STOEL RIVES LLP
ATTORNEYS AT LAW

500 Capitol Mall, Suite 1600
Sacramento, California 95814
main 916.447.0700
fax 916.447.4781
www.stoel.com

JOHN A. MCKINSEY
*Direct (916) 319-4746*
jamckinsey@stoel.com



December 21, 2011

**VIA HAND DELIVERY**

Ms. Mary Dyas, Compliance Project Manager
California Energy Commission
1516 Ninth Street, MS-2000
Sacramento, CA 95814

**Re: Crockett Cogeneration Project (92-AFC-01)**
**Petition to Amend**

Dear Ms. Dyas:

On behalf of Crockett Cogeneration, a California Limited Partnership ("Project Owner"), enclosed please find fifteen (15) paper copies and fifteen (15) discs containing the Petition to Amend the Commission Decision for the Crockett Cogeneration Project ("PTA"). The enclosed PTA proposes to modify the Crockett Cogeneration Project ("CCP") by installing electric motor driven natural gas compression equipment to the CCP.

The need for the natural gas compression equipment has arisen in the wake of Pacific Gas & Electric Company's ("PG&E") derating of its natural gas supply and delivery pipeline system, which resulted in pressure reductions that are preventing CCP from meeting its power delivery obligations under its power purchase agreement with PG&E. Additionally, CCP is not able to perform as designed to meet power demands in the San Francisco Bay Area. The installation of the natural gas compression equipment at the facility will ensure that the facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. For these reasons, the PTA is of an urgent and important nature.

If you require additional copies of or require additional information regarding the enclosed PTA, please feel free to contact my office at (916) 447-7000. You may speak with Melissa A. Foster or Kimberly J. Hellwig in my absence.

Respectfully submitted,

for John A. McKinsey

JAM:jmw
Enclosures

# PETITION TO AMEND
## THE CALIFORNIA ENERGY COMMISSION FINAL DECISION FOR THE CROCKETT COGENERATION PROJECT
## (92-AFC-1)

DATE

DECEMBER 21, 2011

PREPARED FOR

CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814

SUBMITTED BY

CROCKETT COGENERATION, A CALIFORNIA LIMITED PARTNERSHIP
550 LORING AVENUE
CROCKETT, CA 94525

PREPARED BY

environ strategy consultants, inc.

1036 W. Taft Avenue, Suite 200
Orange, California 92865
tel 714.919.6500
fax 714.919.6501
environstrategy.com

TABLE OF CONTENTS

# 1.0 INTRODUCTION

Crockett Cogeneration, LLC ("Project Owner") is requesting that the California Energy Commission's ("CEC") May 3, 1993 Final Decision for the Crockett Cogeneration Project (92-AFC-1C) ("Crockett" or "CCP") be amended to include modifications to the current license. This Petition to Amend describes in detail and sets forth an environmental analysis of the requested modifications and their potential environmental effects. As part of the evaluation set forth herein, the Conditions of Certification ("COCs") as set forth in the Final Decision and subsequent post-Decision orders, were reviewed and no changes to any COCs are proposed as the existing COCs will ensure the Project is in compliance with all applicable laws, ordinances, regulations, and standards ("LORS")..

## *1.1 Overview of Amendment*

The Project consists of installing Natural Gas Compression Equipment at the facility to ensure the facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by Pacific Gas & Electric ("PG&E"). As described in Section 2.1 Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The new compressor will reduce or eliminate the uncertainty to meet the capacity demonstration period limit of 240 MW caused when PG&E's reduction in gas pressure required to operate the Facility falls below 360 psi.

The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August but would be utilized at other times as necessary.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1 Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical micro-piles to embed the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS while having a minimum impact.

Section 2.0 describes the proposed modifications and facility design. The environmental analysis of the modified project description and facility design is presented in Section 3.0. The Final Decision Conditions of Certification and those set forth in subsequent post-Decision orders are presented in Section 4.0. The Project Owner has not proposed any modifications to any existing COCs, nor has the Project Owner proposed any new COCs. And, finally, potential

effects on the public and nearby property owners, if any, are presented in Section 5.0.

## 1.2 Cumulative Impacts

Section 3.0 addresses each environmental area affected by the proposed modifications and a cumulative impact assessment is included within each issue area. The modifications discussed herein, however, will not result in significant, unmitigated cumulative impacts in excess of those already analyzed by the CEC, and this modification will not change the assumptions or conclusions made in the CEC's Final Decision for Crockett.

## 1.3 Laws, Ordinances, Regulations, and Standards (LORS)

The May 3, 1993 Final Decision concluded that the project complied with all applicable laws, ordinances, regulations, and standards (LORS). As discussed in detail in Section 3.0, the proposed modification will not affect the CCP's ability comply with all applicable LORS.

## 1.4 Consistency with Section 1769

Title 20 of the California Code of Regulations, section 1769 (Section 1769) requires a discussion of a requested amendment's consistencies with requisite LORS and whether requested modifications are based upon new information that changes or undermines the assumptions, rationale, findings, or other bases of a Final Commission Decision. In addition, if a project is no longer consistent with its license, Section 1769 requires that the project owner provide an explanation as to why the modification should be permitted.

Pursuant to and consistent with Section 1769, this Petition provides a complete description of, and an explanation for, the Natural Gas Compression Equipment, rationale for the Natural Gas Compression Equipment, LORS compliance analysis, and any proposed changes to the COCs set forth in the May 3, 1993 CEC Final Decision for the Crockett Cogeneration Project (CCP). Further, the analysis herein contains a discussion of the potential effect of the Natural Gas Compression Equipment on nearby property owners, the public, and parties to this proceeding.

## 1.5 Necessity of Proposed Change

Sections 1769(a)(1)(B) and 1769(a)(1)(C) require a discussion of the necessity of the Natural Gas Compression Equipment and whether the proposed project is based on information known by Crockett Cogeneration, A California Limited Partnership, during the AFC proceeding. Specifically, the need for the Natural Gas Compression Equipment has arisen in the wake of PG&E's de-rating of its natural gas supply and delivery pipeline system which resulted in pressure reductions that are preventing CCP from meeting its power delivery obligations under its Power Purchase Agreement with PG&E.

As the CEC fully evaluated the environmental impacts of the CCP in the Final Decision, the Natural Gas Compression Equipment must be addressed as a consequent modification of the AFC proceeding as an amendment to the 1993 Final Commission Decision for CCP, rather than a wholly separate project. The Natural Gas Compression Equipment is a foreseeable "but-for" consequence of the AFC proceeding and, therefore, must be evaluated as part of the PEC project. (*San Joaquin Raptor/Wildlife Rescue Ctr. v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 731-34 (noting that the development and necessary sewer expansion to serve the development were part of the same project and were improperly addressed in two separate environmental review documents); *see also Laurel Heights Improvement Ass'n of San Francisco, Inc. v. Regents of the Univ. of California* (1988) 47 Cal.3d 376, 396-98 (noting that environmental review documents must address reasonably foreseeable consequences of a project and their effects).) Accordingly, addressing the Natural Gas Compression Equipment as wholly separate from or outside of the CCP would be improper piecemealing of the project. (*San Joaquin Raptor/Wildlife Rescue Ctr.*, 27 Cal.App.4th at 734.)

# 2.0 PROPOSED MODIFICATIONS TO THE FACILITY

The Crockett Cogeneration Power Plant (CCP) is an existing, natural gas fired combustion gas turbine electrical power generating plant located in Crockett, California. This Petition to Amend (PTA) the Final Decision of the California Energy Commission approving CCP seeks modifications to CCP to install natural gas compression equipment. The work proposed by this PTA is referred to as the "Project" to distinguish it from the facility itself. This Project will amend the facility. This section of the PTA describes the proposed changes, the construction process to install the Natural Gas Compression Equipment and operation of the facility with the Natural Gas Compression Equipment installed.

## *2.1 Project Description*

Crockett was certified by the CEC on May 3, 1993 and permitted as a 240 megawatt (MW) electrical facility that provides the steam required to operate the C&H Sugar Refinery. CCP began operations in May of 1996. The facility is located on approximately 2.6 acres in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, California. The project is located within the C&H Sugar Refinery, which consists of an extensive industrial complex containing large brick, steel, and concrete buildings, a steel conveyor system, wooden wharf, large bulk sugar storage bins, and a fluegas stack for the existing C&H boilers. As permitted and built, CCP did not include gas compression equipment, but instead relied on the normal operating pressure of the Pacific Gas and Electric (PG&E)-owned natural gas pipeline system that delivered natural gas to the facility.

This Petition to Amend (PTA) proposes to modify CCP by installing electric motor driven natural gas compression equipment. The need for the Natural Gas Compression Equipment has arisen in the wake of PG&E's de-rating of its natural gas supply and delivery pipeline system which resulted in pressure reductions that are preventing the Crockett Cogeneration Project from meeting its power delivery obligations under its power purchase agreement with PG&E. As a result, the Crockett Cogeneration Project faces significant financial consequences. Additionally, the Crockett Cogeneration Project is not able to perform as designed to meet power demands in the San Francisco Bay Area. For these reasons, the ***PTA is of an urgent and important nature***.

The compression equipment will be installed within the existing Crockett Cogeneration Project footprint, amidst existing generation equipment and completely hidden from view. Applicant anticipates that construction of the proposed modifications to the Crockett Cogeneration Project will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the Crockett Cogeneration Project of 4 days. The compressor will be installed on a concrete slab foundation

that will be constructed with limited excavation in the already disturbed soil in the interior of the facility. The compression equipment will be delivered to the site by truck, and construction activities could occur from 7:00 AM to 9:00 PM Monday through Saturday.

The Natural Gas Compression Equipment is expected to be operated between 12pm and 6pm, Monday through Friday, during the months of June, July, and August but could operate at other times, whenever it is needed to allow the facility to operate at design output. During operation, the efficiency of the facility will be slightly reduced by virtue of the electric power required to drive the natural gas compression equipment. Operationally, the noise emitted by the natural gas compressor will not result in a perceptible increase in noise levels beyond the facility property line. The gas compression equipment will not be visible from outside of the facility.

## 2.2 Facility Overview

### 2.2.1 Equipment Layout

The Project consists of installing Natural Gas Compression Equipment at the facility to ensure the facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. The Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August but would be utilized at other times as necessary.

The Natural Gas Compression Equipment will be located strategically within the facility and housed within a structure designed to reduce and avoid potential impacts from its operation. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical micro-piles to embed the slab into the soil and bedrock below.

Figure 2 provides an overall site plan with the location of the Natural Gas Compression Equipment, and Figure 3 provides a detailed view. As the figures demonstrate, the gas compression equipment will be located within a sheltered and shielded interior area of the facility. This location essentially eliminates visibility of the equipment from off-site and greatly reduces noise-related issues. The Natural Gas Compression Equipment will be electrically driven, reciprocating compression equipment. The equipment will either be one 1500 HP compressor or two 750 HP compressors.

### 2.2.2 Equipment Technology

The compressor(s) to be used are electric motor driven reciprocating compressor(s).

### 2.2.3 Efficiency and Reliability

The Natural Gas Compression Equipment will be electrical driven reciprocating compressors that will increase the reliability of the project at the best possible efficiency, compared to other design options. The equipment will also only operate when needed to boost the delivered pressure of the natural gas to allow operation of the facility at designed capacity.

Reciprocating compressors are positive displacement machines. This means that, for every revolution of the shaft, a fixed volume of gas is compressed. Centrifugal compressors, on the other hand, rely on centrifugal acceleration to "push" the gas and compress it. This creates for what is called "by-pass" of gas. This by-pass reflects in low efficiency, required larger amounts of electrical energy to compress the same amount of gas.

Reciprocating compressors are the work horses of the natural gas industry. They are fabricated to operate reliably for many years of operation. Centrifugal compressors, on the other hand, are manufactured to move very large volumes of gas or air and they are used where high volume and low pressure differentials are required. Rotary Screw compressors are used mainly for low pressure applications. In the Crockett case, the application is a typical reciprocating compressor application where heavy duty, long term operation is required, with a medium pressure and medium volume of gas.

## 2.3 Compressor Installation

### 2.3.1 Construction

The Natural Gas Compression Equipment will be installed in a rectangular area inside the facility that can accommodate the equipment. The location is currently paved and surrounded by other equipment and structures associated with the facility.

Construction of the proposed modifications to CCP should occur over a limited three-month period from March 2012 through May 2012 during the hours of 8:00 a.m. and 6:00 p.m., Monday through Friday.

The foundation for the equipment and enclosure will consist of a concrete mat of uniform thickness supported by a deep foundation system such as A. B. Chance Helical Piers. The Helical Piers will be installed on a 8'-0" grid pattern. The maximum design strength for the Helical Pier will be helical 50kips with a 1-3/4" shaft. The actual capacity and pattern will depend on an analysis of the interaction of the helix plates and the soil. The slab will include a

secondary containment provided by a 6" high curb on the entire perimeter. The surface of the slab will be slopped to the south east corner, where a 12"x12"x12" deep sump will collect any spilled materials. The design requires the removal of 18" of the existing fill dirt; re-installation and compaction to 95% to minimize the soil export needs.

As much piping as possible will be prefabricated. During a scheduled outage, either in February or March, the interconnection points and valves for the piping will be installed. During this outage the electrical installation onto the 4,160VAC bus bar will also be completed. This will allow downstream work and interconnection without a plant shutdown. During this short outage the existing gas scrubber will also be moved approximately 6 or 8 feet to the east to provide room to install the compressor skid.

During the months of March, April and May the foundations will be fabricating and installed for the compressor skid, fin-fan coolers, coalescing filter separator and inlet scrubber. The compressor skid and peripheral equipment will arrive on site no later than May 1st at which time it will be placed on the foundations and interconnected and piped. The electrical connections will be made for the auxiliary equipment and the acoustical enclosure will be installed.
The completed installation is expected to be ready to be commissioned and tested by May 15th.

### *2.3.2 Operation*

The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary

The equipment will include a local control panel that will allow it to be operated locally. It will also be interconnected to the plant DCS, which will allow it to be operated remotely. Depending on the available pressure from PG&E, the operators will adjust the VVP (Variable Volume Pockets) on each cylinder. The operator then will start the electric motors for the fin fan coolers and the lube oil coolers and the lubricating oil circulating pumps. Once the lube oil has met its permissives, the compressor will be started with the bypass and unloader valves open. The unloader valves will close automatically and the compressor will start increasing the discharge pressure while closing the by-pass valve until it is 100% closed and the compressor is on-line.

