CALPINE

April 25, 2001

Mr. Robert Eller
California Energy Commission
1516 Ninth Street
Sacramento, California 95814

Dear Mr. Eller:

Calpine, pursuant to the provisions of the California Emergency Power Plant 21-Day Permitting Process, hereby submits this Application for Certification seeking approval for construction and operation of the proposed Gilroy Phase 1 LM6000 Project.

As an officer of Calpine, I hereby attest, under penalty of perjury, that the contents of this amended application are true and accurate to the best of my knowledge.

Dated this 25th of April, 2001.

Bryan J. Bertacci, P.E.
Vice President - Western Region
Calpine

BJB:cs

Application for Certification Under the 21-Day Process

for the

Gilroy City LM6000 Phase 1 Project

Submitted to:
California Energy Commission
Sacramento, California

Submitted by:
Calpine Corporation
Western Region Office
Pleasanton, California

Prepared by:
Foster Wheeler Environmental Corporation
Sacramento, California

April, 2001

ATTACHMENT A
CALIFORNIA ENERGY COMMISSION
EMERGENCY SITING PROCESS APPLICATION CHECK LIST

	REQUIREMENT	YES/NO	PAGE IN APPLICATION
1.0	**Project Description**		
1.1	Project owner/operator (name, title, address, phone)	YES	1-1
1.2	Overview of power plant and linear facilities	YES	1-1
1.3	Structure demensions (size and height), plan and profile	YES	1-8
1.4	Full size color photo of the site and rendering of purposed facility if available	YES	15-3
1.5	Maximum foundation depth, cut and fill quantities	YES	1-8
1.6	conformance with California Building Code	YES	1-8
1.7	Proposed operation (hours per year)	YES	1-8
1.8	Expected on-line date	YES	1-9
1.9	Proposed duration of operation (years)	YES	1-9
1.10	Identify transmission interconnection facilities	YES	1-9
1.11	Transmission interconnection application	YES	1-9
1.12	Down-stream transmission facilities, if known	YES	1-9
1.13	Fuel interconnection facilities	YES	1-9
1.14	Fuel interconnection application	YES	1-9
1.15	Water requirements and treatment	YES	1-12
1.16	Water interconnection facilities (supply / discharge)	YES	1-12
1.17	Source and quality of water supply	YES	1-13
1.18	Water supply agreement / proof of water supply	YES	1-14
2.0	**Site Description**		
2.1	Site address (street, city, county)	YES	2-1
2.2	Assessors parcel number	YES	2-1
2.3	Names and addresses of all property owners within 500 feet of the project site or related facilities in both hard copy and electronic mail merge format	YES	2-1
2.4	Existing site use	YES	2-1
2.5	Existing site characteristics (paved, graded, etc.)	YES	2-2
2.6	Layout of site (include plot plan)	YES	1-8 & 2-3
2.7	Zoning and general plan designations of site and linear facilities	YES	2-2
2.8	Ownership of site (name, address, phone)	YES	2-2
2.9	Status of site control	YES	2-2
2.10	Equipment laydown area – size and location	YES	2-2
3.0	**Construction Description**		
3.1	Construction schedule	YES	3-1
3.2	Workforce requirements (peak, average)	YES	3-1
4.0	**Power Purchase Contract (DWR, ISO, other)**		
4.1	Status of negotiations and expected signing date	YES	4-1
5.0	**Air Emissions**		
5.1	Nearest nonitoring station (location, distance)	YES	5-1
5.2	Provide complete self certification air permit checklist	YES	Appendix D
5.3	Provide complete air permit application	YES	Appendix D
5.4	Status of air permit application with air district	YES	5-1
5.5	Status of offsets and / or mitigation fees. as required	YES	5-1
6.0	**Noise**		
6.1	Local nosie requirements	YES	6-1
6.2	Nearest sensitive receptor (type, distance)	YES	6-1
6.3	Project noise level at nearest property line	YES	6-1
6.4	Proposed mitigation if required	YES	6-2
7.0	**Hazardous Materials**		

ATTACHMENT A
CALIFORNIA ENERGY COMMISSION
EMERGENCY SITING PROCESS APPLICATION CHECK LIST

REQUIREMENT	YES/NO	PAGE IN APPLICATION
7.1 Type and volume of hazardous materials on-site	YES	7-1
7.2 Storave facilities and containment	YES	7-2
8.0 Biological Resources		
8.1 Legally protected species* and their habitat on site, adjacent to site and along right of way for linear facilities **threatened or endangered species on State or federal lists, State fully protected species*	YES	
8.2 Designated critical habitat on-site or adjacent to site (wetlands, vernal pools, riparian habitat, perserves)	YES	
8.3	YES	
8.4 Proposed mitigation as required	YES	
9.0 Land Use		
9.1 Local land use restrictions (height, use, etc.)	YES	9-1
9.2 Use of adjacent parcels (include map(	YES	9-2 & 9-3
9.3 Ownership of adjacent parcels – site and linears	YES	2-1
9.4 Demographics of census tract where project is located (most current available)	YES	9-4
10.0 Public Services		
10.1 Ability to serve letter from Fire District	YES	10-1
10.2 Nearest fire station	YES	10-1
11.0 Traffic and Transportation		
11.1 Level of Service (LOS) measurements on surrounding roads – a.m. and p.m. peaks	YES	11-1
11.2 Traffic Control Plan for roads during construction	YES	11-4
11.3 Traffic impact of linear facility construction	YES	11-4
11.4 Equipment transport route	YES	11-4
11.5 Parking requirements – workforce and equipment	YES	11-5
12.0 Soils and Water Resources		
12.1 Wasterwater volume, quality, treatment	YES	12-1
12.2 Status of permits for wastewater discharge or draft permit or Mitigation Strategy	YES	12-2
12.3 Draft Erosion Prevention and Sedimentation Control Plan or Mitigation Stategy	YES	12-2
12.4 Spill Prevention / Water Quality Protection Plan	YES	12-3
13.0 Cultural Resources		
13.1 Indtification of known historic / prehistoric sites	YES	13-1
13.2 Proposed mitigation if required	YES	13-2
13.3 Notification of Native Americans	YES	13-3
14.0 Paleontological Resources		
14.1 Idntification of known paleontologic sites	YES	14-1
14.2 Proposed mitigation if required	YES	14-1
15.0 Visual Resources		
15.1 Plan for Landscaping and screening to meet local requirements	YES	15-1 & 15-4
15.2 Full size color photo of the site and rendering of proposed facility with any proposed visual mitigatio if available	YES	15-3
16.0 Transmission System Engineering		
16.1 Conformance with Title 8, High Voltage Electrical Safety Orders, CPUC General Order 95 (or NESC), CPUC Rule 21, PTO Interconnection Requirements, and National Electric Code	YES	16-1

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SECTION 1.0 PROJECT DESCRIPTION

Calpine Corporation (Calpine) proposes to build and operate a 135 –megawatt (MW) nominal output simple cycle combustion turbine generating facility in the City of Gilroy, Santa Clara County. The proposed facility, the Gilroy Phase 1 Project, is located adjacent to Calpine's Gilroy Co-Gen facility at 1350 Pacheco Pass Highway. See Figures 1-1 and 1-2 for the location of the Gilroy Phase 1 Project.

1.1 Project Owner/Operator

Name:	Bryan J. Bertacchi, PE
Title:	Vice President, Western Region Operations Calpine Corporation
Address:	6700 Koll Center Parkway, Suite 200 Pleasanton, CA 94566
Phone No.:	(925) 600-2033

1.2 Overview Of Power Plant And Linear Facilities

Calpine is proposing the Gilroy Phase 1 Project in response to the state of emergency declared by Governor Davis on January 17, 2001 and several executive orders issued on February 8, 2001. Specifically, the Governor identified a goal of bringing 1,000 MW of new generating capacity on-line to meet peak demand. Executive Order D-26-01 directs the California Energy Commission (CEC) to expedite the review and approval of peaking projects that can be on-line by September 30, 2001. All such proposals are considered emergency projects under Public Resources Code section 21080(b)(4). The CEC emergency permitting process includes a 21-day review and approval period for a qualified project once an application is deemed complete. Due to these emergency conditions, the project is not intended to conform to the 12-year forecast of electric power demands adopted pursuant to California Public Resources Code Sec. 25305(e).

Calpine corporation is considering the merits of two distinct projects that could be located at the Gilroy site. The first project consists of three gas turbines that would begin operating by September 30, 2001. As a result, the application for this first project is being submitted under the CEC's 21-day process. The second project being contemplated would add three more gas turbines to the existing site, for a total of six peaking turbines; however, the proposed second project would not begin operating until after this summer. Accordingly, this second project would require Calpine to submit an application for consideration under the CEC's four-month process.

The Gilroy Phase 1 Project will consist of three 45-MW, natural–gas-fired simple-cycle peaking turbines and associated equipment located on 7-acres of existing agricultural land adjacent to the existing Gilroy Co-Gen facility. The Gilroy Phase 1 Project requires no new linear facilities. The project will interconnect to PG&E's electricity transmission system through a radial tap to PG&E's 115-kV transmission line located on the site. Natural gas will be provided through a

connection to the existing PG&E gas supply located in Route 152 (Pacheco Pass Highway). The Project will obtain raw water through a connection with the existing site's well-water pumps or reclaimed water from the South County Regional Wastewater Authority's reclaimed water facility (if available). The existing site wells have sufficient capacity to supply a total of six simple-cycle peaking power plants. On-site trailer-mounted or skid-mounted water treatment (reverse-osmosis and de-mineralization) units will provide de-mineralized water on demand for turbine injection and cooling. Wastewater will be discharged either Gilroy Foods or directly to the City of Gilroy sewer system.

1.2.1 Power Plant Facilities

1.2.1.1 Generation Equipment

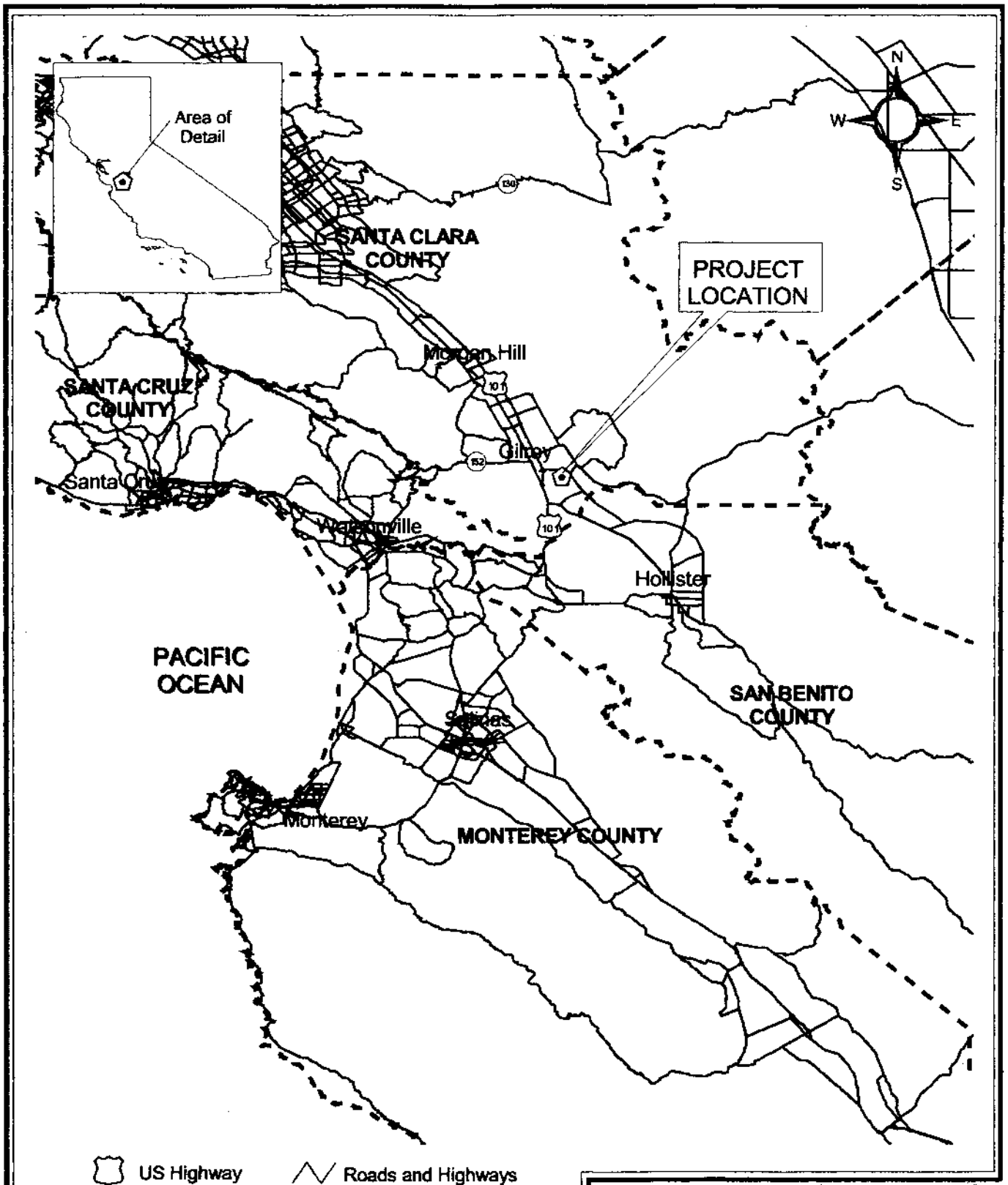
The Gilroy Phase 1 Project will consist of three 45-MW General Electric (GE) LM6000-PCe Sprint simple-cycle combustion turbine generator and associated equipment. The LM6000 is the most efficient simple-cycle aeroderivative combustion turbine generator on the market and has a documented availability record of 97.8 percent. Inlet combustion air will be cooled via a chilled water system and the combustion turbine will have evaporative inter-cooling. NO_x suppression water injection will control NO_x emissions to 25ppmvd, corrected to 15% oxygen. NO_X emissions will be further controlled to 5 ppmvd corrected to 15% oxygen with a selective catalytic reduction (SCR) system, and an oxidation catalyst for CO and VOC control. Even though the CEC's emergency siting procedure allows installation of emission control systems after commercial operation, but prior to May 31, 2002, Calpine expects to have controls installed at the time of start-up. In the event the emission controls are not available at start-up, Calpine will seek an emergency variance from the local air district. Particulate emissions will be controlled using combustion air filtration and natural gas, which is low in particulate matter, as the sole fuel. The sulfur content of the pipeline gas is estimated to be 0.2 grains per 100 standard cubic feet of gas.

1.2.1.2 Electrical Equipment and Systems

The electric power produced by the facility will be transmitted to the PG&E grid. Some power will be used on site to power auxiliaries such as gas compressors, chillers, fans, heaters, pumps, and control systems. An overall single-line diagram of the facility's electrical system is shown in Figure 1-3.

1.2.1.2.1 AC Power-Transmission

The CTGs at 13.8 kV will generate power. The 13.8-kV generator outputs will be connected by non-segregated or open tray cable bus to a generator circuit breaker and an oil-filled generator step-up transformer, which will increase the voltage to 115 kV required for transmission to the grid. Surge arresters will be provided at the high-voltage bushings to protect the transformer from surges on the 115-kV system caused by lightning strikes or other system disturbances. The transformer will be set on a concrete pad within a containment system designed to contain the transformer oil in the event of a leak or spill. The high-voltage side of the step-up transformer will be connected via a CXO breaker to the existing PG&E 115-kV transmission circuits.



Sources:
State: ESRI, derived from GDT Tracts, CACI Pop1999 Variable
County: ESRI, derived from GDT Tracts, CACI Pop1999 Variable
Cities: Census
Major Roads: GDT

