 Fire Pump Engine
b. Fuel usage at S-~~7~~ 6 Fire Pump Engine

Verification: The project owner/operator shall submit documentation of S-~~7~~ 6 Fire Pump Engine hours of operation and fuel use as part of the Quarterly Air Quality Report required by the verification of Condition **AQ-36.**

AQ-58 The project owner/operator shall fully implement the PM10 Mitigation Plan in cooperation with the Bay Area Air Quality Management District as outlined in the Amended PM10 Mitigation Plan prepared by the Applicant and docketed on [Insert date of plan when filed] ~~April 5th, 2001. All retrofits and replacements shall be completed within twenty four (24) months of commencement of first turbine roll.~~ As an alternative to this program, the applicant can surrender 43.4 tons per year of PM10 Emission Reduction Credits (ERCs) banked with the Bay Area Air Quality Management District and approved by the CPM. SO2 ERCS may be used to satisfy all or part of this requirement using a 3:1 ratio.

Verification: The project owner/operator shall submit a PM10 Mitigation Progress Report as a part of each Quarterly Air Quality Report required by the verification of Condition **AQ-36**. Once all required emissions efforts have been completed, the Applicant shall submit a Final PM10 Mitigation Report within sixty (60) days. ~~The report shall provide detailed documentation of the entire mitigation effort including, but not limited to, funds spent and the exact number of fireplaces and wood stoves retrofit/replaced.~~ If ERCs are to be used as an alternative, the owner/operator shall surrender all the ERCs at the start of construction of the project.

AQ- 59. To demonstrate compliance with condition AQ-21, the owner/operator shall record the start time, end time and duration of each steam turbine cold start-up and each gas turbine combustor tuning period. On an annual basis, the owner/operator shall submit a report to the District and the CEC CPM describing the total number of hours during which each turbine was operated in support of a steam turbine cold start-up or combustor tuning mode during the year. (Cumulative increase)

3.2 Biological Resources

The proposed relocation of project facilities will eliminate biological resources impacts that would have occurred under the project as previously configured. The previous location contained seasonal wetlands that would have been filled to construct the project and the new location avoids these. In addition, the previous location was adjacent to pickleweed (*Salicornia*) marsh that is habitat for the federally endangered salt marsh harvest mouse and clapper rail and had the potential to cause adverse impacts to these species and their habitat.

Biological resources issues were addressed in the 2001 AFC and agency consultation with CEC, U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG). However, the relocation of the project facilities and associated linears, and the movement of the construction parking area, involves the potential disturbance of areas not previously considered. The following provides a supplemental assessment of the potential effects on biological resources associated with these changes as proposed in this license Amendment petition. This analysis also provides an update of the environmental baseline in terms of sensitive species database records for the project area.

3.2.1 Environmental Baseline Information

The newly proposed project site and construction parking areas are located on parcels that are approximately 1,300 feet northwest (300 feet boundary to boundary) from the proposed power plant site as described in the 2001 AFC, and are within the analysis area as described in the 2001 AFC (AFC Figure 8.2-3). The following subsections describe the biological conditions of the new areas proposed for project changes, including types of vegetation and habitat currently present and special-status species known to occur in the general region.

3.2.1.1 Habitat and Vegetation Communities

The habitat potentially affected in the new project location area can be characterized as mixed-used industrial, and includes a metal shop, a pallet storage area, and automobile salvage yard. With the exception of scattered ruderal areas, most of the properties are devoid of vegetation. The ruderal areas are highly disturbed and characterized with non-native grasses and forbs. The new project location area does not include seasonal wetlands or other potential federal-listed vernal pool branchiopod habitat.

The habitat that would be temporarily affected by a new construction parking and laydown area can also be characterized as mixed-used industrial, and includes a former metal fabricating business (Runnels Industries) and a vacant lot (eastern portion of City of Hayward parcel). The Runnels property is mostly devoid of vegetation and is highly disturbed with a scattering of some ruderal areas. The ruderal areas are characterized with non-native grasses and forbs and was previously surveyed for the AFC. The City of Hayward parcel is characterized by ruderal vegetation with scattered coyote brush (*Baccharis pilularis*) shrubs. There are some former soil stockpile areas, and a few open gravel areas located at the site. The additional construction parking and laydown areas do not include seasonal wetlands or other potential federal-listed vernal pool branchiopod habitat.

3.2.1.2 Special-status Species

The AFC includes a list of special-status plant and wildlife species compiled for the project area based upon the following references: (1) the CDFG California Natural Diversity Data Base (CNDDB), (2) a USFWS species list for the area, (3) informal consultations with USFWS agency personnel, and (4) project-specific field surveys. Both the USFWS list and CNDDB were updated for this Amendment.

The 2001 AFC included the results of a CNDDB search of the San Leandro, Hayward, Newark, and Redwood Point 7.5-minute USGS topographical quadrangles. The results for the October 2006 CNDDB search are included in Figure 3.2-1. The 2006 CNDDB search results do not warrant the assessment of any special-status species not already included in the 2001 AFC or suggest the need for additional impact analysis of species included in the 2001 AFC.

Supplementary reconnaissance-level field surveys were performed by CH2M HILL biologist Russell Huddleston on September 14, 2006 to characterize the biological resources for the additional project features addressed in this Amendment. A resume indicating Mr. Huddleston's qualifications are provided in Appendix 3.2.

3.2.1.2.1 Special-status Plants

The analysis conducted for the 2001 AFC indicated that, at that time, 14 special-status plant species had the potential to occur in the project area. A new CNDDB search conducted for this Amendment resulted in two additions to this list as seen in Table 3.2-1. In addition, 8 of the species on the 2001 list are not present on the 2006 list.

TABLE 3.2-1
Special-Special-Status Plants Potentially Occurring Within the Project Area

Scientific Name	Common Name	Federal/State Status	Habitat Description	Potential for Species to Occur
Chorizanthe robusta var. robusta	Robust spineflower	FE/None/1B	Cismontane woodland, coastal dunes, coastal scrub.	No suitable habitat in the project area
Sanicula maritime	Adobe sanicle	None/Rare/1B	Meadows and seeps, valley and foothill grassland, chaparral, coastal prairie.	No suitable habitat in the project area

FE = Federally endangered

Based on the survey performed in September 2006, it was determined that suitable habitat for both of these plants is not available on the project site, and no additional consideration for project impacts is needed. No special-status plant species were observed in the project survey areas during protocol-level surveys conducted in support of the 2001 AFC and no evidence of these plant species was discovered during field reconnaissance for this Amendment, either within the power plant location or in the newly identified construction parking and laydown area.

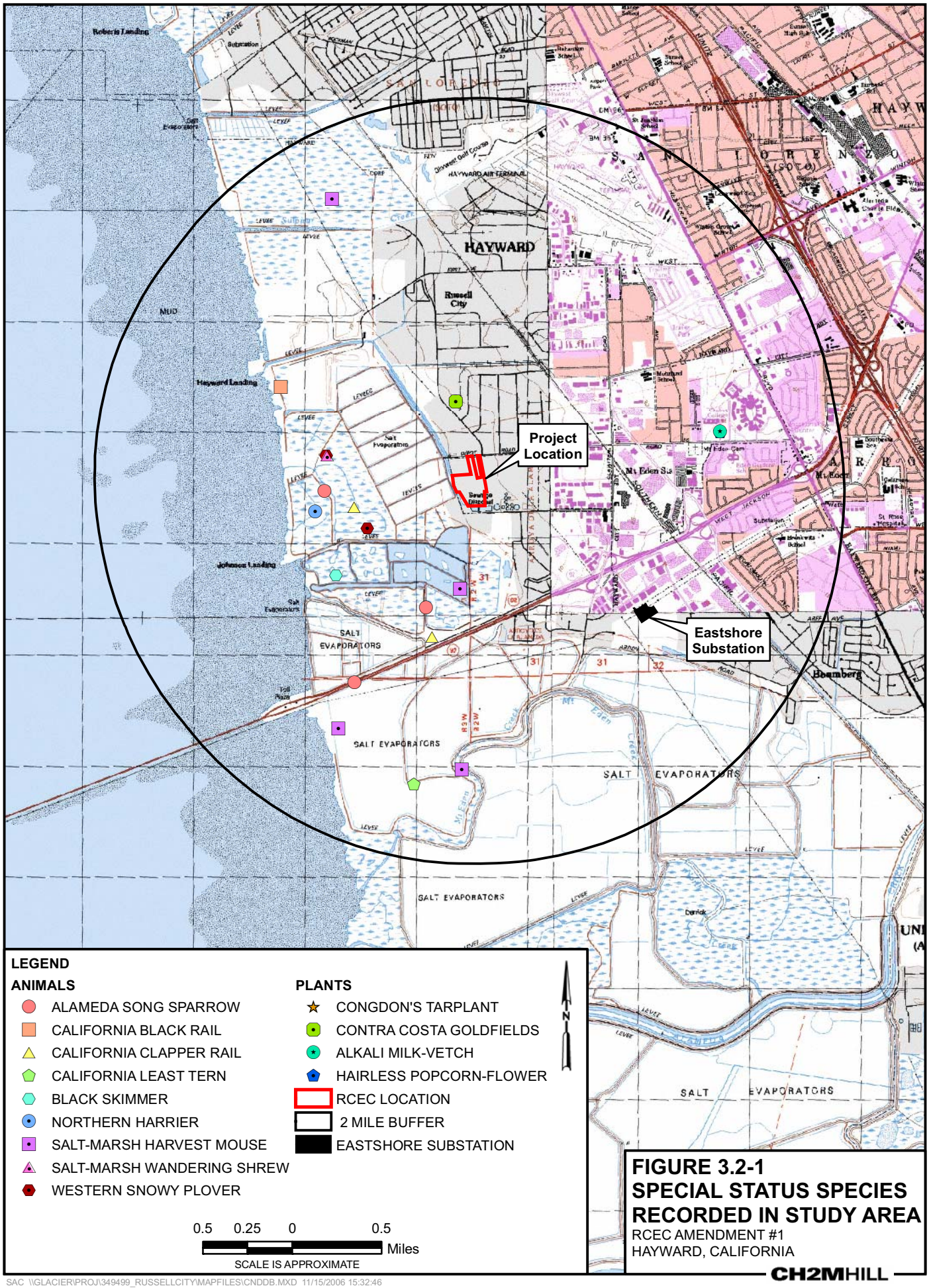

FIGURE 3.2-1
SPECIAL STATUS SPECIES RECORDED IN STUDY AREA
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

CH2MHILL

SAC \\GLACIER\PROJ\349499_RUSSELLCITY\MAPFILES\CNDDB.MXD 11/15/2006 15:32:46

TABLE 3.2-2
Special-Special-Status Wildlife Potentially Occurring Within the Project Area

Scientific Name	Common Name	Federal/State Status	Habitat Description	Potential for Species to Occur
Fish				
Eucyclogobius newberryi	Tidewater Goby	FE/None	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego Co. to the mouth of the Smith River. Found in Shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	No suitable habitat in the project area
Invertebrates				
Lepidurus packardi	Vernal Pool Tadpole Shrimp	FE/None	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water.	No suitable habitat in the project area
Mammals				
Scapanus latimanus parvus	Alameda Island mole	None/CSC	Only known from Alameda Island. Found in a variety of habitats, especially annual and perennial grasslands.	No suitable habitat in the project area

FE = Federally endangered
CSC = California Species of Concern

3.2.1.2.2 Special-status Wildlife

The analysis conducted for the 2001 AFC indicated that, at that time, 50 special-status wildlife species had the potential to occur in the general project area. A new CNDDB search conducted for this Amendment resulted in three additions to this list as seen in Table 3.2-2. In addition, 25 of the species on the 2001 list are not present on the 2006 list.

Based on the survey performed in September 2006, it was determined that suitable habitat for these special-status wildlife was not available, and no additional consideration for project impacts was needed. No special-status wildlife species were observed in the project survey areas during protocol-level surveys conducted in support of the 2001 AFC and no evidence of these wildlife species was discovered during field reconnaissance for this Amendment, either on the power plant location or in the newly identified construction parking and laydown area.

3.2.1.3 Biological Surveys

The biological resources evaluation is primarily based on the biological field surveys, agency consultation, and resulting analysis performed in support of the 2001 AFC. Supplementary field surveys were performed for this Amendment as described above, to characterize the biological resources for the additional construction laydown area addressed in this Amendment.

As with the initial field surveys, the 2006 reconnaissance-level biological surveys focused on characterization and potential impacts associated with vegetation communities, wetlands,

wildlife, and wildlife habitats in the vicinity of the new temporary and permanent impact areas. The field surveys were aided by aerial photographs, which helped identify land uses on the site and surrounding areas. The presence or potential presence of sensitive biological resources was determined from the former biological studies, the 2006 field surveys, and natural resource agency databases. A list of plant species observed during the 2006 biological surveys is included in Table 3.2-3. A list of wildlife species observed during the 2006 biological surveys is included in Table 3.2-4.

TABLE 3.2-3
Plant Species Observed During the Biological Reconnaissance Visits of the RCEC Project Area

Common Name	Scientific Name	Sign
Wild Oat	*Avena fatua*	Observed
Italian ryegrass	*Lolium multiflorum*	Observed
Foxtail barley	*Hordeum murinum* ssp. *leporinum*	Observed
Bermuda Grass	*Cynodon dactylon*	Observed
Smilo grass	*Piptatherum miliaceum*	Observed
Pampas grass	*Cortaderia* sp.	Observed
Bristly ox-tongue	*Picris echioides*	Observed
Bindweed	*Convolvulus arvensis*	Observed
Coyote brush	*Baccharis pilularis*	Observed
Wild mustard	*Brassica* sp.	Observed
Mallow	*Malva neglecta*	Observed
Curly dock	*Rurnex crispus*	Observed
Slender tarweed	*Madia gracillis*	Observed
Fennel	*Foeniculum vulgare*	Observed
Fireweed	*Epilobium* sp.	Observed
Scattered nut sedge	*Cyperus* sp.	
Eucalyptus	*Eucalyptus globulus*	Observed
Himalayan blackberry	*Rubus discolor*	Observed
Cattail	*Typha* sp.	Observed
Tule	*Schoenoplectus acutus*	Observed
Bulrush	*S. robustus*	Observed

TABLE 3.2-4
Wildlife Species Observed During the Biological Reconnaissance Visits of the RCEC Project Area

Common Name	Scientific Name	Location	Sign
Birds			
American Crow	*Corvus brachyrhynchos*	Flying over general vicinity	Observed
Great egret	*Casmerodius albus*	Flying near sediment ponds west of Depot Road	Observed
Black-neck stilt	*Himantopus mexicanus*	In and around waste water treatment ponds	Observed
Mourning dove	*Zenaida macroura*	Flying overhead	Observed
Brewer's blackbird	*Euphagus cyanocephalus*	Waste water treatment plant – often around ponds	Observed
Belding's savanna sparrow	*Passerculus sandwichensis*	Associated with ruderal vegetation on City Property north of Enterprise Ave.	Observed
Canada goose	*Branta canadensis*	In and around waste water treatment ponds	Observed
Gulls	*Larus* spp.	Flying over general vicinity	Observed
Killdeer	*Charadrius vociferus*	Waste water treatment plant – often around ponds	Observed
Mallard	*Anus platyrhynchos*	In and around waste water treatment ponds	Observed
Mammals			
Domestic dog	*Canis familiaris*	Parcel north of water treatment facility – belongs to one of the workers at the site	Observed

3.2.2 Environmental Consequences

In the 2001 AFC, potential direct and indirect impacts to biological resources were evaluated to determine the permanent and temporary effects of project construction, operation, maintenance, and decommissioning of the RCEC project and supporting facilities. The following includes an evaluation of the impacts associated with the proposed changes to the original project.

3.2.2.1 Standards of Significance

As with the 2001 analysis, impacts on biological resources are considered significant if one or more of the following conditions could result from implementation of the proposed project:

- Substantial effect, reduction in numbers, restricted range, or loss of habitat for a population of a state or federally listed threatened or endangered species
- Substantial effect, reduction in numbers, restricted range, or loss of habitat for a population of a California special-status species, including fully protected, candidate proposed for listing, California Species of Concern (CSC), and some California Native Plant Society (CNPS) list designations

- Substantial interference with the movement of resident or migratory fish or wildlife species
- Substantial reduction of habitat for native fish, wildlife, or plants
- Substantial disturbance of wetlands, marshes, riparian woodlands, and other wildlife habitat
- Removal of trees designated as heritage or significant under County or local ordinances

3.2.2.2 Potential Impacts from Moving Project Location and Construction Parking and Laydown Areas

Moving the project location will result in permanent impacts to approximately 18.8 acres. The area is currently disturbed, the dominant vegetation is non-native ruderal, and the parcels are currently being used for sewage drying, pallet storage, auto wrecking yards, and a metal fabricating shop. The quality of land as wildlife habitat is negligible as most of the properties are devoid of vegetation.

Use of the additional construction parking and laydown areas will result in temporary impacts to approximately 9.1 acres. These areas are currently disturbed, the dominant vegetation is non-native ruderal, and the parcels are currently being used for equipment and materials storage (Runnels Industries) or as vacant land (City of Hayward). Although the quality of the land as wildlife habitat is marginal, it could be used seasonally by foraging birds, small mammals, and reptiles. These properties may require temporary gravel placement to support materials and equipment and will likely be reclaimed for storage following project completion.

3.2.2.2.1 Special-Status Species

No special-status species have been observed or recorded by past project-specific database searches or surveys for the project area. The additional laydown area does not include unique habitat features that provide habitat for special-status species not addressed in the 2001 AFC. The additional laydown area does expand the temporary disturbance acreage of the overall project.

The project as previously configured was located adjacent to salt marsh habitat for the endangered salt marsh harvest mouse and clapper rail. Formal consultation with the USFWS regarding potential effects on these species was underway at the time that Calpine announced project suspension and a Biological Opinion was never issued. Because the project under the new configuration described in this Amendment is not located adjacent to salt marsh habitat, the new project will eliminate impacting these listed species, and consultation with the USFWS is not longer necessary.

3.2.2.2.2 Wetlands and Waters of the U.S.

No jurisdictional wetlands or waters are present within the new project location or the construction parking and laydown area. An excavated drainage ditch, which is a part of the Alameda County Flood Control District's storm water system, is present approximately 15 feet west the project area. The drainage is approximately 15 to 20 feet wide and conveys storm water runoff to the north (see Figure 2.2-1).

Recycled water will be applied to the laydown area for dust control during construction. Additional erosion and sediment discharge would be potentially harmful to water quality of adjacent drainage ditches. The Applicant will be required to have a Storm Water Pollution Prevention Plan (SWPPP) as part of compliance with a construction National Pollutant Discharge Elimination System (NPDES) permit. The permit specifies best management practices (BMPs) to avoid sediment runoff and erosion that would otherwise cause water quality degradation.

The project as previously configured required the filling of seasonal wetlands. A mitigation plan was developed that involved creation of wetlands, preservation and restoration of adjacent uplands, and restoration of tidal flow to salt marsh habitat. Permits under Section 404 of the Clean Water Act were not finalized at the time that Calpine announced suspension of the project. The project under the new configuration described in this Amendment will not require the filling of seasonal wetlands or a Clean Water Act Section 404 permit.

3.2.2.2.3 Noise

Construction of the RCEC project will involve pile-driving and HRSG steam blow noise as described in Section 3.7 (Noise). Pile-driving and steam blow could impact sensitive species breeding areas and wildlife using the surrounding areas. Because the previous project location was adjacent to salt marsh habitat that is home to the endangered salt marsh harvest mouse and clapper rail, a construction noise mitigation plan was proposed to alleviate this concern. However, the new project location is approximately 1,400 feet north and 2,500 feet east of the salt marsh habitat area. Distribution warehouses are located to the south of the project location between the marsh area and the project site, providing a buffer from noise impacts. To the west, the nearest pickleweed salt marshes are about 2,500 feet distant, separated from the project site by the City of Hayward's sludge drying ponds and by former water treatment ponds that are generally filled with open water. Because of the additional distance and the warehouse buffer, construction noise impacts will not be as disruptive, and therefore a construction noise mitigation plan will not be needed.

3.2.2.2.4 Bird Collisions with Stacks and Onsite Switchyard

The proposed project will be located in an industrial setting surrounded to the north, south and east by warehouses, water treatment facilities, and mixed industrial uses (pallet storage, metal shops, automobile salvage yards). Sludge drying ponds associated with the City of Hayward's WPCF are located to the west of the project area. Given the industrial setting and limited foraging and nesting habitat surrounding the proposed project site, bird collisions with cooling towers and other project facilities are expected to be minimal.

3.2.3 Mitigation Measures

Additional mitigation measures (beyond those of the Commission Decision) are not required for this Amendment. The existing measures will be adequate and adopted for the revised project and construction plans. Section 3.2.6 contains suggested modifications to the Conditions of Certification.

3.2.4 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to biological resources.

3.2.5 References Cited

California Energy Commission. 2002. Commission Decision, Russell City Energy Center, Application for Certification (01-AFC-7), Alameda County. California Energy Commission, Sacramento, California. September 11.

3.2.6 Conditions of Certification

BIO-10 Habitat Compensation—Condition of Certification BIO-12 requires a construction habitat compensation program to mitigate the loss of seasonal wetlands. Because of the reconfigured site location, however, the project will not require the filling of seasonal wetlands. Therefore, this Condition of Certification is no longer necessary and should be deleted.

~~**BIO-10** The project owner shall provide 26.19 acres of habitat to compensate for the loss of upland, freshwater seasonal wetlands. To mitigate the permanent and temporary loss of habitat, the project owner shall:~~

~~1. Purchase 26.19 acres of habitat adjacent to the proposed RCEC site;~~

~~2. Donate the 26.19 acres of habitat to the East Bay Regional Park District ("EBRPD");~~

~~3. Assist in arranging a long-term lease to the EBRPD for 30 acres of salt marsh habitat owned by the City of Hayward;~~

~~4. Provide a suitable endowment fund to the EBRPD to manage the proposed habitat compensation and the City of Hayward property in perpetuity;~~

~~5. Implement the terms of the Agreement between EBRPD and the Russell City Energy Center LLC, to the extent such terms are consistent with the terms and conditions of this decision; and~~

~~6. Record, with the deed to the 26.19 acres of habitat compensation, an appropriate instrument containing such covenants as will benefit EBRPD and restrict use of the land as an enhanced wetland consistent with the terms and conditions of this decision. Such restriction shall be for the duration of the enhancement and monitoring activities specified in Section 1.2 of the Agreement between EBRPD and the Russell City Energy Center LLC.~~

~~**Verification:**~~

~~1. No less than 30 days prior to any site mobilization activities, the project owner shall provide written verification to the CPM that the required habitat compensation has been purchased and the restricting covenants recorded.~~

~~2. No more than 90 days after completion of the enhancement actions specified in Section 1.2 of the Agreement between the Russell City Energy Center LLC and the EBRPD, and their approval by the regulatory agencies, the project owner must provide written verification to the CPM that the Applicant has provided to the EBRPD a fee simple deed to the 26.19 acre parcel.~~

~~3. No less than 30 days prior to the start of construction of permanent structures, the project owner shall provide written verification to the CPM that the Applicant has paid to the EBRPD the first payment of $300,000. Thereafter, as each subsequent payment is made to the EBRPD in accordance with the terms of the Agreement between RCEC and EBRPD, the project owner shall provide written verification to the CPM within 30 days after each payment is made.~~

~~4. BIO-10 is independent of, and is not intended to change, the contractual rights and obligations of the Agreement between RCEC and EBRPD.~~

BIO-12 Construction Noise—Condition of Certification BIO-12 requires a construction noise mitigation program to protect the endangered salt marsh harvest mouse and clapper rail. Because of the reconfigured site location, however, the nearest pickleweed salt marsh habitat is approximately 1,400 feet south of the project site, not adjacent to the site as with the project as previously configured. A distribution warehouse is located between the marsh and the reconfigured location, providing an industrial buffer zone between the project and sensitive species. To the west, the nearest pickleweed salt marshes are about 2,500 feet distant, separated from the project site by the City of Hayward's sludge drying ponds and by former water treatment ponds that are generally filled with open water. Therefore, this Condition of Certification is no longer necessary and should be deleted.

~~**BIO-12** The project owner will develop an approved construction noise mitigation plan that addresses how noise impacts to state and federally listed nesting and breeding sensitive vertebrate species will be minimized during construction.~~

~~The noise mitigation plan will discuss how pile-driving and HRSG steam blow noise will be mitigated. Regarding operational noise, the project owner shall provide written confirmation from EBRPD indicating that the habitat compensation endowment is sufficient to fund a predator management program for the life of the project. The final plan must be approved by the USFWS, CDFG, EBRPD, and Staff.~~

~~**Verification:** No less than 30 days prior to the start of any site mobilization activities, the project owner will provide to the Energy Commission CPM with a copy of the final, agency approved construction and operational noise mitigation plan and a signed letter from EBRPD indicating that the endowment agreement is sufficiently large to fund a predator management program.~~

BIO-14 Perch Deterrent—Condition of Certification BIO-14 requires a raptor Perch Deterrent Management Plan to protect the endangered salt marsh harvest mouse from predation by raptors. Because of the reconfigured site location, however, the project structures are no longer located adjacent to the salt marsh habitat of the endangered salt marsh harvest mouse. The new location is separated from the salt marsh by industrial buildings and will not provide opportunities for raptors to perch and prey on the salt marsh harvest mouse. For this reason, a raptor perch management program is no longer necessary and Condition of Certification BIO-14 should be deleted.

~~**BIO-14** The project owner shall provide a final, approved Perch Deterrent Management Plan. The Perch Deterrent Management Plan shall:~~

~~1. Be approved by the USFWS, CDFG, EBRPD and Staff;~~

~~2. Identify how landscaping will deter perching, nesting/roosting of raptors and corvids;~~

~~3. Identify how the effectiveness of perch deterrents will be monitored and evaluated ; and~~

~~4. If needed, identify all measures to be implemented in the adaptive management plan, should monitoring indicate that perch deterrents are ineffective.~~

~~**Verification:** No less than 30 days prior to the start of any site mobilization activities, the project owner will provide to the Energy Commission CPM a final approved version of the Perch Deterrent Management Plan. The final Perch Deterrent Management Plan shall be included in the RCEC Biological Resources Mitigation Implementation and Monitoring Plan.~~

BIO-15 Wetland Mitigation—Condition BIO-15 provides for a plan to mitigate the filling of wetlands on the KFAX site. The reconfigured project will avoid these wetlands, however, so Condition of Certification BIO-15 is no longer applicable and should be deleted.

~~**BIO-15** The project owner shall provide a final, approved Wetland Mitigation Plan.~~

~~The Wetland Mitigation Plan shall:~~

~~1. Be approved by USFWS, USACE, RWQCB, EPA, CDFG, EBRPD and Staff;~~

~~2. Identify the timing, locations and all measures to be implemented for creation, preservation and enhancement activities;~~

~~3. Include the hydrological modeling analysis and all construction drawings to be used in support of dredging and levee removal and reduction activities; and~~

~~4. Identify performance criteria to be used in evaluating effectiveness of wetland mitigation measures.~~

~~**Verification:** No less than 60 days prior to any ground disturbance activities, the project owner shall provide to the Energy Commission CPM a final, approved copy of the Wetland Mitigation Plan. The final Wetland Mitigation Plan shall be included in the RCEC Biological Resources Mitigation Implementation and Monitoring Plan.~~

3.3 Cultural Resources

The addition of a Zero Liquid Discharge (ZLD) system and removal of the Advanced Water Treatment (AWT) facility will not involve new ground disturbing activities that could affect cultural resources differently than described in the Commission Decision. The reconfiguration of the project design, however, involves the potential disturbance of areas not previously considered. For this reason, the Project Owner conducted additional field inventory to determine whether or not significant cultural resources are present in project equipment or construction laydown areas previously not surveyed.

3.3.1 Environmental Baseline Information

The Project Owner conducted a cultural resources field archaeological inventory and architectural reconnaissance of the reconfigured project site, construction laydown and parking areas, and new segments of natural gas pipeline and electrical transmission line. Douglas Davy, Ph.D., RPA, conducted the inventory and reconnaissance on October 5, 2006. The archaeological inventory was conducted by walking the project site and laydown and parking parcels in systematic, linear transects spaced 20 meters apart or less where possible. A resume for Dr. Davy is provided in Appendix 3.3A. Figure 3.3-1 depicts the areas covered in the intensive pedestrian survey.

The new project location and construction laydown and parking areas consist of the J&M (APN 439007001202), Eash (APN 439007000900), and Aladdin (APN 43007000806) parcels, and portions of the City of Hayward (APN 439009900200) parcel. Areas previously surveyed for the AFC included the City of Hayward WPCF sludge drying yard, the electrical transmission line between Eastshore Substation and Enterprise Avenue, and portions of the vacant City of Hayward parcel north of Enterprise Avenue and east of the WPCF (new construction laydown and worker parking area), and the portion of the natural gas pipeline route along Depot Road between Viking Street and PG&E Line 153, which runs along the Union Pacific Railroad track. These areas were not resurveyed.

3.3.1.1 Archaeological Inventory Results

Archaeological inventory conditions and results were as follows:

City of Hayward Parcel—The power block will be located mostly on the portion of the City of Hayward parcel that is currently used for sewage sludge drying. This area was surveyed for cultural resources during the licensing phase to support siting the AWT in this location. At that time, the drying yard was occupied by piles of sludge, with bare ground between the piles. At the time of the inventory for the Amendment, this area was entirely covered in sludge that was distributed evenly on the parcel for drying purposes.

Eash Parcel—The Eash parcel is an 8.23-acre parcel currently occupied by a pallet storage and distribution business, a metals fabrication business, lumber storage yard, and miscellaneous storage. Much of the area within the pallet yard was open (about 70 percent), and the ground surface was visible at the time of survey. Much of the area within the metals business, lumber yard and storage area was also visible (about 50 percent). The entire area was walked in systematic survey transects insofar as possible, with detours around

obstacles such as pallet stacks, buildings, and stored vehicles and equipment. The ground was covered in gravel over most of this area, but patches of soil were visible in places.

Inspection of older buildings, however (see discussion of architectural reconnaissance, below), indicated that much of the parcel was covered with at least 6 inches of imported fill. This was evident because this fill surrounded the foundations of the older buildings on the site, but did not extend up to the building walls. In fact, one of the older barn/storage buildings had been constructed on a slightly raised foundation, perhaps because of a flooding hazard (this area is within the 100-year floodplain). The filled area approached this building, but sloped down to the level of the original ground surface next to the building, exposing the area beneath this building, which lies at the original ground elevation. Only a few areas at the margins of the parcel were not covered with this material. These areas were inspected closely for archaeological deposits.

Aladdin Depot Partnership—This 2.35-acre parcel lies immediately east of the larger Eash parcel. It consists of an automobile salvage and dismantling area and a storage yard. Survey of this parcel was not possible, as permission to access the parcel was denied by the occupant. The parcel also appears to be covered in gravel fill.

Natural Gas Pipeline—The natural gas pipeline route runs along Depot Road from PG&E Line 153 at the Union Pacific Railroad tracks. The portion of this route east of Viking Street to Line 153 was surveyed as part of the licensing proceeding. Survey of the remainder of this route between the new site and Viking Street consisted of examining the shoulders of Depot Road in an attempt to find exposed native ground surface to inspect, as most of the area along Depot Road consists of pavement, concrete, or landscaping. There were very few spots available for inspection.

Transmission Line Alternatives—Survey of the new connections to the previously permitted route along the Grant-Eastshore 115 kV transmission line were not conducted except for the portion along Depot Road that will be placed underground and the City of Hayward parcel on Enterprise Street, which was surveyed for the AFC proceeding. All remaining areas are located on automobile salvage or vehicle and container storage yards that are in private ownership and are graveled and filled. These parcels were not accessible for survey and, in any case, would not afford ground visibility.

Offsite Construction Laydown and Parking Areas—The offsite construction laydown and worker parking areas include the Runnels Industries parcel, and eastern end of the City of Hayward parcel (Figure 2.4-1).

The Runnels parcel was inventoried for the AFC. Portions of the City of Hayward parcel were inventoried for the AFC. The remainder will be inventoried and the survey results will be forthcoming.

3.3.1.2 Architectural Reconnaissance Results

Architectural reconnaissance of the new parcels consisted of examining the area near the new project parcels to determine whether or not buildings or structures older than 45 years might be located there, and examination of historical aerial photographs and topographic maps to determine the locations of structures 45 years old or older that may still be standing.

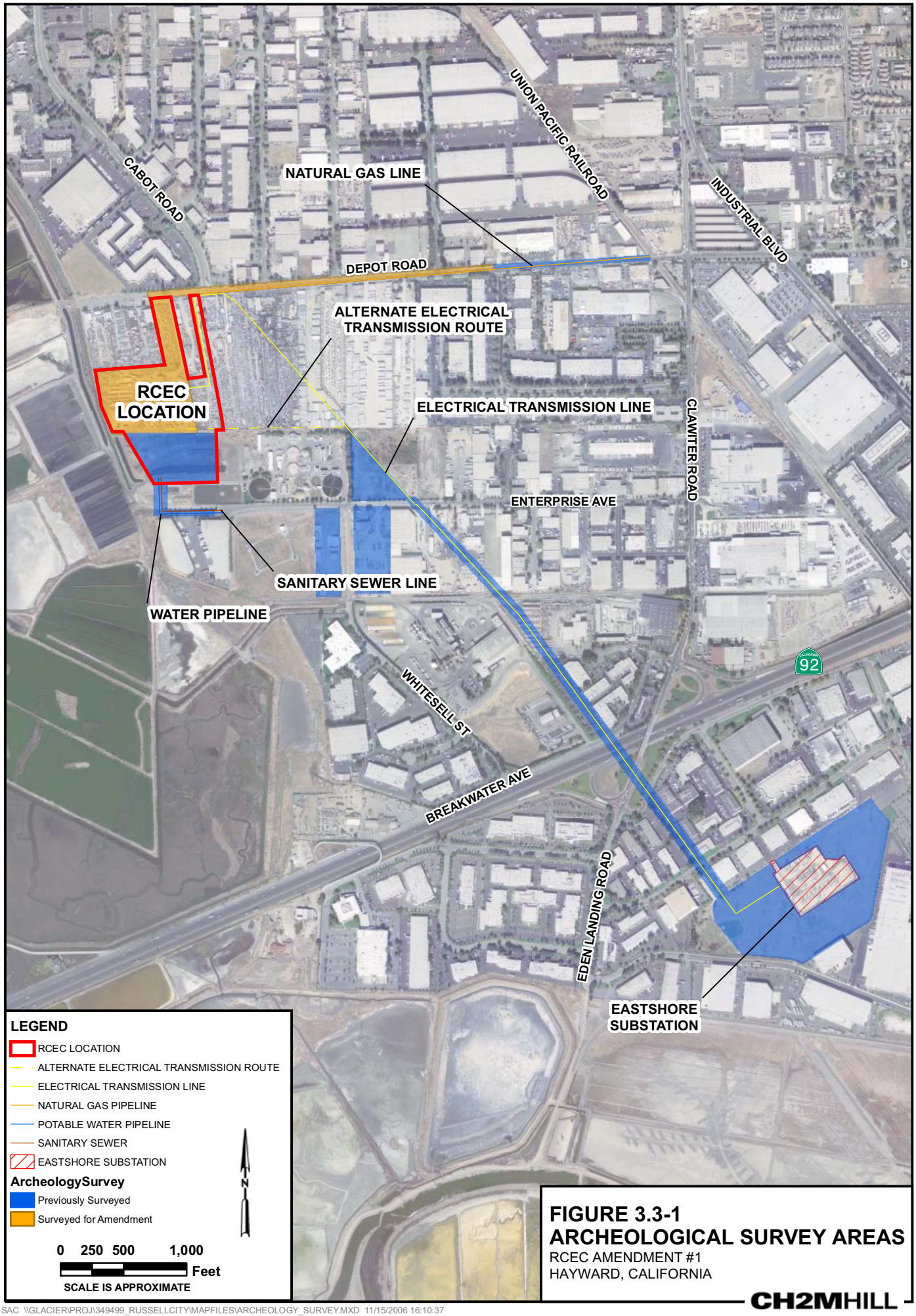

FIGURE 3.3-1
ARCHEOLOGICAL SURVEY AREAS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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The field reconnaissance indicated that buildings and structures older than 45 years could be located on or adjacent to the Eash and Aladdin parcels. There are several buildings on the larger Eash parcel that have the appearance of older buildings. Structures on the north side of Depot Road and south side of Enterprise Avenue, however, are all relatively modern structures.

Examination of aerial photographs shows that, at the time of the earliest available aerial photograph (1939), there was a cluster of buildings located in the northeast corner of the larger Eash parcel, possibly representing an agricultural operation or former farmstead. Much of the surrounding area at this time consisted of open agricultural fields. The buildings appear to be barns or sheds. There does not appear to be a house present in the 1939 photograph. Examination of subsequent photographs from 1946 and 1965 makes it clear that three of the buildings are clearly older than 45 years. Historical property site records (form DPR-523) were prepared for these properties (Appendix 3.3B), are described below.

Garage or shop—At the end of the long lane leading into the large Eash parcel is a garage-like structure, sited on a diagonal (northwest-southeast). This structure has a simple gable roof, board-and-batten siding supplemented by corrugated metal in places, and a sliding door that opens the entire front. The roofing material is corrugated metal. There is a small lean-to shed on the southwest side. There is a large window in the northeast wall. The building measures 45 x 30 feet, not including the lean-to, which measures 15 x 10 feet.

Shed—Directly across the entry lane from the garage/shop structure is shed of similar construction in a north-south orientation. This structure also has a simple gable-roof, board and batten siding and corrugated metal roofing. It has a two entry doors and one window, and a small lean-to shed on the south side. It measures 30 x 30 feet, not including the lean-to, which measures 20 x 10 feet.

Barn—West of the other two structures is a longer, barn-like structure, also of similar construction. The foundation of the structure is elevated about 6 inches above the surrounding area, perhaps because of flooding risk in this area. The structure has two parts: a larger two-story barn, and a smaller one-story shed. Together, the two buildings are 115 feet long. The smaller structure is 45 feet long and the large one is 70 feet long. They are the same width, at 30 feet, although the larger building has a 15-foot-wide awning on the east side. As with the other two buildings, they have board and batten siding and corrugated metal roofing. The small building has a door on the east side and no windows. The larger building has small windows on the east and west and a door on the west side. Facing the south wall is a hopper apparatus for handling agricultural products of some kind. This apparatus extends through the floor of the second floor. The first floor has a receiving bin and a small conveyor apparatus leading to a large hopper on the second floor. A small conveyor extends from this hopper out the second floor opening, so that the article processed or stored here could be deposited in a truck or other container.