The shut down process is similar but in reverse. First the by-pass valve will open and reduce the discharge pressure. Second, the unloader valves will open and unload the compressor. Finally, the compressor itself is shut down and secured. When the compressor has stopped, the motors for the lube oil coolers, lube oil circulating pumps and fin fan coolers will be shut down.

## *2.4 Construction Schedule*

Construction is expected to occur over a three month person, from March to May of 2012 between the hours of 8:00 AM and 6:00 PM. Of that three month period, approximately three weeks is required for curing of the concrete slab. Generally, the construction process will consist of the following major steps:

- Site mobilization and preparations for construction
- Foundation preparation
- Equipment installation and connection
- Testing

# 3.0 ENVIRONMENTAL ANALYSIS

This section presents a description of the affected environment, potential environmental consequences, and potential cumulative impacts that are associated with the Project, along with measures to mitigate or avoid adverse impacts as appropriate. Supporting information to determine compliance with applicable LORS is included within the discussion in each applicable section. A discussion of any proposed changes or additions to the approved COCs is also included within each environmental resource section.

The environmental assessments presented in this section are meant to comply with CEC requirements, including those of the California Environmental Quality Act (CEQA). In general, each section follows the same format of presenting the affected environment and existing site conditions, followed by the environmental consequences of the Project.

## 3.1 Air Quality

### 3.1.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on air quality and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential air quality impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications as detailed in this section demonstrates that the Project will not have a significant environmental impact with regards to air quality in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project and Facility will comply with all applicable LORS.

### 3.1.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific Rail Road main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

### *3.1.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow use of the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1 Project Description for full details on the design and construction of the enclosure. The enclosure will be installed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. The enclosure will be a 17 foot wide by 25 foot long by 12 foot high pre-fabricated building constructed out of acoustic material to provide adequate noise suppression. The height of this structure will be at the same level with the surrounding building so that it will not be visible from outside the Facility.

The Project will implement air pollution mitigation measures for fugitive particle emissions from open storage lies or from active or inactive disturbed surface areas in accordance with the Final Commission Decision for the CCP.

The CCP will be run up to base load capacity demonstration permit requirement of 240 MW. Parasitic electrical power required to operate the compressor's 1,000 horsepower motor will be supplied by base load from CCP. There will be no increase in natural gas consumption by the CCP to compensate for the compressor motor parasitic load. The parasitic load required to operate the Natural Gas Compression Equipment will be provided by reducing the steam turbine extraction rate to produce more electrical power. The Natural Gas Compression Equipment will be designed and operated as a fully-automated closed-loop system, which will not produce any air emissions.

Since CCP will operate up to permitted base load capacity and no additional fuel will be consumed, and the compressor motor will receive the required electrical power as a parasitic load on the CCP, there will be no emissions beyond the permit limits. Therefore, the Project will not have any impacts to air quality beyond those addressed in the Final Decision for the CCP.

#### *3.1.2.2 Onsite Equipment Delivery and Installation*

Delivery of the Natural Gas Compression Equipment will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Two standard size tractor and flatbed 40-foot trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailers to either of the paved equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to CCP will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site. The design requires the removal of 18" of the existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs.

This brief delivery and construction period will not generate any additional impacts to air quality beyond those addressed in the Final Commission Decision for CCP.

#### *3.1.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square foot trapezoid-shaped flat paved area, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square foot rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for access to the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "Public Access Area"[1] or adjacent Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility. A fugitive dust control plan will be prepared and submitted to the CEC in accordance with the Final Commission Decision for the CCP. Fugitive particle emissions from vehicular traffic on paved and unpaved roads and parking areas will be minimized by daily inspections and monitoring and will be maintained in accordance with Final Commission Decision for the CCP.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers, as well as standard light-duty trucks and automobiles, will be used for delivery. There is sufficient existing employee parking for the additional personnel during delivery and construction. Delivery, construction, and operation of the Project will not have any additional impacts to air quality resources beyond those described in the original Application for Certification and in the Final Commission Decision for CCP.

### *3.1.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to air quality resources nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for CCP.

### *3.1.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable air quality related LORS.

### *3.1.5 Conditions of Certification*

The Project will not have any additional impacts on air quality. The proposed modifications will not have any additional impacts on air quality resources beyond those addressed in the Final Commission Decision for CCP. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required or proposed.

### *References*

1. Final Major Facility Review Permit, Crockett Cogeneration, Bay Area Air Quality Management District, 2010.

[1] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

## 3.2 Biological Resources

### 3.2.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on biological resources and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential impacts to biological resources include:

1. Delivery of equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

### 3.2.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. This structure housing the Natural Gas Compression Equipment will be located inside the existing plant, underneath the existing pipe bridge, with the boiler feed pump building to the north, the turbine building to the east and the HRSG (Heat Recovery Steam Generator) to the south.

The enclosure will be a 17-foot wide by 25-foot long by 12-foot high pre-fabricated building constructed out of acoustic material to provide adequate noise suppression. The foundation for

the enclosure will include a 6-inch curb without an external drain to serve as a secondary containment for the compression equipment. The enclosure will be accessible from the east and west via roll-up doors that will be rolled up during maintenance operations.

The Final Commission Decision[2] notes that a panel of experts analyzed the Project-related impacts to critical habitat and species who determined that the cumulative impacts to such habitat and species would be insignificant. The CEC further noted that the "potential for project related impacts on biological resources was very remote" due to the fact that the Facility is located in an industrial area that has been disturbed for several decades. In fact, the Final Commission Decision for CCP concluded that the Project and Facility are situated on previously disturbed refinery grounds that sustain no important wildlife habitat or animal species.

Regarding air emissions and their impact on habitat and species, the Final Commission Decision concluded that as a result of the Project they "expected improvement in emissions." Similar conclusions were made concerning any potential noise impacts. The findings and conclusions do state that the construction and operation of the proposed Project "poses a slight risk of potential impacts to three important biological resources: the Alameda whipsnake, winter-run Chinook salmon, and Carquinez golden bush."[3] However, the Final Commission Decision noted that the Conditions of Certification would address any unforeseen event of Project impacts on biological resources."

In summary, the CEC's Final Commission Decision concluded that "The construction and operation of the project is not likely to have a significant adverse impact on any biological resources in the project area, nor contribute to any adverse cumulative impact on biological resources."[2] Given the location and structure of the Natural Gas Compression Equipment within the Facility, no additional impacts to biological resources beyond those addressed in the Final Commission Decision will be created during construction or operation of the Project.

#### *3.3.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

---

[2] CEC Final Decision for *Crockett Cogeneration Natural Gas Power Plant, Crockett,* Contra Costa County, California

[3] CEC Final Decision for *Crockett Cogeneration Natural Gas Power Plant, Crockett,* Contra Costa County, California, page 244.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an 18-inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

There are no additional impacts on biological resources associated with the Project as it relates to the Natural Gas Compression Equipment. The Natural Gas Compression Equipment is expected to be operated from 12pm to 6pm, Monday through Friday, during the months of June, July, and August. This limited operational time will serve to further ensure that no additional impact to sensitive biological resources. There will therefore be no additional impacts to biological resources associated with the Natural Gas Compression Equipment.

#### *3.2.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailers to either of the equipment laydown areas. The delivery will occur via existing roadways and the laydown areas are paved.

The Natural Gas Compression Equipment will be installed within the existing Crockett Cogeneration Project footprint, amidst existing equipment and completely hidden from view. The Project Owner anticipates that construction of the proposed modifications will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site. The design requires the removal of 18 inches of existing fill dirt. The soil will then be compacted to 95% to minimize the soil export needs.

This brief delivery and construction period will not generate any impacts to biological resources.

#### *3.2.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved area, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for access to the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces; no parking spaces in the "Public Access Area[4]" or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

These modifications will have no significant impact on biological resources.

### *3.2.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to biological resources nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for CCP.

### *3.2.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable LORS.

[4] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

### *3.2.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on biological resources. The Project will comply with existing COC BIO-1 through BIO-4 regarding environmental awareness. The Facility has an existing Environmental Awareness pamphlet[5] and the program is administered by the Facility's Certified Environmental Compliance Manager." Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required.

### *References*

1. CEC Final Decision for *Crockett Cogeneration Natural Gas Power Plant, Crockett,* Contra Costa County, California

[5] Crockett Cogeneration Project, *Environmental Awareness Training Handbook*, 1993-1995.

## 3.3 Cultural Resources

### 3.3.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to the Facility's Final Commission Decision. This section describes the potential effects the Project may have on cultural resources and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential impacts include:

1. Delivery of equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrate that the Project will not have a significant environmental impact with regards to cultural resources in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project will comply with all applicable LORS.

### 3.3.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Existing Facility's regional setting is shown as Figure 1, which is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility, which is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly north of the Facility, between portions of the community and the Facility.

The Facility is located in an industrial area that has been disturbed for several decades. In the Final Commission Decision , CEC staff noted that the proposed cogeneration Facility would be

situated on previously disturbed refinery grounds.[6] CEC staff concluded no significant impacts to cultural resources were evident and that CCP would not cause or contribute to significant impacts to archaeological, historic, or ethnographic resources.[7]

Given the location and structure of the Natural Gas Compression Equipment is entirely within the Facility site, that the location of the Project is on previously heavily disturbed ground, and the previous findings of the CEC staff, there will be no additional impacts to cultural resources beyond those addressed in the Final Commission Decision.

### *3.3.2.1 Natural Gas Compression Equipment Technology*

As discussed in detail in Section 2.1, Project Description, the proposed modifications to the approved CCP involves the addition of Natural Gas Compression Equipment to the Facility. The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but may be utilized at other times as necessary.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

The Natural Gas Compression Equipment will be located within the area of development identified in the Application for Certification as "Area A"[8]. As per the Application for Certification, only one previously recorded prehistoric site adjacent to or within the Facility was identified, located in "Area C," which corresponds with the natural gas line installed under city

[6]Commission Decision: Application for Certification for the Crockett Cogeneration Project, Docket No. 92-AFC-1, California Energy Commission, May 1993, p 240.
[7] Ibid, pp. 255-256.
[8] Commission Decision: Application for Certification for the Crockett Cogeneration Project, Docket No. 92-AFC-1, California Energy Commission, May 1993, p 260.

streets between the C&H Sugar Refinery and Interstate 80.[9] As the Project will be located in "Area A," and will not encroach or include any part of the area designated "Area C," the modifications will have no significant impact on cultural resources, known or unknown.

### *3.3.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailers to either of the equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and completely hidden from view. The Project owner anticipates that construction of the proposed modifications to Crockett Cogeneration Project will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the Crockett Cogeneration Project of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the Crockett Cogeneration Project site. The design requires the removal of 18 inches of existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95 percent to minimize soil export needs.

The brief delivery and construction period and the excavation of already heavily disturbed soil, will not generate any impacts to cultural resources.

### *3.3.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for Facility access from the proposed Natural Gas Compression Equipment delivery route show on Figure 5. The footprint of the Natural Gas Compression

[9] Ibid, pp. 259-263.

Equipment that will be delivered to the Facility is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "Public Access Area"[10] or adjacent Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

Given that the installation will occur entirely within the current Facility and the Facility was constructed on previously heavily disturbed ground, and the Project will not increase the size or impact of the Facility on known or unknown cultural resources, the Project will have no significant impact on cultural resources from the delivery, construction, and operation of the Project.

### *3.3.3 Cumulative Impacts Analysis*

The Project will not result in any significant cumulative impacts to cultural resources nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for CCP. .

### *3.3.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable cultural resources related LORS.

### *3.3.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on cultural resources. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required or proposed.

[10] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

## 3.4 Efficiency

### 3.4.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to the Existing Facility's Final Decision. This section describes the potential effects the Project may have on efficiency conformance established for the Facility and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential efficiency conformance impacts include:

1. Delivery of equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrate that the Project will not have a significant environmental impact with regards to efficiency conformance in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project will comply with all applicable LORS.

### 3.4.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Existing Facility's regional setting is shown as Figure 1, which is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Existing Facility which is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly north of the Facility, between portions of the community and the Facility.

The Existing Facility is located in an industrial area and has maintained efficient operations since May 1996. The Final Commission Decision did not set forth a single Condition of Certification

for efficiency conformance during design and operation. The Natural Gas Compression Equipment has been designed to meet current industry standards for efficiency and will be installed and maintained by qualified trained professionals. Therefore, it is reasonable to deduce that there will be no additional impacts to efficiency conformance and no new Conditions of Certification will be required.

#### *3.4.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The minimum gas pressure required to operate the turbine at full load operation is 360 psig. The Natural Gas Compression Equipment will be sized to provide 400 psig discharge pressure at the SRV of the gas turbine under a wide range of suction pressures. Due to recent events, the delivered gas pressure was decreased, which caused a direct impact to the Facility's ability to meet the requirements of the capacity demonstration period. During the months of June, July and August 2011, the Facility was only able to generate 225 MW due to the decreased natural gas delivery pressure from PG&E. The Project will modify the operation of the Facility to allow it to use Natural Gas Compression Equipment, when needed, to increase the delivered gas pressure up to the design-required range for the turbine. The Natural Gas Compression Equipment will use a 1,000 horsepower, 4160 volt, 3-phase electrical motor to drive the compressor, which will consume approximately 747 kilowatts of power as a parasitic load on the Facility. The electrical parasitic load to drive the compressor is approximately 0.31 percent of the capacity demonstration load of 240 MW and is considered less than significant. Since PG&E is not able to provide the Project Owner a guarantee to supply natural gas at the delivery point at 370 psig, which is needed to meet the capacity demonstration period, the installation of the Natural Gas Compression Equipment is necessary. In addition, the Natural Gas Compression Equipment also will ensure the turbine will operate more efficiently at less than full load during non-peak hours in the event that the gas supply pressure from PG&E drops as low as 270 psig.

The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license. The effect of the drop in natural gas pressure in turbine efficiency is very hard to quantify due to the quantity of operating parameters involved. The only effect is in the capacity, since low gas pressures (below 370 psig at the point of delivery) keep the plant from achieving full load (240MW). The operation of the Natural Gas Compression Equipment will not affect turbine efficiency.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. The Natural Gas Compression Equipment will be electrical and

reciprocating in nature, with a maximum output of 1500hp. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August but may also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description, for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

The operation of the Natural Gas Compression Equipment will not affect Facility start-up or the need for a reliable water source. No additional fuel consumption will be required to operate the Natural Gas Compression Equipment.

The proposed modification in the plant area does not affect the efficiency conformance of the CCP. Therefore, there is no net effect to the efficiency conformance as was the case for the previously permitted project.

#### *3.4.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing Crockett Cogeneration Project footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to Crockett Cogeneration Project will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the Crockett Cogeneration Project of four days.