Figure 1-1

Calpine Corp.
Gilroy Phase I Project
Regional Location Map

FOSTER WHEELER
FOSTER WHEELER ENVIRONMENTAL CORPORATION

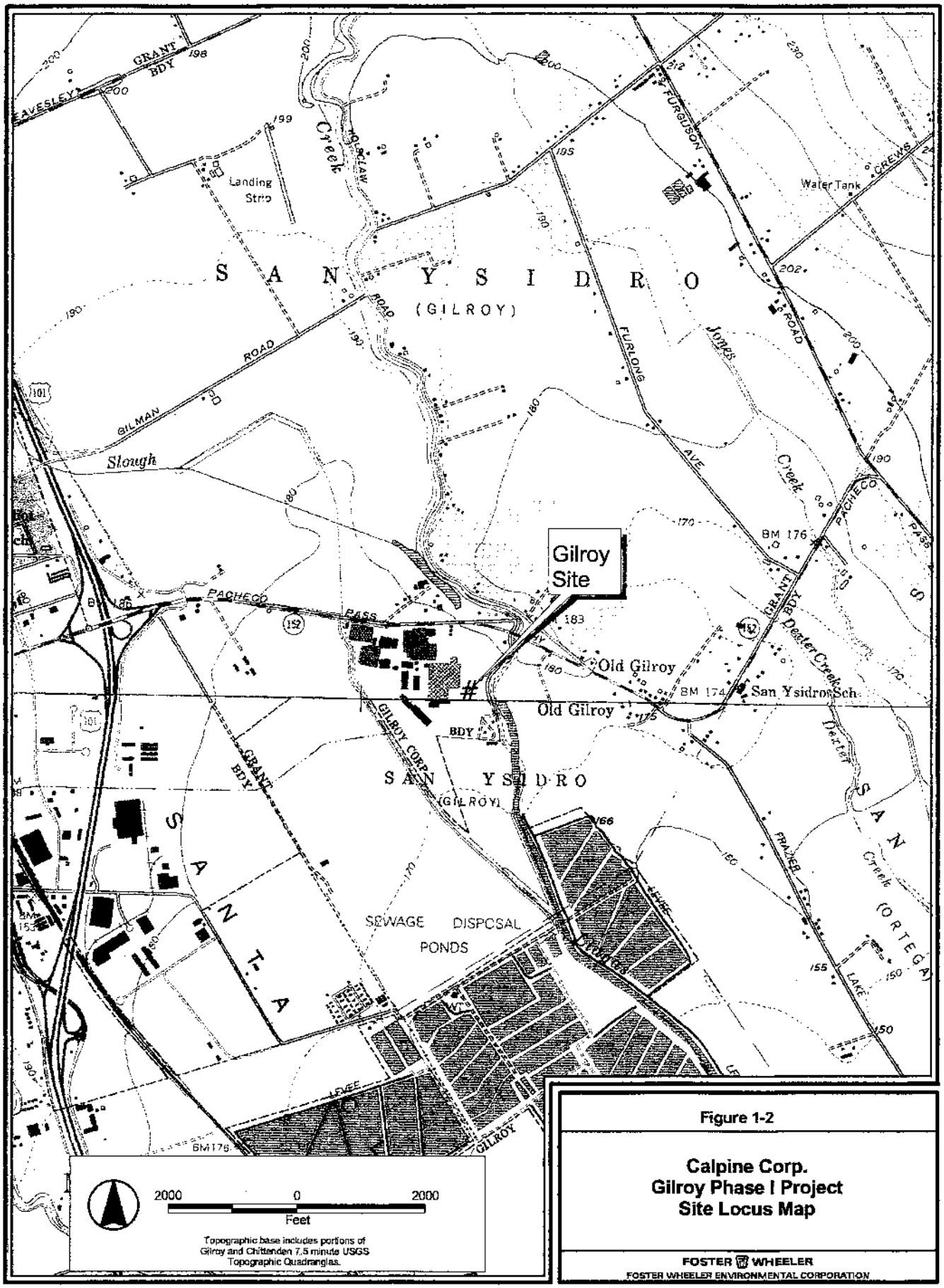


Figure 1-2

Calpine Corp.
Gilroy Phase I Project
Site Locus Map

FOSTER WHEELER
FOSTER WHEELER ENVIRONMENTAL CORPORATION

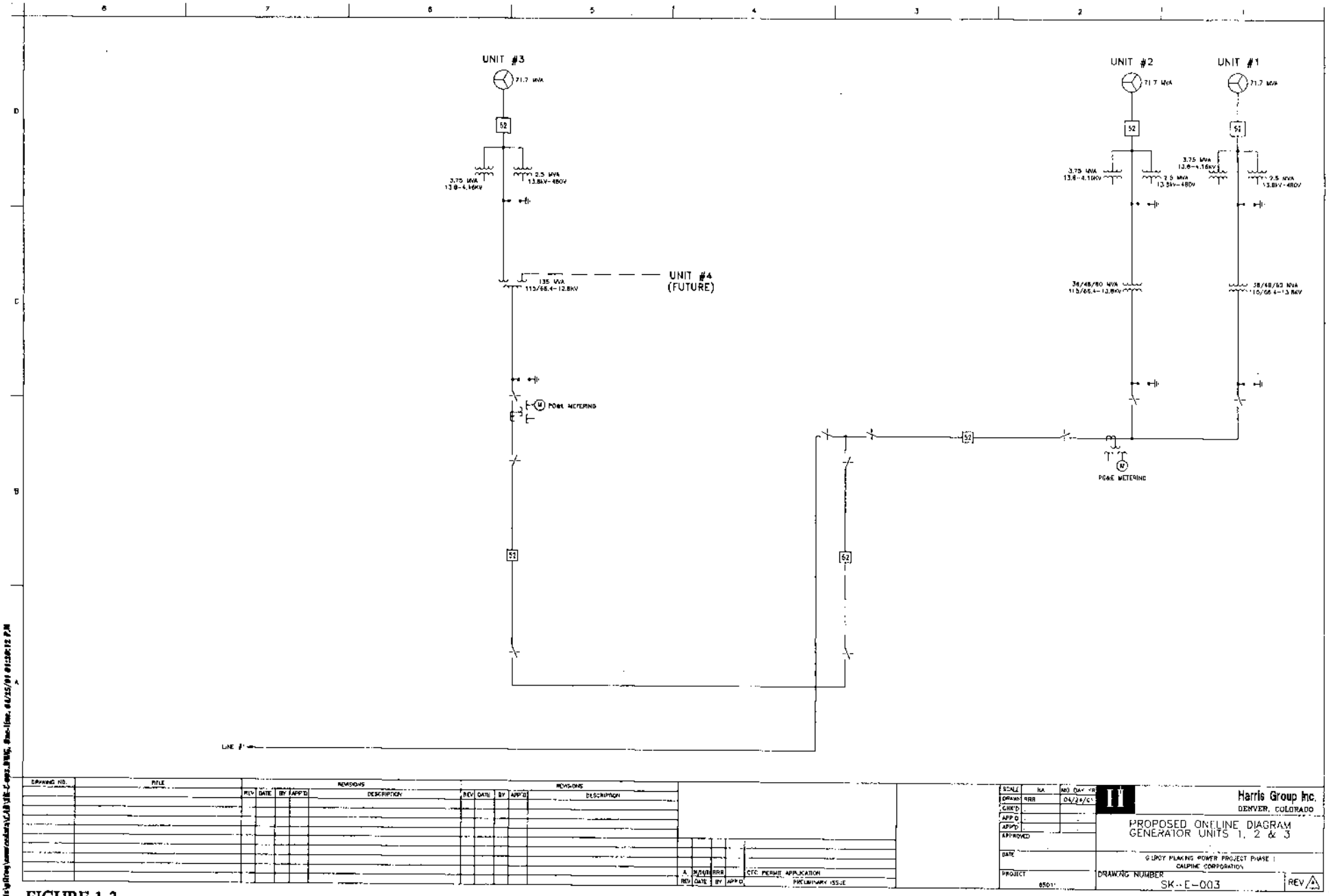

UNIT #3
71.7 MVA
52
3.75 MVA
13.8-4.16KV
2.5 MVA
13.8KV-480V
135 MVA
115/66.4-12.8KV
UNIT #4
(FUTURE)
PG&E METERING
52
52
LINE
UNIT #2
71.7 MVA
52
3.75 MVA
13.8-4.16KV
2.5 MVA
13.8KV-480V
38/48/60 MVA
115/66.4-13.8KV
UNIT #1
71.7 MVA
52
3.75 MVA
13.8-4.16KV
2.5 MVA
13.8KV-480V
38/48/60 MVA
115/66.4-13.8KV
PG&E METERING
Harris Group Inc.
DENVER, COLORADO
PROPOSED ONELINE DIAGRAM
GENERATOR UNITS 1, 2 & 3
GILROY PEAKING POWER PROJECT PHASE I
CALPINE CORPORATION
DRAWING NUMBER
SK-E-003
REV A

FIGURE 1-3

1.2.1.2.2 AC Power—Distribution to Auxiliaries

Auxiliary power to the combustion turbine power block will be supplied at 4,160 volts AC and 480 volts AC by separate switchgear lineups. Primary power to the switchgear will be supplied by separate oil-filled 13.8-kV to 4.16-kV and 13.8 kV to 480 volt station service step-down transformers. Installation of the station service step-down transformers will be such that the CTG output or backfeed from the PG&E 115-kV circuit can serve station power demand. Step-down transformers will have spill containment to contain transformer oil in event of a leak or spill.

The AC power system will have separate 4,160 volt and 480 volt step-down service transformers connected to the 13.8 kV supply side to provide power to motors and the CTG starting system.

1.2.1.2.3 DC Power Supply

Two DC power supply systems consisting of one 125-volt DC battery, two 100-percent 125-volt DC full-capacity battery chargers, metering, ground detectors, and distribution panels will be supplied. One system will be for balance-of-plant and the other will be dedicated to the combustion turbine generator equipment.

Under normal operating conditions, the battery chargers will supply DC power to the DC loads. The battery chargers will receive 480-volt, three-phase AC power from the AC power supply (480-volt) system and continuously load charge the battery while supplying power to the DC loads. The ground detection scheme will detect grounds on the DC power supply system.

Under abnormal or emergency conditions, when power from the AC power supply (480-volt) system is unavailable, the battery supplies DC power to the AC power supply system. Recharging of a discharged battery will occur whenever 480-volt power becomes available from the AC power supply (480-volt) system. The rate of charge will depend on the characteristics of the battery, battery charger, and connected DC load during charging. The anticipated maximum recharge time will be 24 hours.

The appropriate 125-volt DC system will also be used to provide control power to the 4,160-volt switchgear, to the 480-volt LCs, to critical control circuits, and to the emergency DC motors.

1.2.1.2.4 Essential Service AC Uninterruptible Power Supply(s)

The combustion turbines will also have an essential service 120-volt AC, single-phase, 60-Hertz (Hz) power source. This source will supply AC power to essential instrumentation, to critical equipment loads, and to unit protection and safety systems that require uninterruptible AC power. The essential service AC system and DC power supply system will be designed to ensure that critical safety and unit protection control circuits have power and can take the correct action on a unit trip or loss of plant AC power.

The essential service AC system will consist of one full-capacity inverter, a solid-state transfer switch, a manual bypass switch, an alternate source transformer and voltage regulator, and an AC panel board.

The normal source of power to the system will be the DC power supply system through the inverter to the panel board. A solid-state static transfer switch will continuously monitor the inverter output and

the alternate AC source. The transfer switch will automatically transfer essential AC loads without interruption from the inverter output to the alternate source upon loss of the inverter output.

A manual bypass switch will also be included to enable isolation of the inverter-static transfer switch for testing and maintenance without interruption to the essential service AC loads.

A similar essential service AC uninterruptible power supply will serve the balance of plant equipment as required to safely shut down the facility.

1.2.1.3 Fire Protection

The project will be designed to maximize safe operation. Personnel will be trained in safe operation, maintenance, and emergency response procedures to minimize the risk of personal injury and damage to the facilities. The fire protection system will protect the turbine, generator, and accessory equipment compartments from fire. The system will have fire detection sensors in all compartments. Actuating one sensor will provide a high temperature alarm on the combustion turbine control panel. Actuating a second sensor will trip the combustion turbine, turn off ventilation, close ventilation openings, and automatically release CO_2 at a design concentration adequate to extinguish the fire. The generator and control spaces will be equipped with portable hand-held fire extinguishers.

Equipment and resources at the adjacent Gilroy Co-Gen facility will supplement facility fire protection.

1.2.1.4 Plant Auxiliaries

The following systems will support, protect, and control the generating facility.

1.2.1.4.1 Lighting

The lighting system will provide personnel with illumination for operation under normal conditions and for egress under emergency conditions. The system will include emergency lighting to perform manual operations during an outage of the normal power source. The system also will provide 120-volt convenience outlets for portable lamps and tools.

1.2.1.4.2 Grounding

The electrical system would be susceptible to ground faults, lightning, and switching surges that could constitute a hazard to site personnel and electrical equipment. To reduce hazard potential, metal-grounding rods will be driven into the soil to form a looped grounding system. The grounding system will provide an adequate path to permit the dissipation of current created by these transient events.

1.2.1.4.3 Cathodic Protection

A cathodic protection system will be designed to control the electrochemical corrosion of designated metal piping buried in the soil. Depending upon the corrosion potential and the site soils, either passive or impressed current cathodic protection will be provided.

1.2.1.4.4 Instrument Air

The instrument air system will provide dry air to pneumatic operators and devices. Instrument air will be used in the CTG equipment areas and within the water treatment unit where pneumatic operators

and devices will be located. Other consumers of instrument air include CEMS, fuel gas compressors, SCR ammonia injection, chillers, and fire protection-sensing lines.

1.3 Structure Dimensions

The site arrangement shown in Figure 1-4 and the typical profile views with elevations shown in Figure 1-5 illustrate the location and size of the proposed power plant.

1.4 Site Photograph

The project will be visually compatible with existing and planned development on the properties adjacent to the site. Section 15, Visual Resources, contains site photographs that show the project setting.

1.5 Foundation, Cut And Fill

Foundations designed and constructed based on the results of a site geotechnical investigation will support the generating and associated equipment. Foundations will support the weight of the equipment, operating loads, and loads imposed by wind or seismic forces. Final site elevation will require a cut and fill operation to remove unsuitable native material and replace it with structural fill.

1.6 Conformance With California Building Code

The principal natural hazards to the project are earthquakes and floods. The site is located in Seismic Risk Zone 4. Structures will be designed to meet the seismic requirements of CCR Title 24 and the 1998 California Building Code (CBC). The site is essentially flat, with an average elevation of approximately 170 feet above mean sea level (MSL).

1.7 Proposed Operational Mode And Hours

The facility will obtain an air quality control permit to operate approximately 3,900 full load hours per year per unit. Within this annual restriction the units can be operated 7 days per week, 24 hours per day to meet electric demand. The project will sell a portion of its generation under a contract with the California Department of Water Resources (DWR). Generation available from the project that has not been sold through the DWR contract will be available for sale on the competitive market. Operation of the project depends, therefore, on the quantity of electricity sold through the contract and the ability to sell into the competitive market. Because the capacity that will be sold through contract and the prices that will be offered for spot purchases are unknown at this time, the exact mode of operation cannot be described. It is conceivable the facility could be operated in one or all of the following daily modes:

- **Load Following** — The facility would be operated to meet contractual load and whatever spot sales could be made, but the sum would be less than maximum continuous output at all times of the day. The output of the unit would be adjusted periodically to meet load.

- **Partial Operation** — At certain times of any given day, the sum of the contractual load and spot market sales could drop to a level at which it would be economically favorable to cease operation of the project. The facility could cease operation even if the DLOR contract called for generation, if contract load were being served by another facility. This mode of operation could be expected during late evening and early morning hours.

Shutdown — This would occur if forced by equipment malfunction, fuel supply interruption, or transmission line disconnect.

1.8 Expected On-Line Date

Calpine expects to commence operation of the Gilroy Phase 1 Project before September 30, 2001.

1.9 Proposed Duration Of Operation

At a minimum, the proposed project will operate for the life of its 20-year contract with the DWR, or until the DWR contract is terminated and the facility is unprofitable.

1.10 Transmission Interconnection Facilities

An overall single-line diagram of the facility's electrical system is shown in Figure 1-3, including the interconnection with the existing PG&E 115-kV circuit. The CTGs will generate power at 13.8 kV. The 13.8 -kV generator outputs will be connected by non-segregated or open cable bus to an oil-filled generator step-up transformer, which will increase the voltage to 115 kV. Surge arresters will be provided at the high-voltage bushings to protect the transformer from surges on the 115-kV system caused by lightning strikes or other system disturbances. The transformer will be set on a concrete pad within a containment system designed to contain transformer oil in the event of a leak or spill. The high-voltage side of the step-up transformer will be connected via a CXO breaker to the existing PG&E 115-kV circuit.

1.11 Transmission Interconnection Application

Calpine's Application for Transmission Interconnection with PG&E is in Appendix A.

1.12 Downstream Transmission Facilities

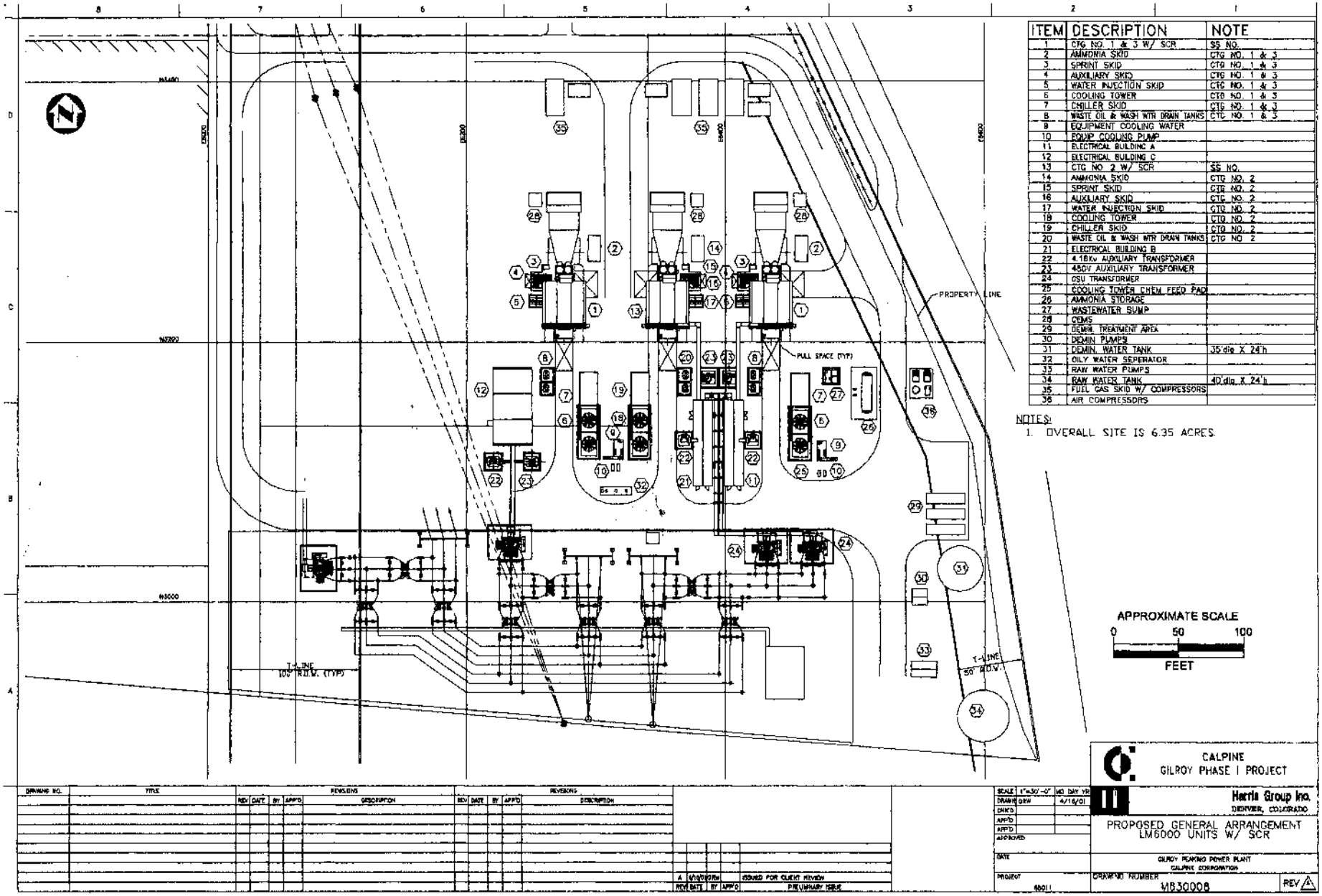
No other downstream transmission facilities are required for this project.

1.13 Fuel Interconnection Facilities

The CTGs will be designed to burn natural gas. Maximum natural gas requirements during base load operation are approximately 470 MMBtu/hr each. The project will connect to the existing PG&E supply of gas located in Route 152 through interconnection valves, metering and piping. The pressure of natural gas will be pressurized by on-site compressors to a minimum of 725 psig. Gas will flow through gas scrubber/filtering equipment, a gas pressure control station and a flow metering station before entering the combustion turbines.

1.14 Fuel Interconnection Application

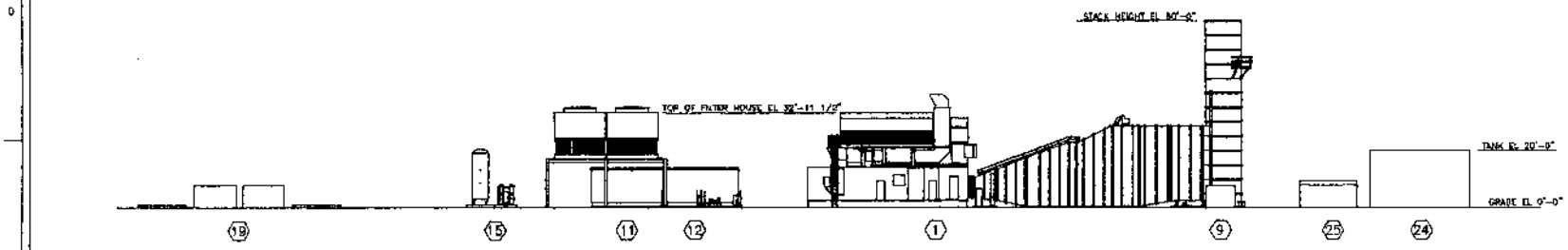
Calpine's Application for Fuel Interconnection with PG&E is in Appendix B.