Other buildings appear and disappear in the aerial photographs, but these three seem to be present throughout. For example, two large buildings first appear in the 1946 photographs adjacent to and west of the barn structure, but are not present in the 1965 photograph. The large structure that currently houses a metal fabricating business first appears in the 1965 photograph. Several other small buildings present in 1939 are no longer present.

The three structures do not apparently have significant historical associations and do not have architectural distinction. They are standard agricultural buildings dating to the early 20th century. The integrity of association of these structures has, furthermore, been compromised by the removal of several buildings in the original complex and addition of newer structures. These buildings do not appear to meet the criteria for listing in the National Register of Historic Places or California Register of Historical Resources.

3.3.2 Environmental Consequences

The surveys resulted in the discovery and recording of three structures older than 45 years. These structures do not meet the criteria for listing in the National Register or California Register, however. No archaeological resources were located during the surveys.

Because no potentially significant cultural resources were discovered in the new project areas, project changes due to the adoption of the ZLD system and the new project location will not result in any changes to the potential impacts of the project.

3.3.3 Mitigation Measures

No significant impacts to cultural resources will result from the approval of this Amendment. Therefore, mitigation measures beyond those stipulated in the Commission Decision are not necessary.

3.3.4 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to cultural resources.

3.3.5 Conditions of Certification

This Amendment does not require changes to the Cultural Resources Conditions of Certification.

3.4 Geology and Paleontology

The relocation of the project facilities will not cause geological hazards beyond those analyzed by the Commission during certification; however, the location change will result in the disturbance of areas not previously considered, and therefore has the potential to impact paleontological resources in areas not previously considered. The addition of a ZLD system, the addition of a Title 22 RWF, the removal of the AWT facility, and removal of the standby generator will not result in potential impacts to geological resources or paleontological resources. It has been more than five years since the paleontological site records search for this project was conducted. For these reasons, the Project Owner conducted supplemental field survey and records review to update the paleontological sensitivity assessment to assure inclusion of the proposed new project site, construction parking area, and new offsite laterals.

3.4.1 Environmental Baseline Information

The Project Owner conducted a paleontological resources field inventory of the proposed new project site and construction parking. Dr. W. Geoffrey Spaulding conducted the inventory on September 28, 2006 by walking and (where developed) wind-shield surveying the project site, parking parcels, and linears. Dr. Spaulding's qualifications as a California paleontologist have been approved by the CEC, and his resume is provided in Appendix 3.4. A paleontological site records review was also completed using the University of California, Berkeley, Museum of Paleontology (UCMP) online database. The absence of new site records was confirmed in a discussion with Dr. Patricia Holroyd of the UCMP. Figure 3.4-1 shows the site records currently available for this area, and is filed under a separate request for confidentiality. Table 3.4-1 provides a list of those sites, and demonstrates that Pleistocene (Irvingtonian and Rancholabrean Land Mammal ages) fossil sites are relatively common in the area.

TABLE 3.4-1
Paleontological Sites in The Vicinity of The Project Area

UCMP Locality No.	Systematic Identification	Period	Epoch	Locality Name
V5258	*Bison latifrons*	Quaternary	Pleistocene	Hayward Freeway
V5928	*Equus*	Quaternary	Pleistocene	Hayward Gravel Pit
V69168	*Glossotherium*(2)	Quaternary	Pleistocene	Alameda Canal
V5834	Reptilia(2), *Clemmys*(2), Aves(8), *Archoplites interruptus*(2), Osteichthyes(3), *Microtus*(2), *Equus*, Amphibia(3), *Orthodon microlepidotus*, *Odocoileus*	Quaternary	Pleistocene	Oak Knoll Hospital
V4045	*Mammuthus columbi*	Quaternary	Pleistocene	Oakland 81st Avenue
V76112	Mammalia	Tertiary	Miocene	San Leandro Dam

TABLE 3.4-1
Paleontological Sites in The Vicinity of The Project Area

UCMP Locality No.	Systematic Identification	Period	Epoch	Locality Name
V6420	*Glossotherium*(1) and *Mammuthus*(6)	Quaternary	Pleistocene	Oakland Coliseum
V6812	*Pliohippus tehonensis*	Tertiary	Miocene	Cull Creek
V5100	*Nannippus tehonensis*	Tertiary	Miocene	Norris Canyon
V5601	Mammalia	Tertiary	Miocene	Eden Creek 1
V5602	*Allodesmus*, Mammalia(2), and Chondrichthyes	Tertiary	Miocene	Eden Creek 2
V5933	*Mammut* and *Bison*	Quaternary	Pleistocene	Niles Community
V3602	Mammalia(2), *Equus caballus*, *Tetrameryx irvingtonensis*, *Camelops minidokae*, *Equus*(4), *Glossotherium*, and *Mammuthus*	Quaternary	Pleistocene	Irvington 1
V3604	*Tetrameryx irvingtonensis, Mammuthus columbi, Equus caballus, Euceratherium collinum, Camelops minidokae, Hemiauchenia, Canis dirus, Platygonus, Smilodon, Odocoileus, Spermophilus, Canis priscolatrans, Vulpes macrotis, Microtus californicus californicus, Perognathus, Thomomys, Rana, Bufo, Gasterosteus aculeatus, Catostomus*	Quaternary	Pleistocene	Irvington 2
V5370	*Mammut, Bison, Camelops, Odocoileus*, and *Paramys copei*	Quaternary	Pleistocene	Centerville Gravel Pit

3.4.2 Environmental Consequences

The survey and site records search did not result in the identification previously unknown paleontological resources, and no new paleontological site records are known for the area (Holroyd, 2006). The new site and offsite laterals occur on the same geological formation and in the same topographic setting as the previous site. Therefore, there is no change in the paleontological sensitivity assessment for this project. Because no new paleontological resources or sites were identified in the vicinity, project changes due to the adoption of the ZLD system, the addition of a Title 22 RWF, and the new project location will not result in any changes to the assessment of impacts of the project on paleontological resources. The planned filling and grading of the site is not expected to impact paleontological resources. However, excavations deeper than 6 feet below ground surface (bgs) will impact paleontologically sensitive sediment of the Temescal Formation and, at depths greater than 15 feet, sediment assigned to the Alameda Formation.

3.4.3 Mitigation Measures

No changes to previously identified impacts to geological or paleontological resources would result from the approval of this Amendment. Therefore, mitigation measures beyond those stipulated in the Commission Decision are not necessary. The mitigation measures previously stipulated are adequate to mitigate impacts to geological and paleontological resources that may occur as a result of build-out of the currently-defined project.

3.4.4 Consistency with LORS

This assessment is consistent with guidelines promulgated by the Society for Vertebrate Paleontology for the evaluation and mitigation of impacts to paleontological resources. The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to geological and paleontological resources.

3.4.5 Conditions of Certification

Because the proposed change in project location and components does not result in any change to the nature of paleontologically sensitive sediment, or the anticipated impact to paleontological resources, this Amendment does not require changes to the Paleontology Conditions of Certification.

GEO-1 and -2 Engineering Geologist—Conditions of Certification GEO-1 and GEO-2 require that the project owner assign a certified Engineering Geologist to the project (GEO-1), and prepare an engineering geology report (GEO-2). We propose discussing with Staff revisions or modifications to this condition that are consistent with recent Commission decisions.

> **GEO-1** Prior to the start of construction, the project Owner shall assign to the project an Engineering Geologist(s), certified by the State of California, to carry out the duties required by the 1998 edition of the California Building Code (CBC) Appendix Chapter 33, Section 3309.4. The Certified Engineering Geologist(s) assigned must be approved by the CPM. The functions of the Engineering Geologist can be performed by a responsible Geotechnical Engineer, if that person has the appropriate California license.
>
> **Verification:** At least 30 days (or a lesser number of days mutually agreed to by the project Owner and the CBO) prior to the start of construction, the project Owner shall submit to the CPM for approval the name(s), resume(s), and license number(s) of the Certified Engineering Geologist (s) assigned to the project. The submittal should include a statement that CPM approval is needed. The CPM shall notify the project Owner of its findings within 15 days of receipt of the submittal. If the Engineering Geologist(s) is subsequently replaced, the project Owner shall submit for approval the name(s), resume(s) and license number(s) of the newly assigned Engineering Geologist(s) to the CPM. The CPM will notify the project Owner of its findings within 15 days of receipt of the notice of personnel change.
>
> **GEO-2** The assigned Engineering Geologist(s) shall carry out the duties required by the 1998 CBC, Appendix Chapter 33, Section 3309.4 Engineered Grading Requirement, and Section 3318.1 – Final Reports. Those duties are:

1. Prepare the Engineering Geology Report, which shall include a site specific seismic hazards analysis. This report shall accompany the Plans and Specifications when applying to the CBO for the grading permit.
2. Monitor geologic conditions during construction.
3. Prepare the Final Geologic Report.

Protocol: (I): The Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3309.3 Grading Designation, shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and an opinion on the adequacy of the site for the intended use as affected by geologic factors. The Final Geologic Report to be completed after completion of grading, as required by the 1998 CBC Appendix Chapter 33, Section 3318.1, shall contain the following: A final description of the geology of the site and any new information disclosed during grading; and the effect of same on recommendations incorporated in the approved grading plan. The Engineering Geologist shall submit a statement that, to the best of his or her knowledge, the work within his/her area of responsibility is in accordance with the approved Engineering Geology Report and applicable provisions of Chapter 33.

Verification: (1) Within 15 days after submittal of the application(s) for grading permit(s) to the CBO or other, the project Owner shall submit a signed statement to the CPM stating that the Engineering Geology Report has been submitted to the CBO as a supplement to the plans and specifications and that the recommendations contained in the report are incorporated into the plans and specifications. (2) Within 90 days following completion of the final grading, the project Owner shall submit copies of the Final Geologic Report required by the 1998 CBC Appendix Chapter 33, Section 3318 Completion of Work, to the CBO, with a copy of the transmittal letter forwarded to the CPM.

3.5 Hazardous Materials Management

The relocation of the project site, addition of a new construction parking and laydown area, and the removal of the standby generator will not result in potential impacts in terms of hazardous materials management that are different than those discussed in the Commission Decision. However, the addition of a ZLD system, addition of a Title 22 RWF, and removal of the AWT facility will result in changes to the chemical inventory for the RCEC project. The following provides a supplemental assessment of the potential effects on hazardous materials management associated with these changes as proposed in this Amendment.

3.5.1 Environmental Baseline Information

The newly proposed project site and construction parking areas are located on parcels that are approximately 1,300 feet northwest from the proposed power plant site as described in the AFC. The following subsections describe the changes to the project as a result of the addition of the ZLD, addition of the Title 22 RWF, removal of the AWT, and change to the general arrangement as a result of the revised project location.

3.5.1.1 Hazardous Materials Used During Operations

The chemical list provided in the AFC has been revised because of the addition of a ZLD system and Title 22 RWF, and the removal of the AWT system. Storage locations for the hazardous materials that will be used during operation are described in Table 3.5-1. Table 3.5-2 presents information about these materials, including trade names, chemical names, Chemical Abstract Service (CAS) numbers, maximum quantities onsite, Reportable Quantities (RQ), California Accidental Release Program (CalARP) threshold quantities (TQs), and status as a Proposition 65 chemical (a chemical known to be carcinogenic or cause reproductive problems in humans). Health hazards and flammability data are summarized for these materials in Table 3.5-3, which also contains information on incompatible chemicals (e.g., sodium hypochlorite and aqueous ammonia). (Due to their size, Tables 3.5-1 through 3.5-3 are located at the end of this subsection.)

3.5.1.2 Aqueous Ammonia Secondary Containment

Potential spill containment for the aqueous ammonia tank will be provided by a secondary containment basin surrounding the tank. The diked secondary containment area will be 22 feet wide by 66 ½ feet long and 3 feet tall for a total storage capacity of 4,389 cubic feet, and will be set below grade. The truck unloading area adjacent to the ammonia tank will be sloped such that any spill during unloading will end up in the tank containment area.

3.5.1.3 Offsite Consequence Analysis

The general arrangement of the power plant has been revised as seen in Figure 2.1-2. A new offsite consequence analysis was performed to assess the risk from a potential spill or rupture of the aqueous ammonia storage tank at the RCEC. Dispersion modeling was conducted using the SLAB numerical dispersion model (LLNL, 1990).

The worst-case accidental release scenario assumed that one of the aqueous ammonia storage tanks was punctured and the entire contents of the tank were released into a secondary containment structure located beneath the tank. An initial ammonia emission rate for an

evaporating pool of 29-percent aqueous ammonia solution was calculated pursuant to the guidance given in *RMP Offsite Consequence Analysis Guidance, EPA, April 1999,* and using the "evaporation calculator" provided by the National Oceanic and Atmospheric Administration (NOAA, 2004). This initial ammonia evaporation rate was assumed to occur for one hour. For concentrated solutions, the initial evaporation rate is substantially higher than the rate averaged over time periods of a few minutes or more since the concentration of the solution immediately begins to decrease as evaporation begins. However, using the initial evaporation rate for the entire release results in a worst-case ammonia emission rate and provides for a conservative analysis. Release rates for ammonia vapor from an evaporating 29-percent solution of aqueous ammonia were calculated assuming that the mass transfer of ammonia across the liquid surface occurs according to principles of heat transfer by natural convection. The ammonia release rate was calculated using ALOHA, meteorological data listed below, and the dimensions of the secondary containment area. The offsite consequence analysis is provided as Appendix 3.5B.

Parameters used to calculate the ammonia emission rates include an atmospheric stability classification of "F," a wind speed of 1.5 meters/second and a temperature of 99 degrees Fahrenheit (°F), which represents the highest temperature recorded over the last 3 years at the project site.

Using these parameters, the ammonia plume was predicted to extend approximately 17.94 meters (58.9 feet) from the ammonia storage tank at a concentration of 150 ppm, at height of 1.6 meters. At a concentration of 75 ppm, the distance was 18.09 meters (59.4 feet) from the tank (see Table 3.5-4). The assumptions used in the ammonia analysis include the following:

- Ammonia emissions are assumed to occur over 1 hour, representing an evaporating pool of 12,750 gallons of a 29-percent ammonia solution
- An ammonia storage temperature of 99°F (highest temperature recorded at the Oakland International Airport Meteorological Station over the past 3 years)
- A diked secondary containment area of 1,463 square feet (22 feet wide by 66 ½ feet long)

TABLE 3.5-4
Gaseous Ammonia Concentrations in the Event of a Release

	Distance in meters from Ammonia Tank to Plume Edge (feet)	
Concentration (ppm)	**0-Meter Receptor Height**	**1.6-Meter Receptor Height**
2000 ppm (risk of lethality)	14.73 (48.33)	16.35 (53.64)
300 ppm (OSHA's IDLH)	15.77 (51.74)	17.65 (57.91)
150 ppm (EPA/CalARP toxic endpoint)	16.21 (53.18)	17.94 (58.86)
75 ppm (CEC Significance Criterion)	16.42 (53.87)	18.09 (59.35)

Notes:
The complete Offsite Consequence Analysis may be found in Appendix 3.5B.
Distances calculated at ground level and based on the height of the average human (1.6 m).

Based on this conservative modeling analysis, the worst case accident is not expected to result in an offsite concentration greater than 75 ppm at the property boundary, located 96 feet from the center of the ammonia tank storage area, at the nearest point. Since the

general public will not be exposed to ammonia concentrations above 75 ppm during a worst-case release scenario, the storage of aqueous ammonia onsite will not pose a significant risk to the public.

3.5.1.4 Cumulative Ammonia Release Impacts

The primary potential cumulative impact from the use and storage of hazardous materials would be from a simultaneous release from two or more sites of a chemical or chemicals that would migrate offsite. Hazardous materials that do not migrate, such as sulfuric acid, will not present a potential cumulative impact. The only hazardous material that has the potential to migrate offsite from the RCEC is ammonia vapor released from spilled aqueous ammonia. To determine the potential for cumulative impacts, other sites in the vicinity that store and use ammonia must be identified and analyzed.

Numerous other facilities in the City of Hayward handle and store ammonia. Ammonia is sometimes used for refrigeration, making it a fairly common chemical in an industrial area such as Hayward. Table 3.5-5 identifies those facilities closest to RCEC that have ammonia onsite.

TABLE 3.5-5
Facilities with Ammonia Onsite in Hayward, CA

Facility Name	Address	Distance from RCEC
Rohm & Haas	25500 Whitesell Rd	0.47 mile
Perry Tool and Research	3415 Enterprise Ave	0.49 mile
Berkeley Farms	25500 Clawiter Road	0.79 mile
Eastshore Power Project	25501 Clawiter Road	0.80 mile

Based on the results of the offsite consequence analysis, offsite ammonia vapor concentrations would only occur at levels below the CEC significance value. In the unlikely event that an aqueous ammonia spill occurred at RCEC, since the nearest facility is approximately 0.47 mile from the project location, offsite ammonia levels from the RCEC would not be sufficient to cause cumulative impacts.

3.5.2 Environmental Consequences

No new significant impacts to hazardous materials would result from the changes proposed as part of this Amendment. Additional hazardous materials will be brought on site, however the materials will be handled and stored in a safe manner, reducing any potential public health or safety hazards. Ammonia secondary containment will be designed to reduce spills outside of the secondary containment area and, in the event of a spill, the ammonia plume would not exceed the CEC significance value at the fenceline. In addition, should a spill occur simultaneously with a spill from another site, it is very unlikely that the plumes would intersect due to the distance between the two sources, even in the unlikely event that spills occurred simultaneously.

3.5.3 Mitigation Measures

No significant impacts in terms of hazardous materials handling will result from the approval of this Amendment. Therefore, mitigation measures beyond those stipulated in the Commission Decision are not necessary.

3.5.4 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to hazardous materials.

3.5.5 Conditions of Certification

HAZ-1 List of Chemicals—With the use of a ZLD system, addition of the Title 22 RWF and removal of the AWT, the project will use additional chemicals not previously identified in the Commission's Decision document. Accordingly, Condition of Certification HAZ-1 should be revised as follows:

> **HAZ-1** The project owner shall not use any hazardous material in any quantity or strength not listed in the Amendment to the AFC Tables 3.5-1 and 3.5-2 ~~8.5-3 and 8.5-6~~ unless approved in advance by the CPM.
>
> **Verification:** The project owner shall provide to the (CPM), in the Annual Compliance Report, a list of all hazardous materials contained at the facility.

HAZ-5 List of Chemicals—This condition requires that that no combustible or flammable material be transported within 100 feet of the sulfuric acid tank. This condition will make it impossible to resupply the RCEC for a number of materials, given the standard layout of the site and its roadways. The following revision is suggested to address this and reflect current National Fire Protection Association (NFPA) standards.

> **HAZ-5** The project owner shall ensure that no combustible or flammable material is stored, used, or transported within 50 ~~100~~ feet of the sulfuric acid tank.
>
> **Verification:** At least sixty (60) days prior to receipt of sulfuric acid on-site, the project owner shall provide to the CPM for review and approval copies of the facility design drawings showing the location of the sulfuric acid storage tank and the location of any tanks, drums, or piping containing any combustible or flammable material and the route by which such materials will be transported through the facility.

HAZ-8, -9, and -10 Pipeline Inspection—Because the natural gas pipeline leading to Line 153 will be owned by PG&E and not the RCEC project owner, Condition of Certifications HAZ-8 through HAZ-10 should be modified so that these conditions apply to only onsite natural gas facilities.

> **HAZ-8** The project owner shall require that the gas pipeline located from the metering station to the power block undergo a complete design review and detailed inspection every 30 years and each 5 years thereafter.
>
> **Verification:** At least thirty days prior to the initial flow of gas in the pipeline located from the metering station to the power block, the project owner shall provide a detailed plan to accomplish a full and comprehensive pipeline design review to the CPM for review and approval. This plan shall be amended, as appropriate, and submitted to the CPM for review and approval, not later than one year before the plan is implemented.

HAZ-9 After any significant seismic event in the area where surface rupture occurs within one mile of the pipeline, the gas pipeline located from the metering station to the power block shall be inspected by the project owner.

Verification: At least thirty days prior to the initial flow of gas in the pipeline located from the metering station to the power block, the project owner shall provide to the CPM a detailed plan to accomplish a full and comprehensive pipeline inspection from the metering station to the power block in the event of an earthquake for review and approval. This plan shall be amended, as appropriate, and submitted to the CPM for review and approval, at least every five years.

HAZ-10 The natural gas pipeline located from the metering station to the power block shall be designed to meet CPUC General Order 112-D&E and 58 A standards, or any successor standards, and will be designed to meet Class III service. The pipeline from the metering station to the power block will be designed to withstand seismic stresses and will be leak surveyed annually for leakage. The project owner shall incorporate the following safety features into the design and operation of the natural gas pipeline located from the metering station to the power block: (1) butt welds will be x-rayed and the pipeline from the metering station to the power block will be pressure tested prior to the introduction of natural gas into the line; (2) the pipeline from the metering station to the power block will be surveyed for leakage annually; (3) the pipeline route from the metering station to the power block will be marked to prevent rupture by heavy equipment excavating in the area; and (4) valves will be installed to isolate the line if a leak occurs.

Verification: Prior to the introduction of natural gas into the pipeline from the metering station to the power block, the project owner shall submit design and operation specifications of the pipelines from the metering station to the power block to the CPM for review and approval.

TABLE 3.5-1
Use and Location of Hazardous Materials

Chemical	Use	Storage Location	State	Type of Storage
Aqueous Ammonia (29%)	Selective catalytic reduction	Outdoors, in the ammonia unloading/storage area	Liquid	Continuously onsite
Sodium Hydroxide (NaOH)	Microfiltration membrane cleaning	Water treatment pavilion	Liquid	Continuously onsite
Sulfuric Acid (93%)	Cooling tower pH control, reverse osmosis feedwater pH control, cleaning sludge press, pH adjustment	Outdoors, near cooling tower, Chemical and dewatering area and reverse osmosis area day tank	Liquid	Continuously onsite
Sodium Hypochlorite	Cooling tower biological control, disinfection of tertiary treated wastewater	Cooling tower circulating water pump house, Title 22 facility chemical storage area	Liquid	Continuously onsite
Stabrex ST70	Biocide in cooling tower	Near cooling tower	Liquid	Continuously onsite
Memclean C	Microfiltration membrane cleaning	Water treatment pavilion	Liquid	Continuously onsite
Citric Acid	Microfiltration membrane cleaning	Water treatment pavilion	Solid	Periodically – once every 10 years
KleenMCT103	Reverse osmosis membrane cleaning	Water treatment pavilion	Liquid	Continuously onsite
KleenMCT411	Reverse osmosis membrane cleaning	Water treatment pavilion	Solid	Continuously onsite
NALCO 356 or NALCO TRIACT 1800	Corrosion control of condensate piping	Near each HRSG	Liquid	Continuously onsite
NALCO 7280	Antiscalant for use in reverse osmosis unit	Water treatment building	Liquid	Continuously onsite
ELIMIN-OX	Oxygen scavenger for use in process feedwater	Near each HRSG	Liquid	Continuously onsite
NALCO 7408	Oxygen scavenger for use upstream of reverse osmosis unit	Water treatment building	Liquid	Continuously onsite
NALCO 22106 or NALCO 7213	Chelate; injected in suction of boiler feed pumps	Near each HRSG	Liquid	Continuously onsite
Hydrogen gas	Steam turbine generator cooling	Adjacent to steam turbine	Gas	Continuously onsite
Lubricating Oil	Rotating equipment	Contained within equipment	Liquid	Continuously onsite

TABLE 3.5-1
Use and Location of Hazardous Materials

Chemical	Use	Storage Location	State	Type of Storage
Mineral Insulating Oil	Transformers	Contained within transformers	Liquid	Continuously onsite
Hydraulic oil	Combustion turbine starting system, turbine control valve actuators	Combustion turbine and steam turbine areas	Liquid	Continuously onsite
No. 2 Diesel Fuel	Emergency fire pump engine	Near emergency fire pump	Liquid	Continuously onsite
Various Cleaning Chemicals	Chemical cleaning of HRSG	Water treatment building/laboratory	Liquid	Continuously onsite
Various Laboratory Reagents	Laboratory analysis	Water treatment building/laboratory	Varies	Continuously onsite
NALCO CORE SHELL 71325	Anionic polymer for Title 22 Facility clarification	Title 22 Chemical Storage Area	Liquid	Continuously onsite
NALCO CORE SHELL 71301	Cationic Polymer for Title 22 Facility clarification	Title 22 Chemical Storage Area	Liquid	Continuously onsite
NALCO NALCOLYTE 8100	Cationic Coagulant for Title 22 Facility clarification	Title 22 Chemical Storage Area	Liquid	Continuously onsite
Ferric Chloride ***or*** Alum ***or*** NALCO Aluminex 5 or NALCO ULTRION 8157	Coagulant for Title 22 Facility clarification	Title 22 Chemical Storage Area	Liquid	Continuously onsite
NALCO 71 D5 Antifoam	Control of brine concentrator foaming	ZLD Area	Liquid	Continuously onsite
Calcium Sulfate	Initial startup seeding of brine concentrator	ZLD Area	Solid	
Chelating agents (EDTA)	Brine concentrator cleaning	ZLD Area	Liquid	Continuously onsite
Sodium sulfate	Brine concentrator water chemistry adjustment	ZLD Area	Solid	
NALCO ACTI-BROM 7342 (sodium bromide)	Circulating water biological control	Cooling tower chemical feed pavilion	Liquid	Continuously onsite
NALCO 7330 (isothoazoline)	Non-oxidizing biocide for circulating water biological control	Cooling tower chemical feed pavilion	Liquid	Continuously onsite
NALCO pHREEdom 5200M	Circulating water dispersant/inhibitor	Cooling tower chemical feed pavilion	Liquid	Continuously onsite

TABLE 3.5-1
Use and Location of Hazardous Materials

Chemical	Use	Storage Location	State	Type of Storage
NALCO 7468	Cooling tower antifoam	Cooling tower chemical feed pavilion	Liquid	Continuously onsite
NALCO 3D TRASAR 3DT177	Circulating water corrosion inhibitor	Cooling tower chemical feed pavilion	Liquid	Continuously onsite
NALCO 3D TRASAR 3DT190	Circulating water dispersant	Cooling tower chemical feed pavilion	Liquid	Continually Onsite
NALCO PermaTreat PC-191 or NALCO PermaTreat PC191T	Antiscalant for reverse osmosis system	Water treatment pavilion	Liquid	Continuously onsite
NALCO 1723	Oxygen scavenger for reverse osmosis system	Water treatment pavilion	Liquid	Continuously onsite
NALCO BT-4000	Liquid phosphate for boiler drum pH control	Cycle chemical feed area	Liquid	Continuously onsite
NALCLEAR 7744	Flocculant for Title 22 facility clarification	Title 22 chemical storage area	Liquid	Continuously onsite
Sulfur Hexafluoride	Transformers/switchyards	Switchyard circuit breakers	Gas	Continuously onsite

TABLE 3.5-2
RCEC Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[f]	Prop 65
Aqueous Ammonia (29%)	Ammonium Hydroxide	7664-41-7	12,000 gal	100 lb	345 lb	500 lb	2,000 lb (State)	No
NALCO 7383	Sodium Hydroxide (50%)	1310-73-2	5,000 gal	1,000 lb	2,000 lb	[d]	[d]	No
Sulfuric Acid (93%)	Sulfuric Acid	7664-93-0	8,000 gal	1,000 lb	1,075 lb	1,000 lb	[d, g]	No
Bleach	Sodium Hypochlorite (15%)	7681-52-9	10,000 gal	100 lb	667 lb	[d]	[d]	No
Stabrex ST70	Sodium Hydroxide (1-5%)	1310-73-2	2,000 gal	1,000 lb	20,000 lb	[d]	[d]	No
	Sodium Hypobromite (10-20%)	13824-96-9		[d]	[d]	[d]	[d]	No
Memclean C	Hydroxy-propionic-tricarboxylic acid	77-92-9	500 gal	[d]	[d]	[d]	[d]	No
Citric Acid	Hydroxy-propionic-tricarboxylic Acid	77-92-9	100 lb	[d]	[d]	[d]	[d]	No
KleenMCT103	Nitrilotriacetic Acid	5064-31-3	220 gal	[d]	[d]	[d]	[d]	No
	Phosphoric Acid (10-30%)	7664-38-2		5,000 lb	16,667 lb	[d]	[d]	Yes
KleenMCT411	Sodium Tripoly-phosphate	7758-29-4	2,000 lb	[d]	[d]	[d]	[d]	No
	Sodium Hydroxide (3-7%)	1310-73-2		1,000 lb	14,285 lb	[d]	[d]	No
NALCO 356	Cyclohexylamine (20-40%)	108-91-8	400 gal	[d]	[d]	10,000 lb	[d]	No
	Morpholine (5-10%)	110-91-8		[d]	[d]	[d]	[d]	No

TABLE 3.5-2
RCEC Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[f]	Prop 65
OR NALCO TRIACT 1800	Cyclohexylamine (10-20%)	108-91-8	400 gal	[d]	[d]	10,000 lb	[d]	No
	Ethanolamine (10-20%)	141-43-5		[d]	[d]	[d]	[d]	No
	Methoxypropylamine (10-20%)	5332-73-0		[d]	[d]	[d]	[d]	No
NALCO 7280	Polyacrylic Acid (20-40%)	Trade Secret	250 gal	[d]	[d]	[d]	[d]	No
ELIMIN-OX	Carbohydrazide	497-18-7	400 gal	[d]	[d]	[d]	[d]	No
NALCO 7408	Sodium Bisulfite (40-70%)	7631-90-5	400 gal	5,000 lb	7,140 lb	[d]	[d]	No
NALCO 22106	Sodium Polyacrylate Aryl Sulfonate	N/A	5,000 gal	[d]	[d]	[d]	[d]	No
OR NALCO 7213	Tetrasodium ethylenediamine-tetra-acetate (10-20%)	64-02-8	5,000 gal	[d]	[d]	[d]	[d]	No
Hydrogen gas	Hydrogen	1333-74-0	95,000 scf	[d]	[d]	[d]	[d]	No
Lubricating Oil	Oil	None	19,500 gal	42 gal [e]	42 gal [e]	[d]	[d]	Yes
Mineral Insulating Oil	Oil	None	82,000 gal	42 gal [e]	42 gal [e]	[d]	[d]	Yes
Hydraulic oil	Oil	None	500 gal	42 gal [e]	42 gal [e]	[d]	[d]	Yes
No. 2 Diesel Fuel	Oil	None	500 gal	42 gal [e]	42 gal [e]	[d]	[d]	Yes
Various Cleaning Chemicals	Various	None	100 gal	[d]	[d]	[d]	[d]	No
Various Laboratory Reagents (liquid)	Various	None	10 gal	[d]	[d]	[d]	[d]	No

TABLE 3.5-2
RCEC Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[f]	Prop 65
Various Laboratory Reagents (Solid)	Various	None	100 lbs.	d	d	d	d	No
NALCLEAR 7744	Not available	None	400 gal.	d	d	d	d	No
NALCO CORE SHELL 71325	Not available	None	400 gal.	d	d	d	d	No
NALCO CORE SHELL 71301	Urea	57-13-6	400 gal.	d	d	d	d	No
	Ethoxylated C10-16 Alcohols	68002-97-1						
	Hydrotreated Light Distillate	64742-47-8						
NALCO NALCOLYTE 8100	Not Available	None	400 gal.	d	d	d	d	No
Ferric Chloride	Ferric Chloride (38.7-42.7%)	7705-08-0	8,000 gal.	1,000 lb	1,000 lb	d	d	No
	Hydrochloric Acid (1%)	7647-01-0		5,000 lb	500,000 lb	d	d	No
OR Alum	Aluminum sulfate (48.5%)	10043-01-3	8,000 gal.	d	d	d	d	No
OR NALCO Aluminex 5	Aluminum Hydroxychloride (15-40%)	1327-41-9	8,000 gal.	d	d	d	d	No
OR NALCO ULTRION 8157	Aluminum Hydroxychloride (10-30%)	1327-41-9	8,000 gal.	d	d	d	d	No
	Aluminum Phosphate	13530-50-2		d	d	d	d	No
	Calcium Chloride	10043-52-40		d	d	d	d	No

TABLE 3.5-2
RCEC Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[f]	Prop 65
NALCO 71 D5 Antifoam	Paraffin Wax (0-1%)	8002-74-2	400 gal.	d	d	d	d	No
	Hydrotreated Light Distillate (10-20%)	64742-47-8						
		64741-44-2						
	Straight Run Middle Distillate (30-60%)	25322-69-4						
		Proprietary						
	Polypropylene Glycol (5-10%)							
	Aliphatic alcohol (1-5%)							
Calcium Sulfate	Calcium Sulfate	7778-18-9	4,000 lb.	d	d	d	d	No
Chelating agents	EDTA Ethylenediaminetetraacetic Acid (38-42%)	20824-56-0	220 gal.	5,000 lb	11,905 lb	d	d	No
Sodium sulfate	Sodium sulfate (95%)	7757-82-6	4,000 lb.	d	d	d	d	No
NALCO ACTI-BRON 7342	Sodium Bromide (30-60%)	7647-15-6	3,000 gal.	d	d	d	d	No
NALCO 7330 (isothoazoline)	5-chloro-2-methyl-4-isothazolin-3-one (1-5%)	26172-55-4	220 gal.	d	d	d	d	No
		2682-20-4						
	2-methyl-4-isothazolin-3-one	10377-60-3						
	Magnesium Nitrate							
NALCO pHREEdom 5200M	Sodium salt of phosphonomethylated diamine (10-30%)	NA	400 gal.	d	d	d	d	No
NALCO 7468	Hydrated silica (1-5%)	10279-57-9	400 gal.	d	d	d	d	Yes

TABLE 3.5-2
RCEC Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[f]	Prop 65
NALCO 3D TRASAR 3DT177	Phosphoric Acid (10-30%)	7664-38-2	400 gal.	5,000 lb	16,667 lb	[d]	[d]	Yes
NALCO 3D TRASAR 3DT190	Substituted aliphatic aldehyde 1-5%	Proprietary	400 gal.	[d]	[d]	[d]	[d]	No
NALCO PermaTreat PC-191	Not available	NA	400 gal.	[d]	[d]	[d]	[d]	No
NALCO PermaTreat PC-191T	Not available	NA	400 gal.	[d]	[d]	[d]	[d]	No
NALCO 1723	Sodium sulfite (10-30%)	7757-83-7	400 gal.	[d]	[d]	[d]	[d]	No
	Dipotassium sulfite (1-5%)	10117-38-1		[d]	[d]	[d]	[d]	No
	Sodium bisulfite (1-5%)	7631-90-5		5,000 lb	100,000 lb	[d]	[d]	No
NALCO BT-4000	Sodium Hydroxide (1-5%)	1310-73-2	400 gal.	1,000 lb	20,000 lb	[d]	[d]	No
Sulfur Hexafluoride	Sulfur Hexafluoride	2551-62-4	200 lb.	[d]	[d]	[d]	[d]	No

[a] Reportable quantity for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Superfund Amendments and Reauthorization Act (SARA) [Ref. 40 CFR 302, Table 302.4]. Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.

[b] Reportable quantity for materials as used onsite. Since some of the hazardous materials are mixtures that contain only a percentage of a reportable chemical, the reportable quantity of the mixture can be different than for a pure chemical. For example, if a material only contains 10 percent of a reportable chemical and the RQ is 100 lb, the reportable quantity for that material would be (100 lb)/(10percent) = 1,000 lb

[c] Extremely Hazardous Substance Threshold Planning Quantity [Ref. 40 CFR Part 355, Appendix A]. If quantities of extremely hazardous materials equal to or greater than TPQ are handled or stored, they must be registered with the local Administering Agency.

[d] No reporting requirement. Chemical has no listed threshold under this requirement.

[e] State reportable quantity for oil spills that will reach California state waters [Ref. CA Water Code Section 13272(f)]

[f] TQ is Threshold Quantity from 19 CCR 2770.5 (state) or 40 CFR 68.130 (federal)

[g] There is a state TQ of 1,000 pounds for sulfuric acid that does not apply to this form of sulfuric acid

TABLE 3.5-3
Toxicity, Reactivity, and Flammability of Hazardous Substances Stored Onsite

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatibles	Flammability*
Aqueous Ammonia (29%)	Color gas with pungent odor	Corrosive. Irritation to permanent damage from inhalation, ingestion, and skin contact	Acids, halogens, strong oxidizers, salts of silver and zinc.	Combustible but difficult to burn.
NALCO 7383 (Sodium Hydroxide)	Clear yellow liquid	Corrosive. Corrosive to tissue in presence of moisture. Strong irritant to tissue by ingestion.	Water, acids, organic halogens, some metals.	Noncombustible.
Sulfuric Acid (93%)	Colorless, dense, oily liquid.	Strongly corrosive. Strong irritant to all tissue. Minor burns to permanent damage to tissue.	Organic materials, chlorates, carbides, fulminates, metals in powdered form. Reacts violently with water.	Not combustible.
Bleach	Pale green; sweet, disagreeable odor. Usually in solution with water or sodium hydroxide	Corrosive. Toxic by ingestion. Strong irritant to tissue.	Ammonia and organic materials.	Fire risk when in contact with organic materials.
Stabrex ST70	Clear, light yellow liquid.	Corrosive. Corrosive to eyes and skin. Harmful if ingested or inhaled.	Strong acids, organic materials, sodium hypochlorite.	Non-flammable
Memclean C	Brown liquid, mild detergent odor.	Mild irritant.	None.	Non-flammable.
Citric Acid	Translucent crystals	None.	None.	Non-flammable.
KleenMCT103	Clear yellow liquid.	Severe irritant.	Strong oxidizers.	Combustible.
KleenMCT411	White powder.	Severe irritant	Strong oxidizer.	Combustible.
NALCO 356	Clear, light yellow/green liquid.	Corrosive. Corrosive to eyes and skin. Can cause kidney damage.	Strong oxidizers and acids. Sulfur dioxide or acidic bisulfite products	Flammable.
OR NALCO TRIACT 1800	Clear, colorless to light yellow.	Corrosive. Corrosive to eyes and skin. Can cause liver damage.	Strong acids, inorganic nitrites or nitrous oxide.	Flammable.
NALCO 7280	Clear to slightly turbid yellow.	Toxic. Kidney damage. Effects on bones.	Reactive salts (nitrites and sulfites).	Non-flammable.
ELIMIN-OX	Colorless liquid.	Slightly toxic. Low human hazard.	Mineral acids, nitrities, and strong oxidizers.	Non-flammable.
NALCO 7408	Yellow liquid.	Corrosive. Irritation to eyes, skin, and lungs. May be harmful if digested.	Strong acids and oxidizers.	Non-flammable.