The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the Crockett Cogeneration Project site. The design requires the removal of 18 inches of existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95 percent to minimize soil export needs.

This brief delivery and construction episode will not generate any impacts to efficiency conformance.

#### *3.4.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for Facility access from the proposed Natural Gas Compression Equipment delivery route show on Figure 5. The footprint of the Natural Gas Compression Equipment that will be delivered to the Facility is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "Public Access Area"[11] or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

The Project will have no significant impact on efficiency conformance from the delivery, construction and operation of the Project.

### *3.4.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to efficiency conformance beyond those addressed in the CEC's Final Commission Decision for the CCP.

[11] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

### *3.4.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable LORS.

### *3.4.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on efficiency conformance. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required or proposed.

## 3.5 Fire Protection

### 3.5.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to the Existing Facility's Final Commission Decision. This section describes the potential effects the Project may have on efficiency conformance established for the Facility and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential fire protection impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrate that the Project will not have a significant environmental impact with regards to efficiency conformance in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project will comply with all applicable LORS.

### 3.5.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Existing Facility's regional setting is shown as Figure 1, which is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

. The Existing Facility is located in an industrial area and has maintained fire safe operations since May 1996. The Final Commission Decision did not set forth a single Condition of

Certification for efficiency conformance during design and operation. The Natural Gas Compression Equipment has been designed to meet current industry standards for efficiency and will be installed and maintained by qualified trained professionals. Therefore, it is reasonable to deduce that there will be no additional impacts to fire safety and no new Conditions of Certification will be required.

### *3.5.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

The proposed modifications will not affect fire safety in the area.

### *3.5.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural

Gas Compression Equipment from the flatbed 40-foot trailer to either of the paved equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and inside of an engineered enclosure, with the exception of two large bore above-ground 8-inch diameter steel pipe runs, which are as follows: 1) supply of gas from the existing gas piping to the Gas Compression Equipment and 2) discharge of compressed gas from the Gas Compression Equipment back to the existing piping The two main gas pipes (gas supply and gas discharge) are going to be approximately 20 feet each. In addition, there will also be a small bore 1-inch diameter, 20-foot long above-ground lube oil steel piping run to supply lubricant to the lube oil coolers, which should be about 20' for supply and return each. Half of the length (approximately 10 feet) of each of the 8-inch diameter and 1-inch diameter steel pipe runs will be installed inside the Natural Gas Compression Equipment enclosure, and the other 10 feet will be located outside of the enclosure.

Project Owner anticipates that construction of the proposed modifications to the CCP will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site. The design requires the removal of 18" of the existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs.

This brief delivery and construction period will not generate any additional impacts to fire safety beyond those addressed in the Final Commission Decision for CCP.

### *3.5.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1, Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for access to the Facility from the proposed delivery route show on Figure 5. The footprint of the Natural Gas Compression Equipment is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 20

to 30 secured parking spaces, therefore no parking spaces in the "Public Access Area[12]" or adjacent Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction. The Project Owner contacted the Contra Costa County Fire Department to discuss the installation of the Natural Gas Compressions Equipment and any requirements that would be needed to comply with Contra Costa County Fire codes. According the Project Owner, the Contra Costa County Fire Chief stated that there were no foam or isolation systems required for the installation of the Natural Gas Compression Equipment.

The Facility will incorporate all appropriate equipment startup, operation, shutdown and maintenance fire safety measures for the Natural Gas Compression Equipment. Experienced, trained, qualified workers will be used to operate and maintain the Natural Gas Compression Equipment in accordance with the manufacturer's requirements, as well as accepted industry standards. At least 10 feet from Natural Gas Compression Equipment enclosure, as well as all Natural Gas Compression Equipment inside the enclosure will be rated Class I, Division 2 in accordance with the National Electrical Code specifications for natural gas handling and processing equipment. Two exhaust fans will be installed to vent the enclosure, where one fan is running continuously, while the other fan will serve as a standby in the event that the primary fan fails. Two natural gas detectors, configured to measure the lower explosive limit (LEL) of natural gas, will be installed at the inlet of the exhaust fans, inside enclosure to detect a natural gas leak. If gas detector identifies that there is a natural gas leak at or near the LEL, and the second natural gas detector confirms a natural gas leak, the compressor will be automatically shut down. An experienced trained worker will be dispatched to the enclosure and use a direct read field instrument to confirm the presence of natural gas leak.

Given the brief delivery and construction period, the natural gas compression leak detection and shutdown system that will be installed, as well as the safe work history of continuous Natural Gas Compression Equipment operations since May 1996, and the findings of the CEC staff, there will not be any additional impacts to worker health and safety beyond those addressed in the Final Commission Decision for CCP.

[12] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

Delivery, construction and operation of the Project will not have any additional impacts to fire safety beyond those described in Section 4.6 of the original Application for Certification and in the Final Commission Decision for CCP.

### *3.5.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to fire safety nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for the CCP.

### *3.5.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable fire safety related LORS.

### *3.5.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on fire safety beyond those addressed in the Final Commission Decision for CCP. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required.

## 3.6 Geological Hazards

### 3.6.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on geological hazards and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential impacts to geological hazards include:

1. Delivery of equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrates that the Project will not have a significant environmental impact with regards to geological hazards in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project and Facility will comply with all applicable LORS.

### 3.6.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

The CCP is located in the Coast Ranges geomorphic province of California. The area is highly faulted and subject to regional earthquakes. Major active faults near the site include the Concord –Green valley, Hayward and San Andreas faults situated, respectively 6.3 miles east, 8.8 miles southeast, and 26.7 miles west-southwest of the site. The site is not located within an Alquist Priolo study area, and there are no active fault traces mapped onsite and no active fault traces mapped within 6.3 miles of the site.

Onsite units were previously mapped as Cretaceous Great Valley complex sedimentary rocks (Ks) comprised of sandstone, siltstone, claystone and shale. Younger deposits of alluvium and artificial fill overlay the bedrock. According to published reports, the artificial fill onsite is likely overlying San Francisco Bay mud deposits overlying the bedrock. Landslides or other mass movements are not known to exist at the site. Groundwater is known to be within the upper 10 feet of the site ground surface.

### *3.6.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

There are no additional impacts on geological resources associated with the Project as it relates to the Natural Gas Compression Equipment Technology. The Natural Gas Compression

Equipment will be placed in the same location as other power generating equipment and on the same geologic materials. There is no significant difference from the previous project equipment however seismic standards may have changed and therefore geological hazards are evaluated herein to take these differences into account. Therefore a site specific Geotechnical Evaluation was performed to assess the potential difference in seismic hazards.

### *3.6.2.2 Construction Phase Geologic Hazards*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the equipment laydown areas. The delivery will occur via existing roadways and the laydown areas are paved.

The Natural Gas Compression Equipment will be installed within the existing Crockett Cogeneration Project footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site.

The Geotechnical Evaluation report identifies a layer of fill materials overlying Bay Mud that is overlying bedrock. The fill and Bay Muds are identified as potentially compressible and /or swelling soils. At the location selected for the placement of the equipment the design may require the removal of up to 18 inches of existing fill dirt. The soil will then be compacted to industry standards to minimize the soil export needs. The foundation will be designed to support the equipment on a combination of piers, structural mats, spread footings and grade beams that are similar to the existing foundation systems at the Facility. No major changes from the previous approval and COCs are anticipated for the foundation of the proposed equipment.

### *3.6.2.3 Seismic Hazards*

Seismic impacts are a potential threat at the site including strong ground shaking, surface rupture, liquefaction, lateral spreading, and landslide. The new Project will be analyzed using current, state of the art seismic analysis and will provide the seismic acceleration design parameters for the foundation. Current state of the art engineering techniques and the design of the structure and foundation will be analyzed in accordance with the current standards and the site specific seismic acceleration. The result will be a much more conservative approach to foundation and structural design of the Natural Gas Compression Equipment. The Natural Gas Compression Equipment framework and foundation will likely be stronger than the original

design standards required. The preliminary seismic analysis in the Geotechnical Evaluation does not identify a significant difference in the seismic acceleration at the Facility from previous site evaluations.

No known active faults cross the subject site. There is a very low or non-existent threat for fault rupture at the site.

The site is flat lying and there are no adjacent slopes to the Project area. Therefore, landslides or other ground instability such as lateral spreading are not likely to affect the Project.

A site specific analysis of liquefaction and ground subsidence will be performed utilizing the updated seismic analysis. The site has shallow ground water and some layers of potentially liquefiable soils. The preliminary analysis identifies a low to high risk for liquefaction and therefore will be evaluated more thoroughly during site specific engineering design of the foundation. Based on the previous foundation design work it appears that the risk for liquefaction or seismically induced settlement is not significantly different from the previous site evaluations.

Given the considerations of the geologic hazards, prior construction onsite has been conducted. Mitigation methods such as driving piles into bedrock have been used to remove the structural load off of the underlying sediments and transfer that load to the bedrock at depth. This will reduce or remove the impact of the artificial fill or bay mud settlement as well as other seismic related impacts. No major changes from the previous approval and COCs are anticipated for the seismic engineering for the proposed equipment.

#### *3.6.2.4 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved area, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for access to the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces; no parking spaces in the "Public Access Area[13]" or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility and are in existing improved areas with adequate paving and structural support. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. The laydown area locations selected will not pose any geological hazards for the Project.

### *3.6.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to geological resources nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for CCP.

### *3.6.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable LORS.

### *3.6.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on geological hazards. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required.

### *References*

1. Phelan, PE GE, Justin & Ryan, PE GE, Marc; *Geotechnical Evaluation –Support for Design of New Gas Compressor Foundation: Crockett Cogeneration Natural Gas Power Plant, Crockett,* Contra Costa County, California; for Crockett Cogeneration, Bakersfield, CA; AMEC Environmental, Oakland, California, December 2011.

[13] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

## 3.7 Hazardous Materials

This section discusses the potential effects from hazardous materials and the management and handling of the same due to the proposed modifications to the CCP. The Project will comply with applicable hazardous materials handling and management LORS.

### 3.7.1 Introduction

As discussed in Section 2.1, Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on hazardous materials management established for the Facility and evaluates the potential impacts to these resources as a result of the proposed modifications. This section also evaluates the potential hazardous materials-related environmental impacts of the proposed Project's compliance with LORS.

Areas of potential hazardous materials impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking;
3. Construction and installation of the Natural Gas Compression Equipment; and
4. Hazardous materials emanating from the Natural Gas Compression Equipment during operation of the Facility.

Analysis of the affected environment and the proposed modifications demonstrates that the Project will not have a significant environmental impact with regards to hazardous materials in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project will comply with all applicable LORS.

### 3.7.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex

dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. This structure housing the Natural Gas Compression Equipment will be located inside the existing plant, underneath the existing pipe bridge, with the boiler feed pump building to the north, the turbine building to the east and the HRSG (Heat Recovery Steam Generator) to the south.

The enclosure will be a 17'wide by 25'long by 12'high pre-fabricated building constructed out of acoustic material to provide adequate noise suppression. The foundation for the enclosure will include a 6" curb without an external drain to serve as a secondary containment for the compression equipment. The enclosure will be accessible from the east and west via roll-up doors that will be rolled up during maintenance operations.

The only potential hazardous material that could be generated by the operation of the Natural Gas Compression Equipment would be a leak of lubricating oil. As with any piece of rotating equipment, motors and compressors need to be lubricated. The proposed compressor packages have a lube oil reservoir on board. The design calls for a secondary containment of 1-1/2 times the capacity of the reservoir. The foundation design also calls for additional secondary containment that would prevent any spilled or leaked lube oil from ever reaching the drain system of the Facility.

The AFC analysis determined that the "most significant hazardous materials to be used at the Facility are aqueous ammonia and natural gas. Although sulfuric acid, caustic soda, and hydrogen will also be present at the Facility, they do not pose a significant risk of off-site impacts to the public."[14] Neither ammonia nor sulfuric acid will be used during construction or during operation of the Natural Gas Compression Equipment.

The Project will not pose a significant risk from hazardous materials.

### *3.7.2.1 Natural Gas Compression Equipment Technology*

As discussed in detail in Section 2.1, Project Description, the proposed modifications to the approved CCP involves the addition of Natural Gas Compression Equipment to the Facility. The

[14] Commission Decision: Application for Certification for the Crockett Cogeneration Project, Docket No. 92-AFC-1, California Energy Commission, May 1993, p. 229.

Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but would be utilized at other times as necessary.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

The proposed compressor has a lube oil reservoir on board. The design calls for a secondary containment of 1-1/2 times the capacity of the reservoir. The foundation design also calls for the addition of additional secondary containment that would prevent any spilled or leaked lube oil from ever reaching the drain system of the Facility.

The design requires the removal of 18" of existing fill dirt, or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs. This material will be analyzed for any hazardous constituents prior to disposal. Should any hazardous materials be found, the materials will be handled and disposed of by licensed hazardous materials professionals and in compliance with all applicable LORS.

In the AFC staff analysis, CEC staff assessed whether the handling and storage of hazardous materials would pose any significant risk. After reviewing the types of materials and the types of possible failures that could occur, "staff found that compliance with existing codes would address the risks from equipment failure and that the project would be designed" to meet any such potential risks.[15] The CCP will also comply with all codes and regulations. For example, double block and bleed will be installed on all equipment as applicable and procedures will be implemented for purging all combustion equipment prior to start-up and operation. Thus, the proposed modification and Natural Gas Compression Equipment in the plant area does not add to the total area of sensitive environment and does not contain any unknown hazardous materials.

[15] Ibid, p. 230

Therefore, there is no net effect to the environment as was the case for the previously permitted project.

### *3.7.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailers to either of the equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the Crockett Cogeneration Project of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site.

The proposed delivery area is in an environment that has been highly disturbed by natural and manmade occurrences. The equipment delivery will not disturb the greater area in and around the CCP site during the delivery and the proposed modifications will not involve any hazardous materials.

Therefore the delivery will not result in a net increase in potential hazardous materials. The overall impact is the same as for the previously permitted project. As a result, there is no planned monitoring during equipment delivery. Consistent with the existing permitted project, the Project will not require the presence of a designated CPM.

### *3.7.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1, Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for access to the Facility from the proposed delivery route show on Figure 5. The footprint of the Natural Gas Compression Equipment is approximately 300

square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces; therefore, no parking spaces in the "Public Access Area[16]" or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

These modifications will have no significant impact on hazardous materials management.

#### *3.7.2.4 Plant Entrance Modifications*

No modifications to the gate entrance and access road are planned to enable delivery of the Natural Gas Compression Equipment to the Facility during the construction phase of the Project.