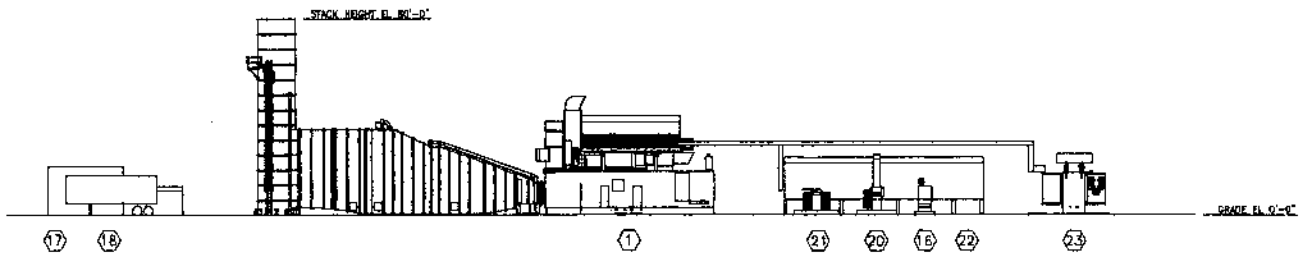
ITEM	DESCRIPTION	NOTE
1	CTG NO. 1 & 3 W/ SCR	SS NO.
2	AMMONIA SKID	CTG NO. 1 & 3
3	SPRINT SKID	CTG NO. 1 & 3
4	AUXILIARY SKID	CTG NO. 1 & 3
5	WATER INJECTION SKID	CTG NO. 1 & 3
6	COOLING TOWER	CTG NO. 1 & 3
7	CHILLER SKID	CTG NO. 1 & 3
8	WASTE OIL & WASH WTR DRAIN TANKS	CTG NO. 1 & 3
9	EQUIPMENT COOLING WATER	
10	EQUIP COOLING PUMP	
11	ELECTRICAL BUILDING A	
12	ELECTRICAL BUILDING C	
13	CTG NO. 2 W/ SCR	SS NO.
14	AMMONIA SKID	CTG NO. 2
15	SPRINT SKID	CTG NO. 2
16	AUXILIARY SKID	CTG NO. 2
17	WATER INJECTION SKID	CTG NO. 2
18	COOLING TOWER	CTG NO. 2
19	CHILLER SKID	CTG NO. 2
20	WASTE OIL & WASH WTR DRAIN TANKS	CTG NO. 2
21	ELECTRICAL BUILDING B	
22	4.16kv AUXILIARY TRANSFORMER	
23	480V AUXILIARY TRANSFORMER	
24	GSU TRANSFORMER	
25	COOLING TOWER CHEM FEED PAD	
26	AMMONIA STORAGE	
27	WASTEWATER SUMP	
28	CEMS	
29	DEMIN. TREATMENT AREA	
30	DEMIN PUMPS	
31	DEMIN. WATER TANK	35'dia X 24'h
32	OILY WATER SEPERATOR	
33	RAW WATER PUMPS	
34	RAW WATER TANK	40'dia X 24'h
35	FUEL GAS SKID W/ COMPRESSORS	
36	AIR COMPRESSORS	

NOTES:
1. OVERALL SITE IS 6.35 ACRES.

FIGURE 1-4



ELEVATION
LOOKING WEST



ELEVATION
LOOKING EAST

ITEM	DESCRIPTION	NOTE
1	CTG NO. 1 W/ SCR	SS NO.
2	AUXILIARY SKID	
3	SPRINT SKID	
4	EQUIPMENT COOLING WATER SKID	
5	WATER INJECTION SKIDS	
6	WASTE OIL & WASH WTR DRAIN TANKS	
7	AMMONIA INJECTION SKID	
8		
9	CEMS	
10	WASTEWATER SUMP	
11	CHILLER SKID	
12	COOLING TOWER	
13	EQUIP COOLING PUMPS	
14	COOLING TOWER CHEM FEED PAD	
15	AIR COMPRESSORS	
16	STANDBY GENERATOR	
17	DEMIN. WATER TANK / PUMPS	
18	DEMIN TRAILERS	
19	FUEL GAS CONDITIONING SKID W/ COMPRESSOR	
20	4.16Kv AUXILIARYTRANSFORMER	
21	480V AUXILIARY TRANSFORMER	
22	ELECTRICAL BUILDING	
23	GSU	
24	RAW WATER TANK	
25	RAW WATER PUMPS	

APPROXIMATE SCALE
0 30 60
FEET

CALPINE
GILROY PHASE I PROJECT

Harris Group Inc.
DENVER, COLORADO

PROPOSED GENERAL ARRANGEMENT
LM6000 UNIT (RIGHT HAND) W/SCR
ELEVATION

GILROY PEAKING POWER PROJECT
CALPINE CORPORATION

DRAWING NUMBER M630004 REV A

DRAWING NO.	TITLE	REVISIONS REV	DATE	BY	APP'D	DESCRIPTION	REVISIONS REV	DATE	BY	APP'D	DESCRIPTION

REV	DATE	BY	APP'D	PRELIMINARY ISSUE
A	3/26/01	DRW		ISSUED FOR CLIENT REVIEW

SCALE	AS SHOWN	NO DAY YR
DRAWN	DRW	3/21/01
CHK'D		
APP'D		
APP'D		
APPROVED		
DATE		
PROJECT		

FIGURE 1-5

1.15 Water Requirements And Treatment

Water consumption includes cooling tower make up for cooling the following heat rejection sources: CTG lube oil system, fuel gas compressor cooling, recycle gas cooler, inlet air chiller condenser, and other minor sources. Additional make-up water is fed to the water treatment system (reverse osmosis followed by demineralization) for use in NO_x suppression injection water and compressor evaporative inter-cooling. The project's expected peak water consumption is about 462 gallons per minute (gpm) based on hot day full load operation. At this rate, total daily peak water use is 665,280gallons per day (gpd). The actual operating schedule will be determined by dispatch to meet peak demand. Typically, peak loads occur between 10 a.m. and 6 p.m. on weekdays. When operating the CTG at full load during the typical 8-hour dispatch mode, daily peak water consumption would be 221,760gpd.

Generation of demineralized water quality as required to operate the CTG water treatment system will include ion exchange and reverse osmosis. Demineralization equipment will be located in on-site trailer-mounted or skid-mounted units, and treated water will be generated on demand. Demineralized water will meet GE's specifications after treatment when tested in accordance with American Society of Testing and Materials (ASTM) test standards.

1.16 Water And Wastewater Interconnection Facilities

The proposed project will obtain raw water through a connection with the existing site's well-water pumps or reclaimed water from the South County Regional Wastewater Authority's reclaimed water facility (if available).Calpine expects to obtain a "will serve" letter from the City to Provide reclaim water to the project. The interconnection would be through a physical tie in and would include piping, valves, flow metering and back-flow prevention and air gaps as required to meet local ordinances. Water supply connections to the de-min unit would be through flexible (hose-like) connections. Standard plumbing methods would be used, and work would be performed with proper authorizations and meet applicable standards for.

Wastewater consists of evaporator cooling blow down and reverse osmosis reject. These two sources will generate about 65 gpm of process wastewater. The additional wastewater will be discharged to either Gilroy Foods or to the City of Gilroy's sewer system. The city has been apprised of the proposed wastewater volume from the project and Calpine expects to receive a "will serve" letter to discharge its wastewater. In addition the CTG's would require 200 gallons of wash water per 250 hours of operation. The turbine wash consist of one or two 40-gallon washes with clean de-mineralized water containing small amounts of a bio-degradable detergent, followed by several 40-gallon rinses with clean de-mineralized water (all de-mineralized water is from the on-site de-min unit). The wash and rinse water cleans the turbine of any dirt particles to keep the CTG in proper operating condition. All wash and rinse water will be collected in an on-site portable water storage tank. The tank will be emptied as needed by a licensed contractor for proper disposal at a public wastewater treatment facility.

1.17 Source And Quality Of Water Supply

All water used by the project will come from the existing co-generation facility's well water pumps located within 0.1 miles of the project site. See Table 1-1 for water quality data. Reclaimed water from the South County Regional Wastewater Authority's existing reclaimed water facility will be used if available but is not required for operation of the project. Sufficient well water supply exists to support the project.

Table 1-1: Gilroy Water Analysis

Contaminant	Units	Reported As	Gilroy	Gilroy
Comments			Well Water	Reclaimed Water
Alkalinity – Bicarbonate	mg/L	CaCO3	222.000	180
Alkalinity – Carbonate	mg/L	CaCO3	0.000	0
Alkalinity – P-BaC12	mg/L	CaCO3	0.000	0
Alkalinity – Phenol	mg/L	CaCO3	0.000	0
Alkalinity – Total	mg/L	CaCO3	222.000	180
Aluminum	mg/L	Al	< 0.1	<0.1
Ammonia	mg/L	N	< 0.6	0.05
Arsenic	mg/L	_	< 0.01	
Barium	mg/L	Ba	0.100	
Boron	mg/L	B	0.100	0.42
Bromide	mg/L	Br		
Cadmium	mg/L	Cd	< 0.01	
Chloride	mg/L	CaCO3	29.000	221.59
Chromium	mg/L	Cr	< 0.01	
Copper	mg/L	_	< 0.05	0.05
Fluoride	mg/L	_	0.200	
Hardness-Calcium	mg/L	CaCO3	144.000	112.36
Hardness-Magnesium	mg/L	CaCO3	102.000	115.27
Hardness-Total	mg/L	CaCO3	260.000	227.63
Iron	mg/L	_	0.050	
Lead	mg/L	_	0.030	
Lithium	mg/L	_		
Manganese	mg/L	_	0.030	
Molybdenum	mg/L	_	< 0.1	
Nickel	mg/L	_	< 0.1	
Nitrate Nitrogen	mg/L	CaCO3	36.000	2.31
Nitrate Nitrogen	mg/L	NO2	0.100	0.1
pH	s.u.	_	7.800	3.15
Phosphorous	mg/L	PO4	< 0.02	7.6
Potassium	mg/L	_	1.000	
Selenium	mg/L	_	< 0.1	
Silica	mg/L	SiO2	31.000	
Silt Density Index	_	_		
Sodium	mg/L	CaCO3	61.000	114
Specific Conductance	umhos/cm	_	620.000	1115
Strontium	mg/L	_	0.570	
Sulfate	mg/L	CaCO3	44.000	62
Sulfur	mg/L	_	39.000	
Total Dissolved Solids	mg/L	_	420.000	640

Contaminant	Units	Reported As	Gilroy	Gilroy
Comments			Well Water	Reclaimed Water
Total Dissolved Solids	mg/L	_	420.000	640
Turbidity	NTU	_	7.600	0.37
Vanadium	mg/L	_		
Zinc	mg/L	_	< 0.01	

1.18 Proof Of Water Supply

The current co-generation facility receives water from an on-site well. Two well-water pumps exist that are sized for 1200 gallons per minute. The plant currently draws a maximum of 800 gallons per minute from the well with one pump running. The well is permitted by the Santa Clara Valley Water District (Permit Number 86W0980 (See Appendix C)). Well-water supply is sufficient to meet the needs of the project. The project will also utilize reclaimed water from the South County Regional Wastewater Authority's reclaimed water facility if such water is available although this supply is not required for the project.

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SECTION 2.0 SITE DESCRIPTION

This section describes the site on which Calpine will construct and operate the Gilroy Phase 1 Project.

2.1 Site Address

Street: 1350 Pacheco Pass Highway
City: Gilroy
County: Santa Clara

2.2 Assessor's Parcel Number

The proposed project site will occupy approximately 7 acres on the property of Calpine's existing Gilroy Co-Gen facility. The Assessor's Parcel Numbers is APN-841-17-77 and APN-841-17-78. Figure 2-1 is a parcel map depicting parcels in the project vicinity.

2.3 Names And Addresses Of Near-By Property Owners

The names and addresses of all property owners within 500 feet of the project site are:

Name: Conagra Inc.
Street: 1 Conagra Dr.
City, State, Zip: Omaha, NE 68102

Name: Ka Wa & Mu Chen Vong
Street: 13010 Columbet Ave
City, State, Zip: San Martin, CA 95046

Name: Jose & Isabel Ramirez
Street: 716 Eschenburg Dr.
City, State, Zip: Gilroy, CA 95020

Name: Santa Clara Valley Water District
Street: 5750 Almaden Expressway
City, State, Zip: San Jose, CA 95118-3686

2.4 Existing Site Use

The 7-acre project site is currently agricultural research land that is adjacent to the property of the existing Gilroy Co-Gen facility.

2.5 Existing Site Conditions

The new CTG's and associated equipment will occupy land that is currently in used for agricultural research.

2.6 Site Layout

The site layout shown in Figure 1-4 illustrates the location and size of the proposed power plant.

2.7 Zoning And General Plan Designations

The site is zoned General Industrial (M-2) on the City zoning map (9/8/00) and is designated as General Industrial on the City General Plan map (1/7/98).

2.8 Site Ownership

Name:	Basic American Foods Energy, A California Limited Partnership
Address:	500 Montgomery Street, 28th Floor
	San Francisco, CA 94119
Phone:	415-705-5115

2.9 Status Of Site Control

Calpine owns the Gilroy Co-Gen facility and operates it on land it controls under lease agreement. Calpine is currently working with Gilroy Foods to amend the lease to include the extension of the project site or to purchase the property.

2.10 Equipment Laydown Area

Construction of the proposed generating facilities will require an equipment laydown and construction parking. This area will be located partly on a portion of the 7-arcre project site and on the Gilroy Foods parking lot near Route 152.

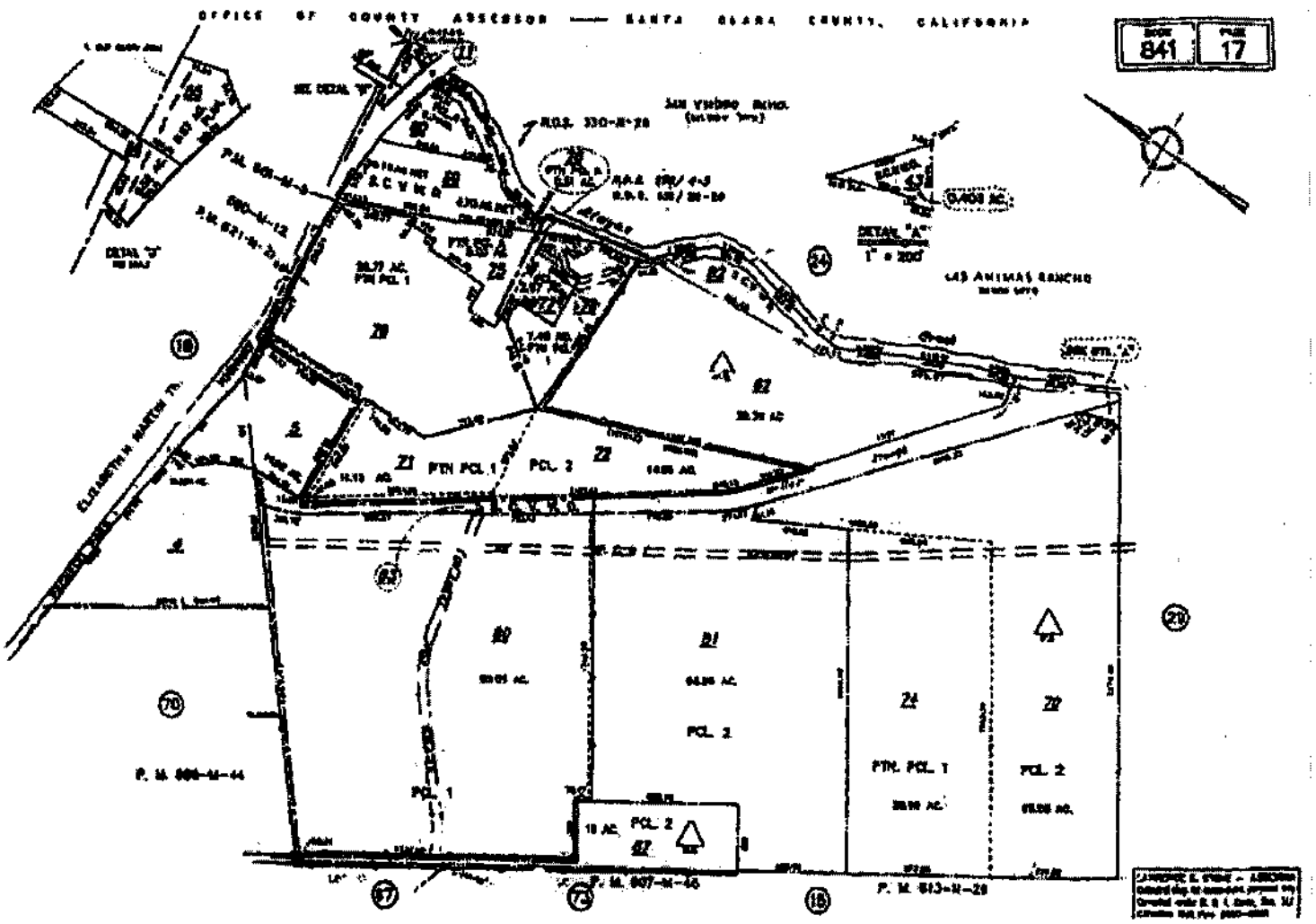

Figure 2-1 A

Calpine Corp.
Gilroy Phase I Project
Plot Plan

FOSTER WHEELER
FOSTER WHEELER ENVIRONMENTAL CORPORATION

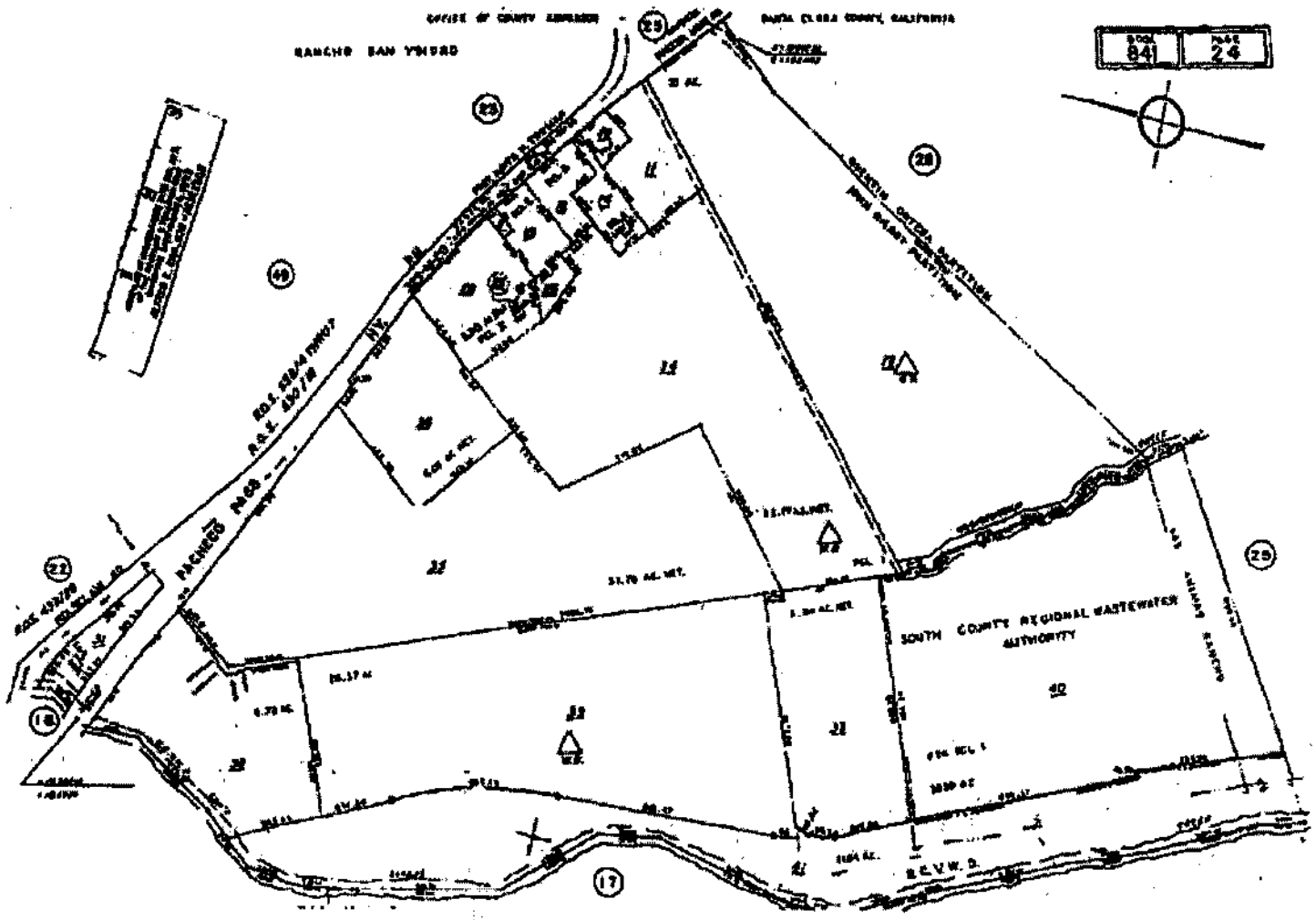

Figure 2-1 B

Calpine Corp.
Gilroy Phase I Project
Plot Plan

FOSTER WHEELER
FOSTER WHEELER ENVIRONMENTAL CORPORATION

SECTION 3.0 CONSTRUCTION DESCRIPTION

This section describes the project construction schedule and the project workforce.