TABLE 3.5-3
Toxicity, Reactivity, and Flammability of Hazardous Substances Stored Onsite

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatibles	Flammability*
NALCO 22106	Clear to slightly yellow.	Toxic. Possibly harmful if swallowed.	None known.	Non-flammable.
OR NALCO 7213	Clear, yellow to amber.	Toxic. Moderate health hazard. Moderate irritation to eyes and skin.	Strong acids.	Combustible. Flash point >200° F.
Hydrogen gas	Colorless, odorless gas	Simple asphyxiant, flammable	None known.	Flammable gas.
Lubricating Oil	Oily, dark liquid.	Ingestion hazardous.	Sodium hypochlorite.	Flammable.
Mineral Insulating Oil	Oily, clear liquid.	Minor.	Sodium hypochlorite.	May be combustible.
Hydraulic oil	Oily, clear liquid.	Minor.	Sodium hypochlorite.	May be combustible.
No. 2 Diesel Fuel	Oily, light liquid.	May be carcinogenic.	Sodium hypochlorite.	Flammable.
Various Cleaning Chemicals	Varies	Varies	Varies	Varies
Various Laboratory Reagents (liquid)	Varies	Varies	Varies	Varies
Various Laboratory Reagents (Solid)	Varies	Varies	Varies	Varies
NALCLEAR 7744	Off white liquid with slight odor	May cause skin and eye irritation with prolonged contact.	None known	Combustible. Flash point >200° F.
NALCO CORE SHELL 71325	Viscous off white liquid with hydrocarbon odor.	May cause skin and eye irritation with prolonged contact.	Strong oxidizers.	Combustible. Flash point >200° F.
NALCO CORE SHELL 71301	Off-white liquid, with hydrocarbon odor.	May cause irritation to eyes and skin with prolonged contact.	Strong oxidizers.	Combustible. Flash point >200° F.
NALCO NALCOLYTE 8100	Amber liquid with ammoniacal odor	May cause irritation to eyes and skin with prolonged contact.	Strong oxidizers.	Non-flammable
Ferric Chloride	Yellow brown liquid.	Corrosive. Harmful if swallowed or inhaled. Causes burns on contact.	Metals, Aluminum strong bases, strong oxidizing agents, potassium	Non-combustible.
Alum	Clear light green or amber liquid.	Irritation to skin and digestive system, May irritate or burn the eyes.	Alkalis and water reactive materials	Non-flammable

TABLE 3.5-3
Toxicity, Reactivity, and Flammability of Hazardous Substances Stored Onsite

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatibles	Flammability*
NALCO Aluminex 5	Colorless liquid with no odor.	May cause mild skin and eye irritation.	Strong alkalis (such as ammonia, sodium hydroxide, hypochlorites) and reactive metals	Non-flammable
NALCO ULTRION 8157	Greenish brown liquid with slight odor	May cause mild skin and eye irritation.	Metals	Non-flammable
NALCO 71 D5 Antifoam	Clear to light yellow liquid with hydrocarbon odor	May cause moderate skin and eye irritation. May cause nausea and vomiting if swallowed	Strong oxidizers and strong alkalis	Combustible
Calcium Sulfate	White Solid with no odor	May cause skin and eye irritation. Prolonged or repeated breathing of material may result in bronchitis.	Aluminum	Non-flammable
Chelating agents	Clear with no odor.	May cause eye and skin irritation.	Aluminum, ferrous metals, strong oxidizing agents	Non-flammable
Sodium sulfate	White powder or granular material with no odor	Irritant to eys, skin, nose, throat and lungs	Molten active metals	Non-flammable
NALCO ACTI-BROM 7342	Colorless liquid with no odor	Irritation to eyes and skin, may be harmful if swallowed	Strong acids, strong oxidizers, reducing agents.	Non-flammable.
NALCO 7330 (isothoazoline)	Light green or yellow liquid with mild odor	Will cause eye burns and permanent tissue damage. May cause severe irritation to skin. Causes chemical burns to mouth, throat and stomach if ingested	Strong oxidizers	Non-flammable
NALCO pHREEdom 5200M	Clear light yellow liquid with slight odor	May cause skin or eye irritation with prolonged contact	Strong oxidizers	Combustible. Flash point >200° F.
NALCO 7468	Off-white liquid with no odor	May cause skin or eye irritation with prolonged contact	None known.	Non-flammable
NALCO 3D TRASAR 3DT177	Yellow odorless liquid	Irritating to eyes and skin.	Strong alkalis.	Combustible. Flash point >200° F.
NALCO 3D TRASAR 3DT190	Orange liquid	Irritation to eyes and skin with prolonged contact.	None known.	Combustible. Flash point >200° F.

TABLE 3.5-3
Toxicity, Reactivity, and Flammability of Hazardous Substances Stored Onsite

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatibles	Flammability*
NALCO PermaTreat PC-191	Yellow liquid with ammoniacal odor	May cause skin and eye irritation with prolonged contact	Strong oxidizing agents and strong acids	Non-flammable
OR NALCO PermaTreat PC-191T	Yellow liquid with ammoniacal odor	May cause skin and eye irritation with prolonged contact	Strong oxidizing agents and strong acids	Non-flammable
NALCO 1723	Light yellow liquid with sulfur odor	Irritating to respiratory system. May cause skin and eye irritation.	Strong oxidizers and strong acids	Non-flammable
NALCO BT-4000	Light yellow liquid with no odor.	Corrosive to skin and eyes	Strong acids	Non-flammable
Sulfur Hexafluoride	Colorless, odorless liquefied gas	High concentrations can cause an oxygen deficient environment	Non reactive	Non-flammable

Data were obtained from Material Safety Data Sheets (MSDSs) and Lewis, 1991. MSDSs provided as Appendix 3.5A.

* Per Department of Transportation regulations, under 49 CFR 173: “Flammable” liquids have a flash point less than or equal to 141° F; “Combustible” liquids have a flash point greater than 141° F.

3.6 Land Use

The RCEC project modifications, as described in Sections 1 and 2 of this document, would not involve substantial changes to the land use findings and conclusions in Section 8.6 (Land Use) of the RCEC AFC.

3.6.1 Environmental Baseline Information

As noted above, the new RCEC project site is located approximately 1,300 feet north of the previously proposed site, and is partially within the City of Hayward and partially in unincorporated Alameda County. The site is comprised of four parcels, three of which form an "island" of unincorporated County land in the middle of the City of Hayward. These three parcels are zoned M-2-B-E (Heavy Industrial) in the County zoning ordinance and are designated as Industrial in the County General Plan. The fourth parcel, located within the limits of the City of Hayward, is zoned Industrial (I) by the City of Hayward, and is designated by the City of Hayward General Plan for industrial use. Existing onsite land uses include a pallet storage yard (County land), an automobile salvage yard (County land), and a portion of the City of Hayward WPCF (City land).

Changes to baseline land use information involve the planned annexation by the City of Hayward of the unincorporated portions of the project site. The three County parcels are included in the City's *Mt. Eden Annexation Study* and subsequent annexation application submitted to the Local Agency Formation Commission of Alameda County (LAFCO) in October of 2004. These three parcels are proposed for annexation into the City of Hayward as part of Phase I of the annexation process. The annexation is scheduled for consideration at the January 11, 2007, LAFCO meeting (personal communication, Jesus Armas, City Manager, City of Hayward, November 7, 2006).

The parcels in question (APNs: 439-007-000-900, 439-007-001-202, and 439-007-000-806) are included as part of the Depot Road Island, as designated in the Mt. Eden Study. The Depot Road Island area has been prezoned "Industrial" by the City of Hayward, consistent with the zoning designations of surrounding properties within the city limits. Other nearby County lands planned for annexation into the City of Hayward have also been prezoned for industrial use. The project site will become part of the West Industrial Planning Area and will be designated as part of the Hayward Industrial Corridor following annexation, which is identical to the land use designation of the site analyzed in the RCEC AFC.

The local setting discussion in the RCEC AFC included the location of sensitive receptors, such as residential uses and schools, relative to the project site. The distance of such uses from the project site will not substantially change with the relocation proposed herein; the new site is approximately 1,300 feet (0.25 mile) north of the previously analyzed location. For example, the nearest residential use is approximately 0.96 mile from the current site, versus about 0.82-mile from the previous site. The relative location of other potentially sensitive land uses is similar to that described in the RCEC AFC (+/- 500 feet). As with the previous site, no sensitive receptors are located immediately adjacent to the project site.

3.6.2 Environmental Consequences

No new significant impact to land use will result from the changes proposed as part of this amendment. Specifically, the proposed project changes will not: physically divide an established community; conflict with applicable land use plans, policies or regulations; or conflict with an applicable habitat conservation plan.

The currently proposed RCEC is an industrial land use that is consistent with current City of Hayward and Alameda County zoning and land use designations, as well as the proposed zoning and land use designations that will apply following City annexation of the project site. The primary components of the proposed facility are substantially similar to those analyzed in the RCEC AFC, which concluded that the project will not have a significant land use impact on the surrounding area. The currently proposed project remains an industrial use located in an industrial area; therefore, the conclusion that it will be consistent with surrounding land uses and will not physically divide any elements of the local community remains valid.

3.6.3 Mitigation Measures

No significant impacts to land use will result from the approval of this Amendment. Therefore, mitigation measures beyond those stipulated in the Commission Decision are not recommended.

3.6.4 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform to all applicable LORS related to land use. If the City of Hayward annexation does not precede construction, additional LORS related to the County of Alameda standards will apply in addition to the City of Hayward standards described previously in the RCEC AFC. Specifically, the project will be required to conform to all applicable County General Plan standards, in addition to the City's standards. The General Plan policies, standards, and applicable LORS of the City of Hayward are detailed in the RCEC AFC. County of Alameda LORS are listed in Table 3.6-1.

TABLE 3.6-1
Laws, Ordinances and Regulations for Alameda County

LORS (Local)	Document/Section	Applicability	AFC Section Where Conformance is Discussed
General Plan Designations	County of Alameda General Plan	Development within the jurisdiction of the County is subject to provisions in the County General Plan	AFC Amendment Section 3.6.1 and 3.6.2.

3.6.5 References Cited

City of Hayward website (www.hayward-ca.gov), Overview of Mt. Eden Annexation Study (http://www.hayward-ca.gov/forums/mt-eden/mtedenforum.shtm) accessed October 2006.

County of Alameda website (http://www.acgov.org) accessed October 2006.

Risk, David. 2006. Personal conversation with City of Hayward Planner David Risk. October 3.

3.6.6 Conditions of Certification

LAND-2 Lot Line Adjustment—Condition of Certification LAND-2, requiring the merging of the project site into one parcel should be revised slightly to reflect the new project location, as follows:

> **LAND-2** The project owner shall adjust the lot line~~s~~ between all parcels to which Calpine holds fee title ~~the two parcels~~ that constitute the RCEC project site in order to establish the RCEC ~~and AWT~~ project site~~s~~ in accordance with provisions and procedures set forth in the City of Hayward's subdivision ordinance.
>
> **Verification:** At least 30 days prior to construction of the RCEC project, the project owner shall submit evidence to the Energy Commission Compliance Project Manager (CPM) indicating approval of the lot line adjustment by the City of Hayward. The submittal to the CPM shall include evidence of compliance with all conditions and requirements associated with the approval of the lot line adjustment by the City.

3.7 Noise and Vibration

The change in the project location and construction parking area will result in a change in the noise generation profile for the project. In addition, the inclusion of a ZLD system and removal of the AWT plant will involve a different noise generation profile than was previously considered. For this reason, this Amendment includes a noise modeling analysis of the reconfigured power plant. This analysis demonstrates that the reconfigured project will not result in significant adverse noise impacts.

3.7.1 Environmental Baseline Information

Land use development intensity has not changed significantly in the since the ambient noise was conducted for the AFC. In addition, a review of sensitive receptors shows that there are no new sensitive receptors in the project area. For these reasons, additional ambient noise monitoring was not necessary and was not conducted. Although the location of project equipment that generates noise has changed, the nearest residential noise receptor (nearest property zoned residential) is the same as described in the AFC as noise monitoring Location 2. This is the residence east of the project site at 2627 Depot Road, near Industrial Boulevard. The distance from the RCEC boundary to this location has increased from 0.82 miles (AFC) to 0.96 miles (Amendment). The distance from the RCEC to the second-nearest residential receptor, the Waterford Apartments on Industrial Boulevard (AFC Location 3), has increased from 0.91 miles (AFC) to 1.06 miles (Amendment) (see Table 3.7-1).

TABLE 3.7-1
Noise Monitoring Locations

Location	Description	AFC Distance (miles)	Amendment Distance (miles)	Difference (miles)
1	Project northern fence line	0.0	NA	NA
2	Residence at 2627 Depot Road	0.82	0.96	0.14
3	Waterford Apartments on Industrial Boulevard	0.91	1.06	0.15
4	Shoreline Interpretive Center	0.73	0.73	0.0
5	Cogswell Marsh Bridge	1.02	0.79	-0.23

Monitoring locations 4 and 5 represented recreational, rather than residential, receptors. The distance from the project boundary to the Hayward Shoreline Interpretive Center (Location 4) is the same, and the distance from the project boundary to Cogswell Marsh footbridge has decreased by 0.23 miles, from 1.02 miles to 0.79 miles.

3.7.2 Environmental Consequences

As stated in the AFC, the average nighttime L_{90} at Location 2 is 45.8 dBA and daytime noise levels average about 60 dBA. The average nighttime L_{90} at Location 3 is somewhat higher, at 49.5 dBA and its daytime average is about 64 dBA. The expected noise attributable to the RCEC at these locations (AFC) was 44 dBA at Location 2 and 42 dBA at Location 3, well

below the existing nighttime L_{90}. In the new location and with the new equipment, noise attributable to the RCEC will be approximately 43 dBA at Location 2 and 42 dBA at Location 3, also significantly lower than the existing ambient nighttime noise levels at these locations (Table 3.7-2). The RCEC will therefore not cause a significant adverse impact in terms of noise at sensitive receptors. Figure 3.7-1 is a noise contour map showing near-field noise from the project.

TABLE 3.7-2
Noise Attributable to the RCEC as Amended

Location	Description	Average Nighttime L_{90} (dBA)	Noise Attributable to RCEC as Amended (dBA)	Difference (dBA)
1	Project northern fence line	58.1	NA	NA
2	Residence at 2627 Depot Road	45.8	43	-2.8
3	Waterford Apartments on Industrial Boulevard	49.5	42	-7.5
4	Shoreline Interpretive Center	51.2	45	-6.2
5	Cogswell Marsh Bridge	44.5	44	-0.5

For recreational receptors Locations 4 and 5, noise attributable to the project would also be substantially lower than the existing ambient noise levels at these locations. During the daytime hours when the recreational locations would be used by the public, the differences would be even greater. The 24-hour L_{eq} for Location 4, for example, is 62.6 dBA; for Location 5, it is 51.8 dBA. Given the relatively high daytime ambient noise levels, noise from the RCEC would not contribute significantly to daytime noise levels at these locations.

3.7.3 Mitigation Measures

No significant impacts to noise will result from the approval of this Amendment. Therefore, mitigation measures beyond those stipulated in the Commission Decision are not necessary.

3.7.4 Consistency with LORS

Design, construction and operation of the RCEC, including transmission lines, pipelines, and ancillary facilities will: (1) conform to all worker safety and health noise limits. (2) be conducted in accordance with applicable LORS relating to project noise, and (3) conform with the Conditions of Certification. The noise from the RCEC, as amended, will remain below all applicable noise standards.

3.7.5 References Cited

Alameda County. 1994. Alameda County General Plan Noise Element. Alameda County Planning Commission, 1975, Appendix N. Amended 2002, Supervisors Resolution 94-272.

Description:

Plot 1

Predicted Sound Contours (dBA) of Attenuated Baseline Plant Operating at Base Load

Project:

Russell City Energy Center

Drawing Number:

RCEC-Rev-B-1-2

Date:

November 14, 2006

Prepared for:

Calpine

Legend:

Property Line

Access Road Easement

N
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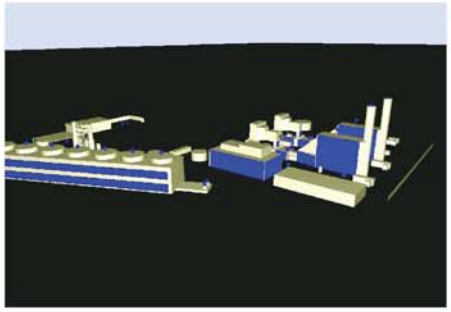

3D View of Model

SOURCE: Hessler Associates, Inc., 2006

FIGURE 3.7-1
NOISE CONTOURS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

CH2MHILL

EY112006002SAC figure_3_7_1.ai 11-14-06 tdaus

3.7.6 Conditions of Certification

NOISE-6 Post-Construction Noise Measurement—This condition requires post-construction noise measurements at ambient noise monitoring locations 1 through 5. Location 1 was intended to represent the project fence line and property boundary, to demonstrate compliance with the City of Hayward's noise standards at the property line.

Because Location 1 is no longer located at the project boundary, we suggest that the condition be changed to indicate a monitoring point at the eastern boundary of the project location.

> **NOISE-6** The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the project will not cause resultant noise levels to exceed the noise standards of the City of Hayward Municipal Code or Noise Element.
>
> No new pure tone components may be introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. Steam relief valves shall be adequately muffled to preclude noise that draws legitimate complaints.
>
> Protocol: Within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct short-term survey noise measurements at the eastern boundary of the project site, and at monitoring sites ~~1,~~ 2, 3, 4, and 5. The short-term noise measurements shall be conducted during both daytime (7 a.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) periods. The survey during power plant operation shall also include measurement of one-third octave band sound pressure levels at each of the above locations to ensure that no new pure-tone noise components have been introduced.
>
> If the results from the survey indicate that the noise level due to the project at monitoring site 2 exceeds 44 dBA Leq, or that the noise standards of the Hayward Noise Element have been exceeded at the eastern boundary of the project site or monitoring sites ~~1,~~ 4, or 5, mitigation measures shall be implemented to the project to reduce noise to a level of compliance with these limits.
>
> If the post-construction noise survey indicates that pure tones have been introduced by plant operations, the project owner shall take any necessary corrective actions to eliminate the pure tones.
>
> **Verification:** Within 30 days after completing the post-construction survey, the project owner shall submit a summary report of the survey to the CPM. Included in the post-construction survey report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. Within 30 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

3.8 Public Health

Due to the project changes and the availability of a new health risk assessment program, the public health section has been revised. This section presents the methods and results of the health risk assessment (HRA) performed to address the potential public health impacts associated with the emissions of toxic and/or hazardous pollutants from the construction and operation of the RCEC.

This analysis describes the identified toxic and/or hazardous air pollutants potentially resulting from the operation of the proposed facility. The primary source of such pollutants will be the exhaust stacks of the power generation turbines/HRSGs. Both the state and federal government have identified specific lists of compounds which are to be evaluated for potential effects on public health. These compounds are referred to as "air toxic pollutants," "hazardous air pollutants," and/or "non-criteria pollutants" and will be referred to herein as toxic air pollutants. The State of California identifies toxic air pollutants under two specific programs: the AB2588 Air Toxics Hot Spots Program and the Air Resources Board Toxic Air Contaminant Identification Program. The federal list of air toxic contaminants is presented in Title III of the Clean Air Act Amendments of 1990, and consists of a total of 189 specific compounds.

The air toxic pollutants identified in the various programs noted above are known or suspected to cause a variety of health-related problems, including short-term (acute), long-term (chronic), and long-term (carcinogenic) health effects. The primary exposure pathway for these pollutants, as emitted from the proposed facility, would be the air pathway. Emissions of toxic air pollutants will consist of small quantities of specific pollutants found in the engine exhaust in the form of both gaseous and particulate species. The HRA performed for the facility consisted of a multiple-pathway assessment using the latest version of the California Air Resources Board (CARB) / Office of Environmental Health and Hazard Assessment (OEHHA) HARP model (Version 1.2a) coupled with the HarpExpress input file generator.

Cancer risk is the probability or chance of contracting cancer over an average human lifespan of 70 years. Note that cancer risk, as defined in the previous sentence, deals with contracting cancer, not cancer mortality probability. Currently, in the United States, the National Cancer Institute estimates that the risk of contracting cancer from all known causes is about 400,000 per million, or about 40 percent. Environmental and occupational exposures, and, therefore, related cancer risk probabilities are generally estimated to be only a small fraction of the total background risk. Environmental and occupational cancer risks are a primary program focus of current regulatory policy due to the following:

- Public exposures are considered to be involuntary, and
- These exposures can, in principle, be reduced by regulatory programs.

Non-cancer health effects are classified as either chronic or acute. Chronic effects result from long-term exposures via chemical accumulation in the body over a period of years. Acute effects are caused by brief exposures which typically last no more than 24 hours, but the concentrations involved in acute effects are typically much higher than those involved in manifestation of chronic health effects.

3.8.1 Environmental Baseline

3.8.1.1 Site Location and Topography

The site is located in Hayward, California (Alameda County). The site is adjacent to and south of Depot Road, and west of the Union Pacific railway line at its crossing of Depot and Clawiter Roads in the east Hayward industrial area. The topography of the site is essentially flat, with a mean elevation of approximately 10 feet above mean sea level (amsl). The site and immediate surrounding area are primarily commercial and industrial in nature. The site occupies approximately 18.8 acres of presently commercial/light industrial land, and lies approximately 1.65 miles east of the eastern shoreline of South San Francisco Bay. Elevations to the north, west, and south of the site are relatively low (i.e., similar to site elevations). Elevations to the east tend to increase gradually toward the East Bay foothills. Elevations of 100 feet amsl or greater exist approximately 3.5 miles east of the site.

3.8.1.2 Population Data

The site is situated in census tract 4371. Figure 3.1D-2 in Appendix 3.1D shows the site and surrounding census tracts. Figure 3.1D-1 shows the approximate locations of identified sensitive receptors within a 6 mile radius of the plant site. Table 3.1D-11 presents a summary of data for each identified census tract within the 6 mile radius.

3.8.1.3 Land Use

According to the Auer land use classification scheme, a 3-kilometer radius boundary around the proposed site yields a predominately rural classification. This is consistent with the current land use and zoning designation for the site and surrounding area as "industrial (I)". The site is located in the City of Hayward Industrial Corridor which extends to Hayward Executive Airport to the north, and to about 1 mile to the east of RCEC. To the west and south of the site lie predominately open lands and municipal properties. The nearest residential area is approximately 1.06 miles east-northeast of the site north of Depot Road and east of Industrial Road. The total amount of residential housing in the immediate area is small. The General Plan designation for the site and surrounding area is "west industrial," as the site lies within the West Industrial Planning Area.

3.8.1.4 Overview of Risk Assessment

The standard approach to assessing public health risks has its origins in early documents produced by the National Academy of Sciences. These early documents proposed a four-step assessment process which is still being implemented and used in the current HRA process at both the state and federal levels. The four basic assessment elements are (1) hazard identification, (2) exposure estimation or assessment, (3) dose-response assessment, and (4) risk characterization. Appendix 3.1D contains a detailed explanation of the risk assessment process, underlying assumptions, research data, goals, results, and uses.

3.8.1.5 Risk Assessment Process

Each of the four basic elements of the HRA scheme is discussed below:

Hazard Identification, for a specific air toxic pollutant, involves the evaluation of the specific compound to determine if a hazard exists from exposure to the compound or

substance. If a hazard is identified, then further evaluation is performed to establish if the hazard is associated with acute, chronic, carcinogenic, or other adverse health effects.

Exposure assessment is that part of the process which estimates the extent of public exposure to the compound or compounds under evaluation, for which potential cancer risk or acute and/or chronic non-cancer health effects may occur. Exposure assessment is typically accomplished by air dispersion modeling using models approved by various local, state, and federal agencies (i.e., local air district, Air Resources Board, and the Environmental Protection Agency). For purposes of the HRA, dispersion modeling is typically used to establish the maximum 1-hour and annual concentrations of single or multiple air toxics at a wide variety of receptor locations. One-hour concentration values are used to assess short-term (acute) health effects, while annual concentration values are used to assess long-term (chronic and carcinogenic) health effects.

Dose-response assessment is that part of the overall process which characterizes the link between exposures and the predicted incidence of an adverse health effect with respect to the exposed population. With respect to carcinogenic risk assessment, the dose-response link is delineated in terms of "potency slope" values which are used to predict the probability of cancer risk associated with an estimated exposure. Cancer potency slope values are expressed as the 95th percentile upper confidence limits of the slope of the dose-response curve. These values assume a continuous lifetime exposure to the substance under consideration at a dose of 1 milligram per kilogram (mg/kg) body weight per day. For cancer risk, it is assumed that risk is directly proportional to dose, and that there is no threshold for carcinogenesis.

Dose-response data for non-cancer health effects are derived from animal and human studies which are used to establish acute and chronic Reference Exposure Levels (RELs). These REL values are defined as concentration values at which no adverse non-cancer health effects are expected or predicted to occur. As such, non-cancer acute and chronic health effects are assumed to have thresholds below which no health effects are anticipated. Typically, the most sensitive health effect is chosen to determine the REL if the substance affects multiple organ systems, but the actual threshold for health effects in the general population is not known with any precision.

Risk characterization is the final step of any risk assessment. Population exposures established via dispersion modeling are then coupled with potency factors and RELs to predict cancer risk as well as acute and chronic non-cancer health effects for the target population under consideration. Cancer risk is generally expressed as an occurrence rate per million of exposed population, while non-cancer health effects are typically expressed as a Hazard Index (HI). For example, for exposures to multiple non-carcinogen substances, the HI approach is applied for all substances affecting the same organ system. Cancer risks from multiple carcinogens are considered additive.

3.8.1.6 Air Dispersion Modeling

Subsequent to calculation of emissions, and confirmation of all applicable release parameters, dispersion modeling is used to predict population exposures for the various air toxic pollutants under consideration. Dispersion models are typically classified as "screening" or "refined," depending on the level of detail built into the model to assess

population concentration estimates. Refined models are preferred for use in the HRA process due to the increased level of "robustness" of the internal algorithms used to predict concentration estimates. In addition, refined models typically have the capability to use representative meteorological data sets, which tend to predict more representative and less conservative concentration values. The most widely used refined model for HRA purposes is the U.S. Environmental Protection Agency (EPA) ISCST3 model. The current version of the HARP model incorporates the ISCST3 model. A grid extending 5,000 meters in each direction from the site, incorporating 50-meter receptor point spacing was used to define the potential impact area for purposes of the risk assessment. A spacing pattern of 50 meters ensures that all potential receptor sites are represented on the modeling grid.

3.8.1.7 Emissions Estimation

Emissions of all identified air toxic pollutants have been calculated for the proposed facility processes and equipment. These emissions are presented in Section 3.1 and in Appendix 3.1A. Emissions have been calculated based on established and approved methods and factors as referenced. Maximum 1-hour and annual emissions values have been used in the risk assessment process to ensure that the health effects from the proposed facility are not underestimated. Table 3.8-1 delineates the identified air toxic pollutants emitted from the facility equipment.

TABLE 3.8-1
Criteria and Toxic Pollutants Emitted from RCEC Facility

NOx	Propylene Oxide
CO	Toluene
Volatile organic compounds (VOCs)*	Xylene
SOx	Diesel Particulate Matter
PM10/PM2.5	Arsenic
Ammonia	Aluminum
PAHs	Cadmium
Acetaldehyde	Chromium III
Acrolein	Copper
Benzene	Iron
1-3 Butadiene	Lead
Ethylbenzene	Mercury
Formaldehyde	Manganese
Hexane	Nickel
Naphthalene	Silver
Propylene	Zinc

* BAAQMD uses particulate organic compounds (POC). For purposes of this application, VOC = POC.

Tables 3.8-2 through 3.8-4 delineate the maximum hourly and annual emissions of all identified air toxic pollutants from the facility processes.

TABLE 3.8-2
Maximum Hourly, Daily, and Annual Air Toxic Emissions (all turbines/HRSGs)

Toxic	Emission Factor* (lb/mmscf)	Maximum Hourly Emissions (lb)	Maximum Daily Emissions (lb)	Maximum Annual Emissions (tons)
Total PAHs excluding Naphthalene	0.00066	0.00289	0.0657	0.0115
Naphthalene	0.00166	0.00727	0.165	0.029
Ethylbenzene	0.0179	0.0784	1.78	0.313
1-3 Butadiene	0.000127	0.000556	0.0126	0.00222
Acetaldehyde	0.0686	0.30	6.83	1.2
Acrolein	0.00643	0.0282	0.64	0.112
Benzene	0.0136	0.0595	1.35	0.238
Formaldehyde	0.110	0.482	11.09	1.92
Propylene	0.770	3.37	76.6	13.50
Toluene	0.071	0.311	7.07	1.24
Xylenes	0.0261	0.114	2.60	0.456
Propylene Oxide	0.0478	0.209	4.76	0.836
Hexane	0.259	1.13	25.80	4.53
Ammonia	5 ppm			

* CARB-CATEF Database (mean values for source type and category)

TABLE 3.8-3
Maximum Hourly, Daily, and Annual Air Toxic Emissions-Cooling Tower*

Toxic	Parts per million	Maximum Hour Emissions (lb)	Maximum Daily Emissions (lb)	Maximum Annual Emissions (tons)
Ammonia	60	.0212	.509	.0928
Aluminum	1.5	.00053	.0127	.00232
Arsenic	.05	.0000177	.000424	.0000774
Cadmium	.08	.0000283	.000678	.000124
Chromium	.41	.000145	.00348	.000634
Copper	.61	.000215	.00517	.000944
Lead	.19	.0000671	.00161	.000294
Manganese	.84	.000297	.00712	.0013
Mercury	.0006	.000000212	.0000051	.000000928
Nickel	.47	.000166	.00398	.000727
Selenium	.07	.0000247	.000593	.000108

TABLE 3.8-3
Maximum Hourly, Daily, and Annual Air Toxic Emissions-Cooling Tower*

Toxic	Parts per million	Maximum Hour Emissions (lb)	Maximum Daily Emissions (lb)	Maximum Annual Emissions (tons)
Silver	.06	.0000212	.00051	.0000928
Zinc	1.92	.000678	.0163	.00297

* Based on cooling tower drift calculations and water quality data.

TABLE 3.8-4
Maximum Hourly, Daily, and Annual Air Toxic Emissions-Emergency Fire Pump Engine

Toxic	Emission Factor (units)	Maximum Hour Emissions (lb)	Maximum Daily Emissions (lb)	Maximum Annual Emissions (lb)
Diesel Particulate Matter*	0.12 g/hp-hr	0.079	0.079	4.11

* Diesel particulate exhaust matter (DPM) per CARB is comprised of approximately 40 pollutants including VOC gases, metals, PAHs, POMs, etc. CARB currently employs the use of DPM to quantify the exposure to whole diesel exhaust.

g/hp-hr = gallon per horsepower hour

3.8.1.8 Sensitive Receptor Identification

Within the general population there are individuals who may be more sensitive to toxic air pollutant exposures. These sensitive populations include, but are not limited to, young children and chronically ill individuals. The area surrounding the proposed facility may contain high densities of these types of individuals located at receptors identified as daycare centers, elementary schools, middle schools, high schools, colleges and universities, nursing and convalescent homes, residential daycare facilities, hospitals, etc. These sensitive populations are protected by general assumptions included in the dose-response assessment portion of a HRA, but their identification is essential to ensuring the general public that such populations are being adequately considered in the risk analysis. Sensitive receptors included in the HRA were derived from the following sources: (1) a sensitive receptor search performed by Environmental Data Resources, Inc. (EDR) for a radius of 6 miles around the facility site, and (2) review of available map resources, such as the applicable USGS topographic maps to augment the EDR receptor list. A listing of these receptors is included in Appendix 3.1D. Figure 3.1D-1 shows the location of all identified sensitive receptors within a 6-mile radius of the facility site. These receptors are essentially covered by the 50-meter grid spacing pattern noted above.

3.8.1.9 Significance Criteria for Health Effects

Table 3.8-5 presents data on the current significance criteria for both cancer and non-cancer health effects for the State of California and the BAAQMD. Risk assessment results which are below these significance levels are deemed “not significant.”

TABLE 3.8-5
Health Effects Significant Threshold Levels

Effect	Significance Thresholds	
	BAAQMD	State of California
Cancer Risk per million	<= 1.0 without T-BACT <= 10.0 with T-BACT	<= 1.0 without T-BACT <= 10.0 with T-BACT
Acute HI	1.0	1.0
Chronic HI	1.0	1.0

T-BACT = best available control technology for air toxic compounds

Table 3.8-6 presents data on the top ten air toxics in the BAAQMD as derived from CARB and BAAQMD publications.

TABLE 3.8-6
Top Ten BAAQMD Toxic Air Pollutants—Summary Data 2004

Toxic	Emissions (tons/year)	Maximum Concentration	Predicted Cancer Risk (10^6)
Acetaldehyde	1,355	0.74 ppb	4
Benzene	1,997	0.372 ppb	34
1-1 Butadiene	414	0.09 ppb	34
Carbon Tetrachloride	0.94	0.10 ppb	25
Hexavalent Chromium	0.10	0.091 ng/m^3	14
Para-Dichlorobenzene	456	0.17 ppb	11
Formaldehyde	3,208	1.71 ppb	13
Methylene Chloride	956	0.14 ppb	<1
Perchloroethylene	730	0.04 ppb	1
Diesel PM	4,552	1.6 µg/m^3	111

ng/m^3 = nanograms per cubic meter
µg/m^3 = micrograms per cubic meter

3.8.1.10 Assumptions Used in the Risk Assessment Process

In order to provide a conservative estimate of health effects, several assumptions were made in the performance of the HRA for the RCEC facility. These assumptions are as follows:

- The first high annual maximum impact receptor (MIR) receptor location was used to establish the proposed project health impacts for cancer risk as well as chronic non-cancer health effects. The MIR represents the point of maximum impact irrespective of whether the location was a residential or worker location. Use of the MIR in this manner results in the probability that cancer or chronic health effects at any other known receptor location will not exceed the MIR values.
- The first high 1-hour MIR receptor location was used to establish the proposed project health impacts for all acute non-cancer health effects. The MIR represents the point of

maximum impact irrespective of whether the location was a residential or worker location. Use of the MIR in this manner results in the probability that cancer or chronic health effects at any other known receptor location will not exceed the MIR values.

In other words, the human health risks predicted at any other receptor location will not be higher than those values predicted for the MIR locations noted above. If there are no significant impacts (i.e., cancer or health effects values above the significance thresholds as delineated in Table 3.8-5 at the MIR locations, then it is highly unlikely that there would be significant health impacts at any other known location within the established impact area of the facility.

3.8.2 Environmental Consequences

As stated above, the most current version of the CARB/OEHHA HARP model (1.2a, August 2005) was used to perform the HRA. HARP, as currently configured, will not accept an input or output file from the most current version of ISCST3. As such, HARP relies upon a previous version of ISCST3 to generate the population exposure estimates. This difference in dispersion model versions is not expected to result in any significant differences in receptor concentrations as compared to the current version of ISCST3. The input files for the HARP HRA runs were produced by the HARP Express program (Version 2.07, September 2004). HARP Express is simply a data input file generator based on Microsoft Excel format. It provides a simpler and quicker option for carrying out risk analysis for permitting and siting purposes. HARP Express bypasses the HARP database by using Microsoft Excel as the primary data input mechanism. Once the input file is created by Harp Express, then the main HARP model is called upon to perform all of the dispersion modeling and subsequent risk assessment analysis.

3.8.2.1 Operational Risk Assessment Results

Table 3.8-7 presents a summary of the HARP risk assessment analysis for the operational phase of the RCEC facility. This data indicates that the facility health risks are considered "insignificant." Appendix 3.1D contains detailed printouts of the risk assessment results.

TABLE 3.8-7
Health Risk Assessment Summary (turbines/HRSGs/cooling tower)

Risk Category	Facility Values	Applicable Significance Threshold
MIR		
Cancer Risk	1.44E-6	<= 10.0 with T-BACT
Acute Hazard Index	0.0525	1.0
Chronic Hazard Index	0.00371	1.0
MIR Residential		
Cancer Risk	1.27E-6	<= 10.0 with T-BACT
Acute Hazard Index	.0166	1.0
Chronic Hazard Index	.00312	1.0

TABLE 3.8-7
Health Risk Assessment Summary (turbines/HRSGs/cooling tower)

Risk Category	Facility Values	Applicable Significance Threshold
MIR Worker (High End)		
Cancer Risk	2.18E-7	<= 10.0 with T-BACT
Acute Hazard Index	0.0219	1.0
Chronic Hazard Index	.000562	1.0

3.8.2.2 Construction Risk Assessment Results

The construction assessment evaluates the health impacts due to diesel exhaust particulate matter (DPM) emitted by diesel construction equipment associated with construction of the RCEC project. This screening assessment is based on HARP. A complete description of the construction impact methodology is presented in Appendix 3.1D.

Typically, most air districts in California recommend the following significance criteria for health risk assessments:

> **Criterion 1:** a greater than 10 in 1 million (10×10^{-6}) lifetime probability of contracting cancer from sources or activities employing T-BACT; or, a greater than 1 in 1 million (1×10^{-6}) lifetime probability of contracting cancer from sources or activities <u>not</u> employing T-BACT, and,
>
> **Criterion 2:** a health hazard index of 1.0 for evaluating the non-carcinogenic effects of toxic air contaminants.

It should be noted, that construction equipment that uses California-certified fuels and complies with the applicable state and federal off-road equipment emissions standards is considered to be employing T-BACT.

Using these typical thresholds of significance, the HRA finds that the maximum anticipated 9-year OEHHA cancer risks associated with the construction of the proposed project are 2.7 in 1 million at the construction MIR. The assessment also finds that the chronic hazard index of 0.0017, for DPM, for non-cancer health impacts is well below 1.0 at the MIR under this construction scenario. The health impacts associated with the construction of the proposed project are below the significance criteria and are, therefore, less than significant. See Appendix 3.1D for details on the construction risk methodology and results.

3.8.2.3 Cumulative Risk Impacts

Health risks from the proposed facility processes and equipment have been evaluated and compared to the existing significance thresholds. The facility risks, based on the proposed design and operational characteristics are "insignificant." If required, a cumulative impact analysis for criteria pollutants will be conducted subsequent to submittal of the Amendment petition pending receipt from the BAAQMD of the required stationary source inventories (i.e., emissions, physical data, location data, etc). Results of this analysis are not expected to

show cumulative criteria pollutant impacts above established significance levels. Due to the insignificant risk levels, no further modeling or cumulative analyses were conducted for air toxics impacts.

3.8.3 Mitigation Measures

No additional mitigation measures are required for air toxics emissions since the risk impacts when compared to the existing significance thresholds indicate that the proposed facility risks are "insignificant."

3.8.3.1 Significant or Unavoidable Adverse Risk Impacts

No significant adverse health effects or impacts are anticipated from either the construction or operation of the proposed facility.