The existing Conditions of Certification will ensure that construction-related activities will comply with appropriate hazardous materials LORS.

### *3.7.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts from hazardous materials beyond those addressed in the CEC's Final Decision for the CCP.

### *3.7.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Final Commission Decision certifying the CCP found the Project to be in compliance with all applicable LORS. As described herein, the Project is consistent with all applicable LORS, and the Amendment will not alter the assumptions or conclusions made in the CEC's Final Commission Decision for the Crockett Cogeneration Project.

[16] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

### *3.7.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on hazardous materials management and handling. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required. The Project will comply with all of the existing COCs.

## 3.8 Land Use

### 3.8.1 Introduction

As discussed in Section 2.1, Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on local land use established for the Facility and evaluates the potential impacts to land use as a result of the proposed modifications.

Areas of potential land use impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrates that the Project will not have a significant environmental impact with regards to land use in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project and Facility will comply with all applicable LORS.

### 3.8.2 Affected Environment and Environmental Analysis

The CCP provides process steam to the C&H Refinery. The C&H Refinery is an existing and long-standing industrial facility. As such, a wide variety of environmental, operational, layout, and economic variables had to be considered in planning the existing Facility. Siting the existing Facility within the existing C&H industrial complex has obvious advantages from a land-use and environmental impacts perspective.

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including industrial, residential, and recreational. The Facility is located in an industrial

complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility under a lease with the State Lands Commission. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

The Project footprint will remain within the existing Facility with the only areas affected by the Project being previously disturbed. Since the proposed modifications do not change the operational envelope of the Facility and do not expand or change the Facility footprint, the Project will not have any additional impacts to land use beyond those described in Section 5.11 of the original Application for Certification (pages 5-335 – 5-354) and in pages 207-223 of the Final Commission Decision for the CCP.

#### *3.8.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

### *3.8.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require fifteen (15) working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailers to either of the paved equipment laydown areas, described below.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and entirely hidden from view. Project Owner anticipates that construction of the proposed modifications to the CCP will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site. The design requires the removal of 18" of the existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs.

Given the location of the Project, the short construction and installation period, and the relatively small number of required workers, the delivery and installation of the Natural Gas Compression Equipment present no material changes to land use as was defined for the previously permitted Facility.

### *3.8.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1, Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The footprint of the Natural Gas Compression Equipment is approximately 300 square feet. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the gate that will be used for access to the Facility from the proposed delivery route show on Figure 5. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers, utilizing standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 secured

parking spaces, therefore no parking spaces in the "Public Access Area"[17] or on adjacent Crockett streets will be required during the construction and installation of the Project. Since the Natural Gas Compression Equipment will be automated, the Project will not require an increase in parking during subsequent operation.

As shown in Figure 4, all laydown areas associated with the Project will be located entirely within the existing Facility. Standard tractor truck and flatbed trailers, as well as standard light-duty trucks and automobiles, will be used for delivery. Therefore, no parking outside of the existing secured parking will be needed for delivery.

Delivery, construction and operation of the Project will not have any additional impacts to land use beyond those described in Section 5.11 of the original Application for Certification and in the Final Commission Decision for the CCP.

#### *3.8.2.4 Facility Site Lease*

As required under Condition of Certification LAND-2 of the Final Commission Decision, the Facility currently operates under a lease with the State Lands Commission, Lease PRC 7691 dated July 29, 1993. The Lease requires the State Lands Commission be notified of an "Alteration" to the Facility, as defined in the Lease. Prior to the start of construction, Project Owner will comply with all notification requirements to the State Lands Commission, as they pertain to the Project, set forth in the Lease.

### *3.8.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to land use nor will such modifications create any significant, unmitigated impacts beyond those addressed in the Final Commission Decision for the Facility.

### *3.8.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable land use related LORS.

### *3.8.5 Conditions of Certification*

The proposed modifications addressed in this Petition to Amend will pose the same effect on land use as the previously permitted Facility. The proposed modifications will not have any

[17] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

additional impacts on land use. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required.

## 3.9 Noise

### 3.9.1 Introduction

As discussed in Section 2.1, Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on noise criteria established for the Facility and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential noise impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking;
3. Construction and installation of the Natural Gas Compression Equipment; and
4. Noise emanating from the Natural Gas Compression Equipment during operation of the Facility

Analysis of the attendant studies, as described below, has shown that the Project will not have a significant environmental impact with regards to noise levels in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project and Facility will comply with all applicable LORS.

### 3.9.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north, south, and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly north of the Facility, between portions of the community and the Facility.

As shown on Figure 6, the nearest residential noise receptors are located approximately 500 feet southeast of the acoustical center of the Project, in the area of Crockett. Figure 6 provides a land use map which identifies residences, hospitals, libraries, schools, places of worship and other facilities considered sensitive noise receptors.

### *3.9.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation.

As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might be utilized at other times as necessary.

CCP, with the proposed modification, will have slightly different sound power levels than that previously permitted by the CEC. A noise analysis was therefore performed to take these differences into account.

### *3.9.2.2 Operations Phase Noise*

The Conditions of Certification for the Facility established operations phase noise criterion. NOISE-3 establishes that the Facility shall not exceed a maximum continuous noise level of 53 dBA from the Facility as measured at the closest receptor on Loring Avenue under normal operating conditions, and 63 dBA from the Facility as measured at 400 feet north of the Facility's turbine building's north wall.

Operation times for the Natural Gas Compression Equipment will occur from 12:00 p.m. to 6 p.m., Monday thru Friday during the months of June, July, and August. Due to this abbreviated operational time and the location of the Natural Gas Compression Equipment, the noise in the baseline sound level is not expected to increase. However, an environmental noise survey and noise modeling were conducted to ensure that the Project will meet NOISE-3 sound criterion and that the Facility will continue to comply with all applicable LORS.

In addition, noise levels within the Project's enclosure during operations may reach levels requiring hearing protection for persons entering the enclosure. Project Owner will continue to comply with all applicable LORS regarding noise levels within the Project's enclosure.

### *3.9.2.3 Noise Survey*

Community noise measurements were carried out by Shaw Environmental[18] from the evening of September 8th to 10th 2011, when the Facility was as running as close to full capacity as allowable and hence in its noisiest condition. The *Report of Environmental Noise Evaluation* is enclosed in Appendix C.

Sound level measurements were performed with a field calibrated Rion NA-29E integrating octave band meter which meets the American National Standards Institute (ANSI) and the International Electrotechnical Commission (IEC) requirements for Type 1 accuracy. The meter provided the measurements of $L_{eq}$ (equivalent continuous sound levels), statistical data such as $L_{90}$ (the level exceeded for 90% of the time), and frequency analysis of certain sounds.

The meter and microphone were tripod-mounted, with the microphone at a height of 5 feet above the ground. Rather than unattended automatic monitoring, attended measurements over periods of 15-minutes were employed. This methodology was utilized to gain a subjective impression of the sounds heard at each position and to note extraneous sounds that may influence the recorded values.

The survey positions selected in Crockett were:

- Adjacent to the Facility on Loring Avenue at the bottom of Jackson St. (referred to as Loring/Jackson),
- Southwest of the refinery at the top of West St. where it meets Edwards Ave. (West/Edwards),
- Southeast of the Facility on higher ground at the junction of Pomona St. and Bishop Rd. (Pomona/Bishop), and
- Southeast of the Facility at the top of the hill in Emerson Ave close to the junction with Baldwin Ave., (Baldwin/Emerson), previously described as Crolona Heights.

In Glen Cove, two locations were chosen which have a direct view of the Facility:

- A footpath adjacent to the marina and new dwellings at the bottom of Chartmaster Drive, and
- South Regatta Drive.

[18] Source: Custard, Graham, M.Sc., INCE; *Report of Environmental Noise Evaluation*: *Crockett Cogeneration Power Plant*, Shaw Environmental, Stoughton, MA., December 2011.

Table 3.9-1 below describes the ambient sound levels in terms of $L_{90}$. This provides a baseline level as a result of continual, steady sounds, such as sounds emanating from the Facility, the C&H Refinery, and road traffic along I-80 and the Carquiniez bridge. This level is least affected by intermittent sounds, such as train horns and passing vehicles.

**Table 3.9-1 - Receptor Notation (see Figure 6) and existing ambient sound levels $L_{90}$, dBA**

| Notation | Road or Intersection | Location relative to power Facility | Ambient sound levels, $L_{90}$ dBA | |
|---|---|---|---|---|
| | | | Day | night |
| R | S REGATTA | Across the water, N of Facility | 52.0 | 48.4 |
| C | CHARTMASTER | Across the water, NE of Facility | 51.7 | 49.9 |
| L | LORING/JACKSON | Adjacent to Facility on the east side | 51.9 | 51.4 |
| W | WEST/EDWARDS | SW of Facility at top of hill | 57.5 | 55.4 |
| P | POMONA/BISHOP | SE of Facility up hill | 47.6 | 45.9 |
| B | BALDWIN/EMERSON | SE of Facility at top of hill | 49.8 | 47.1 |

Extensive noise control engineering had been employed for the design and construction of the Facility in order to meet the Conditions of Certification for Noise as set forth in the Final Commission Decision. Consequently, the Facility operates at relatively quiet levels compared with a conventional 240 MW power station, and thus, the noise environment in its vicinity was found to be dominated by other noise sources.

For example, southwest of the Facility, at the top of West St. (West/Edwards), it is the I-80 bridge traffic and the sugar refinery which dominate the soundscape. The sound from the I-80 bridge also carries eastwards as a significant source on the high ground southeast of the Facility (at Pomona/Bishop and Baldwin/Emerson), where some sound from the C&H Refinery is also audible.

Across the Carquinez Strait to the north, the I-80 and Carquinez bridge traffic is very significant, the C&H Refinery is clearly audible, with the Facility best described as only scarcely audible or not audible at all. It is only adjacent to the Facility, at Loring/Jackson, that the Facility is clearly audible, but within its design limit of 52 dBA.

Table 3.9-1 shows that, at night, ambient levels are generally less than 50 dBA, except at the top of West St. (West/Edwards), and adjacent to the Facility (Loring/Jackson).

The following Table 3.9-2 describes the sound levels in terms of $L_{eq}$, the average sound energy which is used for defining the 24-hour $L_{dn}$ value. $L_{eq}$ is usually a few decibels higher than $L_{90}$ because of variations and by extraneous sounds such as passing vehicles.

**Table 3.9-2 Existing Sound Levels, $L_{eq}$, for determining Ldn**

| Notation | Location | $L_{eq}$ levels, dBA | | | Notes of sound sources |
|---|---|---|---|---|---|
| | | $L_d$ (day) | $L_n$ (night) | $L_{dn}$ | |
| R | S REGATTA | 58.1 | 52.9 | 60.5 | Intermittent sounds of occasional passing cars on road and infrequent distant train horns from railway on south side, even at night. Steady sound from C&H Refinery and I-80 and Carquinez bridge traffic which were clearly audible. Facility was audible occasionally, but not audible most times. |
| C | CHARTMASTER | 53.3 | 51.1 | 57.9 | I-80 and Carquinez bridge traffic predominates, plus some sound occasionally from the water's edge. Occasional train horns even at night. Steady sound from C&H Refinery, but Facility was not audible. |
| L | LORING/JACKSON | 54.4 | 53.0 | 59.6 | Intermittent sounds of an occasional passing vehicle along the road in the daytime, train horns and wind chimes and some sounds from within dwellings. Steady sound dominated by C&H Refinery and Facility which were both clearly audible. |
| W | WEST/EDWARDS | 60.2 | 57.1 | 64.1 | Continual sounds of I-80 and Carquinez bridge traffic and C&H Refinery, with occasional train horns. Facility not audible. |
| P | POMONA/BISHOP | 54.5 | 47.1 | 55.7 | Intermittent sounds of occasional passing vehicles in day time, not at night. |
| B | BALDWIN/EMERSON | 51.8 | 48.9 | 55.9 | Continual sounds of I-80 and Carquinez bridge traffic; C&H Refinery slightly audible, Facility not audible. |

### *3.9.2.4 Predictive Noise Modeling*

SoundPlan 7.1 was used to model the local terrain around the Facility, including the coastline of Glen Cove, and the Project with relevant surrounding buildings of the existing Facility. Final design of the proposed Natural Gas Compression Equipment and associated pipework have not been finalized. However, this analysis assumed a "worst case" design of a 1500hp capacity reciprocating compressor with an electric motor enclosed within an acoustical enclosure. This methodology ensured a conservative analysis.

Noise details of a reciprocating compressor were scaled down from a known sound power spectrum of a 7200hp compressor (the sound power is a measure of the total sound emitted by the equipment in all directions). The sound power level applied to the model is therefore assumed to be 109 dBA, with an appropriate frequency spectrum.

Pipework associated with the Project will also emit noise. Three pipe lengths of approximately10 feet were assumed for the Project and were assumed to be in the Project's immediate vicinity, radiating a sound power of 93 dBA per meter.

In the model, the Natural Gas Compression Equipment was sited at the approximate center-line of the Facility. See Figure 2 for the location of the Natural Gas Compression Equipment.

The table below shows the graphical output of the predicted change to key receptors:

**Table 3.9-3 – No Impact Change in $L_{dn}$ at the Key Receptors[1]**

| Notation | Location | Existing $L_{eq}$ levels, dBA | | | $L_{eq}$ Total for Existing Plus Compressor, dBA | | | Change |
|---|---|---|---|---|---|---|---|---|
| | | $L_d$ (day) | $L_n$ (night) | $L_{dn}$ | $L_d$ (day) | $L_n$ (night) | $L_{dn}$ | $L_{dn}$ |
| **R** | S REGATTA | 58.1 | 52.9 | 60.5 | 58.1 | 52.9 | 60.5 | 0 |
| **C** | CHARTMASTER | 53.3 | 51.1 | 57.9 | 53.3 | 51.1 | 57.9 | 0 |
| **L** | LORING/JACKSON | 54.4 | 53.0 | 59.6 | 54.4 | 53.0 | 59.6 | 0 |

The *Report of Environmental Noise Evaluation*[1] which is enclosed in Appendix C, indicates the following results for the total sound levels from the Project in terms of $L_{eq}$ dBA:

- Noise is propagated most easily across the water towards the receptors of S Regatta and Chartmaster, but the highest levels from the Project are expected to be approximately 40 dBA. This level would not create an increase in the $L_{dn}$ at these locations.

- Noise immediately to the south of the power Facility is mostly screened by the large sugar silos and hence is expected to contribute less than 30 dBA to the existing sound levels. A similar level is predicted at Loring/Jackson, for which no increase would occur to the existing $L_{dn}$.