3.1 Construction Schedule

Calpine anticipates that project construction will take between two to three months. Upon receipt of approval to construct, Calpine will initiate construction activities to achieve commercial operation before September 30, 2001. In the event emission controls are not available at start-up, installation of the SCR systems and CO catalysts may require short-term construction after the project is in operation in time to have the SCR operational before May 31, 2002.

3.2 Workforce

During construction, the site will be used for temporary offices, parking, and lay down for outdoor materials. The peak workforce on the project during construction, including construction craft personnel and supervisory, support, and construction management personnel is expected to be about 225 personnel. The average (non-peak) construction workforce is expected to be about 150 personnel, although that number is expected to dwindle as construction reaches completion. Construction typically will be scheduled between 6 a.m. and 6 p.m., Monday through Saturday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. During the startup phase of the project, some activities will continue 24 hours per day, 7 days per week.

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SECTION 4.0 POWER PURCHASE CONTRACT

Calpine has a contract with DWR to provide 11 units of generating capacity beginning in July 2001. The project guarantees the sale of 2,000 hours of power from each unit to DWR with the remainder of the power being sold on the spot market.

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SECTION 5.0 AIR EMISSIONS

5.1 Nearest Monitoring Station (location, distance)

The nearest monitoring stations are as follows:

PM_{10}:	Hollister (21 km)
CO and NO_2:	San Jose (North Tully Rd) (43 kkm)
SO_2:	Davenport (58 km)

5.2 Complete Self Certification Air Permit Checklist

See Appendix D.

5.3 Complete Air Permit Application

See Appendix D.

5.4 Status of Air Permit Application with Air District

The air permit application was filed with the district on April 20, 2001. The applicant has asked the BAAQMD to issue the ATC by May 25, 2001.

5.5 Status of Offsets and/or Mitigation Fees, As Required

Offsets will be required for increases in NO_X and POC emissions. These offsets will be provided from ERC's currently owned by Calpine.

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SECTION 6.0 NOISE

6.1 Local Noise Requirements

Section 41.20 "General Provisions" of the City of Gilroy Zoning Ordinance is the only place in the ordinance where noise is mentioned. This paragraph simply states that no objectionable public nuisance shall be created in a variety of listed areas including noise and vibration. No numerical limits are provided.

However, the Santa Clara County General Plan does contain a noise section that includes noise compatibility standards for various types of land use. Noise levels are further divided into three groups, which define the acceptability of the noise. The table below lists the noise levels in terms of the day/night level (Ldn) which applies a 10-decibel penalty to nighttime levels between 10 p.m. and 7 a.m.

Generalized Land Use	Satisfactory	Cautionary	Critical
Residential	up to 55 dBA	55 - 65 dBA	above 65 dBA
Commercial	up to 65 dBA	65 - 75 dBA	above 75 dBA
Industrial	up to 70 dBA	70 - 75 dBA	above 75 dBA

6.2 Nearest Sensitive Receptor (Type, Distance)

The nearest noise-sensitive receptors are single-family residences on Cedar Lane just north of Pacheco Pass Highway (Rt. 152) about 1400 feet from the proposed generating units.

6.3 Project Noise Level At Nearest Noise-Sensitive Receptors And At Site Boundary

The expected noise level from the plant at the nearest residence was determined through computer modeling of the various plant noise sources. The NoiseCalc Model developed by the New York State Department of Public Service was employed. Sound power levels of the LM6000 Gas Turbine/Generators and its various components were provided on an octave band basis by the equipment manufacturer. The SCR emission control modules and a high-efficiency stack silencers will significantly attenuate exhaust noise from the gas turbines. Attenuating mechanisms employed in the model included geometric spreading of the sound wave, atmospheric absorption and barrier shielding by the existing plant and strategically placed sound walls.

The plant noise level at the nearest house is expected to be 58.5 dBA. If the plant were to operate 24 hours per day the equivalent Ldn level would be 64.9 dBA. This level is less than the 65 dBA Ldn level considered "Cautionary" for residential areas.

An ambient noise survey performed at sensitive receptors near the site over a 25-hour period on March 23 - 24, 2001, indicated that the existing Ldn is 66.9 dBA at the houses on Cedar Lane due to significant traffic on Pacheco Pass Highway. This level is in the "critical" range for residential areas as identified in the table above. However, the level is not unusual for houses

adjacent to busy highways. At houses a little further to the north on Holsclaw Road, which is a local less traveled street, a lower Ldn of 60.7 dBA was measured. This level is classified as "cautionary" according to the above table for residential areas.

The average L90 at night was 53.6 dBA. The predicted level of 58.5 dBA is about 5dBA above the measured background level and, consequently, will not produce a significant noise impact at the residences.

The highest predicted level on the site boundary is 67.4 dBA on the south boundary. This level is equivalent to a Ldn of 73.8 dBA and is below the recommended level of 75 dBA. Thus, the plant noise levels will be within levels recommended in the Santa Clara County General Plan.

6.4 Proposed Mitigation, If Required

The standard noise control features for the LM6000 gas/turbine generators include combustion air inlet silencers, acoustical enclosures for the turbines and generators, and silencers on the enclosure ventilation exhausts. Additional noise control features that will be employed include high-efficiency stack silencers on all stacks, and enclosures for the gas compressors.

SECTION 7.0 HAZARDOUS MATERIALS

7.1 Type And Volume Of Hazardous Materials On-Site

Hazardous materials used during construction will include gasoline, diesel fuel, motor oil, hydraulic fluid, certain solvents, cleaners, sealants, welding flux, various lubricants, paint and paint thinner. No acutely hazardous materials will be used or stored on-site during construction. There is only minimal potential for environmental impacts from hazardous material incidents during construction. Small volumes of hazardous materials will be temporarily stored on-site inside fuel and lubrication service trucks. Paints and solvents will be stored in flammable materials cabinets.

Project personnel will be trained to handle these materials. The most likely incidents involving these hazardous materials would be associated with minor spills or drips. Impacts from such incidents will be mitigated by thoroughly cleaning up spills as soon as they occur, and disposing of them properly.

A number of hazardous materials will be stored at the generating site during operation of the project.

Aqueous Ammonia (<19% NH_3 and >81% H_2O) - to control nitrous oxide (NO_x) emissions for all 3 units through selective catalytic reduction. Twenty-five thousand gallons will be stored in a tank with adequate containment.

Mineral Insulating Oil – contained in transformer systems

Lubrication Oil – for gas turbine bearings in turbine enclosure

Hydraulic Oil – for mechanical movement for turbine associated equipment.

Chilled Water Coolant – (ethelyne or propolene glycol) used in inlet air chilling system for freeze protection

In addition to the chemicals noted above, small quantities (less than five gallons) of paints, oils, solvent, pesticides, and cleaners, typical of those purchased at a retail hardware store, may also be used at the facility.

The one acutely hazardous material to be used on site is aqueous ammonia. If the aqueous ammonia leaks from the aboveground storage tank, the ammonia will be evaporated into the atmosphere. Facility safety equipment, hazardous materials training, and emergency response planning will mitigate the hazard to workers for the acutely hazardous material. Since the aqueous ammonia is less than 19%, a ammonia Risk Management Plan (RMP) is not required under federal regulations (40 Code of Federal Regulations [CFR] 68) and California's Accidental Release Prevention Program (CalARP. An RMP is required for substances described in section 112(r)(5) of the Clean Air Act and listed in 40 CFR 68.130, if they are handled or stored in quantities in excess of certain levels.

Ammonia is used in a selective catalytic reduction (SCR) process to control NO_x emissions created in the combustion chambers of the combustion turbines. The SCR system includes a reactor chamber, catalyst modules, ammonia storage system and ammonia injection system. The ammonia will be injected into the reactor chamber. The rate of injection will be controlled by a monitoring system that uses sensors to determine the correct quantity of ammonia to feed to the reactor chamber. The reactor chamber contains the catalyst modules and is located in a temperature zone of the duct work just before the stack where the catalyst will be most effective at the desired levels of plant operation.

7.2 Storage Facilities And Containment

The ammonia storage and handling facilities will be equipped with continuous tank level monitors, temperature and pressure monitors and alarms, and excess flow and emergency block valves. Pressure relief valves and excess flow control valves on the tank fill connections will also be provided. Containment will be provided sufficient to contain spills.

Tanker trucks will deliver ammonia to the Gilroy site. A 25,000-gallon storage will be used to store the ammonia on-site. Appropriate filling and depletion levels will be developed in accordance with manufacture recommendations to maximize safety during the refilling process. Deliveries will be made at the frequency of one every 15 days.

All hazardous materials will be handled and stored in accordance with applicable codes and regulations. Incompatible materials will be stored in separate storage and containment area. Areas susceptible to potential leaks and/or spills will be paved and bermed. Wherever possible, double-walled piping will be used to minimize potential releases from ruptured piping.

In accordance with the City of Gilroy's Hazardous Materials Storage Permit Ordinance, Calpine will obtain a Hazardous Materials Storage Permit from the City prior to constructing or installing a hazardous materials storage facility at the site. A Hazardous Materials Business Plan will be submitted as part of the permit application. The permit application and HMBP must also be approved by the City for compliance with the City's Uniform Fire Code.

SECTION 8.0 BIOLOGICAL RESOURCES

This section describes the biological resources on or adjacent to the proposed project site. Section 8.1 describes legally protected species (i.e. Federal or State threatened or endangered species or State fully protected species). Section 8.2 identifies designated critical habitats including wetlands, vernal pools, riparian habitat, and preserves. Section 8.3, provides measures that Calpine will implement, if required, to mitigate potential impacts on biological resources.

8.1 Legally Protected Species And Their Habitats

The legally protected species and their habitats described in this report include listed species under the Federal and California Endangered Species Acts; California Fully Protected Species under the Fish and Game Code; and species identified in the Department of Fish and Game's California Natural Diversity Database (CNDDB). The species search area for the proposed Gilroy Phase 1 Project included a 1-mile radius around the site located on the Gilroy and Chittenden U.S. Geological Survey (USGS) topographic quadrangle (7.5-minute series).

In addition to the CNDDB, on March 28, 2001, Foster Wheeler Environmental consulted with the U.S. Fish and Wildlife Service (FWS) Sacramento Fish and Wildlife Office. On April 3 and 11, 2001, the FWS provided information on threatened and endangered species that may occur in Santa Clara County and on the Gilroy and Chittenden quadrangles.

8.1.1 Legally Protected Species and their Habitat On and/or Adjacent to the Site

The Gilroy Phase 1 Project site is located on a parcel of land currently owned by Basic American Foods. The parcel contains agricultural land currently used for growing test crops and several buildings including a wood-frame research building, an outbuilding, greenhouses, and storage areas. Several ornamental landscaped trees are located near the structures including redwood (*Sequoia sempervirens*), larch (*Thuja sp.*), and almond (*Prunus sp.*). The project site is bounded by the existing Gilroy Co-Gen to the north, a levee and the Llagas Creek to the east, agricultural fields to the south, and Gilroy Foods Warehouse and Distribution Center to the west.

The Llagas Creek is part of the Santa Clara Valley Water District (SCVWD) flood control channel and is located about 100 feet east of the site property. The levee separates the project site from the Llagas Creek. The banks of the Llagas Creek are vegetated with shrub and tree species including coast live oak (Quercus agrifolia), California buckeye (Aesculus californica), California sycamore (Platanus racemosa) Fremont cottonwood (Populus fremontii), and walnut (Juglans sp.).

A search of the CNDDB/RareFind, a publicly available biological resource computerized database, was conducted by Foster Wheeler Environmental on March 20, 2001. The results of the CNDDB/RareFind search revealed that one (1) special status biological resource is within the one-mile radius searched for the site, Least Bell's Vireo Nesting Area.

Least Bell's vireo (*Vireo bellii pustillus*) is a Federal and state listed endangered species. It is a summer resident of southern California and inhabits low riparian growth in the vicinity of water

or in dry river bottoms below 2,000 feet. Least Bell's vireo usually nests in willows (*Salix sp.*), baccharis (*Baccharis sp.*), and mesquite (*Prosopis sp.*) and they tend to situate their nests along the margins of bushes or on twigs projecting into pathways. In 1997, Least Bell's vireo was observed at a point along the Llagas Creek between Highway 152 and the Pajaro River confluence, east of Gilroy. Since the exact location of the 1997 observation was not known the CNDDB/RareFind has mapped this entire reach as potential nesting habitat for this species. The CNDDB/RareFind reports that the Llagas Creek consists of freshwater emergent wetland composed of willows, typhe, hemlock, black walnut, fennel, wild oats, rumex, coyote bush, mustard, and cockleburs. The surrounding land use consists of agriculture, sewage treatment, and food processing.

According to the information provided by the FWS, thirty (30) Federally listed proposed, and candidate species may occur in Santa Clara County in the Gilroy and Chittenden quadrangles. These species include 3 mammal, 7 bird, 3 reptile, 2 amphibian, 5 fish, 2 invertebrate, and 8 plant species. Table 8.1-1 lists the 30 species identified by the FWS and the habitat requirements for each species.

Table 8.1-1: Listed Species and Habitat Requirements for the Gilroy Phase 1 Project

Species (Status) a/	Habitat Requirements
Mammals	
Salt marsh harvest mouse (E), C(E), (FP) Reithrodontomys raviventris	Middle to upper levels of dense pickleweed stand in tidal and diked coastal salt marshes. Endemic to San Francisco Bay Area.
San Joaquin kit fox (E), C(T) *Vulpes macrotis mutica*	Desert and semiarid regions of the western U.S. and Mexico. Grasslands and other sparsely vegetated, shrubby habitats which allow easy mobility and good visibility of ground-dwelling prey species.
Riparian brush rabbit (E), C(E) Sylvilagus bachmani riparius	Abundant woody ground litter and few willows and areas of higher ground not subject to regular or heavy flooding.
Birds	
California brown pelican (E), C(E), (FP) *Pelecanus occidentalis*	Sea coasts and coastal islands.
California clapper rail (E), C(E), (FP) *Rallus longirostris obsoletus*	Upper to lower zones of coastal salt marshes dominated by pickleweed and cordgrass, brackish marshes, and tidal sloughs.
California least tern (E), C(E), (FP) *Sterna antillarum browni*	Coastal waters and beaches. Nesting is limited to San Francisco Bay colony and areas along the coast from San Luis Obispo County to Sand Diego County. Largest concentrations of breeding pairs nest in Los Angeles, Orange, and San Diego counties.
Marbled murrelet (T), C(E) *Brachyramphus marmoratus*	Nests in mature redwoods and Douglas fir forest and feeds in near shore waters. Dependent on old-growth forest for nest sites as far inland as 50 miles from the coast.
Western snowy plover (T) *Charadrius alexandrinus nivosus*	Coastal beaches and shallow alkaline lakes. Less common nesting habitat includes salt pans, coastal dredged spoil disposal sites, dry salt ponds, and salt pond levees and islands. Sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and beaches at river mouths are the preferred coastal habitats for nesting.
Bald eagle (T), C(E), (FP) *Haliaeetus leucocephalus*	Coastal bays, rivers, estuaries, and lakes with large, tall trees for nesting and roosting. Large cliffs near water are also used as nesting sites. Nearby wetland areas are necessary for feeding. Winter habitat along major rivers and reservoirs.

Table 8.1-1: Listed Species and Habitat Requirements for the Gilroy Phase 1 Project

Species (Status) a/	Habitat Requirements
Mountain plover (PT) *Charadrius montanus*	Large, flat grassland expanses with sparse, short vegetation, and bare ground, areas disturbed by prairie dogs, heavy grazing, or fire can also provide suitable habitat and plowed land also may be used by adults and broods in some areas. Preferred habitat often associated with blue grama or buffalo grass.
Reptiles	
San Francisco garter snake (E), C(E), (FP) *Thamnophis sirtalis tetrataenia*	Riparian habitats, wetlands or grasslands near ponds, marshes, and sloughs with dense reed or shrub cover surrounding the water and support large frog populations.
Alameda whipsnake (T), C(T) *Masticophis lateralis euryxanthus*	Coastal scrub and chaparral for cover, adjacent grassland for foraging habitat, and rock outcrops for basking. Required habitat includes over 400,000 acres in Alameda, Contra Costa, Santa Clara and San Joaquin Counties.
Giant garter snake (T), C(T) *Thamnophis gigas*	Marshes, sloughs, ponds, small lakes, shallow streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals that may be associated with rice fields.
Amphibians	
California red-legged frog (T) *Rana aurora draytonii*	Aquatic habitat for breeding but also uses a variety of other habitat types including riparian and upland areas. Dense, shrubby or emergent vegetation closely associated with deep-water pools with fringes of cattails and dense stands of overhanging vegetation such as willows
California tiger salamander (C) *Ambystoma californiense*	Annual grasslands and open woodlands of the foothills and valleys. Breeding sites are usually vernal ponds that fill during winter and may dry by summer.
Fish	
Tidewater goby (E) *Eucyclogobius newberryi*	Upper ends of lagoons with low salinity (less than 10 parts per thousand [ppt]) and with shallow (less than 3 feet deep) waters.
Chinook salmon Oncorhynchus tshawytscha Winter-run chinook salmon (E), C(E) Central valley spring-run chinook salmon (T), C(T) Central valley fall/late-fall run chinook salmon (C)	Freshwater streams and estuaries. Eggs are laid in deeper water with larger gravel, and cool water with good flow. Estuaries and their associated wetlands provide vital nursery areas. Wetlands that provide buffer in estuary areas from silt and pollutants and feeding and hiding areas.
Delta smelt (T), C(T) *Hypomesus transpacificus*	Brackish water with salinity ranges of less than 2 ppt and are rarely found at salinities greater than 14ppt. Found only in the Sacramento-San Joaquin Estuary – the area where the Sacramento and San Joaquin Rivers flow into San Francisco Bay. They have been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River and they extend downstream as far as San Pablo Bay.
Steelhead Oncorhynchus mykiss Central California coastal steelhead (T) South central California steelhead (T)	River reaches and estuarine areas, and adjacent riparian zones, in coastal river basins from the Pajaro River (inclusive) to, but not including, the Santa Maria River. Major river basins that contain spawning and rearing habitat comprise about 7,246 square miles in California. The following counties are partially or wholly within these basins (or contain migration habitat for the species): Monterey, San Benito, San Luis Obispo, Santa Clara, and Santa Cruz.
Sacramento splittail (T) *Pogonichthys macrolepidotus*	Primarily a freshwater species but can tolerate salinities as high as 10 to 18 ppt. Recently found most often in slow-moving sections of rivers and sloughs and dead-end sloughs. Require flooded vegetation for spawning and rearing and are frequently found in areas subject to flooding, such as the major flood basins distributed throughout the Sacramento and San Joaquin Valleys.
Inverterbrates	
Vernal pool fairy shrimp (T) *Branchinecta lynchi*	Small vernal pools (ephemeral freshwater habitats).
Bay checkerspot butterfly (T) *Euphydryas editha bayensis*	Open grasslands, stands of plantain (Plantago erecta), on soils derived of serpentinic rock with stable holes or cracks in the soils and surface rocks outcrops. Wetlands and topography with varied slopes and aspects.