3.8.3.2 Hazardous Materials

The facility may use and store, on a periodic basis, materials that may be deemed hazardous. Use and storage of such materials will comply with all applicable regulations and standard practices pertaining to such materials. Normal use and storage of such materials is not expected to result in any significant impacts on public health. In addition, the facility will comply with all applicable regulations pertaining to avoidance and mitigation of hazardous material spills, releases, etc., including but not limited to the Risk Management Plan provisions of 40 CFR 68, and the CalARP provisions of CCR Title 19, Division 2, Chapter 4.5. Section 8.5 of the AFC presents a detailed discussion on hazardous materials use, storage, and disposal, as well as mitigation measures and compliance with applicable regulations.

3.8.4 Consistency with LORS

3.8.4.1 Laws, Ordinances, Regulations, and Standards

Table 3.8-8 presents an overview of the various laws, ordinances, and regulations applicable to public health. The required discussion of compliance and conformance is given in Table 3.8-9.

TABLE 3.8-8
Summary of Applicable Public Health Regulations

Citation	Health Issue	Agency	Compliance Strategy
Federal Clean Air Act, Title III	Exposure of the public to toxic air pollutants	EPA Region IX	Application of maximum achievable control technology (MACT) if major source of hazardous air pollutants
California Clean Air Act, California Health and Safety Code (CHSC) 39650 et seq.	Exposure of the public to toxic air pollutants	CARB and BAAQMD	Application of best available control technology (BACT) and T-BACT

TABLE 3.8-8
Summary of Applicable Public Health Regulations

Citation	Health Issue	Agency	Compliance Strategy
40 CFR 68	Accidental release exposures	Alameda County Department of Environmental Health (ACDEH)	Prepare Risk Management Policy (RMP) and offsite consequence analysis if required, submit to Alameda County for review and approval
CalARP Title 19 CCR	Accidental release exposures	ACDEH	Prepare RMP and offsite consequence analysis if required, submit to Alameda County for review and approval
CHSC 25500-25542	Hazardous materials inventory, business, and planning requirements per Emergency Planning and Community Right-to-Know Act	State Office of Emergency Services and ACDEH	Prepare all required HazMat plans and inventories, distribute to affected agencies
CHSC 44300 et seq.	AB2588 Program, air toxics emissions	BAAQMD	Participate in AB2588 inventory and reporting program at District level
BAAQMD Reg. 2 Rule 2, NSR	Toxics NSR, T-BACT, HRA, and mitigation	BAAQMD	Application of BACT and T-BACT
CHSC 25249.5 et seq.	Proposition 65	OEHHA	Comply with all signage and notification requirements, etc.

TABLE 3.8-9
Compliance Analysis for Applicable LORs

LORs Citation	Compliance Analysis
Federal Clean Air Act, Title III	The source as designed and operated, per this application, is not a major source of hazardous air pollutants. As such, the incorporation of MACT is not required at this time.
California Clean Air Act, CHSC 39650 et seq.	The control systems as specified in this application meet the requirements of both BACT and T-BACT.
40 CFR 68	The project applicant will work closely with the ACDEH to identify any substances and storage amounts which are subject to the RMP requirements. If any substances are identified, the appropriate Program Level RMP will be prepared prior to the substance(s) being brought on site.
CalARP Title 19 CCR	The project applicant will work closely with the ACDEH to identify any substances and storage amounts which are subject to the RMP requirements. If any substances are identified, the appropriate Program Level RMP will be prepared prior to the substance(s) being brought on site.

TABLE 3.8-9
Compliance Analysis for Applicable LORs

LORs Citation	Compliance Analysis
CHSC 25500-25542	The project applicant will prepare all necessary HazMat business plans for review by agencies such as the ACDEH, Hayward City Fire Department, etc. Plans will meet all requirements of these agencies and will be updated on the agency schedule as specified.
CHSC 44300 et seq.	The project applicant or facility operator will work with BAAQMD staff to produce the required AB2588 air toxics emissions inventory plans and reports.
BAAQMD Reg. 2 Rule 2, NSR	The control systems as specified in this application meet the requirements of both BACT and T-BACT.
CHSC 25249.5 et seq.	The facility, during construction and operation, will comply with all Prop. 65 signage and notification requirements.

3.8.4.2 Agencies and Contact Information

Table 3.8-10 presents data on the involved agencies, contact information, and the reason why the agency is involved from the standpoint of air toxics and/or hazardous materials.

TABLE 3.8-10
Involved Agencies and Contacts

Agency/Address	Contact Information	Reason for Involvement
Alameda County Dept. of Environmental Health 1131 Harbor Bay Parkway Alameda, CA 94502	Tom Peacock 510-567-6702	HazMat plans, RMP review, public exposures to acutely hazardous materials, etc.
BAAQMD 939 Ellis Street San Francisco, CA 94109	Brian Bateman Dir. Engineering Division 415-771-4653	Determination of Compliance, BAAQMD permit review and issuance, air toxics exposure assessment and compliance
City of Hayward Fire Dept. HazMat Divinizing 777 B Street Hayward, CA 94541	Hugh Murphy HazMat Coordinator 510-583-4924	HazMat plans, chemical inventories, fire safety
EPA Region IX 75 Hawthorne Street San Francisco, CA 94105	Gerardo Rios Chief, Permits Section 415-947-3974	Applicability of federal air programs, PSD, Title III MACT, air toxics exposure assessment and compliance
California Air Resources Board 1001 I Street Sacramento, CA 95814	Richard Bode, Chief Health and Exposure Assessment Branch Research Division 916-323-8413	Applicability of state air programs, air toxics exposure assessment and compliance
Office of Environmental Health and Hazard Assessment 1001 I Street Sacramento, CA 95814	Cynthia Oshita, Manager 916-322-2068	Air toxics exposure assessment and compliance, public exposure to toxic/hazardous materials

3.8.4.3 Required Permits and Schedule

The ACDEH will be responsible for review and approval of any required RMP pertaining to substances stored onsite above the RMP threshold amounts. Any such RMP will be required to be completed, approved, and implemented prior to bringing the affected substance on site. The BAAQMD is responsible for providing the CEC with a Determination of Compliance for the proposed facility. The BAAQMD Determination of Compliance will be used in conjunction with the ATC/PTO application as the basis for issuance of the BAAQMD Authority to Construct and Permit to Operate. An ATC/PTO application which is comprised of the project license Amendment Air Quality and Public Health sections and appendices will be submitted to the BAAQMD within 10 working days after submittal of the Amendment petition to the CEC.

3.8.5 References

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U.S. Environmental Protection Agency (EPA). 1989. *Exposure Factors Handbook*, USEPA-OHEA, 600/8-89-043. July.

3.8.6 Conditions of Certification

See Section 3.1, Air Quality.

3.9 Socioeconomics

The modification of the project location and construction parking area will have a minor effect on socioeconomics. The project site will be located on both unincorporated Alameda County and City of Hayward property, which will have a minor effect on tax distribution. In addition, the estimate of the project construction workforce has changed. With the addition of the ZLD system, the addition of the Title 22 RWF, and the removal of the AWT plant, the contribution of construction jobs to the local economy will be greater, providing slightly increased net economic benefits. The number of jobs during the operational phase will remain the same, and will not cause a significant net change to the local economy. Finally, tax rates and capital costs have increased for the project and this will increase the economic benefits of the project to the local economy.

3.9.1 Environmental Baseline Information

The following subsections describe the effects of construction and operation that will take place as a result of the addition of the ZLD, the addition of the Title 22 RWF, removal of the AWT, and change in the project location.

3.9.1.1 Construction Phase Impact

3.9.1.1.1 Construction Workforce

Construction will take place over approximately 25 months during the 2-year construction period beginning in the spring of 2008. Table 2.4-2 identifies the revised construction workforce for the RCEC plant. Construction personnel requirements will peak at approximately 650 workers (an increase from 485 as presented in the AFC) in month 14 of the construction period.

Available skilled labor in the Alameda County was evaluated by contacting the Building and Construction Trades Council of Alameda County and examining information provided by the California Employment Development Department (CEDD) (Table 3.9-1). Both sources show that the workforce in Alameda County would sufficiently meet the RCEC's labor requirements for construction. Therefore, RCEC construction will not place an undue burden on the local workforce. In addition, as shown in Table 3.9-2, the construction workforce has been growing within the Oakland-Fremont-Hayward Metropolitan Division (MD). If growth continues at this rate, RCEC is not likely to result in a significant construction impact. Finally, because the City of Hayward is in the San Francisco Bay Area, which is an area with a huge workforce, construction of the project is unlikely to result in construction labor shortages.

TABLE 3.9-1
Available Labor by Skill in Oakland-Fremont-Hayward Metropolitan Division,* 2001 to 2008

Occupational Title	Annual Averages		Absolute Change	Percentage Change	Average Annual Compounded Growth Rate (%)
	2001	2008			
Carpenters	10,610	12,290	1,680	15.8	1.5
Cement Masons & Concrete Finishers	1,060	1,240	180	17.0	1.6

TABLE 3.9-1
Available Labor by Skill in Oakland-Fremont-Hayward Metropolitan Division,* 2001 to 2008

Occupational Title	Annual Averages		Absolute Change	Percentage Change	Average Annual Compounded Growth Rate (%)
	2001	2008			
Painters, Construction & Maintenance	3,560	4,030	470	13.2	1.2
Sheet Metal Workers	1,430	1,560	130	9.1	0.9
Electricians	4,960	5,220	260	5.2	0.5
Welders, Cutters, Solderers, and Brazers	3,060	3,510	450	14.7	1.4
Industrial Truck and Tractor Operators	5,070	5,190	120	2.4	0.2
Operating Engineers and Other Construction Equipment Operators	3,370	3,510	140	4.2	0.4
Helpers, Construction Trades	2,230	2,320	90	4.0	0.4
Construction Laborers	11,870	13,430	1,560	13.1	1.2
Plumbers, Pipefitters, and Steamfitters	3,190	3,290	100	3.1	0.3
Administrative Services Managers	2,200	2,400	200	9.1	0.9
Mechanical Engineers	1,790	1,850	60	3.4	0.3
Electrical Engineers	1,680	1,650	-30	-1.8	-0.2
Engineering Technicians	4,340	4,620	280	6.5	0.6
Plant & System Operators	3,770	3,850	80	2.1	0.2

Source: CEDD, 2006.

* Occupational data projections were developed for the Oakland MSA before the name was changed to the Oakland-Fremont-Hayward MD. However, since both the MD and the MSA comprise the two counties of Alameda and Contra Costa, data for the MSA and MD are the same.

3.9.1.1.2 Fiscal Resources

The total construction cost of the project is estimated to be approximately $600 million, of which $74.7 million will be paid out as wages and salaries, including benefits (estimated using $65.60/hour). Local products subject to county taxes will be purchased during the construction process. Local governments will not realize property tax revenue, which reflects the value of the completed facility, until after construction is complete. However, sales tax revenue will be realized when the construction period begins. Approximately $12 million of total local product purchases would be taxed during project construction.

The sales tax rate in Alameda County is 8.75 percent (as of July 1, 2006), distributed as shown in Table 3.9-2. The total tax revenue from the sale of local products would be approximately $1,050,000.

TABLE 3.9-2
Alameda County Sales Tax Rate and Distribution

Sales Tax Rate	Distribution	Distribution
8.75% (county-wide)	State of California – 6.25%	$750,000
	Local (City/County) – 0.75%	$90,000
	Transportation Fund – 0.25%	$30,000
	Special Districts – 1.50%	$180,000
Totals	**8.75%**	**$1,050,000**

Source: California Board of Equalization. 2006a; BOE, 2006b

3.9.1.2 Operation Phase Impacts

3.9.1.2.1 Plant Operation Workforce

RCEC will begin commercial operation in the summer of 2010 and will employ up to 25 full-time employees. Anticipated job classifications are shown in Table 3.9-3. The entire permanent workforce is expected to commute from within Alameda County.

TABLE 3.9-3
Typical Plant Operation Workforce

Plant Peak Operations	Personnel	Shift	Workdays
Operations	5 – A Operators 4 – B Operators 4 – C Operators		7 days a week rotate shifts to allow personnel 2 days per week off time
Maintenance	2 – Maintenance Technicians 1 – Chemical Technician 1 – EI&C Technician 1 – Materials Technician 1 – DCS Specialist	Standard 8-hour days	5 days a week (Maintenance technicians will also work unscheduled days and hours, as required, including weekends)
Administration	1 – Plant Manager 1 – Operations Manager 1 – Maintenance Manager 1 – Plant Engineer 1 – Business Manager 1 – A/P Clerk	Standard 8-hour days	5 days a week additional coverage, as required

Facility employees may be drawn from the local workforce, regional workforce, or existing staff. Consequently, any increase in population resulting from the project is expected to be minimal and inconsequential. There will be no significant impact on local employment.

3.9.1.2.2 Operation Impacts on Fiscal Resources

The RCEC operation will have a small, permanent benefit to the local economy by creating employment opportunities for local workers and through local expenditures for materials, such as office supplies and services. The average annual salary per operations employee is

expected to be $80,000, excluding benefits. For the assumed average of 25 full-time employees, this will result in an operation payroll of approximately $2 million per year. All cost estimates are in constant 2006 dollars as are the economic benefits discussed in this section.

RCEC is expected to bring increased property tax revenue to the City of Hayward. The California State Board of Equalization has jurisdiction over the valuation of a power-generating facility for property tax purposes, if the power plant produces 50 megawatts (MW) or more. For a power-generating facility producing less than 50 MW, the county has jurisdiction over the valuation (Lee, 2006). Because RCEC is a nominal 600-MW power-generating facility, the Board of Equalization will assess property value. The property tax rate is set by the Alameda County Assessors Office and the current property the rate is 1.0294 percent. Assuming a capital cost of $600 million, the assessed property tax value is estimated to be approximately $6,176,400 per year. Because the property taxes are collected at the city level, their disbursement is also at the city level.

3.9.2 Environmental Consequences

No significant impacts to socioeconomics will result from the approval of this Amendment. The project will not cause an influx of a significant number of construction or operation workers into the local area; will not have an adverse effect on employment, housing, schools, medical, tax revenues, and fire and police protection; will result in increased revenue from sales taxes due to construction activities; and will recruit employees and purchase materials within the Bay Area to the greatest extent possible.

3.9.3 Mitigation Measures

No changes to the mitigation measures included in the Commission Decision are necessary.

3.9.4 Consistency with LORS

The construction and operation of the RCEC as amended will conform with all applicable LORS related to socioeconomics as identified in the Appendix A to the Commission Decision.

3.9.5 References

California Board of Equalization (BOE). 2006a. California City and County Sales and Use Tax Rates Publication 71. http://www.boe.ca.gov/pdf/pub71.pdf

California Board of Equalization (BOE). 2006b. Local and District Taxes. http://www.boe.ca.gov/sutax/localdist.htm

California Employment Development Department (CEDD). 2006. Annual Average Labor Force Data for Sub-County Areas. http://www.labormarketinfo.edd.ca.gov/cgi/databrowsing/?PageID=4&SubID=164

Lee, S. 2006. Personal communication between Fatuma Yusuf of CH2MHILL and Sang Lee, Senior Specialist, Valuation Division, Property Tax Section, Californian Board of Equalization. June 20.

Luboviski, B. 2006. Personal communication between Sarah Madams of CH2M HILL and Barry Luboviski, Building and Construction Trades Council of Alameda County.

3.9.6 Conditions of Certification

This Amendment does not require changes to the Socioeconomics Condition of Certification.

3.10 Soil and Water Resources

Soil erosion potential and water use will not differ significantly from that described in the 2001 AFC. The inclusion of the ZLD system, the addition of the Title 22 RWF, and removal of the AWT plant will involve some redesign of the water treatment systems and modifications of the site arrangement as described in Section 2. The quantities of water used will remain nearly the same as under the original design. The quantities of wastewater produced will decrease significantly with the addition of the ZLD system.

3.10.1 Environmental Baseline Information

The newly proposed project site and construction parking areas are located on parcels that are approximately 1,300 feet northwest from the proposed power plant site as described in the AFC. The following subsections describe the changes to the project as a result of the addition of the ZLD, the addition of the Title 22 RWF, removal of the AWT, and the change in the project location.

3.10.1.1 Wastewater Disposal

The RCEC will use recycled water for steam production and power plant cooling in a hybrid, wet/dry plume-abated, mechanical-draft cooling tower. The City of Hayward's WPCF will serve as the source of the secondary wastewater effluent. As originally approved in the Commission Decision, RCEC would use an AWT plant both to treat the secondary effluent and also to treat the wastewater leaving the site. With this amendment, the AWT plant has been removed from the project, and has been replaced with an onsite Title 22 RWF. In addition, a ZLD system has been added to the project.

Secondary effluent constituents received from the WPCF will remain the same as described in Table 7-1 of the AFC and Table 2.1-2 of this Amendment. However, with the removal of the AWT plant and the addition of the ZLD system, wastewater from the cooling towers will no longer be treated onsite and returned to the WPCF for disposal through the East Bay Dischargers Authority (EBDA) outfall pipeline. Instead, cooling tower blowdown will be sent to the ZLD system. The water will be evaporated, and solids will be compacted into a salt cake to be disposed of offsite. The use of the ZLD will decrease the blowdown water wastestream from approximately 33 gpm under average conditions and 46 gpm under peak conditions to virtually zero. In addition, and in contrast with the previous design, copper and nickel from the secondary effluent will not be discharged to the EBDA pipeline, thus avoiding any potential violations of the EBDA permit conditions for those metals. A small amount of sludge from the clarifier at the Title 22 RWF will be sent back to the WPCF for treatment. Table 3.10-1 below identifies the composition of the sludge.

TABLE 3.10-1
Title 22 Facility Sludge Composition

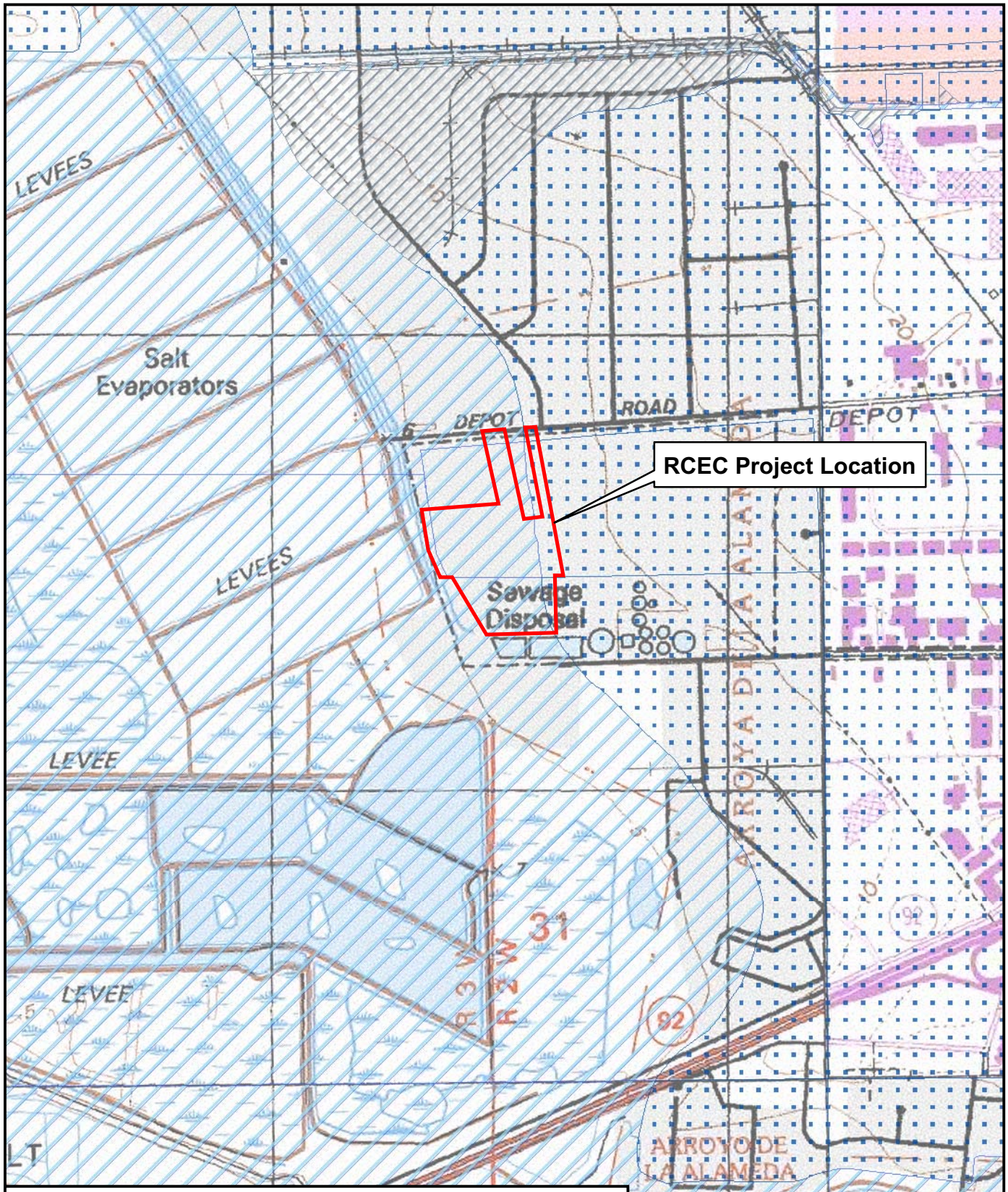
Contaminant	RCEC Sludge Discharge (mg/L)
Alkalinity-Bicarbonate	340
Aluminum	0.5
Ammonia	31
Arsenic	0.004

TABLE 3.10-1
Title 22 Facility Sludge Composition

Contaminant	RCEC Sludge Discharge (mg/L)
Biological Oxygen Demand	18
Boron	0.75
Bromide	1.8
Cadmium	0.007
Calcium	36
Chloride	220
Chromium	0.340
Copper	0.051
Cyanide	0.022
Fluoride	2.2
Hardness-Total	140
Iron	1.0
Lead	0.016
Magnesium	15
Manganese	0.070
Mercury	0.00005
Nickel	0.039
Nitrate	9.0
Nitrite	2.9
Nitrogen-Total	30.8
pH	7.4 s.u.
Phosphate	4.7
Potassium	19
Selenium	0.006
Silica	14
Silver	0.005
Sodium	163
Sulfate	71
Strontium	0.15
Total Dissolved Solids	734
Total Suspended Solids	2000
Zinc	0.160

3.10.1.2 Flooding Potential

The RCEC project site is located approximately 1,300 feet north of the previous location, and portions of the project site, construction laydown area, and parking sites are now located within the revised Federal Emergency Management Agency (FEMA) 100-year floodplain, as shown in Figure 3.10-1. The project site will be filled and compacted, as necessary, to ensure the minimization of flooding risk and confirm with FEMA policies and the County ordinance, which require that the plant will be above the 100-year flood level.



LEGEND

RCEC LOCATION

FEMA Zones

Zone A - Subject to 100-year flood

Zone X - Areas outside the 500-year flood plain

Zone X500 - Areas between the limits of the 100-year and 500-year flood plain

0 250 500 1,000 Feet

SCALE IS APPROXIMATE

FIGURE 3.10-1
FEMA FLOOD ZONES

RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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3.10.1.3 Stormwater Drainage

Since the project location is no longer adjacent to endangered species habitat that is also wetlands, the onsite stormwater retention pond is no longer necessary to protect endangered wildlife and has been removed from the project. Onsite stormwater runoff will be curbed to contain and route runoff as shown in Figure 2.2-1. Rain that falls within areas of the site where impacts from process equipment operation and maintenance could occur will be collected, combined with other site drainage and sent through an oil-water separator. The oil-water separator will remove floating oil, grease, and other hydrocarbons. The clean water from the separator will be sent to the sanitary sewer.

3.10.1.4 Soils

Project soil types in the new project feature locations are as listed in Table 3.10-2 and Figure 3.10-2. The characteristics of all of these soil types are discussed in detail in Table 8.11-2 of the AFC.

TABLE 3.10-2
Soil Mapping Unit Identified by Project Component

Project Component	Soil Mapping Unit
RCEC Project Site	139 – Reyes clay, drained
	154 – Willows clay, drained
Electric Transmission Line	111 – Danville silty clay loam, 0 to 2 percent slopes
	139 – Reyes clay, drained
	154 – Willows clay, drained
Natural Gas Pipeline Route	107 – Clear Lake clay, 0 to 2 percent slopes
	154 – Willows clay, drained
Construction Laydown and Worker Parking	139 – Reyes clay, drained
	154 – Willows clay, drained

3.10.1.5 Soil Erosion

The 18.8-acre proposed RCEC plant location is presently used for a variety of industrial activities, including auto wrecking, pallet storage, sludge drying, and metal finishing. After the power plant site has been graded, compacted, covered with concrete or gravel, and the constructor has installed drainage systems, there will be little remaining potential for natural erosion. Routine vehicular access to the individual project components during operation of the project will be limited to exiting roads. Standard operational activities will not involve disruption of soil.

3.10.2 Environmental Consequences

No new significant impacts to soil and water will result from the changes proposed as part of this amendment. Specifically, the proposed project changes will not: increase erosion,

increase the water supply, increase wastewater disposal, or increase stormwater drainage into the nearby wetlands.

3.10.3 Mitigation Measures

No significant impacts in terms of soil and water will result from the approval of this Amendment. Therefore, mitigation measures beyond those in the Commission Decision are not necessary.

3.10.4 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to soil and water resources.

3.10.5 Conditions of Certification

SOIL & WATER 4 Advanced Water Treatment Facility—The reconfigured project will not include an Advanced Water Treatment Plant as its primary source for cooling and process water supply. Instead, the facility will be using water treated by the onsite Title 22 facility. In addition, staff for the Title 22 facility will be onsite power plant staff and will not be staffed by the City of Hayward staff. For this reason, Condition of Certification SOIL & WATER 4 should be modified as follows:

> **SOIL & WATER 4** The project owner shall use tertiary-treated water supplied from the ~~City of Hayward's~~ onsite Title 22 facility ~~Advanced Water Treatment (AWT) Plant~~ as its primary source for cooling and process water supply. Potable water may be used for cooling and process purposes only in the event of an unavoidable interruption of the onsite Title 22 facility ~~AWT Plant~~ supply, but not to exceed 45 days (1080 hours) in any one calendar year. However, potable water may be used for cooling and process purposes in excess of 45 days per calendar year if an unavoidable interruption of the onsite Title 22 facility ~~AWT~~ supply is due to an Act of God, a natural disaster, an unforeseen emergency or other unforeseen circumstances outside the control of the project owner. If one of the aforementioned unavoidable interruptions should occur, the CPM, project Owner, and City of Hayward shall confer and determine how to restore the onsite Title 22 facility ~~AWT~~ supply as soon as practicable. Fresh water used for domestic purposes shall be metered separately from fresh water used for cooling and process water supply. The project owner will notify the CPM in writing if potable water is used for cooling or process purposes and provide an explanation of why the back-up supplies are being used. The project owner shall prepare and submit to the CPM an annual summary, which will include the monthly range and monthly average of daily water usage in gallons per day, and total water (range and average) used by the project on a monthly and annual basis in acre-feet. The annual summary shall distinguish sources (recycled or potable) and the uses (cooling, process, domestic, etc…) of the specified source. The project owner will obtain copies of project water use records derived from the City of Hayward's recycled and potable water revenue meters.
>
> **Verification:** The project owner will submit as part of its annual compliance report a water use summary to the CPM on an annual basis for the life of the project. Any significant changes in the water supply for the project during construction or operation of the plant shall be noticed in writing to the CPM at least 60 days prior to the effective date of the proposed change.

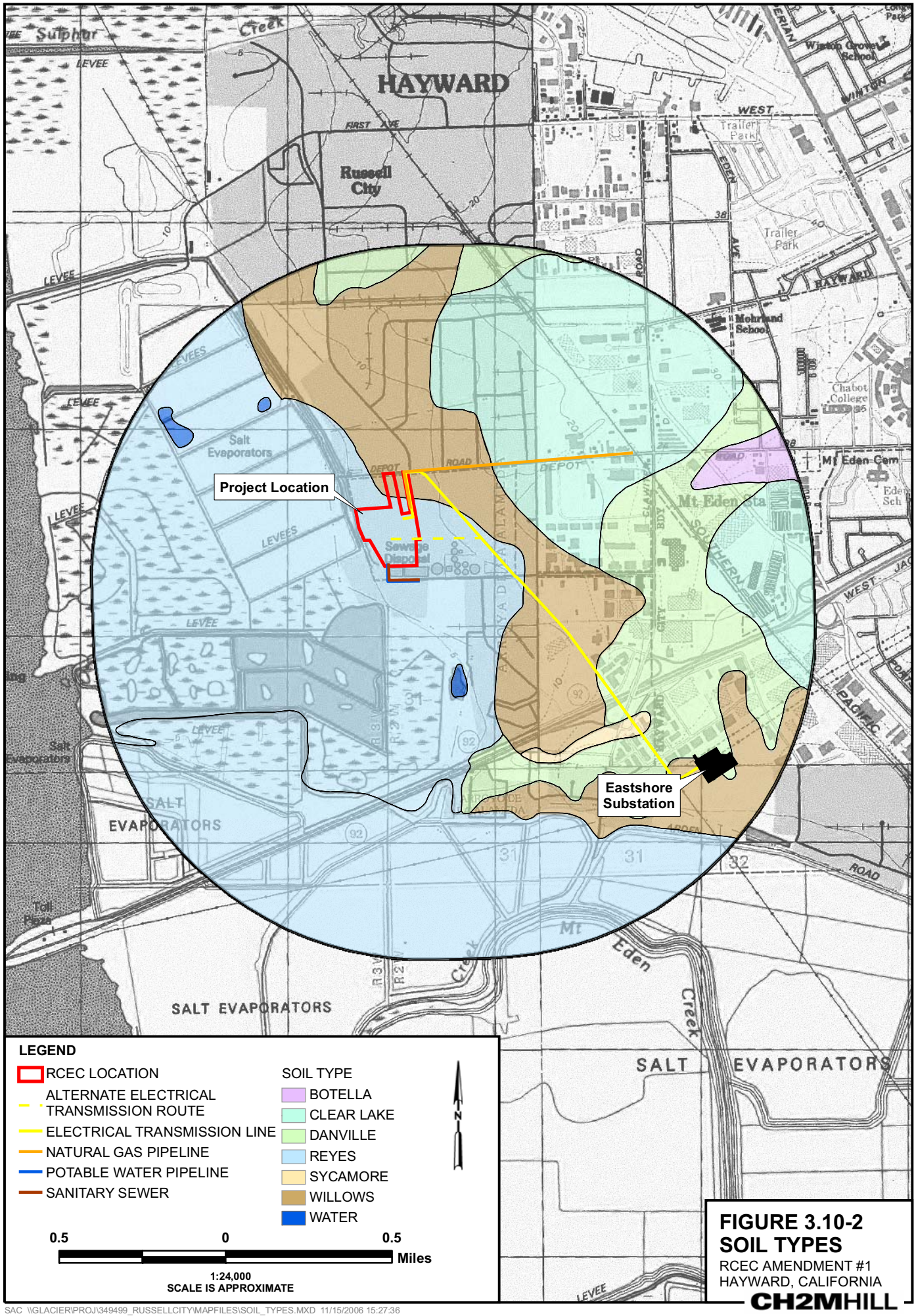

FIGURE 3.10-2
SOIL TYPES
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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3.11 Traffic and Transportation

3.11.1 Environmental Baseline Information

3.11.1.1 Regional

This Amendment does not require changes to the Regional Environmental Baseline Information.

3.11.1.2 Local

The local transportation network near the site is illustrated in Figure 3.11-1. The local baseline information is updated here because: (1) primary access for operation has changed from Enterprise Avenue to Depot Road (construction access is still via Enterprise Avenue), (2) construction workforce estimates and workforce traffic estimates have increased, compared with the AFC, and (3) construction worker parking areas are available that were not previously available, eliminating the need for worker bussing. For these reasons, the construction traffic modeling has been redone, assuming parking on parcels adjacent to Enterprise Avenue (see Figure 2.4-1 for the location of the new construction parking areas).

Construction parking was originally proposed to be located on PG&E property at the Eastshore substation, approximately 1.25 miles from the project site. Because of the distance from the parking to the worksite, the Applicant proposed to bus employees between the locations. This Amendment proposes to relocate construction parking to parcels on Enterprise Avenue, approximately 500 yards to the worksite (Figure 2.4-1). Because workers will be able to walk easily and safely from their cars to the worksite, it will no longer be necessary to bus the employees.

The characteristics of local roadways are summarized below:

The RCEC site can be accessed from Interstate 880 via State Route 92 and then along a variety of local access routes. The roadways in the vicinity of the project site that may be affected are as follows:

- I-880 is an eight-lane north-south freeway from Oakland to San Jose, which passes east of the project site. One of the four lanes is a High Occupancy Vehicle (HOV) lane and one northbound HOV lane in the project vicinity.
- SR-92 is an east-west highway from Hayward to Half Moon Bay, which passes south of the project site. In the vicinity of the project site, it is a six- to eight-lane freeway. SR-92 has an HOV lane on the westbound approach from Hesperian Boulevard to the San Mateo Bridge toll plaza.
- Clawiter Road is a two-lane north-south arterial providing direct access to SR-92. The ramp terminal intersections at the Clawiter Road/Breakwater Avenue, Clawiter Road/Depot Road, and the Clawiter Road/Industrial Boulevard intersections are the only signalized intersections on Clawiter Road in the RCEC vicinity. All other intersections are stop-controlled.

- Depot Road is a two- to four-lane east-west arterial connecting Hesperian Boulevard and Industrial Boulevard to the east and terminating approximately 1 mile west of the Clawiter Road. Depot Road is located immediately to the north of the project site.
- Industrial Boulevard is a four-lane northwest-southeast arterial providing direct access to SR-92. All intersections along Industrial Boulevard in the project vicinity are signalized. Industrial Boulevard terminates at Clawiter Road.
- Diablo Avenue, Enterprise Avenue, Falcon Avenue, and Viking Street are two-lane collectors in the RCEC vicinity. Diablo Avenue is immediately to the south and Viking Street is immediately to the west of the project site.
- Eden Landing Road, Investment Boulevard, Point Eden Way, and Production Avenue are located south of the RCEC project site. They provide access to the local commercial/industrial area immediately to the south of SR-92. These two-lane roadways are designated as collector streets. None of the intersections is signalized. These roadways were not analyzed due to low existing traffic volumes and minimal RCEC construction and operations traffic effects.

The most likely (shortest) access routes are as follows:

- From State Route 92, many vehicles accessing the site will exit on Industrial Boulevard and turn left. Next, they will make a left onto Depot Road, go past Cabot Boulevard and turn left into the site.
- From State Route 92 westbound, some vehicles accessing the site will exit Clawiter Road northbound. From Clawiter Road, they will turn left onto Depot Road, go past Cabot Boulevard and turn left into the site.
- From State Route 92 eastbound, some vehicles accessing the site will exit at Eden Landing Road, turn left on Clawiter Road and travel northbound over the freeway, turn left onto Depot Road, pass Cabot Street and turn left into the site.

The only local roadways near the site that may experience a direct project impact due to the construction of the natural gas pipeline are Depot Road, Enterprise Avenue, and Clawiter Road. Construction practices to ensure safe, efficient and reliable access are described later in this section, while the Land Use section describes the pipeline route.