- On the rising ground further southeast and southwest of the Facility, the noise from the Project is not significant.

The *Report of Environmental Noise Evaluation* concludes that the degree of conservatism built into the present model indicates that no significant impact is likely at the key receptors. In fact, construction and operation of the Natural Gas Compression Equipment will not create any noise impacts beyond those already addressed in the Final Commission Decision for the CCP.

### *3.9.2.5 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailers to either of the equipment laydown areas. This brief delivery and construction timeframe will generate minimal sound impact and will not exceed the predicted maximum noise expected to be generated by the Project.

### *3.9.2.6 Onsite Laydown and Parking Area*

As discussed in Section 2.1, Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the gate that will be used for Facility access from the proposed Natural Gas Compression Equipment delivery route show on Figure 5. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers utilizing standard light-duty trucks and automobiles for transportation to the Facility as described in Section 3.14, Traffic and Transportation. The Facility has 20 to 30 secured parking spaces, therefore no parking spaces in the "Public Access Area[19]" or adjacent Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

As all laydown areas are located onsite, no offsite parking will be required, and construction traffic will be limited. Project Owner anticipates that construction of the proposed modifications to CCP will occur over the limited three-month period from March 2012 through May 2012 during the hours of 8:00 a.m. and 6:00 p.m., Monday through Friday. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary. Therefore, installation of the Project and operation of the Natural Gas Compression Equipment will not have a significant impact on the noise levels in or around the Facility beyond those already addressed in the Final Commission Decision for the CCP.

[19] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

### 3.9.3 Cumulative Impacts

The Project will not result in any significant cumulative impacts to sensitive receptors nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for the CCP.

### 3.9.4 Laws, Ordinances, Regulations, and Standards (LORS)

The Project and Facility will comply with all applicable LORS.

### 3.9.5 Conditions of Certification

The Project will not have any additional impacts on noise resources. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required or proposed.

### References


1. Custard, M.SC., INCE, Graham; *Report of Environmental Noise Survey: Crockett Cogeneration Power Plant, Crockett,* Contra Costa County, California; for Stoel Rives, Sacramento, CA; Shaw Environmental, Stoughton, MA, December 2011.
2. *Conditions of Certification (pages 207-223).*

## 3.10 Paleontological Resources

### 3.10.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to the Existing Facility's Final Decision. This section describes the potential effects the Project may have on paleontological resources established for the Facility and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential paleontological resource impacts include:

1. Delivery of equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrate that the Project will not have a significant environmental impact with regards to paleontological resources in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project will comply with all applicable LORS.

### 3.10.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Existing Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Existing Facility which is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly north of the Facility, between portions of the community and the Facility.

The Existing Facility is located in an industrial area that has been disturbed for several decades. In the AFC proceeding, CEC staff noted that because the proposed cogeneration facility would be situated on previously disturbed refinery grounds, it was unlikely that paleontological resources of scientific value would be discovered. The Final Commission Decision set forth Conditions of Certification to ensure the protection of any identified resources during Project construction, if found. Given that the Project will be constructed entirely within the existing site, it is reasonable to conclude that there will be no additional impacts to paleontological resources and no additional conditions of certification will be required.

### *3.10.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. The Natural Gas Compression Equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August but may also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1 Project Description for full details on the design and construction of the enclosure. The enclosure foundation will be an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. Based on this plan, the depth of penetration into the subgrade soils will be minimal. The final engineering design will take into account the need to restrict excavation and limit any impacts to Paleontological resources so that the Project can comply with LORS.

The proposed modification in the plant area does not add to the total area of sensitive environment that may contain unknown paleontological material. Therefore, there is no net effect to the environment as was the case for the previously permitted project.

### *3.10.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working

days. Standard size tractors and flatbed 40-foot trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing Crockett Cogeneration Project footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to Crockett Cogeneration Project will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the Crockett Cogeneration Project of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the Crockett Cogeneration Project site. The design requires the removal of 18 inches of existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95 percent to minimize soil export needs.

This brief delivery and construction episode will not generate any impacts to paleontological resources.

### *3.10.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for Facility access from the proposed Natural Gas Compression Equipment delivery route show on Figure 5. The footprint of the Natural Gas Compression Equipment that will be delivered to the Facility is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has spare secured parking spaces, therefore no parking spaces in the "Public Access Area[20]" or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

[20] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

The Project will have no significant impact on paleontological resources from the delivery, construction and operation of the Project.

### *3.10.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to paleontological resources.

### *3.10.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable LORS related to paleontological resources.

### *3.10.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on paleontological resources. Therefore, no changes to existing conditions of certification or additional conditions of certification are required.

## 3.11 Public Health

### 3.11.1 Introduction

As discussed in Section 2.1, Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on public health and evaluates the potential impacts as a result of the proposed modifications.

Areas of potential public health impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrate that the Project will not have a significant environmental impact with regards to public health in and around the Facility and affected area, that no modifications of currently existing Conditions of Certification are necessary, and the Project and Facility will comply with all applicable LORS.

### 3.11.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Existing Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Existing Facility which is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

### *3.11.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. The Natural Gas Compression Equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August but may also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1 Project Description for full details on the design and construction of the enclosure. The enclosure foundation will be an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

Since CCP will operate up to permitted base load capacity and no additional fuel will be consumed, and the compressor motor will receive the required electrical power as a parasitic load on the CCP, there will be no air emissions beyond the permit limits. As such, the Project will not have any impacts to air quality beyond those addressed in the Final Decision for the CCP. Therefore, the proposed modifications will not have any adverse impacts to public health or the environment beyond those already addressed in the Final Commission Decision for the CCP.

### *3.11.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Two standard size tractor and flatbed 40-foot trailer will be used to deliver the main equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing Crockett Cogeneration Project footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to Crockett Cogeneration Project will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the Crockett Cogeneration Project of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the Crockett Cogeneration Project site. The design requires the removal of 18 inches of existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95 percent to minimize soil export needs.

This brief delivery and construction period will not generate any additional impacts to public health beyond those addressed in the Final Commission Decision for CCP.

.

### *3.11.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for Facility access from the proposed Natural Gas Compression Equipment delivery route show on Figure 5. The footprint of the Natural Gas Compression Equipment that will be delivered to the Facility is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "Public Access Area"[21] or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is

[21] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

sufficient existing secured employee parking for the additional personnel during delivery and construction.

The Project will have no significant impact on public health from the delivery, construction and operation of the Project.

### *3.11.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to public health nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for CCP.

### *3.11.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable LORS.

### *3.11.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on public health. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required or proposed.

## 3.12 Reliability

### 3.12.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to the Existing Facility's Final Commission Decision. This section describes the potential effects the Project may have on power plant reliability established for the Facility and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential power plant reliability impacts include:

1. Delivery of equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrate that the Project will not have a significant environmental impact with regards to power plant reliability in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project will comply with all applicable LORS.

### 3.12.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Existing Facility's regional setting is shown as Figure 1 which is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Existing Facility which is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific Railroad main line railroad tracks lay directly north of the Facility, between portions of the community and the Facility.

The Existing Facility is located in an industrial area and has maintained reliable operating status since May 1996. In the Facility CEC Commission Decision for the Application for Certification

filed in 1993, the calculated Facility Project reliability was determined to be approximately 94 percent and the forced outage rate was calculated to be 2.9 percent. Since the Natural Gas Compression Equipment is designed to meet current industry standards for reliability greater than 95 percent, which is greater than the overall Facility reliability of 94 percent, and will be installed and maintained by qualified trained professionals, it is reasonable to conclude that there will be no additional impacts that will decrease power plant reliability.

### *3.12.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The minimum gas pressure required to operate the turbine at full load operation is 360 psig. The Natural Gas Compression Equipment will be sized to provide 400 psig discharge pressure at the SRV of the gas turbine under a wide range of suction pressures. Due to recent events, the delivered gas pressure was decreased, which caused a direct impact to the Facility's reliability to meet the requirements of the capacity demonstration period. The Project will modify the operation of the Facility to allow it to use Natural Gas Compression Equipment, when needed, to increase the delivered gas pressure up to the design-required range for the turbine. The Natural Gas Compression Equipment will provide sufficient natural gas pressure to the turbine, which is necessary to ensure the reliable achievement of the mandatory operating requirements of the capacity demonstration test period as defined in the existing CEC Final Decision. The Natural Gas Compression Equipment also will ensure the turbine will operate reliably at less than full load during non-peak hours in the event that the gas supply pressure from PG&E drops as low as 270 psig.

The Project consists of installing the Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. The Natural Gas Compression Equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August but may also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

### *3.12.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing Crockett Cogeneration Project footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to Crockett Cogeneration Project will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the Crockett Cogeneration Project of four days.

The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the Crockett Cogeneration Project site. The design requires the removal of 18 inches of existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95 percent to minimize soil export needs.

The required outage for the installation of the Natural Gas Compression Equipment is 4 to 5 days. The work is installation is expected to be completed during the scheduled PG&E outage in February or March.

This brief delivery and construction episode will not generate any impacts to power plant reliability.

### *3.12.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for Facility access from the proposed Natural Gas Compression Equipment delivery route show on Figure 5. The footprint of the Natural Gas Compression Equipment that will be delivered to the Facility is approximately 300 square feet, which is much

smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "Public Access Area"[22] or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

The Project will have no significant impact on power plant reliability from the delivery, construction and operation of the Project.

### *3.12.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to power plant reliability beyond those addressed in the CEC's Final Commission Decision for the CCP.

### *3.12.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable LORS.

### *3.12.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on power plant reliability. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required or proposed.

[22] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

## 3.13 Socioeconomics

### 3.13.1 Introduction

As discussed in previous sections, this Petition to Amend seeks approval of modifications to CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on socioeconomics and evaluates the potential impacts to these resources as a result of the proposed modifications.

### 3.13.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Existing Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Existing Facility, which is adjacent to a variety of land uses, including residential and recreational. The Existing Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Existing Facility, except for portions facing north, south, and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Existing Facility. The Southern Pacific main line railroad tracks lay directly north of the Facility, between portions of the community and the Facility.

The Project footprint will remain within the Existing Facility and the only areas affected by the Project are previously disturbed. Since the proposed modifications do not change the operational envelope of the Existing Facility and do not expand or change the Facility footprint, the Project will not have any additional impacts to socioeconomics beyond those described in Section 1.7.6 of the original Application for Certification (page 1-38) and in the Final Commission Decision[23] for CCP (pages 128 to 160).

[23] CEC Final Decision for *Crockett Cogeneration Natural Gas Power Plant, Crockett,* Contra Costa County, California

***Project Capital Costs and Tax Revenue***

The proposed modifications are estimated to cost $2.5M. However, installation of the Natural Gas Compression Equipment is not expected to result in a net property improvement value. Pacific Gas and Electric's decrease of gas pressure delivery to the Facility has decreased the power delivery capacity from 240 MW to 225 MW. A sustained decrease in the gas pressure could result in a decreased value of the Facility, as such value is intrinsically related to the Facility's long-term financial viability. Long-term financial viability of the Facility will be strengthened by the installation of the Natural Gas Compression Equipment as the installation reduces the risk created by the diminished gas delivery pressure, which will continue to result in decreased power delivery capacity and associated power generation tax revenues.

Contra Costa County will continue to receive the requisite tax revenues based on the assessed value of the property.

***Construction and Operations***

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "Public Access Area"[24] or adjacent Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility. Installation of the Natural Gas Compression Equipment will require three months with an estimated total labor requirement of 8,000 man-hours. Construction payroll is estimated to be $500,000 during the construction period for the Project.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers, as well as standard light-duty trucks and automobiles, will be used for delivery. There is sufficient existing employee parking for the additional personnel during delivery and construction. Delivery, construction, and operation of the Project will not have any additional impacts to air quality resources beyond those described in the original Application for Certification and in the Final Commission Decision for CCP.

The short duration of construction will not result in a quantifiable benefit to Contra Costa County and the adjacent areas due to the slight and temporary increase in local jobs and commercial activity during construction. In addition, while the Project Owner has not selected a contractor as of this date, it is expected that most of the labor force will be comprised of local

[24] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

residents. However, there may be a need to hire labor or supervision workers from outside the local area. These workers may require temporary housing at local lodging establishments. Because of the low number of workers required to complete the Project, and the number of potential out-of-area workers being even less than the number of workers needed to complete construction of the Project, there will be no significant or adverse impacts to local lodging or other commercial resources.

Payroll for Facility operations will continue to remain the same, which is approximately $3.5 Million per year.

***Utilities and Public Services***

The Project will not have an impact on utilities or public services associated with the Natural Gas Compression Equipment. In fact, because of the decrease in gas pressure from PG&E's gas line, the proposed modifications create a net benefit and reduced impacts to PG&E's supply line. The proposed modifications to the Facility will not have an increased impact on fire protection, police protection, or hospital services as the scale of Project construction is minor and the operations of the Facility will remain unchanged.

### *3.13.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1 Project Description for full details on the design and construction of the enclosure. The enclosure will be installed on an eighteen (18) inch thick concrete slab and will utilize helical micro-piles to anchor the slab into

the soil and bedrock below. The enclosure will be a 17 foot wide by 25 foot long by 12 foot high pre-fabricated building constructed out of acoustic material to provide adequate noise suppression. The height of this structure will be at the same level with the surrounding building so that it will not be visible from outside the Facility

### *3.13.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the paved equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to CCP will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site. The design requires the removal of 18" of the existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs.

This brief delivery and construction period is not expected to generate any quantifiable impacts to the socioeconomics of the area by the purchase of goods and services from businesses located in the vicinity of the Project.

### *3.13.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square foot trapezoid-shaped flat paved area, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square foot rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for access to the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "Public Access Area"[25] or adjacent Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers, as well as standard light-duty trucks and automobiles, will be used for delivery. There is sufficient existing employee parking for the additional personnel during delivery and construction. Delivery, construction, and operation of the Project will not have any additional impacts to socioeconomics beyond those described in the original Application for Certification and in the Final Commission Decision for CCP.

### *3.13.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to the area's socioeconomics nor will the proposed modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for the CCP.

### *3.13.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable socioeconomics-related LORS.

### *3.13.5 Conditions of Certification*

The proposed change addressed in this Amendment is on a much smaller scale than the construction of the Facility, and therefore does not pose the same effect to the area's socioeconomics as the previously permitted Project. The modifications as proposed herein do not raise the impact of the Project as a whole above those identified in the Final Commission Decision. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required or proposed.