Table 8.1-1: Listed Species and Habitat Requirements for the Gilroy Phase 1 Project

Species (Status) a/	Habitat Requirements
Plants	
Tiburon paintbrush (E), C(T) *Castilleja affinis neglecta*	Serpentine soil outcrops derived from ultramafic rocks such as Serpentinite, dunite, and peridotite. Soils tend to be shallow, rocky, and highly erodible and to have high concentrations of magnesium, chromium, and nickel and low concentrations of calcium, nitrogen, potassium, and phosphorus. This species occurs in serpentine bunchgrass communities on north to west facing slopes.
Coyote ceanothus (E) *Ceanothus ferrisae*	Serpentine soil outcrops derived from ultramafic rocks such as Serpentinite, dunite, and peridotite. Soils tend to be shallow, rocky, and highly erodible and to have high concentrations of magnesium, chromium, and nickel and low concentrations of calcium, nitrogen, potassium, and phosphorus. This species grows on dry slopes in serpentine chaparral.
Santa Clara Valley dudleya (E) *Dudleya setchellii*	Serpentine soil outcrops derived from ultramafic rocks such as Serpentinite, dunite, and peridotite. Soils tend to be shallow, rocky, and highly erodible and to have high concentrations of magnesium, chromium, and nickel and low concentrations of calcium, nitrogen, potassium, and phosphorus. This species is restricted to rocky outcrops within serpentine grasslands in Santa Clara County. It is found only in the Coyote Valley area, from San Jose south about 20 miles to San Martin, at elevations of 300 to 900 feet.
Metcalf Canyon jewelflower (E) *Streptanthus albidus albidus*	Serpentine soil outcrops derived from ultramafic rocks such as Serpentinite, dunite, and peridotite. Soils tend to be shallow, rocky, and highly erodible and to have high concentrations of magnesium, chromium, and nickel and low concentrations of calcium, nitrogen, potassium, and phosphorus. This species is Endemic to serpentine outcrops with little soil development.
Robust spineflower (E)* *Chorizanthe robusta*	Endemic to sandy and gravelly soils of coastal habitats in southern Santa Cruz and northern Monterey Counties.
Contra Costa goldfields (E)* *Lasthenia conjugens*	Vernal pools in open grassy areas of woodland and valley grassland communities that are covered by shallow water for extended periods during the cool season but completely dry for most of the warm season drought, at elevations up to 700 feet.
California seablite (E)* *Suaeda californica*	Found in association with the northern coastal salt marsh community around Morro Bay and occurs along the perimeter of the Bay where it is restricted to the upper intertidal zone within coastal marsh habitat.
Showy Indian clover (E)* *Trifolium amoenum*	Variety of habitats including low, wet swales, grasslands, and grassy hillsides up to 1,020 feet in elevation.

a/ Federal Status:
(E) Endangered - in danger of extinction.
(T) Threatened – likely to become endangered within the foreseeable future.
(E)* Endangered – possibly extirpated from the area.
(PT) Proposed for listing – Threatened.
(C) Candidate to become a proposed species.
California Status:
C(E) – State-listed as Endangered.
C(T) – State-listed as Threatened.
(FP) – Department of Fish and Game – Fully Protected Species.

Of these 30 species, 12 may occur in the Gilroy quadrangle (San Joaquin kit fox, bald eagle, mountain plover, California red-legged frog, tiger salamander, chinook salmon – winter-run, central valley spring-run, central valley fall/late-run, delta smelt, Sacramento splittail, bay checkerspot butterfly, Santa Clara valley dudleya, Metcalf Canyon jewelflower, and showy Indian clover) and 6 may occur in the Chittenden quadrangle (San Joaquin kit fox, marbled murrelet, bald eagle, California tiger salamander, steelhead - south central California, and bay checkerspot butterfly. San Joaquin kit fox, bald eagle, California tiger salamander, and bay

checkerspot butterfly are the only species that may occur in both the Gilroy and Chittenden quadrangles.

The San Joaquin kit fox (*Vulpes macrotis mutica*) is listed as a Federally endangered and state threatened species. It is a subspecies of the kit fox which the smallest member of the dog family in North America. San Joaquin kit fox inhabit grasslands and scrub lands that have been extensively modified by human activities, and they make extensive use of habitat fragments in urbanizing environments. Oak woodland, alkali sink-scrub land, vernal pool, and alkali meadow communities also provide habitat for kit foxes.

Dens are scarce in areas with shallow soils due to the proximity to bedrock, high water tables, or impenetrable hardpan layers. Kit foxes construct their own dens, but they can also enlarge or modify burrows constructed by other animals, such as ground squirrels, badgers, and coyotes. They have been known to den in human-made structures, such as culverts, abandoned pipes, and banks in roadbeds. Most kit fox dens, especially natal and pupping dens, have at least two entrances. San Joaquin kit foxes primarily feed on nocturnal rodents, ground squirrels, cottontails, ground-nesting birds, insects, and vegetation, especially grasses.

Although no extensive survey has been conducted of the historical range, kit foxes are thought to inhabit suitable habitat on the San Joaquin Valley floor and in the surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi Mountains. They occur in the interior basins and ranges in Santa Clara County as well as sever other nearby counties.

As described in Table 8.1-1, the habitat requirements of Bald eagle (*Haliaeetus leucocephalus)* include coastal areas; rivers or lakeshores vegetated with large, tall trees as well as man-made reservoirs. Bald eagle is a Federally threatened, state endangered, and Department of Fish and Game fully protected species. The California tiger salamander (*Ambystoma californiense),* a candidate for listing, is restricted to grasslands and low-elevation foothill regions where it uses seasonal aquatic habitats for breeding.

In addition to the Federal and state listed species described above there is a potential for transient Western burrowing owl (*Athena cunicularia hypugaea*), a Federal and state species of special concern, to occur in the vicinity of the proposed project site. Western burrowing owls are typically found in open, dry grasslands, agricultural and range lands, and desert habitats often associated with burrowing animals. They also inhabit grass, forb, and shrub stages of pinyon and ponderosa pine habitats. Burrowing owls commonly perch on fence posts or on top of mounds located outside their burrows. They can be found at the edges of airports, golf courses, and in vacant urban lots. According to the CNDDB/RareFind search, burrowing owl burrow sites occur in the Gilroy and Chittenden quadrangles. The closest burrow site is about 5.1 miles from the project site, south-southeast of Gilroy and about 1.7 miles south-southeast of the Highway 25 crossing over the Pajaro River.

Bay checkerspot butterfly (*Euphydryas editha bayensis*) habitat occurs on shallow, serpentine derived, or similarly droughty or infertile soils, which support the butterfly's larval food plants as well as nectar sources for adults. Serpentine soils are high in magnesium and low in calcium, and are a strong indicator of habitat value for the butterfly. The butterfly is usually associated with

dwarf plantain in grasslands on serpentine soils, such as soils in the Montara series. In Santa Clara County, the Inks and Climara soil series are related soils and often have inclusions of Montara. Henneke and other serpentine soils also occur within the range of the butterfly. However, bay checkerspot is also capable of living in nonserpentine soil areas.

The bay checkerspot's life cycle is closely tied to host plant biology. Host plants germinate anytime from early October to late December, and senesce (dry up and die) from early April to mid-May. Most of the active parts of the bay checkerspot life cycle also occur during this period. The primary larval host plant of the bay checkerspot is dwarf plantain (Plantago erecta) which is an native annual plantain. Secondary host plants such as purple owl's-clover (Castilleja (Orthocarpus) densiflora) and exserted paintbrush (Castilleja exserta (Orthocarpus purpurascens)) may be used by bay checkerspot larvae when dwarf plantain dries up. Nectar plants commonly used by adult butterfly's include desert parsley (Lomatium spp), California goldfields (Lasthenia californica), tidy-tips (Layia platyglossa), and Muilla maritima.

Based on observations made by Foster Wheeler Environmental during its March 16, 2001 site visit, the project site (existing agricultural research land/research building, out-buildings, greenhouses, and storage areas) does not contain, nor is expected to support, any legally protected species and/or their habitat. However, Llagas Creek, located about 100 feet east of the project site, could contain or support Least Bell's vireo nesting habitat. In addition, the FWS reports that San Joaquin kit fox, bald eagle, California tiger salamander, and bay checkerspot butterfly could occur in both project area quadrangles. Burrowing owl burrow sites also occur on the project quadrangles. Given kit fox's preference for non-disturbed and disturbed habitats, that are similar to those adjacent to the project site, there is a potential for transient San Joaquin kit fox to be encountered during construction of the proposed project. Bald eagle could also occur as a transient flyover species. However, it is unlikely that bald eagle would utilize the project site, or adjacent sites, since its preferred habitat does not exist. Neither California tiger salamander or Bay checkerspot butterfly habitat were observed on or adjacent to the Gilroy Phase 1 Project site.

8.1.2 Potential Off-Site Impacts of Air Emissions on Habitat

Calpine will operate three (3) simple cycle natural gas-fired combustion turbines. The resulting exhaust gases will discharge to the atmosphere through 80-foot-tall exhaust stacks. Emissions of criteria pollutants from the three (3) exhaust stacks will include NO_x, sulfur oxides (SO_x), and particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}). In addition, emissions of ammonia (NH_3) will occur as a byproduct of the Selective Catalytic Reduction (SCR) technology used to limit emissions of NO_x.

None of the resultant concentrations would be at levels that would produce direct adverse affects on the physical aspects or physiological function of vegetation or soils in the area. However, nitrogen deposition on serpentine soils resulting from the emissions of nitrogen compounds could increase the growth of non-native grasses, and as a result, could potentially have an adverse cumulative impact on the serpentine plant communities and endemic species in the area. This section assesses that potential.

The potential for impacts from nitrogen deposition on serpentine soils and the associated plant and animal resources that they support depends on the following:

- Nitrogen deposition rates
- Response of non-native species to nitrogen fertilization

8.1.3 Nitrogen Deposition Rates

8.1.3.1 Chemical Transformation of NO_x Emissions

The oxidation of nitrogen oxides is a complicated process that can include a large variety of nitrogen species, such as nitrogen dioxide (NO_2), nitric acid (HNO_3) and organic nitrates (RNO_3) such as peroxyacetylnitrate (PAN). Atmospheric chemical reactions that occur in sunlight result in the formation of ozone and other compounds. Depending on atmospheric conditions, these reactions can start to occur within several hundred meters of the original NO_x source, or after the pollutants have been carried tens of kilometers downwind. Ultimately, some nitrogen oxides are converted to nitric acid vapor or particulate nitrates. Precipitation is one mechanism that removes these pollutants from the air. Forms of atmospherically derived nitrogen are removed from the atmosphere by both wet deposition (rain) or dry deposition (direct uptake by vegetation and surfaces).

Ammonia and ammonium are other forms in which nitrogen occurs. Ammonia is a gas that becomes ammonium when dissolved in water, or when present in soils or airborne particles. Unlike NO_x, which forms during combustion, soil microorganisms naturally form ammonia and ammonium compounds of nitrogen and hydrogen.

In urban atmospheres, the oxidation rate of NO_x to HNO_3 is estimated to be approximately 20 percent per hour, with a range of 10 to 30 percent per hour (CARB, 1986). Aerosol nitrates (NO_3) are present, mainly in the form of ammonium nitrate (NH_4NO_3). Nitrate and ammonium (NH_4) are the predominant forms by which plants absorb nitrogen. In California, ammonium nitrate is the predominant airborne nitrate-bearing particle in the atmosphere (CARB, 1986).

8.1.3.2 Modeling Assumptions

The dispersion model, called the Industrial Source Complex Short Term, Version 3 (ISCST3) was used in this deposition analysis. ISCST3 is a steady-state, mass-conserving, nonreactive (i.e., no chemistry) Gaussian plume dispersion model. All three (3) turbines were modeled to assess nitrogen impacts. The three turbine exhaust stacks were merged into one stack for this analysis.

To produce conservative results (overestimates), modeling assumptions regarding the complex chemistry that occurs to produce nitrogen from NO_x, ammonia, and other pollutants were used in this modeling analysis. As one example, it was assumed that the pollutants leaving the stack(s) would already be in the form of depositional nitrogen (nitrate and ammonium ions). Thus, all impacts would represent 100 percent conversion of combustion emissions into depositional nitrogen. This assumption leads to an exceedingly conservative estimation of nitrogen deposition, because areas with the highest nitrogen emissions do not necessarily experience the

greatest deposition effects, which usually occur far from the original nitrogen source. In addition, since mass is conserved in the model, all downwind calculations of nitrogen deposition, regardless of distance and formation rates, are overestimated by the model.

The ISCST3 model calculates atmospheric deposition of nitrogen by calculating the wet and dry fluxes of total nitrogen. This deposition is accomplished by using a resistance model for the dry deposition part, and by assigning scavenging coefficients for the wet removal process from rainout. As discussed below, depositional parameters are input into the model in order to calculate the deposition of nitrogen. Again, depositional parameters were based on HNO_3, which is consistent with the conservative modeling assumptions that overestimate the amounts of nitrogen deposition from the proposed project. Nitric acid tends to deposit more readily than most other compounds.

8.1.3.3 Nitrogen Deposition Mechanisms

The ISCST3 wet and dry deposition modeling for gaseous pollutants is based on the algorithm contained in the CALPUFF dispersion model (USEPA, 1995), which Moore, et al, reviewed and evaluated (1995). The deposition flux, F_d, is calculated as the product of the concentration, χ_d, and a deposition velocity, v_d, computed at a reference height z_d:

$$F_d = \chi_d \bullet v_d$$

The dry deposition algorithm is based on an approach that expresses the deposition velocity as the inverse sum of total resistance. The resistance represents the opposition to transporting the pollutant through the atmosphere to the surface. ISCST3 incorporates several resistance models that include aerodynamic resistance, canopy resistance, cuticle resistance, deposition layer resistance, mesophyll resistance, and stomatal action.

With wet deposition, gaseous pollutants are scavenged by dissolution into cloud droplets and precipitation. A scavenging ratio approach was used to model the deposition of gases through wet removal. In this approach, the flux of material to the surface through wet deposition (Fw) is the product of a scavenging ratio times the concentration, integrated in the vertical direction. Because the precipitation is assumed to initiate above the plume height, a wet deposition flux is calculated, even if the plume height exceeds the mixing height.

8.1.3.4 Model Inputs

In order to model gaseous deposition, the following inputs are required:

- The molecular diffusivity for the pollutant being modeled [cubic centimeters per second (cm^2/s)]
- The solubility enhancement factor (a_*) for the pollutant
- The pollutant reactivity parameter
- The mesophyll resistance term (r_m) for the pollutant (s/cm),

- The Henry's Law coefficient for the parameter

For this analysis, it as assumed that the deposition parameters would be based on gaseous nitric acid. Nitric acid was chosen to represent total nitrogen deposition since nitric acid has the greatest potential for depositional effects. The deposition parameters were obtained from the CALPUFF modeling system.

The analysis focused on both land and water deposition rates. The Alphas and Henry parameters are only used when applying the algorithm over a water surface. If no water surfaces were present in a particular application, then dummy (non-zero) values were input for Alphas and Henry.

In addition to the above inputs, the dry and wet deposition algorithm also requires surface roughness length (cm), friction velocity (meters per second), Monin-Obukhov length (meters), leaf index ratio, precipitation type, and precipitation rate. Site-specific meteorology was used in this analysis and was based on the 1993 data set collected at the project site in Gilroy.

Many different vegetative land use types surround the project site, predominately rangeland and agricultural. Most of the serpentine areas are in rangeland (on hillsides), so land use characteristics were defined to model deposition, including the surface roughness length, leaf-area index, and plant-growth state. For roughness lengths, domain-averaged values for agricultural land and rangeland for both an active growing season and an inactive season were identified. Leaf area indices were also based on domain-averaged values for an active growing season and an inactive/dormant season. To calculate nitrogen deposition velocities, the state of the vegetation must also be specified and was based on two primary seasons (growing and inactive/dormant).

This approach was used to develop conservative, worst-case scenarios to evaluate potential nitrogen deposition on the serpentine habitats (rangeland). The following two scenarios were used in the assessment of nitrogen depositional fluxes:

Scenario 1: Rangeland—active growing season

- Period: November 1 through June 30
- Vegetation state: active and stressed (nonirrigated)
- Roughness length = 0.05 meter
- Leaf area index = 0.5

Scenario 2: Rangeland—inactive season

- Period: July 1 through October 31
- Vegetation state: inactive
- Roughness length = 0.05 meter
- Leaf area index = 0.2

In addition to these scenarios, depositional parameters based on HNO_3 were used in ISCST3:

- Molecular diffusivity (cm^2/sec) = 0.1628
- Alpha star = 1.0
- Reactivity parameter = 18.0
- Mesophyll resistance (seconds per centimeter) = 0.0
- Henry's law coefficient = 0.0
- Scavenging coefficient [LIQ] 1/(s-mm/hr) = 0.60E-04
- Scavenging coefficient [ICE] 1/(s-mm/hr) = 0.00E+00

ISCST3 calculates depositional flux at user-specified locations, called receptors. Receptors were placed at 1000-meter intervals in sensitive serpentine habitats as identified by Dr. Stuart Weiss. These areas are indicated in Figure 1 and occur north of the project site along the Coyote Ridge. The use of 1000-meter resolution produced more than 122 locations where deposition was calculated in the model.