The average daily traffic volumes on key roadways segments throughout Hayward are shown on Figure 3.11-2. Table 3.11-1 lists the existing average daily traffic volume as well, along with design capacities, truck percentages, peak hour traffic, volume-to-capacity (V/C) ratios, and Level of Service (LOS) on the roadway segments that may be affected by the project during its operation and construction (City of Hayward, 2005; Caltrans, 2005). Freeway capacities were based on 2,000 vehicles/lane/hour; highway capacities were based on 1,800 vehicles/lane/hour; and arterial and collector capacities were based on 800 vehicles/lane/hour. Peak hour distribution was determined for individual segments based on data obtained from Caltrans and City of Hayward traffic volume counts. The LOS for each roadway segment was determined based on the afternoon peak direction volumes. According to the Hayward General Plan (City of Hayward, 2002) and Alameda County Congestion Management Agency (2006), Interstate 880, State Route 92 and Clawiter Road

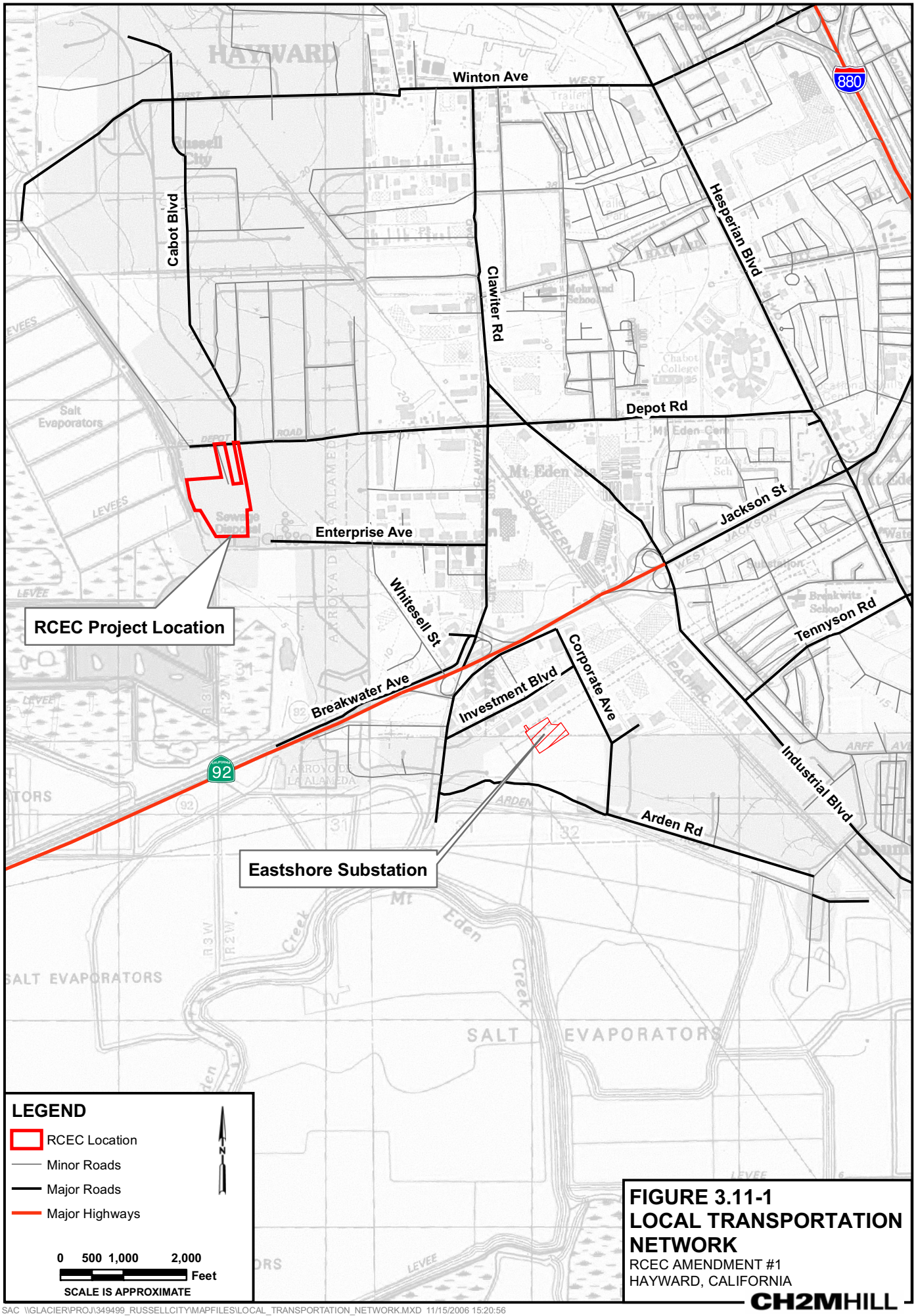

FIGURE 3.11-1
LOCAL TRANSPORTATION NETWORK
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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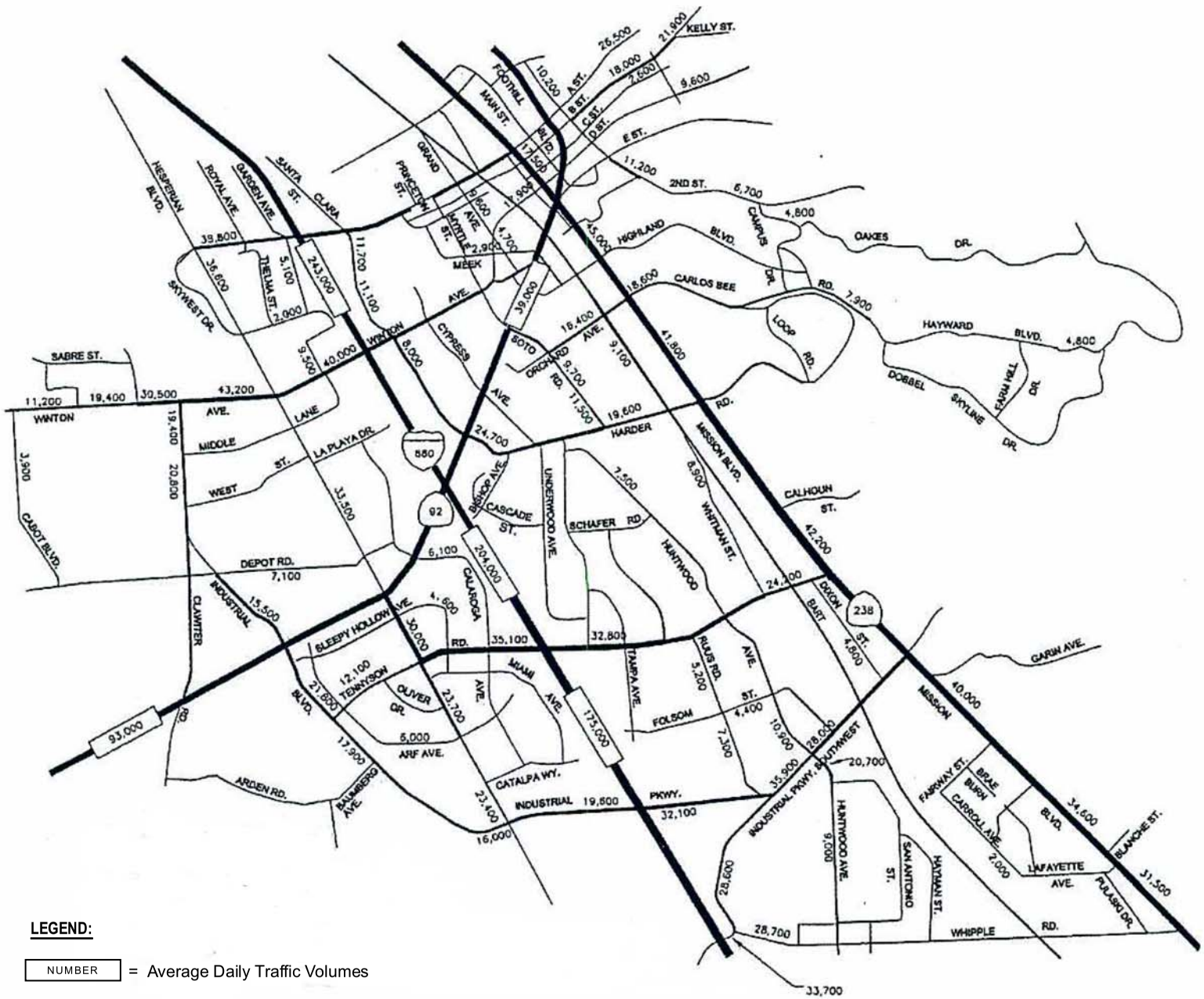

SOURCE: City of Hayward General Plan, 2002

FIGURE 3.11-2
TRAFFIC FLOW MAP
DAILY TRAFFIC ON MAJOR STREET SYSTEM
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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TABLE 3.11- 1
Existing Roadway Daily Volume / Capacity Assessment

Roadway Segment	Between	Road Class	Median	Number of Lanes	Average Daily Traffic Volume	Percent Truck	Peak Design Capacity	Peak Hour Demand	Peak V/C	Peak LOS
I-880	Winton & SR-92	Freeway	Divided	8	256,000	7.00%	2,000	16,900	1.08	F
I-880	SR-92 & Tennyson	Freeway	Divided	8	229,000	6.70%	2,000	14,900	0.95	E
SR-92	I-880 & Hesperian	Highway	Divided	8	109,000	7.00%	1,800	9,300	0.75	C
SR-92	Hesperian & Clawiter	Highway	Divided	8	99,000	7.00%	1,800	8,500	0.69	B
SR-92	Clawiter & San Mateo Bridge	Highway	Divided	6	93,000	6.50%	1,800	8,000	0.86	D
Clawiter Road	Industrial & SR-92 WB Ramp	Minor Arterial	Undivided	2	18,600	12.00%	800	1,293	0.91	E
Clawiter Road	SR-92 WB Ramp & SR-92 EB Ramp	Minor Arterial	Undivided	2	14,700	12.00%	800	1,014	0.63	B
Depot Road	Dodge & Clawiter	Minor Arterial	Undivided	2	8,400	12.00%	800	639	0.52	A
Depot Road	Clawiter & Viking	Minor Arterial	Undivided	4	11,900	12.00%	800	771	0.35	A
Industrial Boulevard	Clawiter & Depot	Major Arterial	Divided	4	10,600	12.00%	800	966	0.32	A
Industrial Boulevard	Depot & SR-92 WB Ramp	Major Arterial	Divided	4	18,500	12.00%	800	1,411	0.48	A
Eden Landing Road	SR-92 EB Ramp & Arden	Collector	Undivided	2	8,200	12.00%	800	624	0.49	A

Source: City of Hayward, 2005 and Caltrans, 2005

Freeway/Highway: A road with limited access, designed to serve regional through traffic.
Arterial Road: A road whose principal function is to serve major through traffic movements between major traffic generators.
Collector Road: A road whose principal function is to provide direct access between local roads and arterials.
Level of Service Criteria for Urban Streets, Highway Capacity Model, Transportation Research Board, 2000:
A 0.00-0.60 Free flow. Insignificant delays
B 0.61-0.70 Stable operation. Minimal delays
C 0.71-0.80 Stable operation. Acceptable delays
D 0.81-0.90 Approaching unstable. Queues develop rapidly but no excessive delays
E 0.91-1.00 Unstable operation. Significant delays
F >1.00 Forced flow. Jammed conditions

between Industrial Boulevard and SR-92 westbound ramps are identified as congested roadways, since they operate at LOS E/F. All other roadways operate at an acceptable LOS.

Existing morning and afternoon peak-hour turning movement volumes for the adjacent street system at key intersections and existing daily average and peak volumes on selected roadway segments were obtained from Caltrans and City of Hayward traffic volume counts. Existing morning and afternoon peak-hour turning movement counts are illustrated in Figures 3.11-3 and 3.11-4, respectively.

Traffic conditions were evaluated using the Synchro software (Trafficware, Version 6). Synchro is a traffic operations analysis tool that incorporates analytical tools from the industry-standard 2000 Highway Capacity Manual (HCM) and the Intersection Capacity Utilization (ICU) method. The ICU calculation sums the amount of time required to serve all movements at saturation for a given cycle length and divides by that reference cycle length. This indicates how much reserve capacity is available or how much the intersection is over capacity. The ICU does not predict delay, but it can be used to predict how often an intersection will experience congestion. ICU LOS is identified through a letter designation, varying from LOS A to LOS H, as described in Table 3.11-2.

TABLE 3.11-2
Intersection Capacity Utilization Level of Service Ranges

LOS	ICU	Traffic Flow Characteristics
A	≤ 0.55	The intersection has no congestion. A cycle length of 80 seconds or less will move traffic efficiently. All traffic should be served on the first cycle. Traffic fluctuations, accidents, and lane closures can be handled with minimal congestion. This intersection can accommodate up to 40% more traffic on all movements.
B	0.55 < ICU ≤ 0.64	The intersection has very little congestion. Almost all traffic will be served on the first cycle. A cycle length of 90 seconds or less will move traffic efficiently. Traffic fluctuations, accidents, and lane closures can be handled with minimal congestion. This intersection can accommodate up to 30% more traffic on all movements.
C	0.64 < ICU ≤ 0.73	The intersection has no major congestion. Most traffic should be served on the first cycle. A cycle length of 100 seconds or less will move traffic efficiently. Traffic fluctuations, accidents, and lane closures may cause some congestion. This intersection can accommodate up to 20% more traffic on all movements.
D	0.73 < ICU ≤ 0.82	The intersection normally has no congestion. The majority of traffic should be served on the first cycle. A cycle length of 110 seconds or less will move traffic efficiently. Traffic fluctuations, accidents, and lane closures can cause significant congestion. Suboptimal signal timings cause congestion. This intersection can accommodate up to 10% more traffic on all movements.
E	0.82 < ICU ≤ 0.91	The intersection is right on the verge of congested conditions. Many vehicles are not served on the first cycle. A cycle length of 120 seconds is required to move all traffic. Minor traffic fluctuations, accidents, and lane closures can cause significant congestion. Suboptimal signal timings can cause significant congestion. This intersection has less than 10% reserve capacity available.

TABLE 3.11-2
Intersection Capacity Utilization Level of Service Ranges

LOS	ICU	Traffic Flow Characteristics
F	0.91 < ICU ≤ 1.00	The intersection is over capacity and likely experiences congestion periods of 15 to 60 minutes per day. Residual queues at the end of green are common. A cycle length over 120 seconds is required to move all traffic. Minor traffic fluctuations, accidents, and lane closures can cause increased congestion. Suboptimal signal timings can cause increased congestion.
G	1.00 < ICU ≤ 1.09	The intersection is 10% to 20% over capacity and likely experiences congestion periods of 60 to 120 minutes per day. Long queues are common. A cycle length over 120 seconds is required to move all traffic. Motorists may be choosing alternate routes, if they exist, or making fewer trips during the peak hour. Signal timings can be used to "ration" capacity to the priority movements.
H	1.09 < ICU	The intersection is 20% over capacity and could experience congestion periods of over 120 minutes per day. Long queues are common. A cycle length over 120 seconds is required to move all traffic. Motorists may be choosing alternate routes, if they exist, or make fewer trips during the peak hour. Signal timings can be used to "ration" capacity to the priority movements.

Source: Trafficware, Intersection Capacity Utilization 2003.
(The ICU 2003 is designed to be compatible with the HCM. The default saturated flow rates and volume adjustments are the same as those recommended by the HCM.)

The City of Hayward General Plan Circulation Element classifies intersection operating conditions as acceptable if at LOS D or better, marginal if at LOS E, and unacceptable if at LOS F. Therefore, LOS E is considered to be the limit of acceptable delay for intersections in the City of Hayward. ICU values for intersections in the vicinity of the RCEC are presented in Table 3.11-3. All intersections operate at acceptable LOSs during the morning and afternoon peak hours.

TABLE 3.11-3
ICU Summary—Existing Conditions

Intersection	AM ICU	AM LOS	PM ICU	PM LOS
Clawiter Road and West Street	0.33	A	0.47	A
Clawiter Road and Industrial Boulevard	0.42	A	0.59	B
Clawiter Road and Depot Road	0.41	A	0.60	B
Clawiter Road/Breakwater Avenue and SR-92 Westbound ramps	0.71	C	0.79	D
Clawiter Road/Eden Landing Road and SR-92 Eastbound ramps	0.64	C	0.77	D
Industrial Boulevard and Depot Road	0.56	B	0.50	A
Industrial Boulevard/Cryer Street and SR-92 Westbound ramps	0.75	D	0.73	C
Enterprise Avenue at Clawiter Road	0.46	A	0.48	A

Note that this method, which will also be used to predict LOSs at intersections during construction and operation, differs from the one used in the 2001 AFC. However, it yields consistent results.

3.11.1.3 Other Transportation Issues and Plans

3.11.1.3.1 Truck Routes

The City of Hayward General Plan addresses truck routes within the General Plan by their policy to "require trucks to use designated routes rather than local streets and prohibit overnight and other specified truck parking activities in residential areas" (City of Hayward, 2002). Depot Road, the new route that trucks will use for deliveries to the RCEC plant site, is suitable for truck travel.

3.11.1.3.2 Traffic Projections/Plans

According to the City of Hayward General Plan, SR-92 and a small portion of I-880 are expected to remain congested in 2025 despite planned improvements.

The Hayward General Plan also includes various intersection LOS projections for the year 2025. It is forecasted that five intersections operate at unacceptable LOS given the City's standards: Hesperian at A Street, Hesperian at eastbound SR-92 ramp, Hesperian at westbound SR-92 ramp, Clawiter Road at eastbound SR-92, and Harder Road at Santa Clara/Jackson.

3.11.2 Environmental Consequences

3.11.2.1 Summary of Construction Phase Impacts

According to the Metropolitan Transportation Commission, approximately 30 percent of cars have more than one occupant during commute time. For construction workers arriving from a wide variety of locations, a more reasonable assumption is that 10 percent of the workforce may carpool. This assumption has been used in the traffic modeling discussed below.

3.11.2.1.1 Trip Generation

Peak period construction traffic impacts associated with RCEC traffic were analyzed to assess the potential worst-case scenario. Table 3.11-4 summarizes the anticipated peak construction workers by month. The construction effort is anticipated to require a maximum of 650 workers per day during the peak construction period at month 14.

As a result, it is forecasted that 585 worker vehicles will enter and exit the site during the peak construction period. These vehicles will all arrive and depart during a single 7:00 a.m. to 7:00 p.m. shift, resulting in 1,170 daily vehicle trips. Truck traffic will include deliveries of plant equipment and construction materials by truck, such as concrete, steel and lumber. Truck scheduling will not differ much from that described in the AFC, and truck traffic will not significantly affect the traffic/truck mix along state highways. However, it may increase the ratio of trucks to passenger vehicles on city streets.

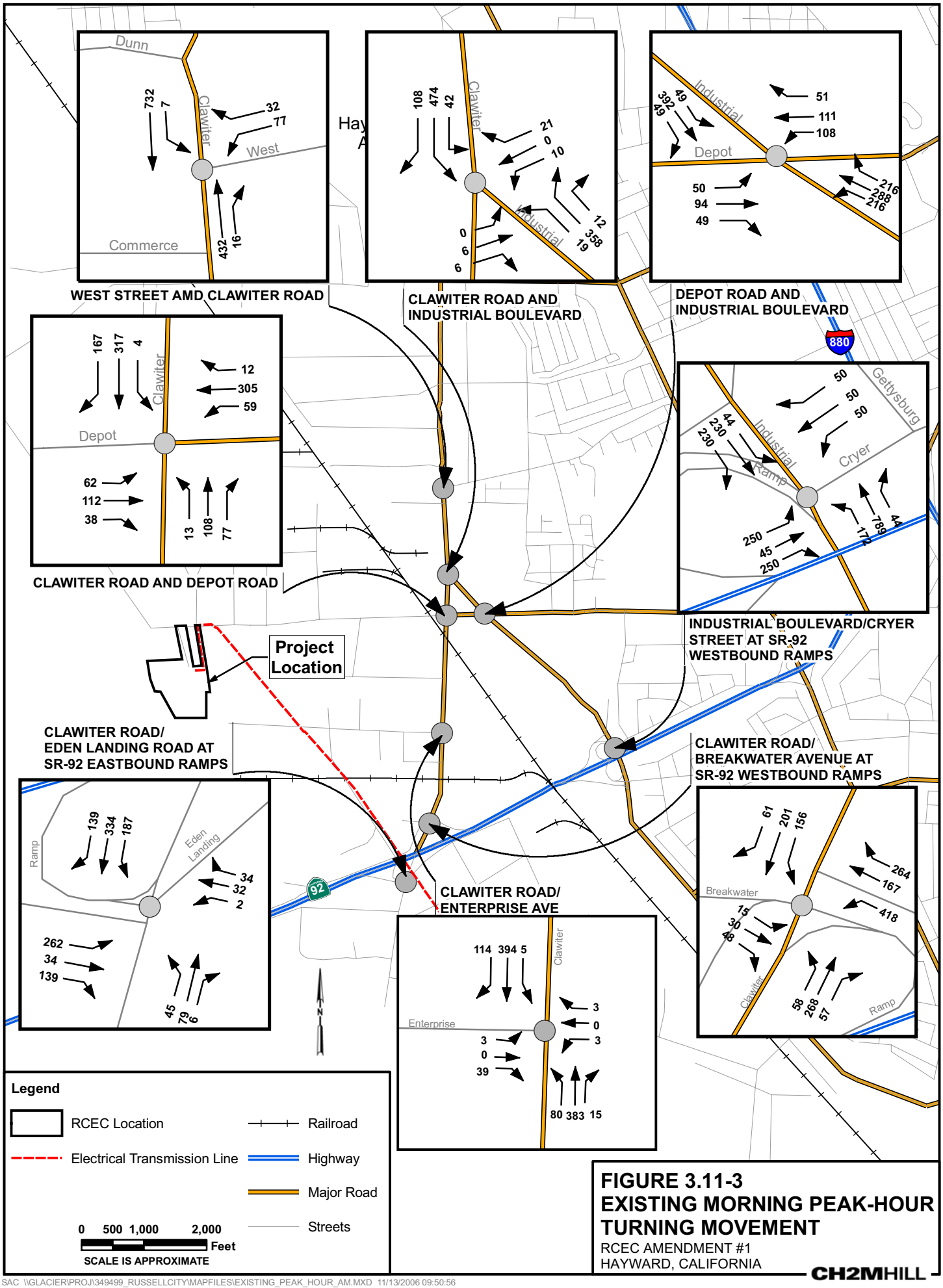

FIGURE 3.11-3
EXISTING MORNING PEAK-HOUR TURNING MOVEMENT
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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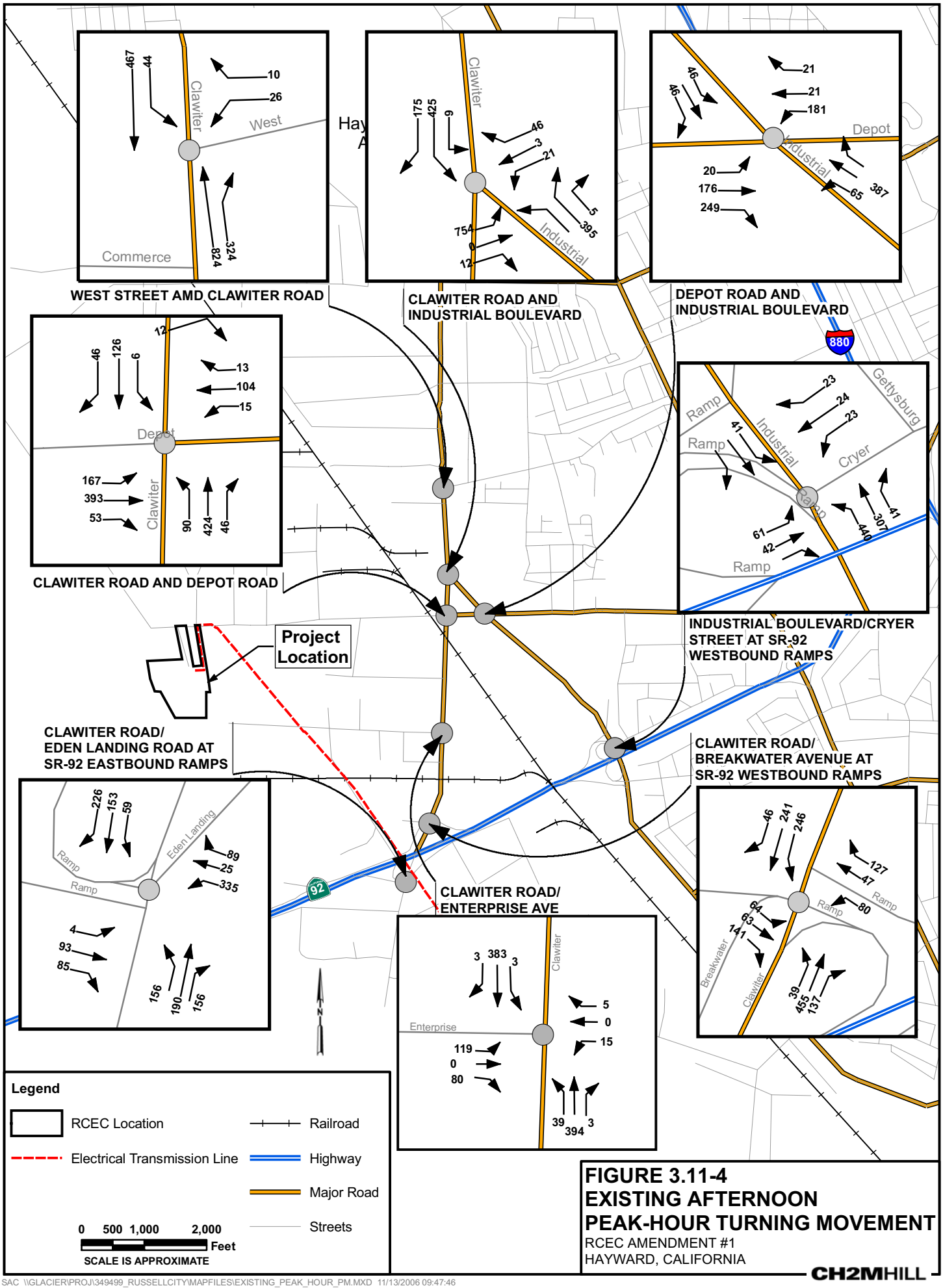

FIGURE 3.11-4
EXISTING AFTERNOON PEAK-HOUR TURNING MOVEMENT
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

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TABLE 3.11-4
Construction Worker Traffic Summary

Month No.	Number of Commuting Workers	Forecasted Number of Commuting Worker Vehicles*
1	28	26
2	46	42
3	76	69
4	94	85
5	135	122
6	171	154
7	242	218
8	326	294
9	297	268
10	277	250
11	524	472
12	602	542
13	600	540
14	650	585
15	551	496
16	605	545
17	559	504
18	433	390
19	446	402
20	388	350
21	311	280
22	204	184
23	214	193
24	181	163
25	141	127

* Assuming 10 percent of workers carpool

3.11.2.1.2 Trip Distribution

The distribution of project-generated traffic was derived from observing existing travel patterns in the vicinity of the project site. A three-step process was used to estimate the project-related traffic volumes at various points on the transportation system, establishing the magnitude and extent of traffic impacts. First, the amount of traffic that will be generated during construction was determined. Second, the construction traffic was added

to existing traffic and distributed geographically to the appropriate local and regional streets and highways through the commercial and industrial areas. Finally, the trips were assigned to specific roadways and the traffic increases were evaluated on a route-by-route basis.

Trip distribution for construction traffic is as follows:

- Approximately 85 percent of all construction trips are assumed to use SR-92 to I-880 via the Clawiter/SR-92 ramps;
- 35 percent of these construction trips are assumed to originate from the north via I-880, and approximately 30 percent are assumed to originate east of I-880;
- 10 percent of construction traffic is assumed to originate from the San Francisco Peninsula via SR-92; and
- The remaining 5 percent of the traffic is assumed to be from the immediate local area.

3.11.2.1.3 Existing Plus Project Traffic Impacts

The LOS analysis for roadway segments in the study area was performed by adding the project's peak hour volumes during construction to the existing peak hour volumes, as presented in Table 3.11-5.

TABLE 3.11-5
Projected Daily Levels of Service During Construction

Roadway Segment	Between	Peak Hour	Peak V/C	Peak LOS
I-880	Winton & SR-92	17,105	1.09	F
I-880	SR-92 & Tennyson	15,076	0.97	E
SR-92	I-880 & Hesperian	9,797	0.79	C
SR-92	Hesperian & Industrial	8,997	0.73	**C* (from B)**
SR-92	Industrial & Clawiter	8,497	0.92	**E* (from D)**
Clawiter Rd.	Industrial & SR-92 WB Ramp	1,878	1.30	**F* (from E)**
Clawiter Rd.	SR-92 WB Ramp & SR-92 EB Ramp	1,511	0.94	**E* (from B)**
Depot Rd.	Dodge & Clawiter	654	0.53	A
Depot Rd.	Clawiter & Viking	771	0.35	A
Industrial Blvd.	Clawiter & Depot	981	0.32	A
Industrial Blvd.	Depot & SR-92 WB Ramp	1,411	0.48	A
Eden Landing Rd.	SR-92 EB Ramp & Arden	624	0.49	A

* Indicates changes in LOS compared to the existing conditions

In general, the addition of the forecasted peak project traffic is not anticipated to result in a significant change to operations of the roadway throughout the day. However, there will be five segments with LOS E or LOS F operations during the peak hour: (1) I-880 between Winton and SR-92, (2) I-880 between SR-92 and Tennyson, (3) SR-92 between Industrial and

Clawiter, (4) Clawiter between Industrial and SR-92 westbound ramp, and (5) Clawiter between SR-92 westbound and eastbound ramps.

The two I-880 segments are predicted to have the same LOS without the project, but because the I-880 segment between Winton Avenue and SR-92 is already over capacity, additional temporary construction traffic may be considered a potentially significant impact. Similarly, the I-880 segment between SR-92 and Tennyson Road will remain at LOS E and additional trips related to the project may represent a potentially significant project impact.

The LOS on the Clawiter Road segment from Industrial Boulevard to SR-92 westbound ramps is predicted to degrade from LOS E to LOS F due to peak construction traffic. This segment of Clawiter Road can accommodate approximately 148 peak-hour trips before the LOS changes from LOS E to LOS F. Peak-hour construction trips will exceed 148 trips from Month 6 to Month 24. Therefore, there may be a potentially significant temporary traffic impact during this period.

The other two segments predicted to operate at LOS E are SR-92 between Industrial Boulevard and Clawiter Road, and Clawiter Road between the SR-92 ramps. Both will degrade from an acceptable to an unacceptable LOS. These may be a potentially significant temporary traffic impacts.

As a more focused assessment of the impacts, an ICU analysis was conducted for the key intersections that will be most directly affected by project construction traffic:

- Clawiter Road and West Street
- Clawiter Road and Industrial Boulevard
- Clawiter Road and Depot Road
- Clawiter Road/Breakwater Avenue at SR-92 Westbound ramps
- Clawiter Road/Eden Landing Road at SR-92 Eastbound ramps
- Industrial Boulevard and Depot Road
- Industrial Boulevard/Cryer Street at SR-92 Westbound ramps
- Enterprise at Clawiter Road

The traffic volumes on the adjacent street system during the project's peak arrival and departure times were compared with the traffic volumes on the adjacent street system during the typical morning and afternoon peak periods.

Construction period intersection volumes were generated by adding the project peak intersection volumes to the existing peak intersection volumes. Table 3.11-6 presents the change in ICU values with the addition of project peak construction traffic during the typical morning and afternoon peak hours.

TABLE 3.11-6
ICU Summary—Construction Conditions

Intersection	AM ICU	AM LOS	PM ICU	PM LOS
Clawiter Road and West Street	0.34	A	0.47	A
Clawiter Road and Industrial Boulevard	0.42	A	0.59	B
Clawiter Road and Depot Road	0.41	A	0.61	B

TABLE 3.11-6
ICU Summary—Construction Conditions

Intersection	AM ICU	AM LOS	PM ICU	PM LOS
Clawiter Road/Breakwater Avenue and SR-92 Westbound ramps	1.00	**F* (from C)**	0.94	**F* (from D)**
Clawiter Road/Eden Landing Road and SR-92 Eastbound ramps	0.68	C	0.93	**F* (from D)**
Industrial Boulevard and Depot Road	0.57	B	0.51	A
Industrial Boulevard/Cryer Street and SR-92 Westbound ramps	0.75	D	0.73	C
Enterprise Avenue and Clawiter Road	0.79	**D* (from A)**	0.63	**B* (from A)**

* Indicates changes in LOS compared to the existing conditions

Three intersections are expected to operate at a modified LOS. Two will not be operating at an acceptable LOS based on the City of Hayward standards (Clawiter Road at SR-92 westbound ramp in the morning and afternoon peaks, and Clawiter Road at SR-92 eastbound in the afternoon peak). These may be potentially significant temporary traffic impacts during this period.

3.11.2.1.4 Construction Laydown Areas

There is a potential for minor traffic delays due to the movement of materials and equipment between the construction laydown areas and the RCEC site. The laydown area currently identified is the J&M parcel, on Depot Road. Deliveries during construction will be channeled through Depot Road.

3.11.2.2 Summary of Operation Phase Impacts

3.11.2.2.1 Project Operations

The RCEC will generate a maximum of 42 round trips per day to the facility. These include 32 round trips by employees and 10 round trips by trades-people, vendors, consultants and management personnel. There will be a maximum of 25 full-time employees working at the plant. The RCEC plant will be operated by a staff consisting of 2 operators per 12-hour rotating shift (8:00 a.m. to 8:00 p.m.), with 2 relief operators; there will also be 5 maintenance technicians and 5 administrative personnel during the standard 8-hour workday. The facility will be operated 7 days per week, 24 hours a day. The additional 42 trips generated by power plant operation represent, for example, an increase of 0.35 percent to the 13,800 daily traffic volume on Clawiter Road near the project, which is a negligible amount that will not result in any change in LOS classification of the affected roadways.

3.11.2.2.2 Transport of Hazardous Materials

Transportation of hazardous materials to the project site is not anticipated until the end of project construction. During plant operations, trucks will periodically deliver/pick-up replacement parts, lubricants, liquid fuels, and other consumables, as described in the AFC. The main difference is that salt cake removal operations will occur approximately five times a week. However, these trucks are to follow prearranged routes and will be in compliance with all LORS governing the safe transportation of hazardous materials. Therefore, the traffic on city streets should not be affected.

3.11.3 Cumulative Impacts

The Eastshore Energy Center project's final construction phase may take place at the same time as peak construction activity for the RCEC. This project is planned for a location near the corner of Depot Road and Industrial Boulevard. During that time, the construction workforce will be at most 650 persons on the RCEC site, and 235 on the Eastshore site. This will result in a total of 797 peak trips, with the assumption that 10 percent of the workforce carpools for both projects. Since the peak construction workforces may not coincide, a second analysis was conducted. This analysis included a worst-case scenario in which peak activity on the RCEC site would overlap with average activity on the Eastshore site (which requires an average of 124 workers). The resulting total would be 697 peak trips.

The impact of this additional traffic was assessed for critical freeway and arterial segments on both projects (see Table 3.11-7). Since construction workers are expected to use the same roads to access regional facilities, the additional trips to the Eastshore site will result in a change in LOS on two roadway segments: SR-92 between I-880 and Hesperian (for the simultaneous peak construction scenario only), and Clawiter Road between SR-92 westbound and eastbound ramps (for both scenarios). The cumulative impact for the Clawiter road segment is potentially significant.

TABLE 3.11-7
Cumulative Impact Study on Key Roadway Segments

		Peak RCEC/ Peak Eastshore Staffing			Peak RCEC/Average Eastshore Staffing		
Roadway Segment	**Between**	**Peak Hour**	**Peak V/C**	**Peak LOS**	**Peak Hour**	**Peak V/C**	**Peak LOS**
I-880	Winton & SR-92	17,179	1.10	F	17,144	1.1	F
I-880	SR-92 & Tennyson	15,139	0.97	E	15,109	0.97	E
SR-92	I-880 & Hesperian	9,977	0.81	**D* (from C)**	9,892	0.8	C
SR-92	Hesperian & Industrial	9,177	0.74	C	9,092	0.74	C
SR-92	Industrial & Clawiter	8,677	0.94	E	8,592	0.93	E
Clawiter Road	Industrial & SR-92 WB Ramp	2,090	1.45	F	1,990	1.38	F
Clawiter Road	SR-92 WB Ramp & SR-92 EB Ramp	1,691	1.06	**F* (from E)**	1,606	1	**F* (from E)**
Depot Road	Dodge & Clawiter	659	0.53	A	656	0.53	A
Depot Road	Clawiter & Viking	771	0.35	A	771	0.35	A
Industrial Blvd.	Clawiter & Depot	986	0.32	A	983	0.32	A
Industrial Blvd.	Depot & SR-92 WB Ramp	1,411	0.48	A	1,411	0.48	A
Eden Landing Road	SR-92 EB Ramp & Arden	624	0.49	A	624	0.49	A

* Indicates changes in LOS compared to the RCEC construction conditions only

The critical intersections for both projects were also examined to assess potential cumulative effects under these conditions (Table 3.11-8). In the morning peak, Clawiter Road at the SR-92 westbound ramp is forecasted to operate at an unacceptable LOS because of the additional traffic from the Eastshore project. This impact is potentially significant. In the evening peak, no intersections are projected to operate at an unacceptable LOS because of the added traffic.

TABLE 3.11- 8
Cumulative Impact Study on Key Intersections

	Peak RCEC / Peak Eastshore Staffing				Peak RCEC / Average Eastshore Staffing			
Intersection	**AM ICU**	**AM LOS**	**PM ICU**	**PM LOS**	**AM ICU**	**AM LOS**	**PM ICU**	**PM LOS**
Clawiter Road and West Street	0.34	A	0.47	A	0.34	A	0.47	A
Clawiter Road and Industrial Boulevard	0.43	A	0.59	B	0.43	A	0.59	B
Clawiter Road and Depot Road	0.42	A	0.62	B	0.41	A	0.61	B
Clawiter Road/Breakwater Avenue and SR-92 Westbound ramps	1.12	**H[a] (from F)[b]**	1.0	F	1.06	**G[a] (from F)[b]**	0.97	F
Clawiter Road/Eden Landing Road and SR-92 Eastbound ramps	0.69	C	0.99	F	0.68	C	0.96	F
Industrial Boulevard and Depot Road	0.57	B	0.51	A	0.57	B	0.51	A
Industrial Boulevard/Cryer Street and SR-92 Westbound ramps	0.75	D	0.73	C	0.75	D	0.73	C
Enterprise Avenue and Clawiter Road	0.79	D	0.63	B	0.79	D	0.67	C

[a] The ICU methodology used to assess intersection operations includes a provision for LOS values that are worse than the traditional LOS F. In this case, the ICU value is assigned a LOS H because the congestion is even greater than LOS F. This can also be interpreted as a traditional LOS F, but with greater congestion than the construction scenario, which is also operating at LOS F. See Table 3.11-2 for further information.

[b] Indicates changes in LOS compared to the RCEC construction conditions only

There should no significant cumulative impacts resulting from the RCEC in combination with other proposed transportation improvement projects in the area. Transportation improvement projects along I-880 and SR-92 are in very early planning phases and will not occur for at least the next several years.

3.11.4 Mitigation Measures

The project's impacts on views from the two KOPs in the shoreline interpretive center and the marsh to the west will be attenuated to a level that is less than significant through plantings of vegetation in the marsh that will partially screen the cooling tower and power

block structures, reducing their overall visibility from the trail. Because of the limited area of the project site, and the presence of easements for pipelines related to the adjacent sewage treatment plant opportunities for planting on the site are limited. In addition, consistent with Condition of Certification VIS-3, the Applicant will use surface treatments in appropriate colors or hues that minimize visual intrusion and contrast by blending with the landscape. In addition, surface treatments will be such that those structures and buildings have surfaces that do not create glare. These treatments will help to break up the facility's apparent mass and better integrate it into the view.

3.11.5 Consistency with LORS

The RCEC project, as amended, will remain consistent with all applicable LORS related to traffic and transportation.

3.11.6 Conditions of Certification

TRANS-2 Employee Parking—Under the reconfigured project design, construction worker parking will now be located adjacent to the project location. For this reason, it will not be necessary to bus the workers from a more remote parking site. Condition of Certification TRANS-2 should therefore be deleted.

> ~~**TRANS-2** The project owner shall develop an offsite construction employee parking program that is designed to reduce the number of trips in the project vicinity. This plan should show that the location and number of parking spaces available offsite is adequate for peak construction employees, that the number of busses and bus capacity will be adequate to shuttle peak construction employees to and from the project site, that the hours of operation for the shuttle bus pickup and drop off times are generally outside the adjacent street peak hours, etc. Since some on-site parking will be available, the parking program should assign general parking locations (on-site or offsite) to employees. Employees should not be encouraged to drive to the project site for a parking space only to realize that one isn't available.~~
>
> ~~**Verification:** At least 30 days prior to the start of site preparation or earth moving activities, the project owner shall provide to the City of Hayward (for determination of compliance with local LORS) and to the CPM (for approval), a copy of the parking and shuttle bus program. Additionally, the project owner shall include in its Monthly Compliance Reports information that documents the number of employees parking offsite versus the total number of employees, the shuttle bus rider ship, and the shuttle bus hours of operation.~~

TRANS-4 and -5 Enterprise Avenue and Whitesell Street—The project will no longer be located along Enterprise Avenue and Whitesell Street. For this reason, Conditions of Certification TRANS-4 and TRANS-5, which require construction of curbs along these streets, should be deleted.