[25] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

## 3.14 Traffic and Transportation

### 3.14.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on traffic and transportation and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential traffic impacts include:

1. Truck trips associated with delivery of the equipment;
2. Vehicle trips associated with construction workers;
3. Parking for construction workers; and
4. Vehicle trips associated with maintenance and other long-term operation.

Analysis of the affected environment and the proposed modifications as detailed in this section demonstrates that the Project will not have a significant environmental impact with regards to traffic and transportation resources in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project and Facility will comply with all applicable LORS.

### 3.14.2 Affected Environment

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific Rail Road main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

The structure housing the Natural Gas Compression equipment will be located inside the existing plant, underneath the existing pipe bridge, with the boiler feed pump building to the north, the turbine building to the east and the HRSG (Heat Recovery Steam Generator) to the south.

The enclosure will be approximately 17-feet wide by 25-feet long by 12-feet high pre-fabricated building constructed out of acoustic material to provide adequate noise suppression. The foundation for the enclosure will include a 6-inch curb without an external drain to serve as a secondary containment for the compression equipment. The enclosure will be accessible from the east and west via roll-up doors that will be rolled up during maintenance operations.

### *3.14.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow use of the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500 hp and a potential configuration of one 1500 hp unit or two 750 hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure foundation will be an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

The Natural Gas Compression Equipment is designed to be fully automated. Since the Natural Gas Compression Equipment is automated, the Project will not create any impacts on traffic and transportation resources beyond those already addressed in the Final Commission Decision for the CCP. In fact, impacts associated with the proposed Project will remain unchanged as a consequence of the proposed modifications.

### *3.14.2.2 Onsite Equipment Delivery and Installation*

Delivery of the Natural Gas Compression Equipment will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Standard size tractors and flatbed 40-foot trailers will be used to deliver the main equipment to the Project laydown area. An onsite forklift will be used to unload the natural gas compression equipment from the flatbed 40-foot trailer to either of the paved equipment laydown areas. The delivery will occur via existing roadways and the laydown areas are paved.

The Natural Gas Compression Equipment will be installed within the existing Crockett Cogeneration Project footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days.

The engineered concrete slab foundation (concrete slab) for the Natural Gas Compression Equipment and enclosure will consist of a concrete mat of uniform thickness supported by a deep foundation system such as A. B. Chance Helical Piers.

Concrete slab foundations will require 30 yards of premixed concrete that will be delivered to the site by three or four concrete trucks, staged as required, to provide the required concrete volume. The concrete trucks will deliver concrete to the Project between the hours of 9:00 a.m. and 3:00 p.m. in accordance with the Final Commission Decision for the CCP.

### *3.14.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square foot trapezoid-shaped flat paved area, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square foot rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for access to the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

All equipment laydown areas will be located within the Facility. Standard tractor truck and flatbed trailers, as well as standard light-duty trucks and automobiles, will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

### *3.14.2.4 Regional Access*

Regional highway access is provided by Interstate 80 (I-80), which is located approximately one mile west of the Project site. I-80 is a north-south freeway with six to seven lanes that connects the San Francisco Bay Area to the Sacramento Valley and points east. There are two exits serving the community of Crockett: the Cummings Skyway and the Crockett exit.

State Route 4 (SR 4) is an east-west regional highway with four lanes that intersects I-80 southwest of Crockett and provides access to the Cities of Martinez and Concord to the east. The Cummings Skyway provides the connection between Crockett and SR 4.

The Facility also has regional railroad access through the Southern Pacific Railroad Company. The tracks pass through the C&H Refinery directly adjacent to the Project site. The C&H Refinery has direct access to facilities for rail-born freight shipments.

Finally, the site is adjacent to the Carquinez Strait, a waterway that links the San Francisco Bay to the Suisun Bay and inland delta areas. The C&H Refinery maintains a large berthing area for barges and other vessels.

### *3.14.2.5 Local Street System*

The Project site is served by a system of local streets under the jurisdiction of the County of Contra Costa. The most direct local access route from I-80 is via Pomona Street, Rolph Avenue, Loring Avenue, and Bay Street.

Rolph Avenue is a fully improved two-lane roadway that runs generally north-south. It has a width of approximately 34 feet.

Loring Avenue is an east-west, two-lane roadway that provides direct access to the C&H site. This fully improved roadway has a width that varies from 20 to 44 feet, with parking allowed on both sides where the width is sufficient to accommodate it.

Bay Street has a paved width of approximately 50 feet and runs north-south, connecting to Loring Avenue.

### *3.14.2.6 Intersection Level of Service Methodologies and Standards*

The intersections most likely to experience any impacts due to the Project-related traffic are Rolph Avenue/Loring Avenue and Rolph Avenue/Pomona Street (hereinafter "study intersections"). These locations provide direct access to the Project site, and all Project traffic

would be expected to travel through these intersections. Both of these study intersections are all-way stop-controlled.

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2000. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The study intersections have stop signs on all approaches so were analyzed using the "All-Way Stop-Controlled" Intersection" methodology from the HCM. This methodology evaluates delay for each approach based on turning movements, opposing and conflicting traffic volumes, and the number of lanes. Average vehicle delay is computed for the intersection as a whole, and is then related to a Level of Service.

The ranges of delay associated with the various levels of service are indicated in Table 3.14-1.

**Table 3.14-1**
**All-Way Stop-Controlled Intersection Level of Service Criteria**

| | |
|---|---|
| LOS A | Delay of 0 to 10 seconds. Upon stopping, drivers are immediately able to proceed. |
| LOS B | Delay of 10 to 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop. |
| LOS C | Delay of 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach, and wait for vehicle to clear from one or more approaches prior to entering the intersection. |
| LOS D | Delay of 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches. |
| LOS E | Delay of 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection. |
| LOS F | Delay of more than 50 seconds. Drivers enter long queues on all approaches. |

Reference: *Highway Capacity Manual*, Transportation Research Board, 2000

### *3.14.2.7 Existing Intersection Operation*

Based on counts obtained between 7:00-9:00 AM and 4:00-6:00 PM on December 5, 2011, both study intersections of Rolph Avenue/ Loring Avenue and Rolph Avenue/Pomona Street are

currently operating at LOS A or B, with very low delays, as summarized in Table 3.14-2. Copies of the calculations are provided in Appendix C.

**Table 3.14-2**
**Summary of Peak Hour Intersection Level of Service Calculations**

| **Study Intersection** ***Approach*** | **Existing Conditions** | | | | **Existing plus Project** | | | |
|---|---|---|---|---|---|---|---|---|
| | **AM Peak** | | **PM Peak** | | **AM Peak** | | **PM Peak** | |
| | **Delay** | **LOS** | **Delay** | **LOS** | **Delay** | **LOS** | **Delay** | **LOS** |
| 1. Rolph Avenue/Loring Avenue | 7.4 | A | 7.3 | A | 7.5 | A | 7.4 | A |
| 2. Rolph Avenue/Pomona Street | 10.6 | B | 9.2 | A | 10.9 | B | 9.2 | A |

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

## *3.14.3 Environmental Analysis*

### *3.14.3.1 Construction Related Impacts*

The construction related impacts to traffic consist of equipment delivery traffic and daily worker trips.

#### *3.14.3.1.1 Equipment Delivery Impacts*

The proposed Project will require the delivery of the Natural Gas Compression Equipment and construction equipment and materials to the Facility. Additionally, there will be a maximum work force of 20 persons required to install the new Natural Gas Compression Equipment.

As proposed, all equipment and materials would be delivered using trucks of a standard size along a route of public highways and streets including I-80, Pomona Street and Rolph Avenue. Site access would be via the Rolph Avenue, crossing the Southern Pacific Railroad tracks into the C&H Refinery, then through to the location of the proposed installation.

It is anticipated that a limited number of truck trips would be necessary to deliver the various components of the Natural Gas Compression Equipment, construction equipment and materials. However, to maintain consistency with the Conditions of Certification set forth in the Final Commission Decision, deliveries should be scheduled during non-peak traffic hours and either before or after shift changes and appropriate permits will be obtained for any oversized loads. Given that there will be approximately ten truck trips needed for equipment and materials delivery and since the expected use of vehicles for delivery will be similar to those being used at the C&H Refinery for other deliveries, the increase in traffic due to delivery is expected to be

imperceptible and the resulting impact less-than-significant. However, Project Owner will continue to enforce TRANS-1 and TRANS-2, as set forth in the Final Commission Decision.

#### *3.14.3.1.2 Construction Worker Trip Impacts*

Construction of the proposed changes will require a work force of up to 20 persons. Personnel are expected to arrive via personal passenger vehicles, and while workers would typically be expected to carpool, for analysis purposes it was assumed that all 20 employees would drive single occupant vehicles, resulting in 20 inbound trips during the AM peak hour and 20 outbound trips during the PM peak hour.

Given the Facility's proximity to I-80, the majority of the workers would be expected to traverse a route between the freeway via Pomona Street, Rolph Avenue, and Loring Avenue. A few workers might elect to use the Cummings Skyway to get to SR 4 and from there to points east, but all construction-related trips would be expected to go through the two Study Intersections of Rolph Avenue/Loring Avenue and Rolph Avenue/Pomona Street. The routes that workers would be expected to use between the site and the regional transportation system are shown in Figure 5.

As indicated by the results of the LOS analysis shown in Table 3.14-2, the additional traffic generated by construction workers would result in a minimal impact on operating conditions for the highways and streets serving the Facility. At the two Study Intersections, under the very conservative assumptions applied, average delay would increase by 0.0 to 0.3 seconds during both peak periods evaluated. Since the number of trips added by the Project would be lower at other locations than the Study intersections, due to the dispersion to various routes, it is reasonable to conclude that the Project's impact on the operation of other transportation facilities in the area would be similarly imperceptible and insignificant. However, Project Owner will continue to enforce TRANS-3 as set forth in the Final Commission Decision

Analysis was also undertaken for any potential safety impacts associated with travel along Rolph Avenue adjacent to John Swett High School. A parking lot is located to the north of the High School. The parking lot contains driveways which exit onto Loring Avenue, as well as Rolph Avenue. Drivers entering and exiting the driveway on Rolph Avenue would most likely be coming from and returning to the south, or traveling in the same direction as Project-generated traffic. Though there exist no left-turn lanes on Rolph Avenue for school traffic to utilize when entering the parking lot, sight lines are unobstructed and there is limited opposing traffic (less than 100 vehicles per hour). Upon exiting the parking lot, it was assumed that drivers will typically be turning right onto Rolph Avenue. Given the actions by drivers, volumes present, and direction of travel, it is reasonable to conclude that safe operation at these locations will not be impacted by the additional construction-related vehicles.

#### *3.14.3.1.3 Parking Area*

The work force of up to 20 persons required for construction of the Project will necessitate the use of up to 20 parking spaces. The Facility has 30 secured parking spaces, therefore no parking spaces in the "Public Access Area"[26] or Crockett streets will be required. However, to ensure that the impacts associated with parking are contained on-site, Project Owner will continue to enforce TRANS-4 as set forth in the Final Commission Decision.

### *3.14.3.2 Operational Related Traffic Impacts*

Upon completion of construction of the Project, the Natural Gas Compression Equipment will exist within the normal operating parameters of the Facility. Therefore, no increase in workers is expected for long-term operations. From time to time, there will be minor ongoing maintenance required. This maintenance will be performed by contractors on an as-needed basis and will consist of a very small number of workers. The impact of long-term maintenance activities on traffic operation is therefore less-than-significant.

In addition, since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

As the daily operation of the Facility will remain unchanged and there are no new employees required to operate the Natural Gas Compression Equipment, the Project will not result in any operational related traffic or parking impacts.

## *3.14.4 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to traffic and transportation resources nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for CCP.

## *3.14.5 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable LORS.

[26] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

### *3.14.6 Conditions of Certification*

The Project will not have any additional impacts on traffic and transportation resources. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required or proposed.

### *References*


1. *Draft Environmental Report for the Crockett Cogeneration Power Plant*, 1991.
2. *Conditions of Certification*
3. *California Code of Regulations, Title 20, Public Utilities and Energy*, Chapter 6, Environmental Protection, Appendix A "Information Requirements for a Corridor Designation Application", Section (k), Page 476 http://www.energy.ca.gov/2008publications/CEC-140-2008-001/CEC-140-2008-001-REV1.PDF
4. Travis Air Force Base – Land Use Compatibility Plan; Adopted by Solano County Air Land Use Commission http://www.co.solano.ca.us/civicax/filebank/blobdload.aspx?blobid=3929
5. Buchanan Field Airport Policies http://www.co.contra-costa.ca.us/DocumentView.aspx?DID=856
6. Napa County Airport Land Use Compatibility Plan http://www.countyofnapa.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=4294968988
7. Oakland International Airport – Land Use Compatibility Plan http://www.acgov.org/cda/planning/landuseprojects/documents/Draft_OAK_ALUCP_091510.pdf
8. *Highway Capacity Manual* (HCM), Transportation Research Board, 2000

## 3.15 Transmission Line Safety and Nuisance

### 3.15.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on transmission line safety and nuisance and evaluates the potential impacts as a result of the proposed modifications.

Areas of potential visual resource impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrates that the Project will not have a significant environmental impact with regards to transmission line safety and nuisance in and around the Facility, no modification of existing Conditions of Certification are necessary, and the Project and Facility will comply with all applicable LORS.

### 3.15.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

The purpose of the transmission line safety and nuisance review is to examine the safety and nuisance aspects of the underground transmission line and related transmission facilities to

ensure that they will be designed constructed and operated in a manner which protects the environment, assures public health and safety and complies with LORS. The addition of the Natural Gas Compression Equipment will not affect the existing transmission lines and therefore will not create any new or significant safety or nuisance issues.

### *3.15.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1 Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in workers at the Facility during operation.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

Operation of the Natural Gas Compression Equipment will not create any additional transmission line safety and nuisance impacts beyond those already addressed in the Final Commission Decision for the CCP. In fact, transmission line safety and nuisance impacts associated with the proposed Project will remain unchanged as a consequence of the proposed modifications.

### *3.15.2.2 Onsite Equipment Delivery and Installation*

Delivery of the Natural Gas Compression Equipment will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15

working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailers to either of the paved equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to CCP will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the Crockett Cogeneration Project site. The design requires the removal of 18" of the existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs.

This brief delivery and construction period will not generate any additional impacts to transmission line safety and nuisance beyond those addressed in the Final Commission Decision for CCP.

### *3.15.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used to access the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment that will be delivered to the Facility is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "Public Access Area"[27] or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

[27] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

Delivery and laydown activities associated with the Project will not have any additional impacts to transmission line safety and nuisance beyond those described in the original Application for Certification and in the Final Commission Decision for CCP transmission line safety and nuisance.