8.1.3.5 Nitrogen Deposition Modeling Results

Results of the nitrogen deposition modeling for the two scenarios were summed (growing season plus inactive season) to produce annual deposition rates in units of kilograms per hectare per year (kg/ha-yr). Since the serpentine areas cover a wide variety of elevations and distances, the deposition rate calculated for each receptor was averaged over the serpentine area(s).

Table 1 presents the worst-case modeled potential maximum annual deposition rates resulting from operation of the proposed project, within the Coyote Ridge serpentine habitat north of the site. Potential deposition rates on Coyote Ridge are extremely small (see Table 1). Cumulative deposition rates that may result from operation of the proposed project were calculated as the sum of deposition from the project, plus background estimates (Weiss, 1999). However, actual cumulative deposition rates are difficult to determine, given the uncertainty of the background estimates (± 50percent) and the historical changes in background pollution levels.

TABLE 1
Modeled Maximum Nitrogen Deposition at Serpentine Locations in the Vicinity of the Gilroy Power Plant
Impact Analysis for NO_x and NH_3 Emissions

Location[a]	Modeled Deposition from Gilroy Power Project Averaged Over Serpentine Areas (kg/ha)			Potential Cumulative Deposition (kg/ha-yr)[b]
	Active season	*Inactive season*	*Annual*	
Coyote Ridge	0.00257	0.00246	0.00503	12.505

[a] Serpentine areas= rangeland.

[b]Background plus maximum modeled annual deposition from project. Background is approximately 12.5 kg/ha-yr (Weiss, 1999). The uncertainty of this estimate is ±50 percent.

8.1.4 Response of Non-native Species to Nitrogen Fertilization

Nitrogen fertilization of soil increases nitrogen absorption by plant roots and, consequently, increases the growth rate and biomass production of many species, including the non-native annual grass species that tend to invade native California grasslands. As previously discussed, the endemic serpentine vegetation is particularly sensitive to competition from annual grasses. When soils are fertilized by artificial nitrogen sources, those nitrogen sources are available to all plant species. However, non-native grasses usually have more vigorous growth habits than serpentine species. When land is adequately fertilized for non-natives, these species easily out-compete serpentine species. The threshold of annual nitrogen deposition rates that can potentially cause such impact on sensitive plant communities is approximately 3 to 10 kg/ha-yr (USDA, 1992). Increased fertilization and subsequent succession of endemic serpentine species by non-native grasses currently occurs within serpentine grasslands throughout the Bay Area. Cattle grazing in these habitats has become an important practice to minimize the growth of non-native grasses and to increase the survival potential of endemic serpentine plant species, thereby preserving habitat for endemic invertebrate species such as the threatened Bay checkerspot butterfly.

Nitrogen deposition must be converted to plant-available forms of nitrogen to affect plant nutrition. Absorption of NO_3 and NH_3 by plant roots is the predominant mode of plant nitrogen nutrition, but a relatively small amount of NH_3 and NO_2 can be absorbed by plant foliage (Marschner, 1995).

Plant response to additions of nitrogen fertilization depends not only on the total amount of nitrogen available, but also on the distribution of total supply over time. When added to soil, inorganic forms of nitrogen (mainly NH_4-N and NO_3-N) can be stored, transformed, or removed. Soil processes that reduce the amount of inorganic nitrogen available for plant use include:

- Immobilization of inorganic NH_3 and NO_3 into organic forms occurs through microbial use and plant uptake, and mineralization of organic matter. A portion of the NH_4 and NO_3 is taken up by plants and immobilized into organic forms. In natural soil-plant systems, most of the total nitrogen is in the organic form (in plants and microorganisms). Some of the nitrogen in the soil-plant system can be removed by grazing animals or through harvesting and removing vegetation. As organic matter mineralizes, amino acids decompose to NH_4.
- Gaseous loss of nitrogen occurs through NH_3 volatilization.
- Ammonium can eventually be converted to NO_3 by the microbial process of nitrification in the soils.
- Leaching of NO_3 occurs below the root zone of plants.
- Denitrification of NO_3 and gaseous loss of elemental nitrogen (N_2) and NO_x occurs.

As a result of the processes, not all of the nitrogen added to the soil during each deposition event is available for plant use.

The maximum potential nitrogen deposition rates that have been estimated for serpentine areas (Table 1) are small compared to the nutritional nitrogen requirement of non-native grasses. Therefore, in areas where ambient nitrogen depositions rates are well below the threshold for adverse impacts on serpentine community (3 to 10 kg N/ha-yr) (USDA, 1992), the potential for deposition from the Gilroy Power Plant operation to initiate transformation of serpentine habitat is unlikely. Background nitrogen deposition rates in the South Bay Area are estimated to be about 7 kg/ha-yr (Blanchard, et al., 1996) and 12 to 15 kg/ha-yr (Weiss, 1999). Because these estimates indicate that current deposition rates probably are above the 3- to 10-kg/ha-yr threshold, conditions for impacts on serpentine communities in these areas most likely already exist, so the potential incremental impact of the proposed operation is insignificant given the small increase (0.00503 kg/ha-yr) in depositional species.

8.2 Designated Critical Habitats

Designated critical habitats discussed in this report include wetlands, vernal pools, riparian areas, and preserves on or adjacent to the proposed site. A survey for designated critical habitats was made by Foster Wheeler Environmental during the site visit of March 16, 2001.

8.2.1 Designated Critical Habitats On or Adjacent to the Site

No wetlands, vernal pools, riparian areas, or preserves were observed on the project site. As indicated in the CNDDB/RareFind report and as observed during the March 16, 2001 site visit, Llagas Creek and its associated wetland and riparian habitats occur about 100 feet east of the project site. Since construction of the project will take place within ConAgra's existing agricultural/developed site, impacts on the Llagas Creek wetland and riparian habitats are not anticipated.

8.3 Proposed Mitigation – If Required

Mitigation of biological resources will not be required for Calpine's Gilroy Phase 1 Project since legally protected species and/or their habits or designated critical habitats will not be impacted on the proposed project site. However, as indicated in the CNDDB/RareFind report, there is a potential for Least Bell's vireo and/or its nesting habitat to occur in the project area. To ensure that Llagas Creek and its associated critical habitats will be protected, Calpine will not clear vegetation from this area, and will install soil erosion controls to protect the riparian habitat along Llagas Creek,

Since there is a potential for transient San Joaquin kit fox to be encountered during construction of the proposed project, Calpine will implement the FWS's April, 1997 *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance*. To minimize potential construction disturbances to transient San Joaquin kit foxes, the following protection measures will be implemented:

- limit or cluster project features to the smallest area possible;
- restrict all project-related vehicular traffic to established roads, construction areas, and other designated areas and observe a 20-mph speed limit;

- minimize nighttime construction activities;
- cover all excavated, steep-walled holes or trenches more than 2 feet deep with plywood or similar material, at the close of each work day or provide 1 or more escape ramps constructed of earth fill or wooden planks;
- thoroughly inspect holes or trenches prior to filling for trapped animals as well as construction pipes, culverts, or similar structures with a 4-inch or more diameter before burial;
- dispose of all food-related trash items in a closed container and remove the container from the construction site for disposal at least once per week;
- no firearms, dogs, or cats should be allowed on the project site;
- restrict the use of rodenticides and herbicides in the project area;
- conduct an employee education program on kit fox biology and legislative protection of this species;
- restore areas of temporary ground disturbances; and
- contact the FWS should any San Joaquin kit foxes be trapped, inadvertently injured, or killed.

Should any of the other species described above, or any other Federal or state threatened or endangered species, or state fully protected species be encountered during construction of the Gilroy Phase 1 Project, appropriate mitigation measures will be developed by a qualified biologist, in consultation with the CEC. These mitigation measures will be implemented to avoid impacts to legally protected species.

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SECTION 9.0 LAND USE, ZONING AND PLANNING

This section provides a discussion of land use at the City of Gilroy project site and assesses the potential effects of the proposed peaking power project construction and operation on existing land use. Section 9.1 discusses the local land use restrictions implemented by the City of Gilroy, focusing on zoning. Section 9.2 discusses the use of the project parcel and the parcels adjacent to the site. Section 9.3 identifies the ownership of parcels within 500 feet of the project site. Section 9.4 provides demographic information for the census tract in which the project is located.

9.1 Local Land Use Restrictions (Zoning)

The site of the proposed generating facility is zoned General Industrial (M-2) according to the City's Zoning Map (9/8/00) and has the designation of General Industrial according to the City of Gilroy General Plan Map (1/7/98). According to the City of Gilroy Zoning Ordinance the intent of the M2 General Industrial District is *"to provide areas in the City suitable for large scale manufacturing, assembly, storage, distribution and wholesaling of materials"*. The Ordinance also indicates that *"M2 General Industrial Districts should be located in areas with good transportation access"*. The project site is situated along Pacheco Pass (Route 152) within a mile of the interchange of State Highway 101.

Permitted Uses and Conditional Uses: Permitted and conditional uses within the M2 General Industrial District include a wide range of industrial and manufacturing operations listed in the Industrial Use Table of the City of Gilroy Zoning Ordinance. Although power generation is not a listed use, the nature of the proposed project is consistent with the permitted uses cited. Furthermore, the Ordinance stipulates that *"the Planning Commission, or its designee, shall determine, upon written request, whether or not any use not listed in the Industrial Use Table is similar in character to a described use for the purpose of applying the district regulations and conditions"*.

Site and Building Requirements: The City of Gilroy Zoning Ordinance stipulates lot coverage, height and additional requirements within the General Industrial District. The proposed project lot coverage will be less than 60% (the limit in the zoning district), and the stack, which is the tallest structure, will be 80 feet. Building height is limited to 75 feet within the M2 district. The Ordinance does not address stacks, but it does stipulate height limits for rooftop antennas. The City of Gilroy Ordinance states that *"Except for residential districts, the maximum height for an antenna structure may exceed the maximum height limit for the zoning district in which it is located by no more than fifteen (15) feet"*. Using this criterion, the tallest allowed structure in the M2 District would be 90 feet. At 80 feet, the stack is less than the maximum allowed structure height for the M2 District.

Additional requirements for parking are described in Section 11 of this application, Traffic and Transportation. The requirements for fences and obstructions as well as landscaping are addressed in Section 15, Visual Resources. The Performance Standards cited in Section 41 of the City of Gilroy Ordinance address hazardous material storage and noise and which are addressed in detail within Sections 7.0, Hazardous Materials and Section 6.0, Noise, respectively.

Conversations with the City of Gilroy Planning Office (April 2001) indicated that the only potentially applicable planning policies would be the Consolidated Landscaping Policy and the Industrial Design Guidelines. The primary requirements of the Landscaping Policy were described to be landscaping of half of the front yard setback and landscaping along a 5-foot perimeter at the site property boundary. Since the site is not on a public road, these requirements do not apply. The primary requirement of the Industrial Design Guidelines is to provide some type of relief to the façade. Since the proposed structures would not be highly visible this type of design guideline is limited in its application to this project.

9.2 Use Of Adjacent Parcels

Figure 9-1 is an aerial photograph that shows land use on the site and surrounding area. The parcel proposed for development is currently in agricultural use for growing test crops and contains a wood-frame research building, an outbuilding, greenhouses and storage areas, all of which will be removed as part of project construction. Some ornamental landscaping exists near the existing structures. The project site is bounded by the Gilroy Co-Gen to the north, a levee and Llagas Creek to the east, agricultural fields to the south, and the Gilroy Foods Warehouse and Distribution Center to the west.

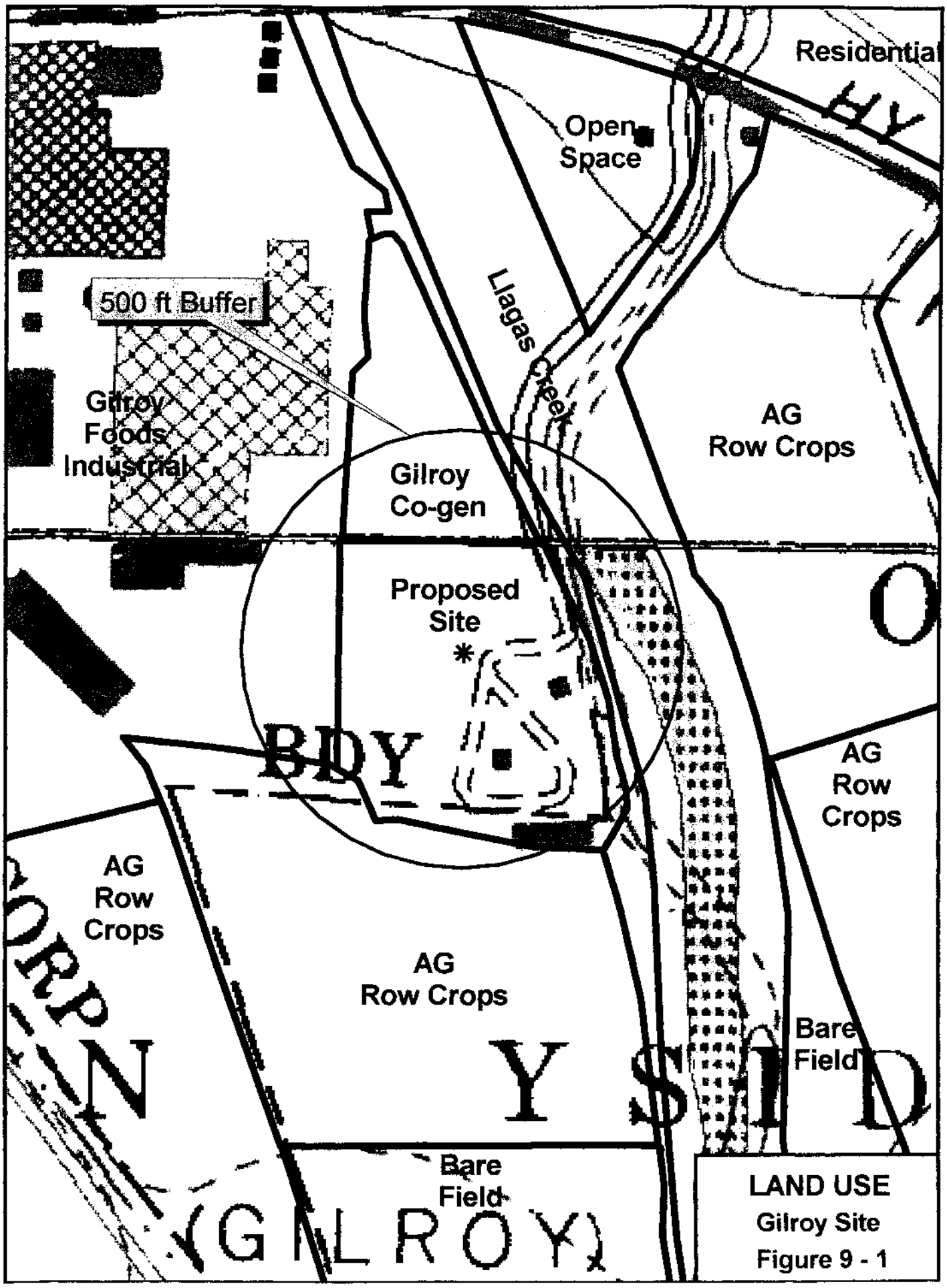
As shown on the aerial photograph adjacent land use is dominated by industrial development associated with Gilroy Foods and the existing Gilroy Co-Gen Facility. The remaining land use adjacent to the site is in agricultural use. The closest residential area is located north of the site across Route 152.

9.3 Ownership Of Adjacent Parcels

The names and addressed of all property owners within 500 feet of the project site, are provided in Section 2.3.

9.4 Demographics Of Census Tract Where Project Is Located

The most recent complete set of demographic data by census tract is the 1989 and 1990 census data. The 2000 census data for the state of California was recently released but economic data is not yet included. The proposed project site is located within the census tract 5126.02 as defined by both the 1990 and 2000 census. According to the US Census Bureau, census tracts are small, relatively permanent statistical subdivisions of a county. Census tracts usually have between 2,500 and 8,000 persons and, when first delineated, are designed to be homogenous with respect to population characteristics, economic status, and living conditions. Census tracts do not cross county boundaries. The spatial size of census tracts varies widely depending on the density of the settlements and census tract boundaries are revised occasionally when large population growth requires splitting a census tract or when substantial population decline requires that census tracts be combined.



LAND USE
Gilroy Site
Figure 9 - 1

The 1990 census tract 5126.02, in which the proposed project site is located, reflects a 1990 population of 2,924 persons. Of this total population the racial breakdown is as follows: 2,326 are White, 28 black, 4 American Indian, 53 Asian, and 513 identify as other race(s); however, 1,492 of the total also identify as persons of Hispanic origin. The median household income in 1989 was $35,357 and 21.2 percent of the total population were below the poverty level in 1989.

In the 2000 census the project site is also located in census tract 5126.02, reflecting a 2000 population of 3,137 persons. Table 9-1 provides 2000 census data.

Table 9-1: 2000 Census Data

Geographic area	Total Population	Race								Hispanic or Latino (of any race)
		One race							Two or more races	
		Total	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race		
Tract 5126.02	3,137	2,947	1,710	11	38	137	3	1,048	190	1,768

In addition to the census tract data provided above, the Demographic Research Unit of the California Department of Finance provides demographic data by city. Please note those census tracts and city boundaries are not consistent which is why the following data cannot be directly compared to the census tract data. It is provided for reference only.

Table 9-2: California Department Of Finance, Demographic Research Unit Census 2000, Incorporated Cities

Geographic Area	Total Population	White	Hispanic	Black	American Indian	Asian	Pacific Islander	Other	Two or more races
City of Gilroy	41,464	15,767	22,298	615	193	1,658	74	58	801

Additionally, Table 9-3 depicts the population change within the City of Gilroy from 1990 – 2000 on the basis of the California Department of Finance demographic data for the incorporated city.

Table 9-3: Population Change 1990 – 2000

City of Gilroy	1990 Population	2000 Population	Numeric change	Percent change
	31,487	41,464	9,977	31.7

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SECTION 10.0 PUBLIC SERVICES

This section provides a discussion of fire protection for the proposed project. Section 10.1 addresses contact with the local Fire District regarding their ability to serve the proposed project and Section 10.2 addresses the location of the nearest fire station.

10.1 Ability To Serve Letter From Fire District

Appendix E contains a letter from Calpine to the City of Gilroy Fire District requesting a letter showing their ability to serve the proposed project.

10.2 Nearest Fire Station

The location of the nearest fire station to the project site is the City of Gilroy Fire Department located approximately 1.5 mile (7,000 feet) west of the project site at 7070 Chestnut Street, at the corner of Chestnut and 9th Street. This location is also the Fire Station Headquarters.

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SECTION 11.0 TRAFFIC AND TRANSPORTATION

This section presents the potential effects on traffic and transportation resulting from construction and operation of the proposed project. Section 11.1 addresses the existing level of service (LOS) of surrounding roads. Section 11.2 addresses the Traffic Control Plan for the facility construction. Section 11.3 discusses the potential impact of linear facility construction. Section 11.4 discusses the equipment transport route and Section 11.5 identifies parking requirements for construction and operation.