> ~~**TRANS-4** The project owner shall complete construction of Enterprise Avenue along the project frontage. Enterprise Avenue is to be constructed as a standard 60-foot industrial public street per City of Hayward Detail SD-102. This includes removal of the temporary asphalt curb, construction of approximately 21 feet of street pavement and a standard 6-foot sidewalk.~~

~~**Verification:** At least 30 days prior to operation of the RCEC plant, the project owner shall submit to the CPM, written verification from the City of Hayward that construction of Enterprise Avenue along the project frontage has been completed in accordance with the City of Hayward's standards.~~

~~**TRANS-5** The property owner shall design and construct improvements on the portion of Whitesell Street along the project frontage. Whitesell Street shall be constructed to be 48 feet wide within a standard 60-foot right-of-way per City of Hayward standards.~~

~~**Verification:** At least 30 days prior to operation of the RCEC plant, the project owner shall submit to the CPM, written verification from the City of Hayward that improvements on Whitesell Street along the project frontage has been completed in accordance with the City of Hayward's standards.~~

3.12 Visual Resources

The commission Decision determined that, with implementation of the mitigation measures specified by the Visual Resources Conditions of Certification, the project would not have significant impacts on visual resources. Under the current amendment proposal, the project's location would be slightly shifted, and the exterior appearance of the project would be altered, but the impacts of the project on visual resources would continue to be less than significant.

3.12.1 Environmental Baseline Information

3.12.1.1 Project Site

Under the amended proposal, the project will be moved approximately 1,300 feet to the northwest to the site indicated on Figure 3.12-1. The new site includes a portion of the City of Hayward Water Pollution Control Facility (WPCF), an auto wrecking yard, and a pallet storage area. The new site is flat and contains a number of small, one-story, utilitarian structures, as well as stored materials and junked vehicles. Unlike the site that was originally proposed, the new site does not include radio towers requiring relocation. The new site does not contain any features that would be considered to be scenic resources, and has a low level of visual quality. The site is located in the interior of the block, and its street frontage is limited to two very short areas along Depot Road. Because the site has such limited street frontage, the site's surface is not readily visible from the surrounding area. Because new the site is set back further from SR 92 than the original site and because it is located behind the City of Hayward's sewage treatment facility, it is not as readily visible from SR-92 as the original site, which was located in an area where the open wetlands lying between it and SR-92 provided unobstructed views from the highway.

The two transmission line routes associated with the amended project (see Figure 3.12-1) are, for the most part, the same as the one proposed originally, in that they both follow the alignment of the existing PG&E Grant-Eastshore 115 kV double circuit line from the vicinity of the power plant to the PG&E Eastshore Substation. The difference is that both of the alternatives now being considered would join the Grant-Eastshore 115 kV line corridor at points that are approximately 750 to 2,200 feet north of the original line's connection at Enterprise Road. Alternative 1 would start at the RCEC switchyard on the project site, extend north to Depot Road where it would go underground and travel eastward along Depot Road until reaching the Grant-Eastshore corridor, where it would come back up above ground and travel overhead on a set of new towers until reaching the Eastshore Substation. Alternative 2 would start at the switchyard, and then travel east along the rear boundary of the City of Hayward WPCF until reaching the Grant-Eastshore transmission corridor, which it would then follow to the Eastshore Substation.

As was the case with the project as originally proposed, the natural gas line, water pipeline, and sanitary sewer line associated with the revised project would be underground, and thus would not be visible.

3.12.1.2 Views toward the Project

The visibility of the revised project will be generally similar to the visibility of the project as originally proposed and indicated on Figure 8.13-1a in the original AFC. For the analysis of the aesthetic effects of the revised project, KOPs 1 through 5 and KOP 7 have been retained. KOP 6 has been eliminated, because the revised project, like the project as originally proposed, would not be readily visible from this location. The three KOPs that had been used to evaluate the visual effects of the relocation of the KFAX radio towers from the original site to a location a the Old West Winton landfill have also been eliminated, because with the change in the project site, there is no longer a need for relocation of these towers.

Because of the shift in the proposed power plant's location, new photographs were taken from KOPs 1 through 5 to capture views in which the new project site is located in the center of the view. These photos are presented in Figures 3.12-2 through 3.12-6. Since the time the original project analysis was done, there have been no major land use changes that have substantially altered the character and quality of these views as described in the original AFC. Because of the shift in view orientation, KOP 2, the view from the Hayward Shoreline Interpretive Center is somewhat different form the view used for the AFC analysis in that Mount Diablo and the KFAX radio towers are no longer visible in the view toward the power plant site.

3.12.2 Environmental Consequences

3.12.2.1 Revised Project Appearance

The revised site arrangement is presented in Figure 2.1-2 in Section 2. Figures 2.1-3 and 2.1-4 present elevation views of the current design. In addition to the change in location, the major physical changes associated with the currently proposed project that have substantial implications for the project's appearance are:

- The architectural treatment had been proposed as part of the original project is no longer included as a project feature.
- A ZLD facility has been added to the project and will be placed to the west of the switchyard.
- The AWT facility has been removed and a smaller Title 22 water treatment area has been placed on the southeast corner of the project site.
- The cooling tower has been realigned from a north-south orientation to a northwest-southeast orientation.
- The steam turbine has been moved slightly north so that it is parallel to the combustion turbines.
- The administration/control building has been moved to the southwestern corner of the new project site and the warehouse structure has been moved to the site's northern end.
- The reclaimed water storage tank has been placed adjacent to the northeast corner of the power block.

- The demineralized water storage tank has been placed to the northwest of the power bock.
- The fire water storage tank has been placed at the northwest corner of the power block.

Table 3.12-1 compares the dimensions of the project features under the previously proposed design with those of the design that is currently being proposed.

TABLE 3.12.1
RCEC Equipment Dimensions

Feature	Height (feet)		Length (feet)		Width (feet)		Diameter (feet)	
	AFC[a]	Amend[b]	AFC	Amend	AFC	Amend	AFC	Amend
HRSG Units								
HRSF casings	72	80		147		38		
To platform	90	88						
To top of highest drums	101	98						
To top of top works support steel	116	108						
To top of highest relief valves and vents	122	118						
HRSG stacks	145	146	16		16			18
Gas Combustion Turbines								
Gas combustion turbines	32	28	30	119	23	35		
Gas turbine air inlet filters	42	77	40	73	25	43		
Steam Turbine Generator								
STG enclosure	38	62	75	109	20	39		
STG pedestal		36		110		40		
Pipe Rack								
Main Rack		65		267		30		
Finger Racks		53		125		26		
Architectural Enclosure for HRSGs, Stacks, and Turbines	135		222		180			
HRSG Cycle Chemical Feed Pavilion		18		36		24		
Cooling Tower			473	540	48	60	30	32
To top of deck		46						(each cell)
To top of fan stacks	64	60						
Architectural Enclosure for Cooling Tower	62		500		85			
Cooling Tower Chemical Feed Pavilion		24		80		39		
Brine Concentrator		81						16
Tanks								
Recycled Water Storage Tank		47						54
Demineralized Water Storage Tank	25	29					25	28
Service/Fire Water Storage Tank		38						36

TABLE 3.12.1
RCEC Equipment Dimensions

Feature	Height (feet)		Length (feet)		Width (feet)		Diameter (feet)	
	AFC[a]	Amend[b]	AFC	Amend	AFC	Amend	AFC	Amend
Cooling Tower Blowdown Storage Tank		30						30
Combined Administration, Control, Warehouse, and Water Treatment Building	25		260		75			
Administration/Control Building		20		160		60		
Warehouse/Maintenance Building		25		115		60		
Water Treatment Pavilion		25		90		72		
Switchyard				380		260		
Switchyard Bus Structures	34	37	25					
Conductor Take-Off Structures	72	59	42					
Advanced Wastewater Treatment Plant								
Microfiltration canopy	20		145		34			
Reverse osmosis canopy	20		145		44			
Chemical and dewatering area	20		102		47			
Lime silo	47						18	
Sludge loading bay	42		65		24			
Final product water storage tanks (2)	36						100	

3.12.2.2 Visual Effects

3.12.2.2.1 KOP 1—Office/Industrial Facility in Whitesell Business Park

Figures 3.12-2a and 3.12-2b

In this view, because the power plant location that is now being proposed will no longer be in the immediate foreground, it will not dominate the view and block the view's existing features to the extent that the original project would have. Even though the power plant now being proposed would have more of an industrial appearance that than the project originally proposed, it would have less of an effect on the view's overall character because of its substantially smaller role in the overall view. Like the originally proposed project, the project that is currently proposed will not create a substantial change in the visual quality of this view, which is now low.

3.12.2.2.2 KOP 2—Hayward Shoreline Interpretive Center

Figures 3.12-3a and 3.12-3b

In the view from this observation point on the front deck of the Hayward Shoreline Interpretive Center, the impact of the project now being proposed will be different from the impact of the previously approved project because the change in the site's location means

that the power plant will no longer be in the line of site with Mount Diablo. As a consequence, the power plant will no longer block views of Mount Diablo from this location, and will not intrude on the view in the general direction of the mountain. As a result, the views toward the mountain—perhaps the most notable landscape feature seen from this viewpoint—will not be impaired by the presence of the power plant. The power plant will now be visible in a less critical portion of the view to the north. With the removal of the architectural screening structure, the power plant will appear less bulky and will block less of the backdrop. However, removal of the architectural screening will mean that the power plant will now appear more industrial than before, and will give this portion of the view a strong industrial character. The project will also affect the level of visual quality in that it will add large-scale rectangular forms to the view that will partially block views toward the hills in the background, and will contrast with the existing forms and textures in the view, reducing the overall levels of visual intactness and unity. This viewpoint is located in a natural preserve that receives a high level of visitation and, for this reason, the viewers and the view are considered sensitive. To soften the impacts from this viewpoint, the Applicant will identify locations in the area between the power block and the marsh where screening vegetation can be planted. With this screening, the changes in visual character and quality from this viewpoint will constitute a less-than-significant visual impact.

3.12.2.2.3 KOP 3—Hayward Shoreline Footbridge at Cogswell Marsh

Figures 3.12-4a and 3.12-4b

In this view across the marsh, the vertical HRSGs and stacks and the long, horizontal cooling towers will create a visually dominant element in the landscape along the marsh's eastern fringe that will stand out because of its large scale, and its contrast with its context in terms of scale, forms, surface appearance, and colors. With the removal of the architectural screening structure, the power plant will now appear more overtly industrial than before, and because it will be larger and more industrial appearing than the smaller scale industrial and warehouse structures now visible along the eastern edge of the wetlands, it will alter the character of this view, making it appear more intensively developed and more industrial. Unlike the project as originally proposed, which appeared to be located behind existing warehouse structures, the project will now occupy a portion of the view that currently has an open appearance. As a consequence, the area of development along the marsh's edge will be substantially extended. Without the architectural treatment, the project will contrast more with its setting, reducing the level of visual intactness. In addition, the HRSGs and stacks will interrupt views toward the hills in the background, reducing the visual unity of the view. The project's net effect will be to reduce the visual quality of this view from moderately high to moderately low. To soften the impacts from this viewpoint, the Applicant will identify locations in the area between the power block and the marsh where screening vegetation can be planted. With this screening, the changes in visual character and quality from this viewpoint will constitute a less-than-significant visual impact.

Given the high visual sensitivity of this view as a view seen from a natural reserve, these substantial changes in visual character and quality will constitute a significant visual impact.

3.12.2.2.4 KOP 4—State Route 92 at Toll Plaza

Figures 3.12-5a and 3.12-5b

In this view, the vertical HRSGs and stacks and the long, horizontal cooling towers will create a visually dominant element in the landscape that will stand out because of its large scale, and its contrast with its context in terms of forms, surface appearance, and colors. Because the power plant will be much larger and more overtly industrial appearing than the smaller scale and more neutral appearing industrial and warehouse structures now visible along the eastern edge of the wetlands, it will alter the character of this view, making it appear more intensively developed and more industrial. The power plant will also affect the level of visual quality in that the HRSGs and stacks will reduce the intactness and unity of the view by adding elements that contrast with the existing elements of the view, and which interrupt the existing unobstructed view toward the ridgeline in the backdrop. The presence of the project will reduce the visual quality of this view from moderate to moderately low. Although there will be a noticeable change in the character and quality of the view from this area, because of the viewing distance, the power plant will not dominate the view and the visual changes will not be so great as to constitute a substantial degradation of the existing conditions. As a consequence, the visual changes will be less than significant.

3.12.2.2.5 KOP 5—Cabot Boulevard at Depot Road

Figures 3.12-6a and 3.12-6b

As was the case with the project as originally proposed, the project now under consideration would have relatively little effect on the view from this KOP. The tops of the HRSG s and stacks as well as the tops of the transmission towers and substation equipment will be visible in the area immediately above the fence surrounding the auto salvage yard in the foreground of the view. The view already has a highly utilitarian character and the existing visual quality of this view is rated as low. Given this context, the presence of the project will not adversely affect the view's current character or its current level of visual quality.

3.12.2.2.6 Light and Glare

There will be no change in the project's provisions for night lighting and the project's light-related impacts will continue to be less than significant.

3.12.2.2.7 Plumes

The project currently being proposed, like the project originally approved, will make use of a plume-abated cooling tower, which will minimize the creation of visible steam plumes during non-rain, non-fog daylight hours, keeping the project's impacts related to visible plumes to a level that is less than significant.

3.12.3 Mitigation Measures

The project's impacts on views from the two KOPs in the shoreline interpretive center and the marsh to the west will be attenuated to a level that is less than significant through plantings of vegetation in the marsh that will partially screen the cooling tower and power block structures, reducing their overall visibility from the trail. Because of the limited area of the project site, and the presence of easements for pipelines related to the adjacent sewage treatment plant opportunities for planting on the site are limited. In addition, the Applicant will develop a color scheme involving a color palette of varying tones of neutral colors that can be applied to the major project structures in a way that will break up the facility's apparent mass and better integrate it into the view.

3.12.4 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to visual resources as identified in the Appendix A to the Commission Decision.

3.12.5 Conditions of Certification

VIS-2 Landscaping—Because travelers along State Route 92 south of the project site, Whitesell Business Park, and Whitesell Street will no longer have unimpeded views of the project, portions of the perimeter landscaping program no longer apply and should be revised.

VIS-2 Prior to the first turbine roll, the project owner shall prepare and implement an approved ~~perimeter~~ landscape plan to screen the power plant from view to the ~~greatest~~ extent ~~possible~~ feasible from views to the west. ~~Landscaping shall consist of a mix of trees, shrubs, and groundcovers. Fast growing, evergreen species shall be used to ensure that maximum screening is achieved as quickly as possible and year-round. Street trees shall be 24" box size at the time of planting. Other trees used for landscaping on the site shall be a minimum of 15 gallons in size. Suitable irrigation shall be installed to ensure survival of the plantings. Landscaping shall be installed consistent with the City of Hayward zoning ordinance. Plant species shall be selected consistent with the U.S. Fish and Wildlife Services recommendations that plants not provide opportunities for perching by birds of prey. Protocol:~~ If perimeter landscaping is not feasible, the Project Owner shall identify sites within the marsh where vegetation can be planted to screen the project from the trail. The project owner shall submit a perimeter landscape plan to the City of Hayward for review and comment, and to the CPM for review and approval. The submittal to the CPM shall include the City's comments. The plan shall include, but not be limited to:

1) A detailed landscape, grading, and irrigation plan, at a reasonable scale, which includes a list of proposed tree and shrub species and installation sizes, and a discussion of the suitability of the plants for the site conditions and mitigation objectives.

2) Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and

3) A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project. The project owner shall not implement the plan until the project owner receives approval of the plan from the CPM.

Verification: Prior to the first turbine roll and at least 60 days prior to installing the landscaping, the project owner shall submit the ~~perimeter~~ landscape plan to the CPM for review and approval. If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal. The project owner shall notify the CPM within seven days after completing installation of the landscape screening that the planting ~~and irrigation system are~~ is ready for inspection. The project owner shall report landscape maintenance activities, including replacement of dead vegetation, for the previous year of operation in the Annual Compliance Report.

VIS-7 Architectural Treatment—The project location no longer borders Whitesell Street and Enterprise Avenue, and the project administrative offices and control room, warehouse, and water treatment laboratory would no longer be sited adjacent to or directly visible from these streets because of their location in the revised project design, and the sound wall that will be constructed along the southern project boundary. In addition, the Advanced Water Treatment Facility is no longer part of the project design. For these reasons, Condition VIS-7, which requires architectural design review of these structures because of their former visibility from Enterprise Avenue and Whitesell Street, is no longer necessary and should be deleted.

> ~~**VIS-7** Prior to the start of commercial operation, the project owner shall treat the major structures of the Advanced Water Treatment (AWT) facility and the buildings housing the project's administrative offices and control room, warehouse, and water treatment laboratory with appropriate architectural treatment if visible from Enterprise Avenue and Whitesell Street. All architectural treatment for the project shall be consistent with the City of Hayward's architectural design guidelines for industrial zoning districts. A specific architectural treatment plan shall be developed for CPM approval to ensure that the treatments do not unduly contrast with the surrounding landscape. Protocol: The project owner shall submit an architectural treatment plan to the City of Hayward for review and comment, and to the CPM for review and approval. The submittal to the CPM shall include the City's comments. The architectural screening plan shall include:~~
>
> ~~1) Specification, and 11" x 17" color simulations at life-size scale as seen from Whitesell Street and Enterprise Avenue, of the treatment proposed for use on the AWT structures and project buildings;~~
> ~~2) A detailed schedule for completion of the treatment; and,~~
> ~~3) A procedure to ensure proper treatment maintenance for the life of the project.~~
>
> ~~The project owner shall not implement the plan until approved by the CPM.~~
>
> ~~**Verification:** At least 60 days prior to start of construction, the project owner shall submit the architectural treatment plan to the CPM for review and approval. If the CPM notifies the project owner of any revisions that are needed before the CPM will approve the plan, within 30 days of receiving that notification the project owner shall submit to the CPM a revised plan. Not less than thirty (30) days prior to the start of commercial operation, the project owner shall notify the CPM that the architectural screening is ready for inspection. The project owner shall provide a status report regarding screening maintenance in the Annual Compliance Report.~~

VIS-8 HRSG Plumes—Because the project will be less visible to the public from sensitive viewing locations such as State Route 92, VIS-8 should be revised, deleting the requirement to abate HRSG plumes. These are very infrequent and the use of an economizer bypass and maintaining an exhaust temperature of 270°F would be very inefficient in terms of the use of natural gas resources.

VIS-8 The project owner shall reduce the RCEC cooling tower and HRSG visible vapor plumes by the following methods:

- The project owner shall reduce the RCEC cooling tower visible plumes through the use of a plume abated wet/dry cooling tower that has a stipulated plume abatement design point of 38°F and 80 percent relative humidity. An automated control system will be used to ensure that plumes are abated to the maximum extent possible for the stipulated design point.

- ~~The project owner shall reduce the RCEC HRSG exhaust visible plumes through the use of an economizer bypass that is capable of raising the exhaust temperature to a minimum of 270°F. An automated control system will be used to ensure that plumes are abated to the maximum extent possible when raising the exhaust temperature to the stipulated design point.~~

Verification: At least 30 days prior to first turbine roll, the project owner shall provide to the CPM for review and approval the specifications for the automated control systems and related systems and sensors that will be used to ensure maximum plume abatement for the wet/dry cooling tower ~~and HRSG economizer bypass~~ plume abatement systems.

VIS-9 Trailside Amenities—With relocated HRSG stacks, the project will no longer block the view of Mt. Diablo from the observation deck of the Hayward Shoreline Interpretive Center. However, the Applicant is willing to provide the trailside amenities.

VIS-9 Prior to commercial operation, the project owner shall install new trailside amenities ~~to offset the blockage of the view of Mt. Diablo from the observation deck of the Hayward Shoreline Interpretive Center. Consistent with Measure 1 of Applicant's Visual Mitigation Plan, the trail amenities shall include, but not necessarily be limited to,~~ The trail amenities may include benches, free-of-charge viewscopes, and an information kiosk and set of low panels for the display of interpretive information related to Mt. Diablo and other important elements of the regional setting. The project owner shall work with the Hayward Area Recreation and Parks District (HARD) to develop the final designs for these facilities. As part of this measure, the project owner shall provide the HARD with an adequate budget that will allow its Staff to research and prepare the interpretive materials to be mounted on the kiosk and panels. The project owner shall determine the precise location of the trailside amenities in consultation with the CPM and the HARD.

Verification: Within 12 months of the start of HRSG construction, the project owner shall submit a final design plan for the trailside amenities to the HARD for review and comment and to the CPM for review and approval. If the CPM notifies the project owner that revisions are needed before the CPM will approve the plan, within 30 days of receiving that notification the project owner shall submit a revised plan to the CPM. Not less than thirty 30 days prior to the first turbine roll, the project owner shall notify the CPM that the trailside amenities are ready for inspection.

VIS-10 Off-Site Landscaping—Because travelers along State Route 92 south of the project site, Whitesell Business Park, and Whitesell Street will no longer have an unimpeded view of the project, Condition of Certification VIS-10, requiring an offsite of landscaping program, no longer applies and should be removed.

~~**VIS-10** Prior to the start of construction, the project owner shall prepare and~~

~~implement an approved off-site landscaping plan. The project owner shall install trees at the Whitesell Business Park (KOP 1) to screen views of the project from this viewing area to the maximum extent possible. Consistent with Measure 2 of Applicant's Visual Mitigation Plan trees shall be planted in the existing empty planting islands at the Whitesell Business Park. If the landowner agrees, the project owner also shall plant trees in the landscape area near the Whitesell Business Park buildings and outdoor patio area to increase the effectiveness of the landscape screening. Consistent with Measure 3 of the Visual Mitigation Plan, the project owner shall install trees along the west side of the warehouse and industrial park complexes that line the eastern edge of the shoreline wetlands. The extent of the landscaping area, as shown in **Visual Resources Figure 14**, shall be expanded to include the berm from Breakwater Avenue north to Johnson Road. Trees shall be planted close together to create a dense screen. Trees planted along the edge of the Whitesell Business Park parking lot shall be pruned up as they grow to allow westward views from the parking lot to the shoreline open space. Trees planted close to the walls of the warehouses shall be allowed to take on a bush-like form to maximize their screening potential. All tree species shall be fast growing and evergreen and shall be 24" box size when planted. The project owner shall provide an appropriate level of irrigation and fertilization to ensure optimal tree growth, health, and appearance. Protocol: Prior to start of construction, the project owner shall submit an offsite landscape plan to the City of Hayward for review and comment, and to the CPM for review and approval. The submittal to the CPM shall include the City's comments. The plan shall include, but not be limited to:~~

~~1) A detailed landscape, grading, and irrigation plan, at a reasonable scale, which includes a list of proposed tree and shrub species and installation sizes, and a discussion of the suitability of the plants for the site conditions and mitigation objectives.~~

~~2) Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and~~

~~3) A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project. The project owner shall not implement the plan until the project owner receives approval of the plan from the CPM.~~

~~**Verification:** At least 90 days prior to start of construction, the project owner shall submit the perimeter landscape plan to the CPM for review and approval. If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal. The project owner shall notify the CPM within seven days after completing installation of the landscape screening that the planting and irrigation system are ready for inspection. The project owner shall report landscape maintenance activities, including replacement of dead vegetation, for the previous year of operation in the Annual Compliance Report.~~

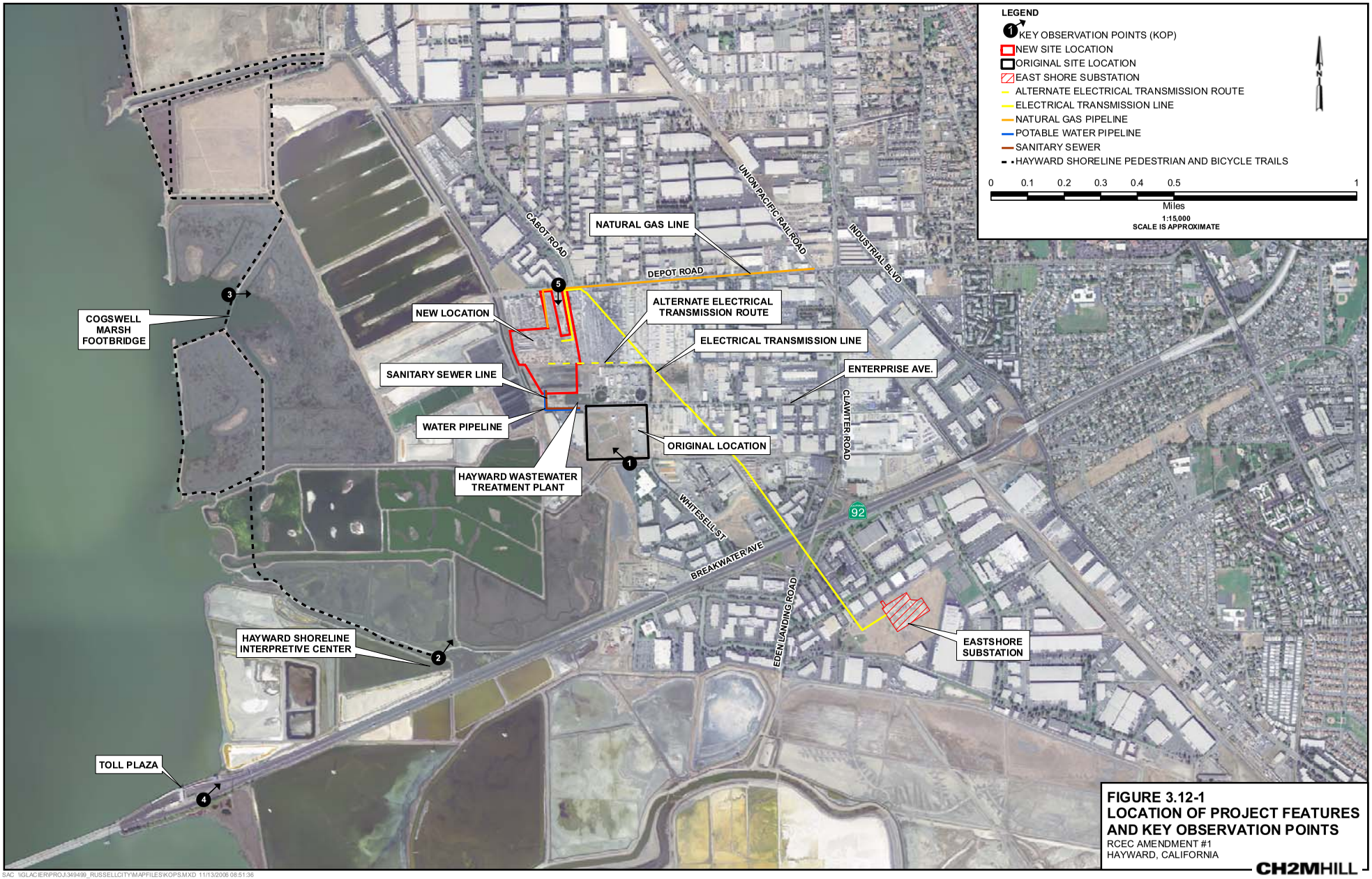

FIGURE 3.12-1
LOCATION OF PROJECT FEATURES AND KEY OBSERVATION POINTS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

CH2MHILL

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A. KOP1 - Existing view from office/ industrial facility looking north

B. KOP 1 - Visual simulation of proposed project

FIGURE 3.12-2
EXISTING AND SIMULATED VIEWS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

SOURCE: Environmental Vision

CH2MHILL

TB112006001SAC KOP1_FIG_3_12_2.ai 11-06-2006 sbm

A. KOP 2 - Existing view from Hayward Shoreline Interpretive Center looking northeast

B. KOP 2 - Visual simulation of proposed project

SOURCE: Environmental Vision

FIGURE 3.12-3
EXISTING AND SIMULATED VIEWS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

CH2MHILL

TB112006001SAC KOP2_FIG_3_12_3.ai 11-06-2006 sbm

A. KOP3 - Existing view from Hayward Shoreline footbridge at Cogswell Marsh looking southeast

B. KOP 3 - Visual simulation of proposed project

SOURCE: Environmental Vision

FIGURE 3.12-4
EXISTING AND SIMULATED VIEWS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

CH2MHILL

TB112006001SAC KOP3_FIG_3_12_4.ai 11-06-2006 sbm

A. KOP4 - Existing view from San Mateo Bridge Toll Plaza looking east

B. KOP 4 - Visual simulation of proposed project

SOURCE: Environmental Vision

FIGURE 3.12-5
EXISTING AND SIMULATED VIEWS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

CH2MHILL

TB112006001SAC KOP4_FIG_3_12_5.ai 11-06-2006 sbm

A. KOP 5 - Existing view from Cabot Boulevard at Depot Road

B. KOP 5 - Visual simulation of proposed project

FIGURE 3.12-6
EXISTING AND SIMULATED VIEWS
RCEC AMENDMENT #1
HAYWARD, CALIFORNIA

SOURCE: Environmental Vision

CH2MHILL

TB112006001SAC KOP4_FIG_3_12_6.ai 11-06-2006 sbm

3.13 Waste Management

Waste management will not differ significantly from that described in the AFC. The modification of the project location will require some additional demolition; however, not in amounts that exceed landfill capacity in the area. The inclusion of the ZLD system, the addition of the Title 22 RWF, and removal of the AWT plant will also create some additional nonhazardous waste streams during operation; however, the additional waste will not create a burden to either landfill capacity or the WPCF. Consequently, any potential waste management impacts associated with this Amendment would be less than significant.

3.13.1 Environmental Baseline Information

3.13.1.1 Site Investigations

The RCEC facility is composed of four parcels, identified as the small and large Eash parcels, the City of Hayward parcel, and the Aladdin parcel. Phase I and Phase II Environmental Site Assessment (ESA) reports have been prepared for each of these parcels and are included in Appendix 3.13A. The reports are summarized below.

3.13.1.1.1 The Eash Parcels

The Eash parcels are located at 3862 and 3878 Depot Road in Hayward, California. Taken together, these two contiguous parcels encompass a total of 11.26 acres and surrounding land uses include commercial offices, automobile salvage yards, light industrial facilities, a wastewater treatment plant, and salt ponds. The parcel at 3862 Depot Road (large Eash parcel) was used as a fertilizer plant prior to the mid 1940s, and then was used for a variety of light industrial uses such as a machine shop, wooden pallet fabrication shop and storage yard, lumber yard and a wrought iron fabrication shop. All four of these activities are currently onsite. The site currently has many discarded metal storage drums on site, numerous abandoned vehicles and an abandoned aboveground storage tank (AST). An industrial non-potable water well is located near the machine shop and is used for machine shop operations.

The parcel at 3878 Depot Road (small Eash parcel) was occupied by an uncultivated pasture with a single-family residence prior to 1947. The structure was removed from the parcel between 1959 and 1969 and an automobile salvage yard was developed on the lot. The salvage yard remains in operation. The property currently consists of a storage yard containing trucks and vans in various stages of disassembly. An abandoned water well is located near the northern property boundary, and a groundwater monitoring well is also located on the property.

A Phase I ESA was prepared for the Eash parcel in December 2004 by Levine-Fricke (LFR) (LFR, 2004). The purpose of the ESA was to identify recognized environmental conditions at the site resulting from present or past activities. As a follow-up to the Phase I ESA, a limited subsurface investigation was conducted in April 2005 (LFR, 2005). A summary of both reports is provided below and the reports are provided in Appendix 3.13A.

3.13.1.1.2 Eash Parcels Phase I ESA

The Phase I ESA was conducted in October 2004 pursuant to American Standard Test Method (ASTM) E 1527-00. It included a visual inspection of the buildings and grounds; a

site history survey, including historical map and aerial photograph review; personal, telephone, and written communication with local, county, state, and federal regulatory agencies; and a computer database search of sites with environmental concerns within a 1.0-mile radius of the site.

The database search was conducted by Environmental Data Resources, Inc. (EDR) to determine the existence of any documentation related to environmental incidents at the site or surrounding properties. The database search showed two of the operations on the project site, Metal Masters and All Good Pallet Company, Inc. at 3862 Depot Road were listed on the state databases HAZNET. HAZNET is a Department of Toxic Substances Control (DTSC) database with information on hazardous waste shipments entered from hazardous waste manifests. The purpose of the database service is to provide Certified Unified Program Agencies (CUPAs) with information to facilitate their manifest research work and inspection preparation. Appearance in this database is not necessarily an indication that any violations have occurred.

A records review was conducted for the project site at the ACDEH. According to ACDEH no files were available for review at 3878 Depot Road; however, several files were identified for 3862 Depot Road. The findings of the file review were as follows:

- Metal Masters received several violations from the ACDEH over a several-year period, including violations for improper storage of hazardous waste and insufficient containment of hazardous waste.
- A diesel spill of approximately 30 to 75 gallons was reported at the Metal Masters site in 1994. The spill resulted in the removal and disposal of approximately 25 to 35 cubic yards of affected soil.
- An underground storage tank (UST) was removed form the property in the 1970s. A consultant had conducted an investigation to assess whether the tank had leaked.
- In 1989, the property owner applied for a UST permit.
- A small oil spill had occurred on the All Good Pallets portion of the property. Soil samples were collected and analyzed and the spill was cleaned up (LFR, 2004).

The records search performed by EDR identified several sites near the project site which are listed on federal and/or state databases. There are three active Leaking Underground Storage Tank Facilities (LUST) within one-half mile of the Eash parcels. The American Auto Wreckers, Inc. at 3744 Depot Road is located within 0.1 mile east, and LFR has determined it to be hydraulically upgradient to the parcel. St. Francis Electric at 23294 Connecticut Street is located 0.4 mile northeast of the Eash parcels, and LFR has determined that site to be hydraulically cross-gradient to the parcel. The City of Hayward WPCF is located at 3700 Enterprise Avenue, approximately 0.1 mile southeast of the Eash parcel. Because the site characterization has not been completed, LFR could not determine whether this release has the potential to affect nearby properties. In addition, six facilities within one-quarter mile of the Eash parcels are identified as RCRIS Small Quantity Generators, and one facility, American Auto Wreckers, Inc. at 3744 Depot Road is listed on the Solid Waste Landfill database, as it stores waste tires on the premises.

Based on the findings from the records search, site visit, and historic report review, LFR had the following findings:

- Oily soil staining in various areas of the 3862 and 3878 Depot Road properties.
- Onsite chemical storage on the 3862 property.
- A large amount of debris on the two properties, including 55-gallon drums, piping, storage containers, auto parts, abandoned vehicles, and other miscellaneous materials.
- The abandoned water well and the groundwater monitoring well at 3878 Depot Road should be properly closed.
- The EDR report did not identify specific offsite facilities that appear to represent a potential source of migration of hazardous substances to soil or groundwater beneath the site.

As a result of these findings, and based on the current and historical use of the 3862 and 3878 Depot Road properties, LFR recommended that additional investigation be conducted to evaluate the quality of the soil and groundwater at the properties (LFR, 2004).

3.13.1.1.3 Eash Parcels Phase II ESA

In April 2005, a limited subsurface investigation was conducted at the site to address outstanding issues identified in the Phase I ESA. These activities were conducted to address the recommendation to evaluate the quality of the soil and groundwater at the properties (LFR, 2005a).

Field investigation activities involved the installation of shallow soil borings, surface soil samples, and "grab groundwater" samples, as well as the collection and analysis of soil and groundwater samples for specific chemical constituents at a state-certified laboratory. Sixteen surface soil samples were taken, four shallow (3 feet bgs) soil samples were taken, and eight water samples were taken.

Soil and groundwater quality data were evaluated based on comparison to the San Francisco Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs) for soil and groundwater for commercial and industrial properties where the groundwater is a potential source of drinking water. The ESLs were developed for the following pathways and environmental concerns: protection of human health, direct/indirect exposure to affected soil, emission of subsurface vapors to building interiors, protection of groundwater quality, protection of terrestrial (non-human) biota, protection against nuisance concerns (odors, etc.), and general resource degradation. If the ESL for an individual constituent was not available, then the laboratory result was compared to the EPA Region IX Preliminary Remediation Goals (EPA PRGs; EPA, 2004), if available. Additionally, laboratory results for metals were compared to background distribution of metals at Lawrence Berkeley National Laboratory (LBNL) (LBNL, 2002)

The following is a summary of the results from the field investigation:

- **Petroleum Hydrocarbons**: Total Petroleum Hydrocarbon, diesel (TPH-d) and Total Petroleum Hydrocarbon, motor oil (TPH-mo) were detected in soil samples collected at 0.5 foot bgs at concentrations as high as 2,200 mg/kg and 4,700 mg/kg respectively.

Gasoline (TPH-g) was detected in only one of the 16 soil samples taken at this level. Of the 16 soil samples, TPH-d was detected above the San Francisco RWQCB ESL of 100 mg/kg at four locations and TPH-mo was detected above the ESLs at two locations. TPH-g was not detected above ESL levels. At a depth of 3 feet bgs, TPH-d, TPH-mo, and TPH-g were not detected above ESL levels.

- **VOCs:** Several VOCs, including 1,2,4-trimethylbenzene, 2-butanone, acetone, and many others were detected in one or more shallow soil samples above laboratory detection limits but below ESL levels. Methylene chloride was detected in 8 of the 16 samples; however, the Phase II report suggests that this may be indicative of laboratory cross-contamination. In five surface soil samples, methylene chloride was found above the ESL of 77 µg /kg.
- **Metals**: Lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc were detected in surface soil samples and in the shallow soil sample (3 feet bgs). Arsenic was detected above ESL levels in six samples, chromium was detected above ESL levels in one sample, and zinc was detected above ESL levels in one sample. The Phase II report suggests that the arsenic is likely from naturally occurring materials.
- **Pesticides:** Low levels (below ESLs) of DDE, DDT, delta BHC, dieldrin, endrin aldehyde, and heptachlor epoxide were detected sporadically in surface soil samples. Dieldrin was detected above ESL levels in two surface samples. Endrin aldehyde was detected above ESL levels in one shallow sample (3 feet bgs), and heptachlor epoxide was detected in one surface soil sample.
- **PCBs**: PCBs were detected in four surface soil samples at concentrations ranging from 55 to 1,600 micrograms per kilogram (µg/kg). One surface sample contained PCBs above the industrial preliminary remediation goals (PRGs).
- **Groundwater**: Eight grab groundwater samples detected low levels of several VOCs at six locations. Benzene, xylenes, methylene chloride, and MTBE were detected in samples above the ESL levels. Per LFR the reported concentrations are relatively low.

According to the Phase II ESA, shallow soils at four locations are affected with residual concentrations above regulatory action levels (LFR, 2005a). Groundwater analytical results indicate that shallow groundwater contains residual concentrations of VOCs at concentrations only slightly above ESLS. According to the report, "Residual contaminants were detected sporadically and at relatively low levels indicating the likely absence of a widespread environmental problem at the site."

LFR recommended additional soil sampling to evaluate the extent of affected soil. In addition, during the Phase II investigation, the property owner identified a location of a former UST. LFR was unable to sample adjacent to the proposed location and recommended a geophysical investigation to confirm the presence of the UST. LFR recommended a soil and groundwater investigation to evaluate the extent of potential contamination from the UST (LFR, 2005a).