### *3.15.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to transmission line safety and nuisance nor will the Project create any significant, unmitigated transmission line safety and nuisance impacts beyond those addressed in the CEC's Final Commission Decision for the CCP.

### *3.15.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable transmission line safety and nuisance related LORS.

### *3.15.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on transmission line safety and nuisance beyond those addressed in the Final Commission Decision for CCP. Therefore, based on the evaluation of the Project, no modifications or additions of Conditions of Certification will be required for transmission line safety and nuisance.

## 3.16 Transmission System Engineering

### 3.16.1 Introduction

As discussed in Section 2.1 Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on transmission system engineering and evaluates the potential impacts as a result of the proposed modifications.

Areas of potential visual resource impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrates that the Project will not have a significant environmental impact with regards to transmission system engineering in and around the Facility, no modification of existing Conditions of Certification are necessary, and the Project and Facility will comply with all applicable LORS.

### 3.16.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

The purpose of the transmission system engineering review is to determine if the Project's transmission facilities conform to all applicable LORS for electrical power transmission lines.

Secondly, the review assesses whether the Project meets transmission system planning criteria that will assure that the PG& E transmission system will have adequate transmission capacity to accommodate the Project's power output.[28] The AFC analysis concluded that the electric transmission system for the proposed Facility is designed to meet applicable industry and regulatory criteria…"[29]

The Natural Gas Compression Equipment will not affect the existing transmission lines and therefore will not create any new or significant safety or nuisance issues.

### *3.16.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1 Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in workers at the Facility during operation.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1 Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

[28] Commission Decision: Application for Certification for the Crockett Cogeneration Project, Docket No. 92-AFC-1, California Energy Commission, May 1993, p. 356.
[29] Ibid, p. 358.

Operation of the Natural Gas Compression Equipment will not create any additional transmission system engineering impacts beyond those already addressed in the Final Commission Decision for the CCP. In fact, transmission system engineering impacts associated with the proposed Project will remain unchanged as a consequence of the proposed modifications.

### *3.16.2.2 Onsite Equipment Delivery and Installation*

Delivery of the Natural Gas Compression Equipment will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the paved equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to CCP will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the Crockett Cogeneration Project site. The design requires the removal of 18" of the existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs.

This brief delivery and construction period will not generate any additional impacts to transmission system engineering beyond those addressed in the Final Commission Decision for CCP.

### *3.16.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1 Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used to access the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment that will be delivered to the Facility is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "Public Access Area"[30] or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

Delivery and laydown activities associated with the Project will not have any additional impacts to transmission system engineering beyond those described in the original Application for Certification and in the Final Commission Decision for CCP.

### *3.16.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to transmission system engineering nor will the Project create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for the CCP.

### *3.16.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable transmission system engineering related LORS.

### *3.16.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on transmission system engineering beyond those addressed in the Final Commission Decision for CCP. Therefore, based on the evaluation of the Project, no additional Conditions of Certification will be required for transmission system engineering.

[30] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

## 3.17 Visual Resources

### 3.17.1 Introduction

As discussed in Section 2.1, Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on visual resources established for the Facility and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential visual resource impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrates that the Project will not have a significant environmental impact with regards to visual resources in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project and Facility will comply with all applicable LORS.

### 3.17.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

### *3.17.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. The structure will be surrounded by the existing equipment to the north, south, east and west. A utility and piping mezzanine will be located above the structure and will not allow direct access. See Section 2.1 Project Description for full details on the design and construction of the enclosure. The enclosure will be installed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. The enclosure will be a 17 foot wide by 25 foot long by 12 foot high pre-fabricated building constructed out of acoustic material to provide adequate noise suppression. The height of this structure will at the same level with the surrounding building so that it will not be visible from outside the Facility.

This advanced technology will allow the structure to comply with all applicable LORS.

Construction and operation of the Natural Gas Compression Equipment will not create any additional visual resources impacts beyond those already addressed in the Final Commission Decision for the CCP.

### *3.17.2.2 Onsite Equipment Delivery and Installation*

Delivery of the Natural Gas Compression Equipment will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the

Natural Gas Compression Equipment from the flatbed 40-foot trailers to either of the paved equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to CCP will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site. The design requires the removal of 18" of the existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs.

This brief delivery and construction period will not generate any additional impacts to visual resources beyond those addressed in the Final Commission Decision for CCP.

### *3.17.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1, Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment area. Each laydown area has direct access to the sliding gate that will be used for access to the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment that will be delivered to the Facility is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, therefore no parking spaces in the "BCDC Area" or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction. Delivery, construction and operation of the Project will not have any additional impacts to visual resources beyond those described in the original Application for Certification and in the Final Commission Decision for CCP.

### *3.17.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to visual resources nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for the CCP.

### *3.17.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable visual resources related LORS.

### *3.17.5 Conditions of Certification*

The proposed modifications addressed in this Amendment will be conducted completely within the Facility and will not be visible outside of the Facility. The proposed modifications will not have any additional impacts on visual resources beyond those addressed in the Final Commission Decision for CCP. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required.

## 3.18 Waste Management

### 3.18.1 Introduction

As discussed in Section 2.1, Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on waste management for the Facility and evaluates the potential impacts as a result of the proposed modifications.

Areas of potential waste management impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrates that the Project will not have a significant environmental impact with regards to waste management in and around the Facility and the affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project and Facility will comply with all applicable LORS.

### 3.18.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Existing Facility, between portions of the community and the Facility.

### *3.18.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1 Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

CCP will perform the necessary routine maintenance of the Natural Gas Compression Equipment in accordance with the manufacturer's specifications and no wastestreams will be generated. Operation of the Natural Gas Compression Equipment will not create any additional waste management impacts beyond those addressed in the Final Commission Decision for the CCP.

### *3.18.2.2 Onsite Equipment Delivery and Installation*

Delivery of the Natural Gas Compression Equipment will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the paved equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and completely hidden from view. Project Owner anticipates that construction of the proposed modifications to CCP will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site. The design requires the removal of 18" of the existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs.

The Geotechnical Evaluation for the Project identifies water beneath the ground at a depth ranging from 6 feet to 8 feet based on borings from the mid-1980's. The need for dewatering depends on the depth of excavation required and the changes in the groundwater levels. Based on the information available it is unlikely that the depth of the proposed excavation will encounter groundwater. Therefore, the need for dewatering, pumping and disposal of groundwater is not anticipated at this time and wastewater will not be generated.

Non-hazardous wastes are expected to be generated as a consequence of general construction activities during installation of the Natural Gas Compression Equipment. Typical examples of such non-hazardous waste include broken concrete, trash, wood wastes, other debris, and excess excavated dirt. The quantities of non-hazardous wastes associated with the Project are expected to be minimal and will not adversely impact local landfill capacities or recycling capabilities. All non-hazardous wastes will be managed in accordance with the Crockett Cogeneration *Operations Waste Management Plan*[31]

This brief delivery and construction period will also not generate any impacts to waste management beyond those addressed in the Final Commission Decision. Nevertheless, any waste produced due to normal construction activities (i.e., normal construction waste and materials) would be managed in accordance with existing Conditions of Certification.

### *3.18.2.3 Natural Gas Compression Equipment Operation Wastes*

The existing natural gas scrubber at the Facility will be used as an inlet scrubber to the Natural Gas Compression Equipment to prevent any liquids from reaching the compressor. This will ensure that inefficiency or malfunction is not caused by vapor locking in the compressor. Historically, however, the gas supplied by PG&E has not contained any liquid. If liquids are

[31] *Operations Waste Management Plan*, Crockett Cogeneration, December 2011.

collected, they will be drained into a bucket and placed in a waste oil tank for recycling off-site in accordance with the Crockett Cogeneration *Operations Waste Management Plan*. Operation of the Natural Gas Compression Equipment will have no additional impacts to waste resources beyond those described in the original Application for Certification and in the Final Commission Decision for CCP.

### *3.18.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to waste management nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for the CCP.

### *3.18.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable waste management related LORS.

### *3.18.5 Conditions of Certification*

The proposed change addressed in this Amendment poses the same effect to waste management as the previously permitted project. The site has a current *Operations Waste Management Plan*, which includes waste minimization and management practices that meet or exceed all regulatory requirement. The incremental effect caused by the proposed modifications does not raise the impact of the Project as a whole above the present level of significance. Therefore, existing COCs do not need to be modified.

## 3.19 Water Resources and Quality

### 3.19.1 Introduction

As discussed in Section 2.1, Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on water resources and water quality, and evaluates the potential impacts to these resources as a result of the proposed modifications.

Areas of potential impacts to water resources and quality include:

1. Delivery of equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking;
3. Construction and installation of the Natural Gas Compression Equipment; and
4. Operation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrates that the Project will not have a significant environmental impact with regards to water resources in and around the Facility and affected area, that no modification of currently existing Conditions of Certification are necessary, and that the Project and Facility will comply with all applicable LORS.

### 3.19.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north, south, and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

The Natural Gas Compression Equipment will be located strategically and housed within a structure designed to reduce and avoid potential impacts from its operation. This structure housing the Natural Gas Compression equipment will be located inside the existing plant, underneath the existing pipe bridge, with the boiler feed pump building to the north, the turbine building to the east and the HRSG (Heat Recovery Steam Generator) to the south.

The enclosure will be a 17-foot wide by 25-foot long by 12-foot high pre-fabricated building constructed out of acoustic material to provide adequate noise suppression. The foundation for the enclosure will include a 6-inch curb without an external drain to serve as secondary containment for the compression equipment. The enclosure will be accessible from the east and west via roll-up doors that will be rolled up during maintenance operations. The Natural Gas Compression Equipment's location indoors will protect it from contact with rain and storm water discharge.

Although the Project is near the Carquinez Strait, the CEC's Final Commission Decision determined that the "construction and operation of the Project is not likely to have a significant adverse impact on any water resources in the Project area, nor contribute to any adverse cumulative impact on water resources and water quality."[32]

The construction of the Natural Gas Compression Equipment will follow all applicable laws and regulations that restrict discharge of any water into storm channels.

Given the location and structure of the Natural Gas Compression Equipment within the Facility, no additional impacts to water resources and water quality beyond those addressed in the Final Commission Decision will be created.

### *3.19.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential

[32] CEC Final Decision for *Crockett Cogeneration Natural Gas Power Plant, Crockett,* Contra Costa County, California

equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description, for full details on the design and construction of the enclosure. The enclosure will be installed on an 18 inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

The existing natural gas scrubber at the Facility will be used as an inlet scrubber to the Natural Gas Compression Equipment to prevent any liquids from reaching the compressor. This will ensure that inefficiency or malfunction is not caused by vapor locking in the compressor. The gas supplied by PG&E is Public Utility Commission (PUC) quality gas and historically has not contained any liquid. In the unlikely event liquids are collected from the scrubber, they will be drained into a bucket and placed in a waste oil tank for recycling off-site. The gas scrubber is equipped with sufficient secondary containment.

No water is required for the Natural Gas Compression Equipment to operate. Therefore, there will be no additional impacts to water resources and water quality associated with the Project as it relates to the Natural Gas Compression Equipment since no water is required for operation of the equipment.

### *3.19.2.2 Onsite Equipment Delivery and Installation*

Delivery of the equipment components will require approximately one (1) working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the equipment laydown areas. The delivery will occur via existing roadways and the laydown areas are paved.

The Natural Gas Compression Equipment will be installed within the existing Crockett Cogeneration Project footprint, amidst existing equipment and completely hidden from view. The applicant anticipates that construction of the proposed modifications will occur over the three (3) month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four (4) days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the CCP site. The design requires the removal of 18 inches of existing fill dirt. The soil will then be compacted to 95% to

minimize the soil export needs. The construction will utilize current soil erosion control and storm water runoff Best Management Practices (BMPs) that will ensure there is no adverse impact to the nearby Carquinez Strait surface water body.

This brief delivery and construction period will not generate any impacts to water resources and water quality.

### *3.19.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1, Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved area, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used for access to the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project. The laydown and parking areas will be equipped with stormwater and erosion controls (i.e. storm water BMPs) that will prevent impacts to water resources and water quality.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 30 spare secured parking spaces, so no parking spaces in the "Public Access Area[33]" or Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

These modifications will have no adverse impacts on water resources and water quality.

[33] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

### *3.19.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to water resources and water quality nor will such modifications create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for CCP.

### *3.19.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable LORS.

### *3.19.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on water resources and water quality. Therefore, no changes to existing Conditions of Certification or additional Conditions of Certification are required.

#### *References*

1. CEC Final Decision for *Crockett Cogeneration Natural Gas Power Plant, Crockett*, Contra Costa County, California

## 3.20 Worker Health and Safety

### 3.20.1 Introduction

As discussed in Section 2.1, Project Description, this Petition to Amend seeks approval of modifications to the CCP to install urgently required Natural Gas Compression Equipment that necessitates evaluation of environmental impacts and potential amendments to specific Conditions of Certification. This section describes the potential effects the Project may have on worker health and safety for the Facility and evaluates the potential impacts as a result of the proposed modifications.

Areas of potential worker health and safety impacts include:

1. Delivery of the equipment;
2. Onsite/offsite laydown and parking area for equipment staging and construction employee parking; and
3. Construction and installation of the Natural Gas Compression Equipment.

Analysis of the affected environment and the proposed modifications demonstrates that the Project will not have a significant environmental impact with regards to worker health and safety in and around the Facility, no modification of existing Conditions of Certification are necessary, and the Project and Facility will comply with all applicable LORS.

### 3.20.2 Affected Environment and Environmental Analysis

The CCP is located in an unincorporated area of Contra Costa County known as Crockett, Township 3 North, Range 3 West, Mount Diablo Base and Meridian, California. The Facility's regional setting is shown as Figure 1. The Facility is located entirely within an industrial complex, immediately east of the southern span of the Carquinez Bridge, south of the Carquinez Strait waterfront, and north of Loring Avenue.

The Project site is entirely located within the Facility. The Facility is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery completely surrounds the Facility, except for portions facing north and south and to the east. Approximately 2.6 acres of the C&H Refinery are leased for the Facility. The Southern Pacific main line railroad tracks lay directly south of the Facility, between portions of the community and the Facility.

### *3.20.2.1 Natural Gas Compression Equipment Technology*

The original configuration of the Facility did not require the use of the Natural Gas Compression Equipment, as the pressure of gas delivered by PG&E was sufficient to allow full operation. The Project will modify the operation of the Facility to allow it to use the Natural Gas Compression Equipment when needed to raise the pressure of gas delivered to the Facility to the levels sufficient to allow full operation and output under the existing CEC license.