11.1 Level Of Service (LOS) Measurements On Surrounding Roads –A.M. And P.M. Peaks

The primary state highways and local routes that could provide access to the proposed project consist of the following: 1) U.S. 101 to Highway 152 with access to the site via the existing Gilroy paved parking lot property, or 2) U.S. 101 to Highway 152 to an easement on Santa Clara Valley Water District (SCVWD) property with site access on the eastern side of the site. The 101/152 interchange is currently used by truck traffic from U.S. 101 to the warehouse operations and facilities associated with Gilroy Foods and the existing Gilroy Go-Gen Facility. Figure 1-2, previously provided in Section 1, Project Description, depicts the Gilroy local roadway network. The following descriptions of the regional roads and access-ways, are provided:

U.S. 101: A four lane north-south state freeway that provides regional access for the City of Gilroy and provides statewide and interstate access for the movement of people, goods and services. U.S. 101 also carries a significant amount of inter-regional automobile and truck traffic. Full interchange access on U.S. 101 is provided at Highway 152 (Pacheco Pass).

Highway 152: A two lane east-west state State Route that provides regional access for the City of Gilroy and currently provides access to the existing Gilroy Co-Gen Facility. This Highway is also the primary route between U.S. 101 and Interstate 5. This Highway is proposed for construction improvements scheduled to begin November 2002 and end August 2003.

SCVWD Easement: An unpaved easement providing access to the Santa Clara Valley Water District Sewage Disposal Ponds situated roughly 1 mile south of the proposed project. Not a public way.

In addition to the roadway and access way descriptions provided above, there are three roadway intersections that could experience temporary increases in traffic volume during project. For each of these three intersections information was obtained from a January 2001 Traffic Impact Analysis performed by RBF Consulting for a proposed R.V. Park and submitted to the City of Gilroy.

"U.S. 101 Southbound Ramps/10th Street. West of U.S. 101, 10th Street is a four-lane divided roadway. Approaching the intersection from the west, 10th Street has a raised median that converts to a striped median to allow for dedicated left turn pockets. The intersection of U.S. 101 Southbound Ramps is the only signalized intersection along the study corridor. Westbound, two through lanes and a dedicated left turn lane with protected left turn phasing is provided.

Eastbound, two through lanes are provided. A dedicated right turn lane is provided to access the southbound U.S. 101, but the ramp is located west of the signalized intersection. On the southbound approach, a dedicated left turn lane, a shared left/through lane and a dedicated right turn lane are provided.

U.S. 101 Northbound Ramps/Pacheco Pass (Highway 152). 10th Street-Pacheco Pass crosses over U.S. 101. Between the northbound and Southbound Ramps, 10th Street-Pacheco Pass is a four-lane roadway. The intersection of U.S. 101 Northbound Ramps/Pacheco Pass (Highway 152) is stop controlled on the northbound approach. Eastbound and westbound, two through lanes are provided. On the eastbound approach, U.S. 101 northbound is accessible via a loop ramp located to the west of the intersection. Therefore the eastbound right turn vehicles do not impact the operations of the intersection. On the westbound approach, U.S. 101 northbound is accessible via a slip ramp, located east of the intersection. Northbound one dedicated right turn lane and one dedicated left turn lane is provided.

Brem Lane-Renz Lane/Pacheco Pass(Highway 152). East of Brem Lane, Pacheco Pass narrows to a two-lane highway. On the eastbound approach, a striped shoulder is provided for truck pull-off. Renz lane and Brem Lane are two-lane, unstriped local roadways. At the stop controlled intersection of Brem Lane-Renz Lane/Pacheco Pass (Highway 152), a dedicated left turn lane, one through lane and a shared through/right turn lane are provided on the eastbound and westbound approaches. On the northbound and southbound stop-controlled approaches, one lane is provided that serves as a shared through/left/right turn lane."

One major aspect of traffic analysis is the level of service (LOS) for roadways and intersections. LOS classifications are based on the amount of traffic and roadway capacities. The LOS scale ranges from A to F with Level A representing stable or free flow conditions and Level F representing forced or jammed conditions. LOS A, B, and C are considered satisfactory to most motorists, while LOS D is marginally acceptable. As stated in the RBF Traffic Impact Analysis Report, the City of Gilroy threshold for acceptable LOS is LOS C or better. However, review of the 1994 Santa Clara County General Plan indicates that many areas in Santa Clara County are currently operating at LOS E or F but the Plan "establishes LOS D as a goal to be achieved whenever practical".

Table 11-1 provides a summary of Average Daily Traffic Volume (ADT) and Level of Service (LOS) as excerpted from the 2001 RBF Study. It should be noted that RBF collected data on Friday December 8, 2000 and since December is outside the peak travel season, the existing counts were adjusted using historical data to reflect peak season counts. The Study indicates that the City of Gilroy experiences peak traffic conditions during the summer months when tourism and agricultural activities are at their highest and heavy vehicle activity can exceed 20 to 25 percent of the total traffic in the vicinity of U.S. 101. For this reason, Table 11-1 and 11-2 provide the results of the RBF Study's intersection and roadway segment LOS as based on the adjusted peak hour intersection and roadway segment volumes in order to be representative of summer (peak season) traffic conditions.

Table 11-1: Existing Conditions – Peak Hour Intersection LOS

Study Intersection	Traffic Control	A.M. Peak Hour LOS	P.M Peak Hour LOS
U.S. 101 SB Ramps/10th Street	Signal	B	B-
U.S. 101 NB Ramps/Highway 152	One-Way Stop	C	F
Renz Ln.-Brem Ln./Highway 152	One-Way Stop	E	F

Note: (a) – One-way stop controlled intersection, average delay of most constrained movement reported. Bold indicates unacceptable LOS.

As shown in Table 11-1, the signalized intersection of U.S. 101 SB Ramps/10th Street operates at an acceptable LOS in both the a.m. and p.m. peak hours. In the p.m. peak hour, the unsignalized intersections of U.S. 101 NB Ramps/Pacheco Pass (Highway 152) and Renz Lane-Brem Lane/Pacheco Pass (Highway 152) both operate at unacceptable LOS D or worse.

Table 11-2: Existing Conditions –Roadway Segment LOS

Roadway segment	A.M Peak Hour		P.M. Peak Hour	
	Eastbound LOS	Westbound LOS	Eastbound LOS	Westbound LOS
10th Street – West of U.S. 101 SB Ramps	A	B	B	A
Highway 152 – East of U.S. 101 SB Ramps	B	A	C	A
Highway 152 – East of U.S. 101 NB Ramps	A	A	B	A`
Highway 152 – East on Renz Lane – Brem Lane	A	A	B	A

Note: LOS based on 1994 HCM Multilane Highway Operational Analysis. Bold indicates unacceptable LOS.

As shown in Table 11-2, all study roadway segments operate at an acceptable LOS C or better in the a.m. and p.m. peak hours.

1999 CalTrans Data for U.S. 101 and Highway 152 are provided in Tables 11-3 and 11-4, respectively. For Highway 152 in Table 11-3 there is a break in the route as it crosses Highway 101, thus the Leavesley Road segment is also provided. As noted in that table the Annual Average Daily Traffic (AADT) for the segment of Highway 152 for which project traffic is anticipated, is 24,600 vehicles.

Table 11-3: 1999 Caltrans Data For Highway 101

Route	County	Mile	Description / Location	1999 Annual Average Daily Traffic (AADT)	
101	Santa Clara	6.08	Gilroy, South JCT RTE 152 East	55,000	75,000

Table 11-4: 1999 Caltrans Data For State Route 152

Route	County	Mile	Description / Location	1999 Annual Average Daily Traffic (AADT)	
				West of Location	East of Location
152	Santa Clara	9.78	Gilroy, on Leavesley Road	31,000	31,000
152	Santa Clara	9.91	Gilroy, South JCT RTE 101	---	24,600
152	Santa Clara	10.28	Gilroy, North JCT RTE 101	31,000	---

11.2 Traffic Control Plan For Roads During Construction

Traffic Control during construction will be implemented to minimize impact to traffic flow and to maintain safe roadway conditions. The safety measures will include:

- Using proper signage and traffic control measures in accordance with Caltrans and City requirements.
- Coordinating construction and delivery activities with appropriate City, County and Caltrans departments.
- Scheduling traffic lane or road closures during off-peak hours whenever possible should such closures be needed.
- Restricting truck and construction traffic to approved access roads, construction yards, construction sites, and transport schedules.
- Coordinating oversize load delivery with the City and Gilroy Foods.

Each of the applicable transportation permits required by Caltrans to transport oversize, overweight, overheight, or overlength vehicles on State highways will be obtained prior to equipment transport. Construction material shipments will be properly labeled and placarded in accordance with applicable California Vehicle Codes.

11.3 Traffic Impact Of Linear Facility Construction

No linear facilities will be constructed, thus there will be no impact to traffic due to project interconnection requirements.

11.4 Equipment Transport Route

Increased transportation due to the construction of the proposed project will include deliveries of plant equipment and construction materials by truck, such as concrete and components. Certain components of the facility are of such dimension and weight that special delivery will be required during construction. Any ground shipment exceeding designated state or local size

and/or weight/load limits for access roads will require a Single Trip Transportation Permit. Appropriate permits will be obtained for all deliveries to comply with local laws and ordinances.

Truck deliveries are not anticipated to significantly affect the traffic/truck mix along U.S. 101, but may increase the ratio of trucks to passenger vehicles on Highway 152 and the existing industrial access roads. However, there are currently numerous truck deliveries to the warehouse operations that exist in this area, particularly the Gilroy Foods Facility. Thus, the temporary increase in truck traffic is not expected to significantly affect the existing traffic characteristics.

As indicated previously, site access for equipment deliveries can be provided from two primary routes, 152 to the existing Gilroy parking area, or 152 to the Access on SCVWD property. Preliminary consultation with the City of Gilroy Traffic Engineering Department indicates that Highway 152 is a designated truck route. For construction and equipment delivery both SCVWD and Gilroy Foods have indicated that the SCVWD Easement and Gilroy Food access drive could also be used.

11.5 Parking Requirements – Workforce And Equipment

Operational parking requirements will be minimal. Parking will be provided at the project site consistent with City of Gilroy Parking requirements:

Construction parking for the peak construction workforce will be provided. The construction workforce peak is estimated to be 225 employees with an average construction workforce of 150. Although it is anticipated that ride-sharing or the use of public transportation will occur, the peak workforce has been used to estimate parking demand in order to provide a margin of safety with respect to providing adequate construction parking. In addition to the provision of construction parking areas, the project has also established a construction equipment laydown area to ensure adequate flow of equipment and vehicles into the construction area, thereby minimizing off-site traffic impacts.

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SECTION 12.0 SOILS AND WATER RESOURCES

This section discusses the water use, wastewater and storm water discharges, and plans to control soil erosion and sedimentation on the site.

12.1 Wastewater Volume, Quality, Treatment

During project operation, process wastewater will come from blowdown from the cooling tower and blowdown from the demineralization units. These two sources will generate about 65 gpm of wastewater based on full load hot day operation. The only change in water quality will be an increase in concentrations of dissolved solids. Because the quality of the wastewater is suitable for agricultural uses, no treatment is anticipated before discharge. Wastewater will be discharged to the Gilroy Co-Gen wastewater system through an on-site connection and piping or to the City of Gilroy sewer system. If discharged to the Co-Gen facility, wastewater is sent to Gilroy Foods and then to the City of Gilroy to be reused as agricultural irrigation water. If discharged to the City of Gilroy, wastewater will be sent directly to the sanitary sewer. The average combined wastewater volume, including domestic and service water as well as process wastewater, will be 70 gpm. A brief description of the individual waste streams is presented below:

Domestic Water System: This system will produce approximately 2 gallons per minute (2,900 gallons per day) of waste and will consist of normal sanitary sewer system wastes. No significant increase in total dissolved solids is expected.

Service Water System: This system will produce approximately 3 gallons per minute (4,300 gallons per day) of aqueous waste consisting primarily of general washdown water. No significant increase in total dissolved solids is expected. The service water collection system will be designed to prevent discharge of any petroleum-contaminated wastes.

Demineralizer System Blowdown: This system will produce approximately 32 gallons per minute of reject water from a reverse osmosis-based water purification system. Makeup water will be provided by either reclaimed water from the South County Regional Wastewater Authority's Reclaimed Water Facility (if available) or from existing water supplies at the site. The on-site wells can provide more water than the project requires and the use of reclaim water is not a necessity. Reclaimed water will be treated to California Title 22 standards prior to use as process water. Total dissolved solids in this stream will be approximately four (4) times higher than total dissolved solids in the raw effluent from the Gilroy WWTP or the existing site wells. Groundwater from on-site wells would also be used in emergencies (e.g., fire fighting or loss of the primary reclaimed water source for cooling) if reclaimed water is not available.

Cooling Tower Blowdown: This system will produce approximately thirty-three (33) gallons per minute of aqueous waste. Total dissolved solids in this stream will be approximately four (4) times higher than total dissolved solids in the raw effluent from the Gilroy WWTP.

12.2 Status Of Permits For Wastewater Discharge

The Gilroy Phase 1 Project does not require a discharge permit for wastewater that it will discharge to Gilroy Foods since Gilroy Foods has a use permit with the City. If Calpine chooses to discharge to the sewer, it will obtain from the City of Gilroy a letter indicating a willingness to provide reclaimed water as well as return of the project's wastewater to the City.

12.3 Erosion And Sedimentation Control Mitigation Strategy

The goals of the Erosion and Sedimentation Control Mitigation Strategy are to control on-site storm water; minimize soil erosion and sedimentation; meet federal, state and local storm water quality standards; prevent water inundation on-site and off-site; analyze potential drainage control devices and uses for storm water collected and controlled on-site, and implement a plan for the National Pollutant Discharge Elimination system (NPDES) Permit.

The first phase (Planning Phase) is establishing the drainage control plan of the site. This phase will develop the surface hydrology of the site and hydraulic calculations required in evaluating drainage controls and predicting flows. These calculations will be signed by a licensed California Civil Engineer and will accompany the grading plans required by the city/county for the grading permit approval. A soil erosion and drainage control plan will be developed. The drainage control plan will address storm water runoff and sediment controls for the existing condition and during construction of the facility. This information is necessary to secure the grading permit.

The second phase (SWPPP Development) is to prepare the Storm Water Pollution Prevention Plan (SWPPP) for Construction along with filing the Notice of Intent (NOI) with the Water Board for construction activities. This phase will present the measures to be implemented to minimize sediment and other pollutants in storm water discharges during the development of the site.

The third phase (Final Development), is to provide a separate SWPPP and Storm Water Monitoring and Reporting Plan (SWMRP) for the General Industrial Activities Permit required after construction and to file a Notice of Termination (NOT) of coverage under the construction permit.

The second phase has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges; and, (2) to describe and ensure the implementation of effective practices to reduce sediment and other pollutants in storm water discharges during construction activities. The SWPPP will include Best Management Practices (BMPs) which address source reduction and provide measures/controls necessary to mitigate potential pollutant sources. The SWPPP will be available to the public under Section 308(b) of the CWA and will be made available by the Regional Water Board upon request. Required elements of the SWPPP include:

- site description
- erosion and sediment controls
- non-storm water management
- waste management and disposal
- implementation of other approved plans

12.4 Spill Prevention/Water Quality Protection Plans

The amount of petroleum products on-site in electrical equipment exceeds the threshold quantity for a Spill Prevention Control and Countermeasures Plan (SPCC) as per 40 CFR 112. Calpine will amend the existing SPCC plan for the Gilroy Co-Gen to include the proposed new generating equipment before installing oil-filled equipment on the site. Appendix H contains the existing SPCC Plan.

Storage of ammonia on-site for use in the SCR system for NO_x control will not require a Risk Management Plan (RMP) pursuant to federal Clean Air Act regulations at 40 CFR 68, Subpart G, and pursuant to California's Accidental Release Prevention Program (CalARP).

Total project area exceeds five acres and a Storm Water Pollution Prevention Plan (SWPPP) for construction will be required. Calpine will obtain a SWPPP before start of construction. During construction, Calpine will adhere to Best Management Practices (BMPs) for storm water pollution prevention. At a minimum, the BMPs would likely include culverts, berms, and other acceptable methods of storm water control.

The project will require a SWPPP for operation. Calpine will make the proper submittal to the regional water quality control board (RWQCB) and prepare a SWPPP for the site. Secondary containment, closed storage containers, and precise tracking of chemical inventories will prevent the movement of chemicals and oil stored on-site into storm waters.

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SECTION 13.0 CULTURAL RESOURCES

13.1 Identification Of Known Historic/Prehistoric Sites

Foster Wheeler Environmental conducted a record search at the Northwest Information Center of the California Historical Resources Information System (CHRIS) at California State University, Sonoma (Yolo County). The search, which included the project Area of Potential Effect (APE) and areas within 1 miles of the APE, determined that there are no known cultural resources recorded within the APE. A small portion of the of the Gilroy project area was included in a cultural resource survey conducted by Woodward & Clyde in 1984 (Woodward & Clyde 1984). No sites were recorded during this survey. In addition, several archaeological surveys have been previously conducted in the general vicinity, outside the APE. Table 13-1 describes the previous surveys in terms of location and authorship. Most of these surveys resulted in no findings.

In the project vicinity, the known prehistoric sites are concentrated along the Llagas and Dexter creeks in the area. Only one prehistoric site was found within 1 mile of the APE. Site CA-412 is a prehistoric habitation camp located on private farmland adjacent to Dexter Creek. (See Table 13-2)

Within one mile of the APE, one historic period site was identified, site P-43-001114 (CA-SCL—813/H) is the Burchell Farm which included two houses and a storage shed. (See Table 13-2)

13.2 Field Survey

Foster Wheeler conducted a pedestrian field survey on March 21, 2001 of the entire Gilroy Phase 1 Project site, to identify any potential cultural resources. The pedestrian field survey for the project covered approximately 7 acres of agricultural test plots and surrounding structures. Surface ground exposure during the survey was good to poor due to the variation of agricultural and development activity on the site. Survey methods within the agricultural test plots included 10-15 meter linear transects along plowed rows. The crops were at an early stage of growth, rendering ground visibility excellent (98%). Developed areas of the site include the agricultural office/conference building an adjacent office, a storage shed and building, and a green house with farm equipment out front. The surveyor examined and walked around and along the perimeter of these structures and the roads and driveways of the APE. As mentioned above, past agricultural and development activity have disturbed all surveyed areas. No archaeological resources were identified during field survey.