3.13.1.1.4 The City of Hayward Parcel

The City of Hayward parcel consists of two parcels located at 3700 Enterprise Avenue. One of the parcels is the western portion of the 39.86-acre property addressed as 3700 Enterprise

Avenue, and the other is a 1.67 acre unaddressed parcel that adjoins the western portion to the south. The site has been the location of the City of Hayward wastewater treatment plant since the early 1950s. Prior to that time the site was undeveloped. The unaddressed parcel may have been used for farming, but is currently undeveloped. No buildings are located on the site, and the ground surface consists of bare soil. The site is currently used as a biosolids drying area (LFR, 2005b). Surrounding land uses in the area include a pallet storage area, lumber yard, machine shop, wrought iron fabrication ship, automotive wrecking yards, and light-industrial facilities.

A Phase I ESA was prepared for the City of Hayward parcel in October 2005 by LFR (LFR, 2005b). The purpose of the ESA was to identify recognized environmental conditions at the site resulting from present or past activities. As a follow-up to the Phase I ESA, a subsurface investigation for the City of Hayward, Aladdin, and Eash parcels was conducted in September 2006 (LFR, 2006a). A summary of both of these reports is provided below and the reports are provided in Appendix 3.13A.The Phase I ESA was conducted in September 2005 pursuant to ASTM E 1527-00. It included a visual inspection of the buildings and grounds; a site history survey, including historical map and aerial photograph review; personal, telephone, and written communication with local, county, state, and federal regulatory agencies; and a computer database search of sites with environmental concerns within a 1.0-mile radius of the site.

The database search was conducted by Environmental FirstSearch, Inc. (FirstSearch) to determine the existence of any documentation related to environmental incidents at the site or surrounding properties. The database search identified the wastewater treatment plant as listed on the LUST database. The LUST database contains an inventory of reported leaking UST incidents. A gasoline fuel release was discovered at this site in March 1999 during tank removal operations. No action has yet been taken to determine the vertical and horizontal extent of the subsurface contamination. The LUST is approximately 300 feet east of the City parcel. Per LFR, the facility is hydraulically upgradient from the site, and may have impacted soil and groundwater at the City parcel. In addition laboratory data for sludge, effluent, and influent samples from the wastewater treatment plant were reviewed. According to staff at the wastewater treatment plant, the sludge data is in compliance with current EPA sludge limits for land application.

A records review was conducted for the project site at the Hayward Fire Department and the ACDEH. The findings of the file review were as follows:

Hayward Fire Department:

- Three USTs are located at the adjacent wastewater treatment plant.
- During the removal of one of the 2,000-gallon USTs in March 1999, a release to the soil was observed. Groundwater impact was not observed. Soil samples were collected and analyzed for TPH-d. The tank closure report indicated that no further action was needed.

ACDEH:

- A Notice of Responsibility (NOR) for a gasoline release from a UST indicated a release was noted during removal of a 1,000-gallon UST in 1989. A soil sample was collected, and groundwater was not affected.

- Following UST removal in 1989, two phases of soil excavation occurred to determine the extent of contamination. No closure documentation was contained in the file. Per LFR, based on the assumed westerly groundwater flow direction, this release may affect the groundwater at the City of Hayward parcel.

The records search performed by FirstSearch identified several sites near the project site which are listed on federal and/or state databases. Three facilities within one-quarter mile of the City of Hayward parcel are identified as Small Quantity Generators. One facility, American Auto Wreckers, Inc. at 3744 Depot Road is listed on the Solid Waste Landfill database because it stores waste tires on the premises. In addition to the record of a LUST on the site described above, there are two active LUST sites within one-half mile of the City parcel. The American Auto Wreckers, Inc. at 3744 Depot Road is located within 0.23 mile northwest of the City parcel. The responsible party is currently conducting a preliminary site assessment to determine the extent of contamination. According to LFR, since the site characterization has not been completed, it is unknown if this release will effect the City of Hayward parcel. Forni Corporation at 3600 Depot Road is located 0.41 mile northeast of the City of Hayward parcel. A gasoline spill was discovered during tank closure. The current status is listed as remedial action. LFR has determined that, based on the distance of this property from the City of Hayward parcel, the presumed low transmissivity of area soils, low groundwater gradient, and the hydraulic relationship to the City of Hayward parcel, this site is unlikely to be a recognized environmental condition to the City of Hayward parcel.

Based on the findings from the records search, site visit, and historical report review, LFR had the following findings:

- Given the historical use of the property as a biosolids drying area, oil and/or hazardous materials may be present in the subsurface of the City parcel. Laboratory data provided to LFR indicates the presence of metals, TPH and VOCs in the sludge and bio-sludge generated at the plant. The sludge is in compliance with EPA regulations; however, soil underneath the drying area may have been impacted.

- No ASTs, USTs, hazardous material and/or waste storage areas were observed on the City parcel. A nonhazardous polymer added to the sludge is located on the site in bulk containers.

- A LUST site was identified at the adjoining wastewater treatment plant. Based on the assumed groundwater direction, the release may impact soil and groundwater at the City parcel.

- The EDR report did not identify specific offsite facilities that appear to represent a potential source of migration of hazardous substances to soil or groundwater beneath the site (LFR, 2005b).

3.13.1.1.5 The Aladdin Parcel

The Aladdin parcel consists of one parcel located at 3810 Depot Road. The parcel is approximately 2.96 acres, and is divided into the northern and southern portion. The northern portion of the site is occupied by 4000 Auto Wreckers, Inc., an auto wrecking facility. The southern portion of the property is used for storage by the property owners, as well as St. Francis Electric Company, Bay Area Framers, and D&S Trucking. The southern

portion of the site is separated from the northern portion of the site with a 6-foot fence. A locked gate limits access to the southern portion of the parcel. An inactive greenhouse is located along the southern site border. The southern portion of the parcel is unpaved, while the northern portion is paved with concrete. 4000 Auto Wreckers has been on the site since 1995, prior to that a lumber company was located on the site from the mid 1980s. Before the 1980s, an auto wrecking yard was located on the parcel, beginning in the late 1960s. Prior to that, the site was undeveloped. Surrounding land uses in the area include the City of Hayward wastewater treatment facility, a pallet storage area, lumber yard, machine shop, wrought iron fabrication ship, automotive wrecking yards, and light-industrial facilities (LFR, 2006b).

A Phase I ESA was prepared for the Aladdin parcel in September 2006 by LFR (LFR, 2006b). The purpose of the ESA was to identify recognized environmental conditions at the site resulting from present or past activities. As a follow-up to the Phase I ESA, a subsurface investigation for the City, Aladdin, and Eash parcels was conducted in September 2006 (LFR, 2006a). A summary of both reports is provided below and the reports are provided in Appendix 3.13A.

The Phase I ESA of the Aladdin parcel was conducted in August 2006 pursuant to ASTM E 1527-00. It included a visual inspection of the buildings and grounds; a site history survey, including historical map and aerial photograph review; personal, telephone, and written communication with local, county, state, and federal regulatory agencies; and a computer database search of sites with environmental concerns within a 1.0-mile radius of the site.

The database search was conducted by FirstSearch to determine the existence of any documentation related to environmental incidents at the site or surrounding properties. The Aladdin parcel was not identified on any federal or state databases.

A records review was conducted for the project site at the Hayward Fire Department and the ACDEH. The findings of the file review were as follows:

Hayward Fire Department:

- A Hazardous Materials Management Plan (HMMP) is on file for 4000 Auto Wreckers.
- No UST or AST records are on file for the site.

ACDEH:

- The HMMP indicates that propane and drained gasoline are used 4000 Auto Wreckers, and motor oil and lube oil, antifreeze, Freon, used batteries and oil filters are generated.
- No records of spills or releases were noted in the ACDEH files.

The records search performed by FirstSearch identified several sites near the project site which are listed on federal and/or state databases. Six facilities within ¼ mile of the Aladdin parcel are identified as Small Quantity Generators. There are two LUST facilities within one-tenth of a mile of the Aladdin parcel. The American Auto Wreckers, Inc. at 3744 Depot Road is located approximately 0.1 mile northeast and upgradient from the Aladdin parcel. The status of the site is "leak being confirmed," and the database report indicates the release was discovered during tank removal. The responsible party is currently conducting a preliminary site assessment to determine the extent of contamination. According to LFR, since the site characterization has not been completed, it is unknown if

this release will effect the Aladdin parcel. The second LUST facility is located at J&M Inc. at 3826 Depot Road. This site is located along the western boundary of the Aladdin parcel. The J&M LUST has a status of "case closed." According to LFR, based on the distance and direction from the Aladdin parcel, the other LUST sites identified in the database report are not expected to affect soil and groundwater at the site.

In addition to the LUST database, the database report identified a Shell pipeline leak at the corner of Depot Road and Cabot Boulevard, approximately 0.06 mile northeast of the Aladdin parcel. The case was closed in 1993. Five facilities were also identified on the state SITES list. The closest site is approximately 0.65 mile from the Aladdin property. According to the report, the listed properties are not anticipated to affect soil or groundwater at the Aladdin parcel.

Based on the results of the records search, site visit, and historic report review, the Phase I report made the following findings:

- The Aladdin parcel has been used historically as an automobile wrecking yard. Hazardous materials are generated by these activities, and although there have been no reported spills or releases, undocumented releases may have occurred.
- Labeled and unlabeled drums containing petroleum products were observed on the southern portion of the site. Minor soil staining was observed near the drums.

Based on these findings, LFR recommended a limited subsurface investigation to assess the impact of the current and historical activities on the soil and groundwater at this parcel (LFR, 2006b).

3.13.1.1.6 City, Aladdin, and Eash Parcel Phase II ESA

In September 2006, a limited subsurface investigation was conducted at the site to address outstanding issues identified in the Phase I ESAs (City and Aladdin parcels) and those identified in the 2004 Phase II ESA (Eash parcels). The objectives of the sampling activities were as follows:

- To assess if soil and groundwater were affected by chemical storage and use.
- To assess the extent of affected soil at the Eash parcels.
- To assess the presence of the UST and possible presence of affected soil and/or groundwater in the vicinity of the UST at one of the Eash parcels (LFR, 2006a).

Field investigation activities involved the installation of shallow soil borings, surface soil samples, and "grab groundwater" samples, as well as the collection and analysis of soil and groundwater samples for specific chemical constituents at a state-certified laboratory. The number of samples taken at each site is identified in Table 3.13-1.

TABLE 3.13-1
Summary of Analyses

Analyte	Number of Surface Samples	Number of Subsurface Samples	Number of Groundwater Samples
Aladdin Parcel			
TPH-g, TPH-d, TPH-mo, VOCs, Metals, Pesticides, Herbicides, PCBs	6*	--	6
City of Hayward Parcel			
TPH-g, TPH-d, TPH-mo, Herbicides, SVOCs	5	--	--
Metals	9	1	5
VOCs	5	--	5
Pesticides, PCBs	5	1	--
Eash Parcels			
TPH-g, TPH-d, TPH-mo, VOCs	3	--	3
Metals	7	--	1
OCPs, PCBs	13	--	--
Nitrates	--	--	1

* A total of 12 soil samples were taken, however only 6 samples from the surface were analyzed initially. The soil samples collected at subsurface levels (3 ft bgs) were placed on hold at the laboratory pending receipt of the results.

The following is a summary of the results from the field investigation:

Aladdin Parcel

- **Petroleum Hydrocarbons**: TPH-d and TPH-g were not detected in the surface soil samples. TPH-mo was detected in six soil samples at concentrations ranging from 9.35 to 400 mg/kg, however concentrations were below the ESL of 1,000 mg/kg.
- **PCBs, Herbicides, Pesticides, and VOCs and SVOCs**: Neither PCBs, herbicides, pesticides, VOCs, nor SVOCs were not detected in soil samples at this parcel.
- **Metals**: Arsenic, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, vanadium, and zinc were detected in samples at this parcel. Table 3.13-2 identifies which metals were detected, and whether the metal was detected above or below the ESL.

TABLE 3.13-2
Metals Detected in Soil at the Aladdin Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/kg)	Number of Samples Above ESL	Number of Samples Below ESL
Arsenic*	6	5.5	4	2
Barium	6	1,500	0	6
Cadmium	1	7.4	1	0

TABLE 3.13-2
Metals Detected in Soil at the Aladdin Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/kg)	Number of Samples Above ESL	Number of Samples Below ESL
Chromium	6	58	0	6
Cobalt	6	10	5	1
Copper	6	230	0	6
Lead	6	750	0	6
Mercury	5	10	0	5
Nickel	6	150	0	6
Vanadium	6	200	0	6
Zinc	6	600	0	6

* Arsenic was also compared to background distribution of metals at LBNL Background Metal Concentrations, and it was determined that concentrations at this parcel are below the background concentrations for the Bay Area (LBNL, 2002). Therefore, LFR concluded that arsenic detected at this parcel can be considered naturally occurring.

- **Groundwater**: Groundwater samples collected from the Aladdin parcel were not analyzed for hydrocarbons. MTBE and isopropyl ether were detected at levels below the ESL. 1,1-Dichloroethane, and 1,1-dichloroethene were detected in 2 samples. 1,1-Dichloroethene was detected above ESLs in both samples, and 1,1-dichloroethane was detected above the ESL in one sample. Metals detected in groundwater are presented in Table 3.13-3.

TABLE 3.13-3
Metals Detected in Groundwater at the Aladdin Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/kg)	Number of Samples Above ESL	Number of Samples Below ESL
Arsenic	6	0.0	0	6
Barium	6	1.0	0	6
Cobalt	1	0.003	1	0
Copper	1	0.0031	0	1
Lead	1	0.0025	1	0
Mercury	6	0.000012	6	0
Molybdenum	6	0.035	0	6
Selenium*	6	0.005	6	0
Silver	5	0.00019	5	0
Zinc	6	0.081	1	5

* According to LFR, groundwater selenium concentrations at the parcel are elevated relative to selenium concentrations observed in the area. However, certain geologic formations such as shales and mudstones, may contain elevated selenium concentrations. Therefore selenium concentrations could be naturally elevated if the parcel is underlain by sediments derived from these geologic formations (LFR, 2006a).

City Parcel

- **Petroleum Hydrocarbons**: TPH-d was detected in two samples ranging from 3.69 to 23.1 mg/kg, although this may be a laboratory error. Neither sample was over the ESL level of 100 mg/kg. TPH-g was detected in one sample at a concentration of 9.9 mg/kg, but may also be a laboratory error. The sample was below the ESL level of 100 mg/kg. TPH-mo was detected in five soil samples ranging from 16.2 to 818 mg/kg; however concentrations were below the ESL level of 1,000 mg/kg.

- **VOCs and SVOCs**: 2-butanone was detected in one soil sample at a concentration of 12.28 µg /kg. An ESL is not available for this chemical, but the concentration is below the PRG of 110 µg/kg. Bis-2-ethylhexyl-phthalate was detected in all five soil samples, ranging from 330 to 44,000 µg /kg however per LFR, this is common constituent found in sampling gloves, and is likely a result of cross contamination (LFR, 2006a).

- **PCBs, Herbicides, and Pesticides**: PCBs, herbicides, and pesticides were not detected in soil samples at this parcel.

- **Metals:** Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, silver, vanadium, and zinc were detected in soil samples at this parcel. Table 3.13-4 identifies which metals were detected, and whether the metal was detected above or below the ESL.

TABLE 3.13-4
Metals Detected in Soil at the City of Hayward Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/kg)	Number of Samples Above ESL	Number of Samples Below ESL
Antimony	1	40	0	1
Arsenic[a]	10	5.5	2	8
Barium	10	1500	0	10
Beryllium	1	800	0	1
Cadmium	4	7.4	1	3
Chromium	10	58	2	8
Cobalt	9	10	1	8
Copper	10	230	1	9
Lead	10	750	0	10
Mercury	7	10	0	7
Molybdenum	1	40	0	1
Nickel	10	150	0	10
Silver	3	40	1	2
Vanadium	10	200	0	10
Zinc	10	600	2	8

* Arsenic was also compared to background distribution of metals at LBNL, and it was determined that concentrations at this parcel are below the background concentrations for the Bay Area (LBNL, 2002). Therefore, LFR concluded that arsenic detected at this parcel can be considered naturally occurring.

- **Groundwater**: Groundwater samples collected from the City of Hayward parcel were not analyzed for hydrocarbons. MTBE, toluene, and trichloroethene were detected at levels below the ESL. Metals detected in groundwater are presented in Table 3.13-5.

TABLE 3.13-5
Metals Detected in Groundwater at the City of Hayward Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/L)	Number of Samples Above ESL	Number of Samples Below ESL
Arsenic	2	0.0	2	0
Barium	5	1.0	0	5
Cadmium	1	0.0011	1	0
Cobalt	4	0.003	4	0
Mercury	3	0.000012	3	0
Molybdenum	4	0.035	1	3
Nickel	3	0.0082	3	0
Selenium*	5	0.005	5	0
Silver	3	0.00019	3	0
Vanadium	1	0.081	0	1

* According to LFR, groundwater selenium concentrations at the parcel are elevated relative to selenium concentrations observed in the area. However, certain geologic formations such as shales and mudstones, may contain elevated selenium concentrations. Therefore, selenium concentrations could be naturally elevated if the parcel is underlain by sediments derived from these geologic formations (LFR, 2006a).

Eash Parcel

- **Petroleum Hydrocarbons:** In the samples taken and analyzed in August 2006, TPH-g was not detected. TPH-d was detected in two samples ranging from 36 to 57 mg/kg, but were below the ESL level of 100 mg/kg. LFR determined this was likely a laboratory error. TPH-mo was found in all seven samples ranging from 4.3 to 4,450 mg/kg, and two of these were over the ESL level of 1,000 mg/kg.

- **VOCs and SVOCs**: No VOCs or SVOCs were detected in the Eash parcel samples taken in August 2006. Previous sampling in 2004 (as described above) detected methylene chloride and other VOCs.

- **PCBs**: PCBs were detected sporadically in an area that formerly contained an electric transformer. Aroclor-1254 was detected in four samples ranging from 275 to 1,340 µg/kg. Two of these samples were above the Industrial PRG of 740 µg /kg.

- **Herbicides, and Pesticides**: 4,4-DDE was detected in five samples ranging from 22.3 to 70.8 µg /kg; however none were over the ESL level of 4,000 µg /kg. 4-4-DDT was detected in three samples, ranging from 34.6 to 58.6 µg /kg, however were below the ESL level of 4,000 µg /kg. Dieldrin was detected in four samples ranging from 2.82 to 71 µg /kg, and were over the ESL level of 2.3 µg /kg.

- **Metals**: Antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, silver, vanadium, and zinc were detected at this parcel. Table 3.13-6 identifies which metals were detected, and whether the metal was detected above or below the ESL.

TABLE 3.13-6
Metals Detected in Soil at the City of Hayward Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/L)	Number of Samples Above ESL	Number of Samples Below ESL
Antimony	1	40	0	1
Arsenic*	7	5.5	1	6
Barium	7	1,500	0	7
Cadmium	3	7.4	1	2
Chromium	7	58	1	6
Cobalt	7	10	1	6
Copper	7	230	0	7
Lead	7	750	0	7
Mercury	5	10	0	5
Nickel	7	150	0	7
Silver	1	40	0	1
Vanadium	7	200	0	7
Zinc	7	600	1	6

* Arsenic was also compared to background distribution of metals at LBNL, and it was determined that concentrations at this parcel are below the background concentrations for the Bay Area (LBNL, 2002). Therefore, LFR concluded that arsenic detected at this parcel can be considered naturally occurring.

- Groundwater: No hydrocarbons were detected in the groundwater samples collected at the Eash parcel near the presumed UST. No VOCs or SVOCs were detected in the groundwater samples collected during the 2006 sampling event. Arsenic, barium, copper, molybdenum, selenium, and vanadium were detected in the groundwater sample. Selenium was detected at 0.029 mg/L and exceeded the ESL level of 0.005 mg/L. All other metals detected were below ESL levels. Nitrates were detected at 19 mg/L, but are below the drinking water maximum contaminant level of 45 mg/L.

3.13.1.1.7 Conclusions

LFR found that the shallow soils were affected with residual chemicals above the industrial ESL levels. Groundwater analytical results indicate that shallow groundwater contain selenium, MTBE, 1,1-dichloroethane, and 1,1-dichloroethene above industrial ESL levels. Based on the results from the sampling, LFR had the following recommendations (LFR, 2006a).

Eash Parcel

- Remove the gasoline dispenser pump and piping
- Remove shallow stained soil, and perform shallow excavations of selected areas of concern

City of Hayward Parcel

- Collect soil samples beneath the equalization and sludge distribution basin, as these areas were inaccessible during sampling activities
- Collect additional soil samples in the biosolids drying area to verify that all biosolids and waste materials have been removed

All Parcels

- Prepare a Soil Management Contingency Plan
- Collect additional information on selenium concentrations in nearby upgradient and cross-gradient wells to determine if elevated selenium levels in groundwater are due to offsite sources

3.13.1.2 Project Waste Generation

Waste will be generated at the RCEC site during both facility construction and operation. Types of waste will include wastewater, solid nonhazardous waste and liquid and solid hazardous waste. The project will also generate solid nonhazardous waste during construction of the electric transmission line, natural gas supply line, and water supply interconnects to the existing site service feeders.

3.13.1.2.1 Construction Phase

During construction, the primary waste generated at the RCEC site will be solid nonhazardous waste. The estimates for the amount of waste to be produced, compared with the amounts listed in the AFC, are presented in Table 3.13-7. Hazardous waste produced during construction will not differ significantly from that described in the AFC.

TABLE 3.13-7
Quantities of Nonhazardous Waste Generated During Construction as Proposed in the Amendment and the AFC

Type of Construction Waste	Revised Estimate for Amendment	Original Estimate in AFC
Paper, Wood, Glass, and Plastics	35 tons	100 tons
Metal	38 tons	25 tons
Concrete (from demolition of buildings)	1,000 tons*	70 tons

* 50 percent of the concrete will be disposed at the beginning of the project, and the remaining 50 percent will be disposed of towards the end of construction.

3.13.1.2.2 Operation Phase

During operation of the RCEC facility, the primary waste generated will be a nonhazardous solid waste. Nonhazardous solid waste quantities are not expected to vary from the AFC to this Amendment, with the exception of two waste streams, a salt cake, and a water treatment sludge. The sludge will be generated by the Title 22 RWF, and the components are

described in Table 3.10-1. The sludge is anticipated to be a nonhazardous wastewater and will be shipped directly to the WPCF for treatment and ultimate disposal in the EBDA pipeline. The salt cake is generated by the ZLD system and is comparable in amounts to the AWT sludge cake that was described in the AFC. It is anticipated that this salt cake will be disposed of in a suitable offsite landfill, once it has been tested to confirm that it is nonhazardous. If the salt cake is found to be hazardous, it will be disposed of at a hazardous waste landfill. During baseload operation at average ambient conditions, an average of 9.2 tons per day of salt cake will be generated and transported to an offsite landfill for disposal. During baseload operation at high ambient temperatures, an estimated 13.9 tons per day of salt cake will be generated. Expected annual salt cake generation is estimated at 4,000 tons.

3.13.1.3 Waste Disposal Sites

3.13.1.3.1 Nonhazardous Waste Disposal Facilities

Currently, the City of Hayward has a franchise agreement with Waste Management, Inc. for collection and disposal of solid waste generated within its jurisdiction, in effect through May 2007. Waste Management, Inc. also provides collection services directly for commercial and industrial facilities in the project site area. Nonhazardous waste, collected by the City of Hayward, is brought to the Altamont Landfill disposal facility, which is owned by Waste Management, Inc. It is located in the eastern part of the county. The estimated closure date of the facility is 2024. There are two other disposal sites located in Alameda County: the Vasco Road Landfill (Vasco) and the Tri-Cities Landfill (Tri-Cities). Located in the eastern portion of the county, Vasco is owned by Republic Industries, Inc. and has a closure date of 2015. The Tri-Cities Landfill accepts waste from Fremont, Newark, and Union City only (i.e., would not take waste from the RCEC facility). Table 3.13-8 shows the waste disposal facilities in the area.

TABLE 3.13-8
Solid Waste Disposal Facilities in the Vicinity of the RCEC Project

Land/MRF /Transfer Station	Location	Class	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Permitted Through put (tons per day)	Estimated Closure Date	Violation of Minimum State Standards Noted
Altamont Landfill	Alameda County	II, III	124,400,000	124,400,000	11,150	2025	No enforcement actions in SWIS Database for this Site
Vasco Road Landfill	Alameda County	II, III	31,942,205	12,279,865	2,518	2015	Two enforcement orders pending; 2004-010808-NAO and 2006-011062-NAO

3.13.1.3.2 Hazardous Waste Disposal Facilities

According to the DTSC, there are 64 facilities in California that can accept hazardous waste for treatment and recycling (DTSC, 2005). For ultimate disposal, California has three hazardous waste (Class I) landfills, which are described below. The closest disposal facility to RCEC is Clean Harbors' Buttonwillow Landfill, Kern County.

Clean Harbors' Buttonwillow Landfill, Kern County

This landfill is permitted at 13.8 million cubic yards and has approximately 10 million cubic yards of remaining space as of July 2006. The annual deposit rate is currently 130,000 to 350,000 cubic yards. At the current deposit rate, the landfill can accept hazardous waste until approximately 2035 to 2045. Buttonwillow has been permitted to accept all hazardous wastes except flammables, PCBs with a concentration greater than 50 ppm, medical waste, explosives, and radioactive waste with radioactivity greater than 1,800 picocuries (Buoni, 2006).

Clean Harbors' Westmorland Landfill in Imperial County

This facility is not currently open and accepting waste because the Buttonwillow facility can accommodate the current hazardous waste generation rate. The facility is, however, available in reserve and could be reopened if necessary. If opened, the landfill's conditional use permit prohibits the acceptance of some types of waste, including radioactive (except geothermal) waste, flammables, biological hazard waste (medical), PCB, dioxins, air- and water-reactive wastes, and strong oxidizers. The facility is permitted to receive only federal and state hazardous waste (i.e., cannot receive nonhazardous waste).

Waste Management, Inc.'s Kettleman Hills Landfill in Kings County

This facility accepts Class I, II (designated), and III waste. The Class I landfill is permitted for and will accept all hazardous wastes except radioactive, medical, and unexploded ordinance. This landfill has permitted capacity of 10.7 million cubic yards, with a remaining capacity of 6 million cubic yards as of February 2006 (Yarbrough, 2006). According to Chemical Waste Management, the landfill will be open for at least another 20 years, though they could permit additional capacity, if necessary. The Class II and III waste disposal facility has a planned closure date of 2036 (Yarborough, 2006). It is permitted to accept up to 2,000 tons per day of solid waste and contaminated soil (CIWMB, 2006).

Additional Commercial Hazardous Waste Treatment and Recycling Facilities

In addition to hazardous waste landfills, there are numerous offsite commercial liquid hazardous waste treatment and recycling facilities in California. Some of the closest facilities include Aerc.Com Inc. in Hayward, Evergreen Oil Company in Newark, Romic Environmental Technologies in East Palo Alto, Clean Harbors in San Jose, and Safety Kleen in Oakland (DTSC, 2005).

3.13.2 Environmental Consequences

No new significant impacts to waste management would result from the changes proposed as part of this amendment. The project location has limited soil and groundwater contamination as a result of past activities. Prior to construction, a limited excavation of "hot spots" will be conducted. In the event contaminated soil is encountered during construction, a soil management work plan will be prepared prior to groundbreaking. In addition, although the project will generate additional hazardous and nonhazardous waste, the landfill capacity for disposal of waste is more than adequate for these additional quantities.

3.13.3 Mitigation Measures

No significant impacts in terms of waste management would result from the approval of this Amendment. Therefore, mitigation measures beyond those stipulated in the Commission Decision are not necessary.

3.13.4 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to waste management as identified in the Appendix A to the Commission Decision.

3.13.5 References

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LFR. 2005a. Limited Soil and Groundwater Sampling Report, 3862 and 3878 Depot Road. Levine-Fricke. April 8.

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LFR. 2006a. Phase II Environmental Site Assessments at 3810 Depot Road and 3700 Enterprise Avenue, and Additional Soil and Groundwater Sampling Activities at 3862 and 3878 Depot Road. Levine-Fricke. November.

LFR. 2006b. Phase I Environmental Site Assessment at 3810 Depot Road. Levine-Fricke. September.

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3.13.6 Conditions of Certification

Waste-5 Runnels Site Remedial Action Plan— The Runnels Industries site is no longer the location of project facilities and will be used only for construction parking and laydown. Project activities will not involve excavation on this parcel. Therefore, Condition of Certification WASTE-5, requiring preparation of a Remedial Action Plan, should be deleted.

~~**WASTE-5** The project owner shall prepare a Remedial Action Plan (RAP) for the known soil and groundwater contamination present on the Runnels Industry portion of the site and submit this plan to the SFRWQCB, the City of Hayward Fire Department Hazardous Materials Office, and the CPM. This RAP shall include a schedule for the remediation of the site prior to the commencement of construction activities.~~

~~**Verification:** Sixty (60) days prior to any earth moving activities, the project owner shall submit the RAP to the SFRWQCB, the City of Hayward Fire Department Hazardous Materials Office, and the CPM for approval 60 days prior to any earth moving activities, including those associated with site mobilization, ground disturbance, or grading as defined in the general conditions of certification.~~

Waste-6 Work Plan— Because the new project location has some potential contamination, it is recommended that Condition of Certification WASTE-6 remain. As requested in WASTE-5, the portion referring to the Remedial Action Plan should be removed as follows.

WASTE-6 The project owner shall provide a soil management workplan providing the methods that will be used to properly handle and/or dispose of soil

that may be classified as hazardous or contain contaminants at levels of potential concern. The workplan will discuss, as necessary, the reuse of soil on site in accordance with applicable criteria to protect construction or future workers onsite, disposal of soil to a Class I (hazardous) landfill, and disposal to a Class II or III landfill. ~~This workplan may be submitted as part of the RAP.~~

Verification: The project owner shall submit the soil management workplan to the CPM for approval 60 days prior to any earth moving activities, including those associated with site mobilization, ground disturbance, or grading as defined in the general conditions of certification.

3.14 Worker Safety and Fire Protection

Since all workers will undergo proper training under the terms of the current license, the proposed modifications to the project will not result in impacts different than those analyzed by the Commission during certification. As a result, any potential Worker Safety and Fire Protection impacts associated with this Amendment will be less than significant.

3.14.1 Mitigation Measures

No significant impacts in terms of worker safety and fire protection will result from the approval of this Amendment. Therefore, mitigation measures beyond those stipulated in the Commission Decision are not necessary.

3.14.2 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to worker safety and fire protection as identified in the Appendix A to the Commission Decision.

3.14.3 Conditions of Certification

This Amendment does not require changes to the Worker Safety and Fire Protection Conditions of Certification.

3.15 LORS

The Commission Decision certifying the RCEC project concluded that the project is in compliance with all applicable LORS. The RCEC project, as amended, will continue to comply with all applicable LORS.

SECTION 4.0

Potential Effects on the Public

This section discusses the potential effects on the public that may result from the modifications proposed in this Amendment application, per CEC Siting Regulations (Title 20, CCR, Section 1769[a][1][G]).

The modifications proposed in this Amendment will benefit the public and local economy by increasing the project's contribution to the local tax base, compared with the project as proposed in the AFC and analyzed in the Commission Decision (see Sections 2.0 and 3.9). No adverse effects on the public will occur because of the changes to the project as proposed in this Amendment. In fact, the project reconfigurations will result in reduced visual impacts at key observation points and reduced noise impacts at the measuring locations.

SECTION 5.0

List of Property Owners

This section lists the property owners in accordance with the CEC Siting Regulations (Title 20, CCR, Section 1769[a][1][H]). Appendix 5 contains a list of all property owners whose property is located within 1,000 feet of the project site or 500 feet of the natural gas pipeline, and 500 feet of the new transmission alignment alternatives. The list is provided in a format suitable for copying to mailing labels.

SECTION 6.0

Potential Effects on Property Owners

This section addresses potential effects of the project changes proposed in this Amendment on nearby property owners, the public, and parties in the application proceeding, per CEC Siting Regulations (Title 20, CCR, Section 1769 [a][1][I]).

The new construction parking and laydown areas will involve project-related activities that will be situated closer to some property owners than previously proposed, because the new project location and parking and laydown area extends to Depot Road and will border on parcels in this area that were formerly not located adjacent to project facilities. These areas are located in industrial zones, the use will be temporary and the use is consistent with the industrial uses on neighboring properties. Therefore, there will be no adverse effect on adjacent property owners.

The project site will move to a location approximately 1,300 feet northwest of the previous location. The project site will border a different set of property owners than under the previous design. The new project location will involve industrial renovation of "brownfield" property in an area that is zoned for industrial and heavy industrial uses. The project owner to the east, south, and west of the new location is the City of Hayward, which uses the adjacent parcels for wastewater treatment and sludge ponds. The surrounding uses to the north and northeast are industrial uses including automobile salvage yards and container storage yards. Therefore, the project will not have an adverse effect on property owners. In fact, replacement of the salvage yards with a modern industrial facility may have a positive impact on surrounding property owners. Therefore, there no significant adverse effects on property owners will result from the adoption of the changes proposed in this Amendment.

3.13 Waste Management

Waste management will not differ significantly from that described in the AFC. The modification of the project location will require some additional demolition; however, not in amounts that exceed landfill capacity in the area. The inclusion of the ZLD system, the addition of the Title 22 RWF, and removal of the AWT plant will also create some additional nonhazardous waste streams during operation; however, the additional waste will not create a burden to either landfill capacity or the WPCF. Consequently, any potential waste management impacts associated with this Amendment would be less than significant.

3.13.1 Environmental Baseline Information

3.13.1.1 Site Investigations

The RCEC facility is composed of four parcels, identified as the small and large Eash parcels, the City of Hayward parcel, and the Aladdin parcel. Phase I and Phase II Environmental Site Assessment (ESA) reports have been prepared for each of these parcels and are included in Appendix 3.13A. The reports are summarized below.

3.13.1.1.1 The Eash Parcels

The Eash parcels are located at 3862 and 3878 Depot Road in Hayward, California. Taken together, these two contiguous parcels encompass a total of 11.26 acres and surrounding land uses include commercial offices, automobile salvage yards, light industrial facilities, a wastewater treatment plant, and salt ponds. The parcel at 3862 Depot Road (large Eash parcel) was used as a fertilizer plant prior to the mid 1940s, and then was used for a variety of light industrial uses such as a machine shop, wooden pallet fabrication shop and storage yard, lumber yard and a wrought iron fabrication shop. All four of these activities are currently onsite. The site currently has many discarded metal storage drums on site, numerous abandoned vehicles and an abandoned aboveground storage tank (AST). An industrial non-potable water well is located near the machine shop and is used for machine shop operations.

The parcel at 3878 Depot Road (small Eash parcel) was occupied by an uncultivated pasture with a single-family residence prior to 1947. The structure was removed from the parcel between 1959 and 1969 and an automobile salvage yard was developed on the lot. The salvage yard remains in operation. The property currently consists of a storage yard containing trucks and vans in various stages of disassembly. An abandoned water well is located near the northern property boundary, and a groundwater monitoring well is also located on the property.

A Phase I ESA was prepared for the Eash parcel in December 2004 by Levine-Fricke (LFR) (LFR, 2004). The purpose of the ESA was to identify recognized environmental conditions at the site resulting from present or past activities. As a follow-up to the Phase I ESA, a limited subsurface investigation was conducted in April 2005 (LFR, 2005). A summary of both reports is provided below and the reports are provided in Appendix 3.13A.

3.13.1.1.2 Eash Parcels Phase I ESA

The Phase I ESA was conducted in October 2004 pursuant to American Standard Test Method (ASTM) E 1527-00. It included a visual inspection of the buildings and grounds; a

site history survey, including historical map and aerial photograph review; personal, telephone, and written communication with local, county, state, and federal regulatory agencies; and a computer database search of sites with environmental concerns within a 1.0-mile radius of the site.

The database search was conducted by Environmental Data Resources, Inc. (EDR) to determine the existence of any documentation related to environmental incidents at the site or surrounding properties. The database search showed two of the operations on the project site, Metal Masters and All Good Pallet Company, Inc. at 3862 Depot Road were listed on the state databases HAZNET. HAZNET is a Department of Toxic Substances Control (DTSC) database with information on hazardous waste shipments entered from hazardous waste manifests. The purpose of the database service is to provide Certified Unified Program Agencies (CUPAs) with information to facilitate their manifest research work and inspection preparation. Appearance in this database is not necessarily an indication that any violations have occurred.

A records review was conducted for the project site at the ACDEH. According to ACDEH no files were available for review at 3878 Depot Road; however, several files were identified for 3862 Depot Road. The findings of the file review were as follows:

- Metal Masters received several violations from the ACDEH over a several-year period, including violations for improper storage of hazardous waste and insufficient containment of hazardous waste.
- A diesel spill of approximately 30 to 75 gallons was reported at the Metal Masters site in 1994. The spill resulted in the removal and disposal of approximately 25 to 35 cubic yards of affected soil.
- An underground storage tank (UST) was removed form the property in the 1970s. A consultant had conducted an investigation to assess whether the tank had leaked.
- In 1989, the property owner applied for a UST permit.
- A small oil spill had occurred on the All Good Pallets portion of the property. Soil samples were collected and analyzed and the spill was cleaned up (LFR, 2004).

The records search performed by EDR identified several sites near the project site which are listed on federal and/or state databases. There are three active Leaking Underground Storage Tank Facilities (LUST) within one-half mile of the Eash parcels. The American Auto Wreckers, Inc. at 3744 Depot Road is located within 0.1 mile east, and LFR has determined it to be hydraulically upgradient to the parcel. St. Francis Electric at 23294 Connecticut Street is located 0.4 mile northeast of the Eash parcels, and LFR has determined that site to be hydraulically cross-gradient to the parcel. The City of Hayward WPCF is located at 3700 Enterprise Avenue, approximately 0.1 mile southeast of the Eash parcel. Because the site characterization has not been completed, LFR could not determine whether this release has the potential to affect nearby properties. In addition, six facilities within one-quarter mile of the Eash parcels are identified as RCRIS Small Quantity Generators, and one facility, American Auto Wreckers, Inc. at 3744 Depot Road is listed on the Solid Waste Landfill database, as it stores waste tires on the premises.

Based on the findings from the records search, site visit, and historic report review, LFR had the following findings:

- Oily soil staining in various areas of the 3862 and 3878 Depot Road properties.
- Onsite chemical storage on the 3862 property.
- A large amount of debris on the two properties, including 55-gallon drums, piping, storage containers, auto parts, abandoned vehicles, and other miscellaneous materials.
- The abandoned water well and the groundwater monitoring well at 3878 Depot Road should be properly closed.
- The EDR report did not identify specific offsite facilities that appear to represent a potential source of migration of hazardous substances to soil or groundwater beneath the site.