Table 13-1: Previous Archaeological Surveys Conducted Near The Project Area

Report Citation	Project Name	Project Sponsor	Relation To Project Area	Area Surveyed	Survey Intensity	Ground Visibility	Findings
Woodward &Clyde 1984	Thermonetics Co-generation	Thermonetics Inc.	Adjacent to project area	2 acres and 4.3 linear miles	10-meter transects	Good	Isolated artifacts. No sites.
Runnings 1993	Reconnaissance for 230 acres southeast of Gilroy.	EMC Planning Group Inc.	Southwest-of project area.	230 acres	N/A	NA	None
Runnings 1992	Reconnaissance for 178 acres east of Gilroy	EMC Planning Group	Northwest of project area	178 acres	N/A	N/A	None
Archaeological Resource Mgt. 1991	Evaluation for the South Co. Admmendment #91-03	Coats Consulting	West of project area	30.83 acres	N/A	N/A	None
Schmucker 1986	Gilroy Co-gen	Gilroy Energy Commission	Extends to northwest.	Tower location within 20 linear miles	At each specified tower location.	N/A	None

N/A = Information not available or not stated in Report

Table 13-2: Archaeological Sites Within 1 Mile Of Project APE

Primary/ Trinomial	Report Citation	7.5' Quad	Location	Distance from APE	Site Type	Effects	Action
CA-SCL-412	Private owner	Gilroy	T10S, R4E,	1 mile	Prehistoric habitation site	No effect	None
P-43-1114	None	Gilroy	T11S, R4E	.8 miles	Historic structure	No effect	None

13.3 Proposed Mitigation

Records search and field survey results determined that the project APE is within a medium to high archaeological sensitivity zone. Though archaeological and historical sites were not found during the field survey for the project, there is a possibility that subsurface excavation for project construction could encounter buried archaeological remains. Factors to consider when evaluating the probability of discovering subsurface cultural resources are determined by landforms, location, and occurrence of prerecorded prehistoric sites within the surrounding project radius. Landform types would include the floodplain and terraces of the Creeks. The APE locality is adjacent to Llagas Creek and within the vicinity of Dexter and Jones Creek. Such locations yielded a variety of natural resources that could be obtained and utilized by aboriginal people. Sites that exhibit prehistoric habitation and small-scale-food procurement have been located and recorded adjacent to these creeks. Therefore, it is possible that buried cultural deposits may exist within the APE.

Due to the locality of the APE and occurrence of archaeological sites along Llagas Creek and other drainages in the area, there is possibility for buried sites within the proposed APE. Therefore, monitoring for archaeological resources by a qualified archaeologist is recommended during all construction that involves mechanical excavation.

A Project Archaeologist or Archaeological Monitor should conduct a monitoring program. The Project Archaeologist should meet the minimum qualifications for Principal Investigator on federal projects under the *Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation.* The Archaeological Monitor should hold a Bachelor of Arts degree in anthropology with an emphasis in archaeology and 1 year of experience conducting archaeological field projects, or have 5 years of experience in the field of archaeology. The Archaeological Monitor should be qualified to detect archaeological deposits in the field. In addition to site detection, the project archaeologist should be qualified to evaluate the significance of the deposits, consult with regulatory agencies, and plan site evaluation and mitigation activities.

13.4 Notification Of Native Americans

Foster Wheeler informed the Native American Heritage Commission (NAHC) about the Gilroy Phase 1 Project area on March 26, 2001 via FAX. Foster Wheeler requested a search of the Sacred Lands File to determine whether or not traditional cultural properties are located within the project vicinity. The NAHC responded on April 16, 2001, and reported their record search failed to indicate the presence of Native American cultural resources in the immediate project area. The NAHC also included a referral list of Native American groups and individuals that may have knowledge regarding traditional cultural properties and sacred places in the project area. Reference in Appendix F.

The NAHC also included a referral list of Native American groups and individuals that may have knowledge regarding traditional cultural properties and sacred places in the project area. Notification letters were sent out to each individual or group from the NAHC Native American referral list. On April 19, 2001, Foster Wheeler environmental received a response telephone call from Jakki Kahl of the Ohlone/Costanoan tribe. Ms. Kahl stated that she had some concerns about ancestral prehistoric sites near the project vicinity. She knew Native Americans had lived within the project area and felt there is a potential of encountering subsurface archaeological material with the APE. She recommended Native American monitoring during construction. In addition, she requested the record search and documentation of the project area. Calpine will continue to consult with Ms. Kahl and is considering her recommendation for a Native American monitor.

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SECTION 14.0 PALEONTOLOGICAL RESOURCES

This section provides a discussion of the paleontological reviews that have been conducted to ensure that impacts to paleontological sites are avoided or mitigated. Section 14.1 discusses the data review conducted to ensure that known paleontological sites are identified. Section 14.2 addresses the need for and type of mitigation proposed. Section 14.3 identifies the references used in the analysis.

14.1 Identification Of Known Paleontological Sites

The Gilroy project site is located immediately to the west of Llagas Creek. The valley is a structural depression between the Diablo Range to the east and the Coast Ranges to the west. This structural depression is filled by a range of stream sediments from Llagas Creek on the east and Uvas Creek on the west (Helley and Nakata 1991). The bedrock in the adjacent mountains ranges from Tertiary marine sedimentary rocks, Tertiary volcanic rocks, to Jurassic and Cretaceous Franciscan Assemblage (Jennings and Strand 1959; Streitz and Sherburne 1980; Helley and Nakata 1991). The Gilroy project site is over two miles from bedrock outcrops in the adjacent mountain ranges.

The valley sediments within this structural depression include a range of different stream deposits ranging from Late Quaternary to Holocene age alluvial fans, stream channel deposits, levee deposits, flood plain deposits, and flood basin deposits (Helley and Nakata 1991). The Gilroy project site is on the map unit Qhl which are Holocene stream levee deposits derived from Llagas Creek (Helley and Nakata 1991). Helley and Nakata (1991) report no fossils from these Quaternary and Holocene deposits. Because of the proximity to Llagas Creek, the surface sediments at the site are likely very recent in age, i.e., deposited with the last several hundred to one thousand years. An archival search conducted at the University of California Museum of Paleontology in Berkeley, California found no fossil locations reported within 2 miles of the project site.

Based on the published report on the geology of the local area (Helley and Nakata 1991), the archival search at the California Museum of Paleontology, and the very recent age of the sediments there is low potential for recovering vertebrate fossils from the Holocene alluvium of the site. Consequently, the Holocene alluvium is considered to be of low paleontological sensitivity and there is a very low likelihood of disturbing any vertebrate fossils during project construction.

14.2 Mitigation

The Gilroy project is not expected to produce direct impacts to high sensitivity formations or paleontological resources. Consequently, the recommended mitigation is for the site construction manager to have a paleontologist or archaeologist as well as a Native American monitoring on call and to stop work and to have this specialist called in if any bones are exposed during construction.

14.3 References

Helley, E.J. and J.K. Nakata. 1991. Geological map of the Gilroy 7.5 minute quadrangle, California. U.S. Geological Survey Open-file Report 91-278.

Jennings, C.W. and R.G. Strand. 1959. Geologic Map of California - Santa Cruz Map Sheet. California Department of Conservation, Division of Mines and Geology, Scale 1:250,000. Fifth Printing 1992.

Streitz, R. and R. Sherburne. 1980. Studies of the San Andreas Fault zone in northern California. California Division of Mines and Geology, Special Report 140.

Wagner, D.L., E.J. Bortugno, R.D. McJunkin. 1990. Geologic map of the San Francisco-San Jose quadrangle. California Division of Mines and Geology, Regional Geologic Map Series, Map No. 5A.

SECTION 15.0 VISUAL RESOURCES

This section provides a discussion of the mitigation proposed to reduce the potential visual impacts of the LM6000 Phase 1 Project development in accordance with local requirements

15.1 Plan For Landscaping And Screening To Meet Local Requirements

The proposed LM6000 facility will be constructed on an area immediately south of the Gilroy Co-Gen Plant and to the east of the Gilroy Foods warehouse. Figure 15-1 is a view of this site as seen from its southwest corner; the east wall of the Gilroy Foods warehouse is visible on the left, and the co-gen plant is visible along the site's northern boundary.

Under the City of Gilroy zoning ordinance, this area is zoned M2, General Industrial. The setbacks required in this zone are 15 feet for front yards, 15 feet for side yards adjacent to streets, with no mandatory setbacks for rear yards or for side yards not adjacent to streets. In any requisite front or side yards adjacent to streets, landscaping is required. Because the project site has no frontage along a public street (access along the site's eastern edge is on a private easement), no setbacks and no landscaping would be required under the City's zoning ordinance.

The site photos provide a good indication of the role played by vegetation in the southeast corner of the site in screening the site in views from publicly accessible areas in the vicinity. However, much of this vegetation would be removed in preparing the site for the proposed facility. Although no landscaping of the project site is required under the zoning ordinance, Calpine plans to provide vegetative plantings for visual impact mitigation near the eastern site property line, but needs agreement from the Santa Clara County Water District to plant on their land. To this end, the applicant is developing a cooperative agreement with the SCVWD to plant vegetation. A conceptual plan for the off-site landscaping is presented on Figure 15-2. The off-site landscaping will include a mix of deciduous and non-deciduous species that is aesthetically and ecologically compatible with the plantings in adjacent areas. The landscape plan will be consistent with the landscape standards specified in Sections 38.30 and 38.40 of the zoning ordinance and with the requirements of the Consolidated Landscaping Policy. The ordinance's specific provisions related to landscaping in industrial areas are:

<u>Section 38.30</u> Landscaping Installation and Maintenance Requirements

All landscaping shall be installed and maintained according to the following minimum standards:

All landscaping shall be installed in accordance with the adopted Consolidated Landscaping Policy, and a landscaping plan approved by the Planning Director.

Only healthy, well-formed and vigorous plant materials shall be used.

An irrigation system shall be provided which will adequately supply water to all plant materials in all planter areas using water conservation methods if possible.

Soil amendments shall be used where poor soil conditions exist.

All plant materials shall be maintained in a live and healthy condition, and free of weeds. The developer and owner shall be required to remove weeds and replace all sick or dead plant material for a six- (6) month period after installation.

Section 38.40 Design Features

Landscaping shall be designated to enhance the aesthetic quality of the development by use of the following design features:

Parking areas shall be screened from adjacent residential area and streets, except at driveways and street corners where visibility is needed.

In certain locations, such as around trash enclosures, carports, pool equipment and electronic transformers, the landscaping shall be designed to provide a visual screen from these less pleasing features of the development.

Trees shall be provided to shade large paved areas and to screen long building frontages.

Trees and shrubs shall be clustered together, for accent, to form aesthetically pleasing groups and patterns.

The density and placement of plants are to be determined by the plant size at maturity. The size of ground cover and shrubs, when installed shall give enough coverage for a pleasing appearance in all landscaped areas.

Trees shall have a minimum fifteen- (15) gallon container size.

Drought-resistant plant materials shall be selected when feasible.

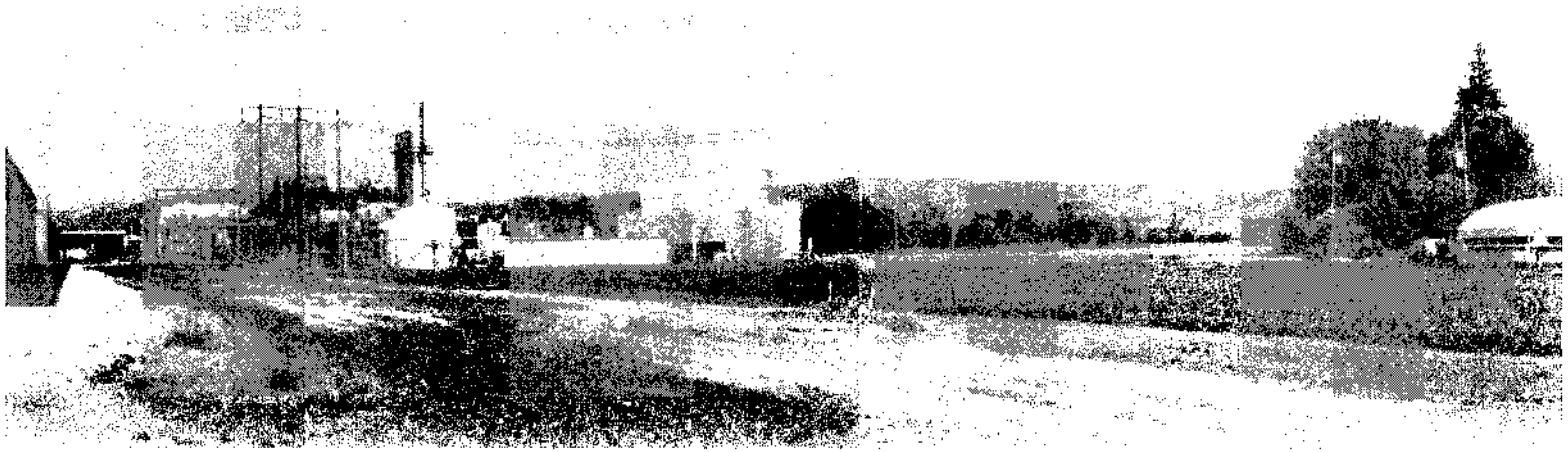
Gravel, redwood bark chips, and similar material shall not be used as major landscaping design features except in children's play areas. These materials may only be used to cover bare soil between plant materials until the plants fill in at maturity.

Sturdy raised curbs shall separate all planter areas from driveways and parking areas where feasible. Wheel stops need not be provided in parking areas where the front two (2) feet of the planter area is planted with low ground cover to accommodate the overhang.

Deep root planters must be provided where trees are planted within three (3) feet of the City pavement or sidewalk.

15.2 Full Size Color Photo Of The Site And Rendering Of Proposed Facility With Any Proposed Visual Mitigation If Available.

Figure 15-1 is a view of the site from its southwest corner. Figure 15-2 is a site plan indicating where existing trees will be preserved and where new off-site screening plantings will be installed. A rendering of the proposed facility with the proposed visual mitigation is not available at this time.

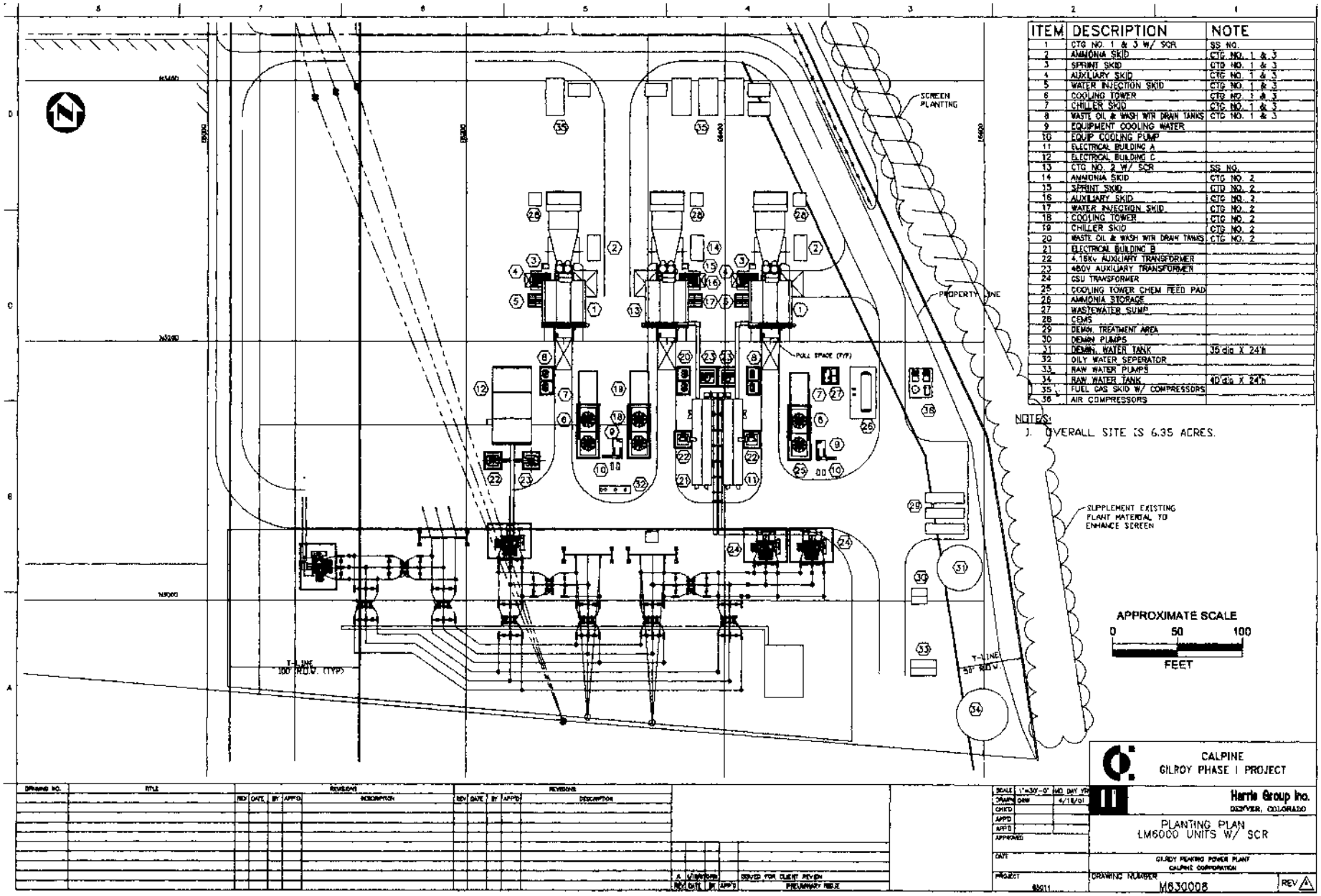


View of project site as seen from its southwest corner. The east wall of the Gilroy Foods warehouse is visible on the left. The Calpine cogeneration plant is visible along the site's northern boundary.

Figure 15-1

Calpine Corp.
Gilroy Phase I Project
View From Southwestern Site Boundary

FOSTER WHEELER
FOSTER WHEELER ENVIRONMENTAL CORPORATION



ITEM	DESCRIPTION	NOTE
1	CTG NO. 1 & 3 W/ SCR	SS NO.
2	AMMONIA SKID	CTG NO. 1 & 3
3	SPRINT SKID	CTG NO. 1 & 3
4	AUXILIARY SKID	CTG NO. 1 & 3
5	WATER INJECTION SKID	CTG NO. 1 & 3
6	COOLING TOWER	CTG NO. 1 & 3
7	CHILLER SKID	CTG NO. 1 & 3
8	WASTE OIL & WASH WTR DRAIN TANKS	CTG NO. 1 & 3
9	EQUIPMENT COOLING WATER	
10	EQUIP COOLING PUMP	
11	ELECTRICAL BUILDING A	
12	ELECTRICAL BUILDING C	
13	CTG NO. 2 W/ SCR	SS NO.
14	AMMONIA SKID	CTG NO. 2
15	SPRINT SKID	CTG NO. 2
16	AUXILIARY SKID	CTG NO. 2
17	WATER INJECTION SKID	CTG NO. 2
18	COOLING TOWER	CTG NO. 2
19	CHILLER SKID	CTG NO. 2
20	WASTE OIL & WASH WTR DRAIN TANKS	CTG NO. 2
21	ELECTRICAL BUILDING B	
22	4.16kv AUXILIARY TRANSFORMER	
23	480V AUXILIARY TRANSFORMER	
24	GSU TRANSFORMER	
25	COOLING TOWER CHEM FEED PAD	
26	AMMONIA STORAGE	
27	WASTEWATER SUMP	
28	CEMS	
29	DEMIN. TREATMENT AREA	
30	DEMIN PUMPS	
31	DEMIN. WATER TANK	35'dia X 24'h
32	OILY WATER SEPERATOR	
33	RAW WATER PUMPS	
34	RAW WATER TANK	40'dia X 24'h
35	FUEL GAS SKID W/ COMPRESSORS	
36	AIR COMPRESSORS	

NOTES:
1. OVERALL SITE IS 6.35 ACRES.

FIGURE 15-2

SECTION 16.0 TRANSMISSION SYSTEM ENGINEERING

The project will conform with Title 8, High Voltage Electrical Safety Orders, CPUC General Orders 95 (or NESC), CPUC Rule 21, PTO Interconnection Requirements and National Electrical Codes.

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