As a result of these findings, and based on the current and historical use of the 3862 and 3878 Depot Road properties, LFR recommended that additional investigation be conducted to evaluate the quality of the soil and groundwater at the properties (LFR, 2004).

3.13.1.1.3 Eash Parcels Phase II ESA

In April 2005, a limited subsurface investigation was conducted at the site to address outstanding issues identified in the Phase I ESA. These activities were conducted to address the recommendation to evaluate the quality of the soil and groundwater at the properties (LFR, 2005a).

Field investigation activities involved the installation of shallow soil borings, surface soil samples, and "grab groundwater" samples, as well as the collection and analysis of soil and groundwater samples for specific chemical constituents at a state-certified laboratory. Sixteen surface soil samples were taken, four shallow (3 feet bgs) soil samples were taken, and eight water samples were taken.

Soil and groundwater quality data were evaluated based on comparison to the San Francisco Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs) for soil and groundwater for commercial and industrial properties where the groundwater is a potential source of drinking water. The ESLs were developed for the following pathways and environmental concerns: protection of human health, direct/indirect exposure to affected soil, emission of subsurface vapors to building interiors, protection of groundwater quality, protection of terrestrial (non-human) biota, protection against nuisance concerns (odors, etc.), and general resource degradation. If the ESL for an individual constituent was not available, then the laboratory result was compared to the EPA Region IX Preliminary Remediation Goals (EPA PRGs; EPA, 2004), if available. Additionally, laboratory results for metals were compared to background distribution of metals at Lawrence Berkeley National Laboratory (LBNL) (LBNL, 2002)

The following is a summary of the results from the field investigation:

- **Petroleum Hydrocarbons**: Total Petroleum Hydrocarbon, diesel (TPH-d) and Total Petroleum Hydrocarbon, motor oil (TPH-mo) were detected in soil samples collected at 0.5 foot bgs at concentrations as high as 2,200 mg/kg and 4,700 mg/kg respectively.

Gasoline (TPH-g) was detected in only one of the 16 soil samples taken at this level. Of the 16 soil samples, TPH-d was detected above the San Francisco RWQCB ESL of 100 mg/kg at four locations and TPH-mo was detected above the ESLs at two locations. TPH-g was not detected above ESL levels. At a depth of 3 feet bgs, TPH-d, TPH-mo, and TPH-g were not detected above ESL levels.

- **VOCs:** Several VOCs, including 1,2,4-trimethylbenzene, 2-butanone, acetone, and many others were detected in one or more shallow soil samples above laboratory detection limits but below ESL levels. Methylene chloride was detected in 8 of the 16 samples; however, the Phase II report suggests that this may be indicative of laboratory cross-contamination. In five surface soil samples, methylene chloride was found above the ESL of 77 µg /kg.
- **Metals**: Lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc were detected in surface soil samples and in the shallow soil sample (3 feet bgs). Arsenic was detected above ESL levels in six samples, chromium was detected above ESL levels in one sample, and zinc was detected above ESL levels in one sample. The Phase II report suggests that the arsenic is likely from naturally occurring materials.
- **Pesticides:** Low levels (below ESLs) of DDE, DDT, delta BHC, dieldrin, endrin aldehyde, and heptachlor epoxide were detected sporadically in surface soil samples. Dieldrin was detected above ESL levels in two surface samples. Endrin aldehyde was detected above ESL levels in one shallow sample (3 feet bgs), and heptachlor epoxide was detected in one surface soil sample.
- **PCBs**: PCBs were detected in four surface soil samples at concentrations ranging from 55 to 1,600 micrograms per kilogram (µg/kg). One surface sample contained PCBs above the industrial preliminary remediation goals (PRGs).
- **Groundwater**: Eight grab groundwater samples detected low levels of several VOCs at six locations. Benzene, xylenes, methylene chloride, and MTBE were detected in samples above the ESL levels. Per LFR the reported concentrations are relatively low.

According to the Phase II ESA, shallow soils at four locations are affected with residual concentrations above regulatory action levels (LFR, 2005a). Groundwater analytical results indicate that shallow groundwater contains residual concentrations of VOCs at concentrations only slightly above ESLS. According to the report, "Residual contaminants were detected sporadically and at relatively low levels indicating the likely absence of a widespread environmental problem at the site."

LFR recommended additional soil sampling to evaluate the extent of affected soil. In addition, during the Phase II investigation, the property owner identified a location of a former UST. LFR was unable to sample adjacent to the proposed location and recommended a geophysical investigation to confirm the presence of the UST. LFR recommended a soil and groundwater investigation to evaluate the extent of potential contamination from the UST (LFR, 2005a).

3.13.1.1.4 The City of Hayward Parcel

The City of Hayward parcel consists of two parcels located at 3700 Enterprise Avenue. One of the parcels is the western portion of the 39.86-acre property addressed as 3700 Enterprise

Avenue, and the other is a 1.67 acre unaddressed parcel that adjoins the western portion to the south. The site has been the location of the City of Hayward wastewater treatment plant since the early 1950s. Prior to that time the site was undeveloped. The unaddressed parcel may have been used for farming, but is currently undeveloped. No buildings are located on the site, and the ground surface consists of bare soil. The site is currently used as a biosolids drying area (LFR, 2005b). Surrounding land uses in the area include a pallet storage area, lumber yard, machine shop, wrought iron fabrication ship, automotive wrecking yards, and light-industrial facilities.

A Phase I ESA was prepared for the City of Hayward parcel in October 2005 by LFR (LFR, 2005b). The purpose of the ESA was to identify recognized environmental conditions at the site resulting from present or past activities. As a follow-up to the Phase I ESA, a subsurface investigation for the City of Hayward, Aladdin, and Eash parcels was conducted in September 2006 (LFR, 2006a). A summary of both of these reports is provided below and the reports are provided in Appendix 3.13A.The Phase I ESA was conducted in September 2005 pursuant to ASTM E 1527-00. It included a visual inspection of the buildings and grounds; a site history survey, including historical map and aerial photograph review; personal, telephone, and written communication with local, county, state, and federal regulatory agencies; and a computer database search of sites with environmental concerns within a 1.0-mile radius of the site.

The database search was conducted by Environmental FirstSearch, Inc. (FirstSearch) to determine the existence of any documentation related to environmental incidents at the site or surrounding properties. The database search identified the wastewater treatment plant as listed on the LUST database. The LUST database contains an inventory of reported leaking UST incidents. A gasoline fuel release was discovered at this site in March 1999 during tank removal operations. No action has yet been taken to determine the vertical and horizontal extent of the subsurface contamination. The LUST is approximately 300 feet east of the City parcel. Per LFR, the facility is hydraulically upgradient from the site, and may have impacted soil and groundwater at the City parcel. In addition laboratory data for sludge, effluent, and influent samples from the wastewater treatment plant were reviewed. According to staff at the wastewater treatment plant, the sludge data is in compliance with current EPA sludge limits for land application.

A records review was conducted for the project site at the Hayward Fire Department and the ACDEH. The findings of the file review were as follows:

Hayward Fire Department:

- Three USTs are located at the adjacent wastewater treatment plant.
- During the removal of one of the 2,000-gallon USTs in March 1999, a release to the soil was observed. Groundwater impact was not observed. Soil samples were collected and analyzed for TPH-d. The tank closure report indicated that no further action was needed.

ACDEH:

- A Notice of Responsibility (NOR) for a gasoline release from a UST indicated a release was noted during removal of a 1,000-gallon UST in 1989. A soil sample was collected, and groundwater was not affected.

- Following UST removal in 1989, two phases of soil excavation occurred to determine the extent of contamination. No closure documentation was contained in the file. Per LFR, based on the assumed westerly groundwater flow direction, this release may affect the groundwater at the City of Hayward parcel.

The records search performed by FirstSearch identified several sites near the project site which are listed on federal and/or state databases. Three facilities within one-quarter mile of the City of Hayward parcel are identified as Small Quantity Generators. One facility, American Auto Wreckers, Inc. at 3744 Depot Road is listed on the Solid Waste Landfill database because it stores waste tires on the premises. In addition to the record of a LUST on the site described above, there are two active LUST sites within one-half mile of the City parcel. The American Auto Wreckers, Inc. at 3744 Depot Road is located within 0.23 mile northwest of the City parcel. The responsible party is currently conducting a preliminary site assessment to determine the extent of contamination. According to LFR, since the site characterization has not been completed, it is unknown if this release will effect the City of Hayward parcel. Forni Corporation at 3600 Depot Road is located 0.41 mile northeast of the City of Hayward parcel. A gasoline spill was discovered during tank closure. The current status is listed as remedial action. LFR has determined that, based on the distance of this property from the City of Hayward parcel, the presumed low transmissivity of area soils, low groundwater gradient, and the hydraulic relationship to the City of Hayward parcel, this site is unlikely to be a recognized environmental condition to the City of Hayward parcel.

Based on the findings from the records search, site visit, and historical report review, LFR had the following findings:

- Given the historical use of the property as a biosolids drying area, oil and/or hazardous materials may be present in the subsurface of the City parcel. Laboratory data provided to LFR indicates the presence of metals, TPH and VOCs in the sludge and bio-sludge generated at the plant. The sludge is in compliance with EPA regulations; however, soil underneath the drying area may have been impacted.

- No ASTs, USTs, hazardous material and/or waste storage areas were observed on the City parcel. A nonhazardous polymer added to the sludge is located on the site in bulk containers.

- A LUST site was identified at the adjoining wastewater treatment plant. Based on the assumed groundwater direction, the release may impact soil and groundwater at the City parcel.

- The EDR report did not identify specific offsite facilities that appear to represent a potential source of migration of hazardous substances to soil or groundwater beneath the site (LFR, 2005b).

3.13.1.1.5 The Aladdin Parcel

The Aladdin parcel consists of one parcel located at 3810 Depot Road. The parcel is approximately 2.96 acres, and is divided into the northern and southern portion. The northern portion of the site is occupied by 4000 Auto Wreckers, Inc., an auto wrecking facility. The southern portion of the property is used for storage by the property owners, as well as St. Francis Electric Company, Bay Area Framers, and D&S Trucking. The southern

portion of the site is separated from the northern portion of the site with a 6-foot fence. A locked gate limits access to the southern portion of the parcel. An inactive greenhouse is located along the southern site border. The southern portion of the parcel is unpaved, while the northern portion is paved with concrete. 4000 Auto Wreckers has been on the site since 1995, prior to that a lumber company was located on the site from the mid 1980s. Before the 1980s, an auto wrecking yard was located on the parcel, beginning in the late 1960s. Prior to that, the site was undeveloped. Surrounding land uses in the area include the City of Hayward wastewater treatment facility, a pallet storage area, lumber yard, machine shop, wrought iron fabrication ship, automotive wrecking yards, and light-industrial facilities (LFR, 2006b).

A Phase I ESA was prepared for the Aladdin parcel in September 2006 by LFR (LFR, 2006b). The purpose of the ESA was to identify recognized environmental conditions at the site resulting from present or past activities. As a follow-up to the Phase I ESA, a subsurface investigation for the City, Aladdin, and Eash parcels was conducted in September 2006 (LFR, 2006a). A summary of both reports is provided below and the reports are provided in Appendix 3.13A.

The Phase I ESA of the Aladdin parcel was conducted in August 2006 pursuant to ASTM E 1527-00. It included a visual inspection of the buildings and grounds; a site history survey, including historical map and aerial photograph review; personal, telephone, and written communication with local, county, state, and federal regulatory agencies; and a computer database search of sites with environmental concerns within a 1.0-mile radius of the site.

The database search was conducted by FirstSearch to determine the existence of any documentation related to environmental incidents at the site or surrounding properties. The Aladdin parcel was not identified on any federal or state databases.

A records review was conducted for the project site at the Hayward Fire Department and the ACDEH. The findings of the file review were as follows:

Hayward Fire Department:

- A Hazardous Materials Management Plan (HMMP) is on file for 4000 Auto Wreckers.
- No UST or AST records are on file for the site.

ACDEH:

- The HMMP indicates that propane and drained gasoline are used 4000 Auto Wreckers, and motor oil and lube oil, antifreeze, Freon, used batteries and oil filters are generated.
- No records of spills or releases were noted in the ACDEH files.

The records search performed by FirstSearch identified several sites near the project site which are listed on federal and/or state databases. Six facilities within ¼ mile of the Aladdin parcel are identified as Small Quantity Generators. There are two LUST facilities within one-tenth of a mile of the Aladdin parcel. The American Auto Wreckers, Inc. at 3744 Depot Road is located approximately 0.1 mile northeast and upgradient from the Aladdin parcel. The status of the site is "leak being confirmed," and the database report indicates the release was discovered during tank removal. The responsible party is currently conducting a preliminary site assessment to determine the extent of contamination. According to LFR, since the site characterization has not been completed, it is unknown if

this release will effect the Aladdin parcel. The second LUST facility is located at J&M Inc. at 3826 Depot Road. This site is located along the western boundary of the Aladdin parcel. The J&M LUST has a status of "case closed." According to LFR, based on the distance and direction from the Aladdin parcel, the other LUST sites identified in the database report are not expected to affect soil and groundwater at the site.

In addition to the LUST database, the database report identified a Shell pipeline leak at the corner of Depot Road and Cabot Boulevard, approximately 0.06 mile northeast of the Aladdin parcel. The case was closed in 1993. Five facilities were also identified on the state SITES list. The closest site is approximately 0.65 mile from the Aladdin property. According to the report, the listed properties are not anticipated to affect soil or groundwater at the Aladdin parcel.

Based on the results of the records search, site visit, and historic report review, the Phase I report made the following findings:

- The Aladdin parcel has been used historically as an automobile wrecking yard. Hazardous materials are generated by these activities, and although there have been no reported spills or releases, undocumented releases may have occurred.
- Labeled and unlabeled drums containing petroleum products were observed on the southern portion of the site. Minor soil staining was observed near the drums.

Based on these findings, LFR recommended a limited subsurface investigation to assess the impact of the current and historical activities on the soil and groundwater at this parcel (LFR, 2006b).

3.13.1.1.6 City, Aladdin, and Eash Parcel Phase II ESA

In September 2006, a limited subsurface investigation was conducted at the site to address outstanding issues identified in the Phase I ESAs (City and Aladdin parcels) and those identified in the 2004 Phase II ESA (Eash parcels). The objectives of the sampling activities were as follows:

- To assess if soil and groundwater were affected by chemical storage and use.
- To assess the extent of affected soil at the Eash parcels.
- To assess the presence of the UST and possible presence of affected soil and/or groundwater in the vicinity of the UST at one of the Eash parcels (LFR, 2006a).

Field investigation activities involved the installation of shallow soil borings, surface soil samples, and "grab groundwater" samples, as well as the collection and analysis of soil and groundwater samples for specific chemical constituents at a state-certified laboratory. The number of samples taken at each site is identified in Table 3.13-1.

TABLE 3.13-1
Summary of Analyses

Analyte	Number of Surface Samples	Number of Subsurface Samples	Number of Groundwater Samples
Aladdin Parcel			
TPH-g, TPH-d, TPH-mo, VOCs, Metals, Pesticides, Herbicides, PCBs	6*	--	6
City of Hayward Parcel			
TPH-g, TPH-d, TPH-mo, Herbicides, SVOCs	5	--	--
Metals	9	1	5
VOCs	5	--	5
Pesticides, PCBs	5	1	--
Eash Parcels			
TPH-g, TPH-d, TPH-mo, VOCs	3	--	3
Metals	7	--	1
OCPs, PCBs	13	--	--
Nitrates	--	--	1

* A total of 12 soil samples were taken, however only 6 samples from the surface were analyzed initially. The soil samples collected at subsurface levels (3 ft bgs) were placed on hold at the laboratory pending receipt of the results.

The following is a summary of the results from the field investigation:

Aladdin Parcel

- **Petroleum Hydrocarbons**: TPH-d and TPH-g were not detected in the surface soil samples. TPH-mo was detected in six soil samples at concentrations ranging from 9.35 to 400 mg/kg, however concentrations were below the ESL of 1,000 mg/kg.
- **PCBs, Herbicides, Pesticides, and VOCs and SVOCs**: Neither PCBs, herbicides, pesticides, VOCs, nor SVOCs were not detected in soil samples at this parcel.
- **Metals**: Arsenic, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, vanadium, and zinc were detected in samples at this parcel. Table 3.13-2 identifies which metals were detected, and whether the metal was detected above or below the ESL.

TABLE 3.13-2
Metals Detected in Soil at the Aladdin Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/kg)	Number of Samples Above ESL	Number of Samples Below ESL
Arsenic*	6	5.5	4	2
Barium	6	1,500	0	6
Cadmium	1	7.4	1	0

TABLE 3.13-2
Metals Detected in Soil at the Aladdin Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/kg)	Number of Samples Above ESL	Number of Samples Below ESL
Chromium	6	58	0	6
Cobalt	6	10	5	1
Copper	6	230	0	6
Lead	6	750	0	6
Mercury	5	10	0	5
Nickel	6	150	0	6
Vanadium	6	200	0	6
Zinc	6	600	0	6

* Arsenic was also compared to background distribution of metals at LBNL Background Metal Concentrations, and it was determined that concentrations at this parcel are below the background concentrations for the Bay Area (LBNL, 2002). Therefore, LFR concluded that arsenic detected at this parcel can be considered naturally occurring.

- **Groundwater**: Groundwater samples collected from the Aladdin parcel were not analyzed for hydrocarbons. MTBE and isopropyl ether were detected at levels below the ESL. 1,1-Dichloroethane, and 1,1-dichloroethene were detected in 2 samples. 1,1-Dichloroethene was detected above ESLs in both samples, and 1,1-dichloroethane was detected above the ESL in one sample. Metals detected in groundwater are presented in Table 3.13-3.

TABLE 3.13-3
Metals Detected in Groundwater at the Aladdin Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/kg)	Number of Samples Above ESL	Number of Samples Below ESL
Arsenic	6	0.0	0	6
Barium	6	1.0	0	6
Cobalt	1	0.003	1	0
Copper	1	0.0031	0	1
Lead	1	0.0025	1	0
Mercury	6	0.000012	6	0
Molybdenum	6	0.035	0	6
Selenium*	6	0.005	6	0
Silver	5	0.00019	5	0
Zinc	6	0.081	1	5

* According to LFR, groundwater selenium concentrations at the parcel are elevated relative to selenium concentrations observed in the area. However, certain geologic formations such as shales and mudstones, may contain elevated selenium concentrations. Therefore selenium concentrations could be naturally elevated if the parcel is underlain by sediments derived from these geologic formations (LFR, 2006a).

City Parcel

- **Petroleum Hydrocarbons**: TPH-d was detected in two samples ranging from 3.69 to 23.1 mg/kg, although this may be a laboratory error. Neither sample was over the ESL level of 100 mg/kg. TPH-g was detected in one sample at a concentration of 9.9 mg/kg, but may also be a laboratory error. The sample was below the ESL level of 100 mg/kg. TPH-mo was detected in five soil samples ranging from 16.2 to 818 mg/kg; however concentrations were below the ESL level of 1,000 mg/kg.

- **VOCs and SVOCs**: 2-butanone was detected in one soil sample at a concentration of 12.28 µg /kg. An ESL is not available for this chemical, but the concentration is below the PRG of 110 µg/kg. Bis-2-ethylhexyl-phthalate was detected in all five soil samples, ranging from 330 to 44,000 µg /kg however per LFR, this is common constituent found in sampling gloves, and is likely a result of cross contamination (LFR, 2006a).

- **PCBs, Herbicides, and Pesticides**: PCBs, herbicides, and pesticides were not detected in soil samples at this parcel.

- **Metals:** Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, silver, vanadium, and zinc were detected in soil samples at this parcel. Table 3.13-4 identifies which metals were detected, and whether the metal was detected above or below the ESL.

TABLE 3.13-4
Metals Detected in Soil at the City of Hayward Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/kg)	Number of Samples Above ESL	Number of Samples Below ESL
Antimony	1	40	0	1
Arsenic[a]	10	5.5	2	8
Barium	10	1500	0	10
Beryllium	1	800	0	1
Cadmium	4	7.4	1	3
Chromium	10	58	2	8
Cobalt	9	10	1	8
Copper	10	230	1	9
Lead	10	750	0	10
Mercury	7	10	0	7
Molybdenum	1	40	0	1
Nickel	10	150	0	10
Silver	3	40	1	2
Vanadium	10	200	0	10
Zinc	10	600	2	8

* Arsenic was also compared to background distribution of metals at LBNL, and it was determined that concentrations at this parcel are below the background concentrations for the Bay Area (LBNL, 2002). Therefore, LFR concluded that arsenic detected at this parcel can be considered naturally occurring.

- **Groundwater**: Groundwater samples collected from the City of Hayward parcel were not analyzed for hydrocarbons. MTBE, toluene, and trichloroethene were detected at levels below the ESL. Metals detected in groundwater are presented in Table 3.13-5.

TABLE 3.13-5
Metals Detected in Groundwater at the City of Hayward Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/L)	Number of Samples Above ESL	Number of Samples Below ESL
Arsenic	2	0.0	2	0
Barium	5	1.0	0	5
Cadmium	1	0.0011	1	0
Cobalt	4	0.003	4	0
Mercury	3	0.000012	3	0
Molybdenum	4	0.035	1	3
Nickel	3	0.0082	3	0
Selenium*	5	0.005	5	0
Silver	3	0.00019	3	0
Vanadium	1	0.081	0	1

* According to LFR, groundwater selenium concentrations at the parcel are elevated relative to selenium concentrations observed in the area. However, certain geologic formations such as shales and mudstones, may contain elevated selenium concentrations. Therefore, selenium concentrations could be naturally elevated if the parcel is underlain by sediments derived from these geologic formations (LFR, 2006a).

Eash Parcel

- **Petroleum Hydrocarbons:** In the samples taken and analyzed in August 2006, TPH-g was not detected. TPH-d was detected in two samples ranging from 36 to 57 mg/kg, but were below the ESL level of 100 mg/kg. LFR determined this was likely a laboratory error. TPH-mo was found in all seven samples ranging from 4.3 to 4,450 mg/kg, and two of these were over the ESL level of 1,000 mg/kg.

- **VOCs and SVOCs**: No VOCs or SVOCs were detected in the Eash parcel samples taken in August 2006. Previous sampling in 2004 (as described above) detected methylene chloride and other VOCs.

- **PCBs**: PCBs were detected sporadically in an area that formerly contained an electric transformer. Aroclor-1254 was detected in four samples ranging from 275 to 1,340 µg/kg. Two of these samples were above the Industrial PRG of 740 µg /kg.

- **Herbicides, and Pesticides**: 4,4-DDE was detected in five samples ranging from 22.3 to 70.8 µg /kg; however none were over the ESL level of 4,000 µg /kg. 4-4-DDT was detected in three samples, ranging from 34.6 to 58.6 µg /kg, however were below the ESL level of 4,000 µg /kg. Dieldrin was detected in four samples ranging from 2.82 to 71 µg /kg, and were over the ESL level of 2.3 µg /kg.

- **Metals**: Antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, silver, vanadium, and zinc were detected at this parcel. Table 3.13-6 identifies which metals were detected, and whether the metal was detected above or below the ESL.

TABLE 3.13-6
Metals Detected in Soil at the City of Hayward Parcel

Metal	Number of Samples Where Analyte was Detected	ESL (mg/L)	Number of Samples Above ESL	Number of Samples Below ESL
Antimony	1	40	0	1
Arsenic*	7	5.5	1	6
Barium	7	1,500	0	7
Cadmium	3	7.4	1	2
Chromium	7	58	1	6
Cobalt	7	10	1	6
Copper	7	230	0	7
Lead	7	750	0	7
Mercury	5	10	0	5
Nickel	7	150	0	7
Silver	1	40	0	1
Vanadium	7	200	0	7
Zinc	7	600	1	6

* Arsenic was also compared to background distribution of metals at LBNL, and it was determined that concentrations at this parcel are below the background concentrations for the Bay Area (LBNL, 2002). Therefore, LFR concluded that arsenic detected at this parcel can be considered naturally occurring.

- Groundwater: No hydrocarbons were detected in the groundwater samples collected at the Eash parcel near the presumed UST. No VOCs or SVOCs were detected in the groundwater samples collected during the 2006 sampling event. Arsenic, barium, copper, molybdenum, selenium, and vanadium were detected in the groundwater sample. Selenium was detected at 0.029 mg/L and exceeded the ESL level of 0.005 mg/L. All other metals detected were below ESL levels. Nitrates were detected at 19 mg/L, but are below the drinking water maximum contaminant level of 45 mg/L.

3.13.1.1.7 Conclusions

LFR found that the shallow soils were affected with residual chemicals above the industrial ESL levels. Groundwater analytical results indicate that shallow groundwater contain selenium, MTBE, 1,1-dichloroethane, and 1,1-dichloroethene above industrial ESL levels. Based on the results from the sampling, LFR had the following recommendations (LFR, 2006a).

Eash Parcel

- Remove the gasoline dispenser pump and piping
- Remove shallow stained soil, and perform shallow excavations of selected areas of concern

City of Hayward Parcel

- Collect soil samples beneath the equalization and sludge distribution basin, as these areas were inaccessible during sampling activities
- Collect additional soil samples in the biosolids drying area to verify that all biosolids and waste materials have been removed

All Parcels

- Prepare a Soil Management Contingency Plan
- Collect additional information on selenium concentrations in nearby upgradient and cross-gradient wells to determine if elevated selenium levels in groundwater are due to offsite sources

3.13.1.2 Project Waste Generation

Waste will be generated at the RCEC site during both facility construction and operation. Types of waste will include wastewater, solid nonhazardous waste and liquid and solid hazardous waste. The project will also generate solid nonhazardous waste during construction of the electric transmission line, natural gas supply line, and water supply interconnects to the existing site service feeders.

3.13.1.2.1 Construction Phase

During construction, the primary waste generated at the RCEC site will be solid nonhazardous waste. The estimates for the amount of waste to be produced, compared with the amounts listed in the AFC, are presented in Table 3.13-7. Hazardous waste produced during construction will not differ significantly from that described in the AFC.

TABLE 3.13-7
Quantities of Nonhazardous Waste Generated During Construction as Proposed in the Amendment and the AFC

Type of Construction Waste	Revised Estimate for Amendment	Original Estimate in AFC
Paper, Wood, Glass, and Plastics	35 tons	100 tons
Metal	38 tons	25 tons
Concrete (from demolition of buildings)	1,000 tons*	70 tons

* 50 percent of the concrete will be disposed at the beginning of the project, and the remaining 50 percent will be disposed of towards the end of construction.

3.13.1.2.2 Operation Phase

During operation of the RCEC facility, the primary waste generated will be a nonhazardous solid waste. Nonhazardous solid waste quantities are not expected to vary from the AFC to this Amendment, with the exception of two waste streams, a salt cake, and a water treatment sludge. The sludge will be generated by the Title 22 RWF, and the components are

described in Table 3.10-1. The sludge is anticipated to be a nonhazardous wastewater and will be shipped directly to the WPCF for treatment and ultimate disposal in the EBDA pipeline. The salt cake is generated by the ZLD system and is comparable in amounts to the AWT sludge cake that was described in the AFC. It is anticipated that this salt cake will be disposed of in a suitable offsite landfill, once it has been tested to confirm that it is nonhazardous. If the salt cake is found to be hazardous, it will be disposed of at a hazardous waste landfill. During baseload operation at average ambient conditions, an average of 9.2 tons per day of salt cake will be generated and transported to an offsite landfill for disposal. During baseload operation at high ambient temperatures, an estimated 13.9 tons per day of salt cake will be generated. Expected annual salt cake generation is estimated at 4,000 tons.

3.13.1.3 Waste Disposal Sites

3.13.1.3.1 Nonhazardous Waste Disposal Facilities

Currently, the City of Hayward has a franchise agreement with Waste Management, Inc. for collection and disposal of solid waste generated within its jurisdiction, in effect through May 2007. Waste Management, Inc. also provides collection services directly for commercial and industrial facilities in the project site area. Nonhazardous waste, collected by the City of Hayward, is brought to the Altamont Landfill disposal facility, which is owned by Waste Management, Inc. It is located in the eastern part of the county. The estimated closure date of the facility is 2024. There are two other disposal sites located in Alameda County: the Vasco Road Landfill (Vasco) and the Tri-Cities Landfill (Tri-Cities). Located in the eastern portion of the county, Vasco is owned by Republic Industries, Inc. and has a closure date of 2015. The Tri-Cities Landfill accepts waste from Fremont, Newark, and Union City only (i.e., would not take waste from the RCEC facility). Table 3.13-8 shows the waste disposal facilities in the area.

TABLE 3.13-8
Solid Waste Disposal Facilities in the Vicinity of the RCEC Project

Land/MRF /Transfer Station	Location	Class	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Permitted Through put (tons per day)	Estimated Closure Date	Violation of Minimum State Standards Noted
Altamont Landfill	Alameda County	II, III	124,400,000	124,400,000	11,150	2025	No enforcement actions in SWIS Database for this Site
Vasco Road Landfill	Alameda County	II, III	31,942,205	12,279,865	2,518	2015	Two enforcement orders pending; 2004-010808-NAO and 2006-011062-NAO

3.13.1.3.2 Hazardous Waste Disposal Facilities

According to the DTSC, there are 64 facilities in California that can accept hazardous waste for treatment and recycling (DTSC, 2005). For ultimate disposal, California has three hazardous waste (Class I) landfills, which are described below. The closest disposal facility to RCEC is Clean Harbors' Buttonwillow Landfill, Kern County.

Clean Harbors' Buttonwillow Landfill, Kern County

This landfill is permitted at 13.8 million cubic yards and has approximately 10 million cubic yards of remaining space as of July 2006. The annual deposit rate is currently 130,000 to 350,000 cubic yards. At the current deposit rate, the landfill can accept hazardous waste until approximately 2035 to 2045. Buttonwillow has been permitted to accept all hazardous wastes except flammables, PCBs with a concentration greater than 50 ppm, medical waste, explosives, and radioactive waste with radioactivity greater than 1,800 picocuries (Buoni, 2006).

Clean Harbors' Westmorland Landfill in Imperial County

This facility is not currently open and accepting waste because the Buttonwillow facility can accommodate the current hazardous waste generation rate. The facility is, however, available in reserve and could be reopened if necessary. If opened, the landfill's conditional use permit prohibits the acceptance of some types of waste, including radioactive (except geothermal) waste, flammables, biological hazard waste (medical), PCB, dioxins, air- and water-reactive wastes, and strong oxidizers. The facility is permitted to receive only federal and state hazardous waste (i.e., cannot receive nonhazardous waste).

Waste Management, Inc.'s Kettleman Hills Landfill in Kings County

This facility accepts Class I, II (designated), and III waste. The Class I landfill is permitted for and will accept all hazardous wastes except radioactive, medical, and unexploded ordinance. This landfill has permitted capacity of 10.7 million cubic yards, with a remaining capacity of 6 million cubic yards as of February 2006 (Yarbrough, 2006). According to Chemical Waste Management, the landfill will be open for at least another 20 years, though they could permit additional capacity, if necessary. The Class II and III waste disposal facility has a planned closure date of 2036 (Yarborough, 2006). It is permitted to accept up to 2,000 tons per day of solid waste and contaminated soil (CIWMB, 2006).

Additional Commercial Hazardous Waste Treatment and Recycling Facilities

In addition to hazardous waste landfills, there are numerous offsite commercial liquid hazardous waste treatment and recycling facilities in California. Some of the closest facilities include Aerc.Com Inc. in Hayward, Evergreen Oil Company in Newark, Romic Environmental Technologies in East Palo Alto, Clean Harbors in San Jose, and Safety Kleen in Oakland (DTSC, 2005).

3.13.2 Environmental Consequences

No new significant impacts to waste management would result from the changes proposed as part of this amendment. The project location has limited soil and groundwater contamination as a result of past activities. Prior to construction, a limited excavation of "hot spots" will be conducted. In the event contaminated soil is encountered during construction, a soil management work plan will be prepared prior to groundbreaking. In addition, although the project will generate additional hazardous and nonhazardous waste, the landfill capacity for disposal of waste is more than adequate for these additional quantities.

3.13.3 Mitigation Measures

No significant impacts in terms of waste management would result from the approval of this Amendment. Therefore, mitigation measures beyond those stipulated in the Commission Decision are not necessary.

3.13.4 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to waste management as identified in the Appendix A to the Commission Decision.

3.13.5 References

Buoni, M. 2006. Clean Harbors. Personal communication between Marianna Buoni (Clean Harbors) and Derek Larsen (CH2M HILL). October 26.

CIWMB. 2006. Solid Waste Information System (SWIS) Database. October.

Department of Toxic Substances Control (DTSC). 2005. *California Commercial Offsite Hazardous Waste Management Facilities.* November 8.

Lawrence Berkeley National Laboratory (LBNL). 2002. Analysis of Background Distribution of Metals in the Soil at Lawrence Berkeley National Laboratory for the Lawrence Berkeley National Laboratory, Environmental Restoration Program. June.

LFR. 2004. Phase I Environmental Site Assessment, 3862 and 3878 Depot Road. Levine-Fricke. December 2.

LFR. 2005a. Limited Soil and Groundwater Sampling Report, 3862 and 3878 Depot Road. Levine-Fricke. April 8.

LFR. 2005b. Phase I Environmental Site Assessment, Two Parcels on Enterprise Avenue. Levine-Fricke. October 21.

LFR. 2006a. Phase II Environmental Site Assessments at 3810 Depot Road and 3700 Enterprise Avenue, and Additional Soil and Groundwater Sampling Activities at 3862 and 3878 Depot Road. Levine-Fricke. November.

LFR. 2006b. Phase I Environmental Site Assessment at 3810 Depot Road. Levine-Fricke. September.

Yarborough, T. 2006. Waste Management Kettleman Hills. Personal communication between Terri Yarborough (Waste Management, Inc.) and Derek Larsen (CH2M HILL). October 26.

3.13.6 Conditions of Certification

Waste-5 Runnels Site Remedial Action Plan— The Runnels Industries site is no longer the location of project facilities and will be used only for construction parking and laydown. Project activities will not involve excavation on this parcel. Therefore, Condition of Certification WASTE-5, requiring preparation of a Remedial Action Plan, should be deleted.

~~**WASTE-5** The project owner shall prepare a Remedial Action Plan (RAP) for the known soil and groundwater contamination present on the Runnels Industry portion of the site and submit this plan to the SFRWQCB, the City of Hayward Fire Department Hazardous Materials Office, and the CPM. This RAP shall include a schedule for the remediation of the site prior to the commencement of construction activities.~~

~~**Verification:** Sixty (60) days prior to any earth moving activities, the project owner shall submit the RAP to the SFRWQCB, the City of Hayward Fire Department Hazardous Materials Office, and the CPM for approval 60 days prior to any earth moving activities, including those associated with site mobilization, ground disturbance, or grading as defined in the general conditions of certification.~~

Waste-6 Work Plan— Because the new project location has some potential contamination, it is recommended that Condition of Certification WASTE-6 remain. As requested in WASTE-5, the portion referring to the Remedial Action Plan should be removed as follows.

WASTE-6 The project owner shall provide a soil management workplan providing the methods that will be used to properly handle and/or dispose of soil

that may be classified as hazardous or contain contaminants at levels of potential concern. The workplan will discuss, as necessary, the reuse of soil on site in accordance with applicable criteria to protect construction or future workers onsite, disposal of soil to a Class I (hazardous) landfill, and disposal to a Class II or III landfill. ~~This workplan may be submitted as part of the RAP.~~

Verification: The project owner shall submit the soil management workplan to the CPM for approval 60 days prior to any earth moving activities, including those associated with site mobilization, ground disturbance, or grading as defined in the general conditions of certification.

3.14 Worker Safety and Fire Protection

Since all workers will undergo proper training under the terms of the current license, the proposed modifications to the project will not result in impacts different than those analyzed by the Commission during certification. As a result, any potential Worker Safety and Fire Protection impacts associated with this Amendment will be less than significant.

3.14.1 Mitigation Measures

No significant impacts in terms of worker safety and fire protection will result from the approval of this Amendment. Therefore, mitigation measures beyond those stipulated in the Commission Decision are not necessary.

3.14.2 Consistency with LORS

The construction and operation of the RCEC, as amended, will conform with all applicable LORS related to worker safety and fire protection as identified in the Appendix A to the Commission Decision.

3.14.3 Conditions of Certification

This Amendment does not require changes to the Worker Safety and Fire Protection Conditions of Certification.

3.15 LORS

The Commission Decision certifying the RCEC project concluded that the project is in compliance with all applicable LORS. The RCEC project, as amended, will continue to comply with all applicable LORS.

SECTION 4.0

Potential Effects on the Public

This section discusses the potential effects on the public that may result from the modifications proposed in this Amendment application, per CEC Siting Regulations (Title 20, CCR, Section 1769[a][1][G]).

The modifications proposed in this Amendment will benefit the public and local economy by increasing the project's contribution to the local tax base, compared with the project as proposed in the AFC and analyzed in the Commission Decision (see Sections 2.0 and 3.9). No adverse effects on the public will occur because of the changes to the project as proposed in this Amendment. In fact, the project reconfigurations will result in reduced visual impacts at key observation points and reduced noise impacts at the measuring locations.

SECTION 5.0

List of Property Owners

This section lists the property owners in accordance with the CEC Siting Regulations (Title 20, CCR, Section 1769[a][1][H]). Appendix 5 contains a list of all property owners whose property is located within 1,000 feet of the project site or 500 feet of the natural gas pipeline, and 500 feet of the new transmission alignment alternatives. The list is provided in a format suitable for copying to mailing labels.

SECTION 6.0

Potential Effects on Property Owners

This section addresses potential effects of the project changes proposed in this Amendment on nearby property owners, the public, and parties in the application proceeding, per CEC Siting Regulations (Title 20, CCR, Section 1769 [a][1][I]).

The new construction parking and laydown areas will involve project-related activities that will be situated closer to some property owners than previously proposed, because the new project location and parking and laydown area extends to Depot Road and will border on parcels in this area that were formerly not located adjacent to project facilities. These areas are located in industrial zones, the use will be temporary and the use is consistent with the industrial uses on neighboring properties. Therefore, there will be no adverse effect on adjacent property owners.

The project site will move to a location approximately 1,300 feet northwest of the previous location. The project site will border a different set of property owners than under the previous design. The new project location will involve industrial renovation of "brownfield" property in an area that is zoned for industrial and heavy industrial uses. The project owner to the east, south, and west of the new location is the City of Hayward, which uses the adjacent parcels for wastewater treatment and sludge ponds. The surrounding uses to the north and northeast are industrial uses including automobile salvage yards and container storage yards. Therefore, the project will not have an adverse effect on property owners. In fact, replacement of the salvage yards with a modern industrial facility may have a positive impact on surrounding property owners. Therefore, there no significant adverse effects on property owners will result from the adoption of the changes proposed in this Amendment.