The Project consists of installing Natural Gas Compression Equipment at the Facility to ensure the Facility can be fully responsive to demand and need regardless of the delivery pressure of natural gas by PG&E. As described in Section 2.1, Project Description, the Natural Gas Compression Equipment may include a range of potential equipment. However, all potential equipment will be electrical and reciprocating in nature, with a maximum output of 1500hp and a potential configuration of one 1500hp unit or two 750hp units. The Natural Gas Compression Equipment is expected to be utilized from 12:00 p.m. to 6:00 p.m., Monday through Friday in the peak summer months of June, July, and August, but might also be utilized at other times as necessary. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in workers at the Facility during operation.

The Natural Gas Compression Equipment will be housed within a structure designed to reduce and avoid potential impacts from its operation. See Section 2.1, Project Description for full details on the design and construction of the enclosure. The enclosure will be housed on an eighteen (18) inch thick concrete slab and will utilize helical piers to anchor the slab into the soil and bedrock below. This advanced technology will allow the structure to comply with all applicable LORS.

Operation of the Natural Gas Compression Equipment will not create any additional worker health and safety impacts beyond those already addressed in the Final Commission Decision for the CCP. In fact, worker health and safety impacts associated with the proposed Project will remain substantially unchanged as a consequence of the proposed modifications.

### *3.20.2.2 Onsite Equipment Delivery and Installation*

Delivery of the Natural Gas Compression Equipment will require approximately one working day. Construction and installation will occur within the existing Facility and will require 15 working days. Approximately ten standard size tractors with 40-foot flatbed trailers will be used to deliver the equipment to the Project laydown area. An onsite forklift will be used to unload the Natural Gas Compression Equipment from the flatbed 40-foot trailer to either of the paved equipment laydown areas.

The Natural Gas Compression Equipment will be installed within the existing CCP footprint, amidst existing equipment and inside of an engineered enclosure, with the exception of two large bore above-ground 8-inch diameter steel pipe runs, which are as follows: 1) supply of gas from the existing gas piping to the Gas Compression Equipment and 2) discharge of compressed gas from the Gas Compression Equipment back to the existing piping The two main gas pipes (gas supply and gas discharge) are going to be approximately 20 feet each. In addition, there will also be a small bore 1-inch diameter, 20-foot long above-ground lube oil steel piping run to supply lubricant to the lube oil coolers, which should be about 20' for supply and return each. Half of the length (approximately 10 feet) of each of the 8-inch diameter and 1-inch diameter steel pipe runs will be installed inside the Natural Gas Compression Equipment enclosure, and the other 10 feet will be located outside of the enclosure.

Project Owner anticipates that construction of the proposed modifications to CCP will occur over the three-month period from March 2012 through May 2012. The Project will employ a peak workforce of approximately 20 workers and require an outage at the CCP of four days. The Natural Gas Compression Equipment will be installed on a concrete slab foundation that will be constructed by excavating already disturbed soil in the interior of the Crockett Cogeneration Project site. The design requires the removal of 18" of the existing fill dirt or approximately 500 cubic feet. The soil will then be compacted to 95% to minimize soil export needs.

The Facility will incorporate any appropriate equipment startup, operation, shutdown and maintenance safety measures for the Natural Gas Compression Equipment. Experienced, trained, qualified workers will be used to operate and maintain the Natural Gas Compression Equipment in accordance with the manufacturer's requirements, as well as accepted industry standards. The Project has a brief delivery and construction period, as well as the safe work history since May 1996. Since the Facility workers are operating the CCP, which uses high pressure natural gas, there are no additional worker safety concerns that result from the installation and use of the proposed Natural Gas Compression Equipment.

Based on the brief delivery and construction period and the findings of the CEC staff, there will not be any additional impacts to worker health and safety beyond those addressed in the Final Commission Decision for CCP.

### *3.20.2.3 Onsite Laydown and Parking Area*

As discussed in Section 2.1, Project Description, the Project will utilize two onsite equipment laydown areas and existing Facility secured parking. The onsite equipment laydown areas are shown on Figure 4. Laydown area #1 is an approximately 1,800 square feet trapezoid-shaped flat paved areas, which is located approximately 100 feet west of the Natural Gas Compression Equipment installation area. Laydown area #2 is an approximately 2,100 square feet rectangular-shaped flat paved area, which is located approximately 75 feet southwest of the

Natural Gas Compression Equipment installation area. Each laydown area has direct access to the sliding gate that will be used to access the Facility from the proposed delivery route shown on Figure 5. The footprint of the Natural Gas Compression Equipment that will be delivered to the Facility is approximately 300 square feet, which is much smaller than Laydown areas #1 and #2. Therefore, no offsite laydown areas will be required for the Project.

The Project will employ a peak workforce of approximately 20 workers and they will use standard light-duty trucks and automobiles for transportation to the Facility. The Facility has 20 to 30 secured parking spaces, therefore no parking spaces in the "Public Access Area[34]" or adjacent Crockett streets will be required. Since the Natural Gas Compression Equipment is automated, the Project will not require an increase in parking during its subsequent operation at the Facility.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers as well as standard light-duty trucks and automobiles will be used for delivery. There is sufficient existing secured employee parking for the additional personnel during delivery and construction.

Delivery and laydown activities associated with the Project will not have any additional impacts to worker health and safety beyond those described in the original Application for Certification and in the Final Commission Decision for CCP.

### *3.20.3 Cumulative Impacts*

The Project will not result in any significant cumulative impacts to worker health and safety nor will the Project create any significant, unmitigated impacts beyond those addressed in the CEC's Final Commission Decision for the CCP.

### *3.20.4 Laws, Ordinances, Regulations, and Standards (LORS)*

The Project and Facility will comply with all applicable worker health and safety related LORS.

### *3.20.5 Conditions of Certification*

The proposed modifications will not have any additional impacts on worker health and safety beyond those addressed in the Final Commission Decision for CCP. Therefore, no additional Conditions of Certification are required

[34] As this area is described in Section 5.11 of the Final Commission Decision (pages 207-223).

# 4.0 CROCKETT COGENERATION PROJECT CONDITIONS OF CERTIFICATION

Conditions of Certification (COCs) adopted by the Commission in the Final Commission Decision for CCP ensured that the facility was constructed, operated, and closed in compliance with air and water quality, public health and safety, environmental, and other regulations, and guidelines established by the California Energy Commission and other state and federal agencies. The modifications set forth in this Petition to Amend require some changes to the COCs set forth in the Final Commission Decision.

Recommended changes to such COCs are designed to maintain the Commission's assurance that the facility is constructed, operated, and closed in compliance with air and water quality, public health and safety, environmental, and other regulation and guidelines established by the California Energy Commission, and other state and federal agencies.

The following section provides all conditions of certification applicable to CCP. Specifically, the conditions include all those set forth in the 1993 Final Decision and those conditions modified or added in subsequent post-decision orders (i.e., see Commission Order 97-0716-1(b) wherein the Commission amended conditions of certification in the Air Quality section). The proposed Project does not require amendments or deletions of any existing conditions of certification. The conditions currently in place will ensure the Project is constructed and operated in compliance with all laws, ordinances, regulations and standards.

# Crockett Cogeneration Project (92-AFC-1)

## All Conditions of Certification
## As Presented in the California Energy Commission
## Final Decision & Post Decision Orders

### AIR QUALITY[35]

**AQ-1**. Before implementing any major change in the Air Emissions Control System, the Applicant shall submit the proposed change to the California Energy Commission (CEC) Compliance Project Manager (CPM) for approval. Examples of major changes are the use of alternative air pollution control equipment, emission monitoring system, or a significant change in the performance criteria.

Verification: One hundred and twenty (120) days before implementing any major change, the Applicant shall submit to the BAAQMD and the CEC the design details 01 the proposed changes and a discussion 01 the potential change in air emissions from the project. The Applicant shall receive written approval from the CEC CPM prior to Implementing any major change.

**AQ-2**. The Applicant shall obtain a Permit to Operate from the BAAQMD as required by the BAAQMD 's rules and regulations. The conditions for the Permit to Operate shall be consistent with the CEC Decision Conditions of Certification.

Verification: The Applicant shall submit a copy of the BAAQMD Permit to Operate to the CEC CPM within ten (10) working days after it is issued by the BAAQMD.

**AQ·3**. During the construction phase of the Crockett Cogeneration Project (project), fugitive particulate emissions from vehicular traffic on unpaved roads and unpaved parking lots on the construction site should be minimized with one of the following alternatives:

a. Water all unpaved roads used for any vehicular traffic at least three times per day, or
b. Water all unpaved roads used for any vehicular traffic or any unpaved parking lot once daily (unless the soil moisture content is higher than 12 percent. The moisture content shall be measured as required in condition AQ·6) and restrict speeds to 15 miles per hour, or
c. Apply a chemical stabilizer to the surface of all unpaved roads or unpaved parking lots in sufficient quantity and frequency to maintain a stabilized surface.

[35] The Air Quality Conditions of Certification were modified pursuant to Commission Order 97-0716-1(b) in which the Commission deleted "all existing conditions except for conditions AQ-1 through AQ-8, AQ-10.1, AQ-11.1, AQ-35.1, AQ-37 through AQ-41, AQ-45, AQ-47, and AQ-49." All new or modified conditions were then set forth beginning at AQ-101.

The Applicant should inspect on a daily basis the conditions of the unpaved roads and unpaved parking lots to ensure dustless operation, e.g. a stabilized surface.

Verification: The Applicant shall inform the CEC CPM at least five (5) working days prior to the initiation of the construction phase of the proposed project what method or methods would be used to control fugitive emissions from unpaved roads and unpaved parking lots. The Applicant shall maintain a log indicating the date and time when the control measure was applied.

**AQ-4**. During the construction phase of the project, fugitive particulate emissions from vehicular traffic on paved roads and paved parking lots on the construction site should be minimized by mechanical sweeping or water flushing of the road surface to remove buildup of loose material. The Applicant shall inspect on a daily basis the conditions of the paved roads and parking lots to determine the need for mechanical sweeping or water flushing.

Verification: The Applicant shall maintain a log during the construction phase of the project indicating the date and time when the inspection of paved roads and parking lots occurred and the date and time when the cleaning operation occurred.

**AQ-5**. During the construction phase of the project, fugitive particulate emissions from open storage piles or from active or inactive disturbed surface areas shall be minimized. except when impractical for safety considerations, by one of the following actions:

a. Apply chemical stabilizers in sufficient quantity and frequency to maintain a stabilized surface. e.g. there is no visual evidence of wind driven fugitive dust. or
b. Apply water to at least 70 percent of the surface area of all open storage piles or inactive disturbed areas from construction activities on a daily basis when there is visual evidence of wind driven fugitive dust. or
c. Apply water at least twice per day to at least 70 percent of all active disturbed surface areas. or
d. Apply a fabric cover to open storage or inactive disturbed surface areas.

Verification: The Applicant shall maintain a daily log during the construction phase of the project indicating what type of control was used. if any, and a brief description and approximate location of the open storage pile(s} and disturbed areas.

**AQ-6**. Not later than sixty (60) days prior to the commencement of construction, the Applicant shall submit to the CEC CPM a fugitive dust control plan for construction operations. This plan shall provide for the maintenance of soil moisture levels at a minimum of 12 percent during all earth moving activities. The plan shall propose a method for ensuring that the minimum moisture content is maintained, and shall include a method for determining when an optimum moisture content for compaction is less than 12 percent. In such cases, the plan shall provide that the compaction process is completed as expeditiously as possible, after achieving at least a moisture level not less than two (2) percent below the optimum soil moisture content with a minimum moisture content of 4 percent, The plan shall specify daily watering frequencies or daily soil sampling frequencies and criteria for determining when watering is needed in order to comply with this condition. The CEC CPM will notify the Applicant of the approval. disapproval. or

proposed changes to the fugitive dust control plan within 30 days of receipt of the plan; otherwise the fugitive dust control plan will be deemed approved.

Verification: The Applicant shall maintain a log indicating the daily soil moisture reading conducted to comply with this Condition. Any request to receive authorization from the CEC CPM on the use of an equivalent ASTM Method other than the methods indicated in this Condition shall be received by the CEC CPM at least ten (10) working days prior to its intended use.

Within five (5) working days of receipt of this request, the CEC CPM will advise the Applicant of the acceptability of the proposed alternative method otherwise the alternative method shall be deemed approved.

**AQ-7**. During the construction phase of the project, the Applicant shall implement the following measures to mitigate air pollutant emissions from the use of diesel fueled heavy equipment.

a. All construction equipment shall be subject to regular prevention maintenance in order to detect and prevent mechanical problems that can lead to increased emissions.
b. Diesel fuel used in construction machinery shall meet the requirements of the California Air Resources Board's (CARB) for on highway motor vehicle diesel fuel.
c. Any heavy construction equipment shall minimize engine idle time by shutting down the engines if the engine would remain in idle condition for more than 15 consecutive minutes.
d. To the extent feasible, the Applicant shall use heavy equipment Dowered by turbo charged and intercooled engines.

Verification; During the construction phase. the Applicant shall maintain a log of the following;

a. records showing all the preventive maintenance measures taken to ensure that all the diesel engines receive all the preventive maintenance measures as suggested by the engine manufacturers;
b. amount and type of diesel fuel brought to the site during the construction phase of the project;
c. records showing that operators of heavy construction machinery have been informed of the need to shut down the engines if they would remain in idle conditions for approximately more than 15 consecutive minutes.

If the Applicant is unable to find providers of heavy construction equipment with intercooled and turbo charged diesel engines, the Applicant shall also maintain a record indicating all the sources contacted for the supply of such machinery.

**AQ-8**. The Applicant shall install a Phase I and II vapor hydrocarbon recovery system on the gasoline storage tank and dispensers. The Applicant shall also use a submerged fill pipe on the diesel storage tank to control hydrocarbon emissions during tank filling.

Verification: At least ten (10) working days prior to the installation of the gasoline and diesel tanks, the Applicant shall notify the CEC CPM In writing confirming the use of the vapor recovery system described above for the gasoline tank and gasoline dispensers and a submerged fill pipe for the diesel storage tank.

**AQ-10.1**. During the PG&E Firm Capacity Demonstration Test, the daily heat input rates for individual sources shall not exceed the limits set forth in Table 1.1 below. This demonstration test shall be performed only once and shall not continue for more than 10 consecutive days. This condition only applies during the Demonstration Test.

**TABLE 1.1**
Maximum Daily Heat Input Limits
For Individual Source During
The Firm Capacity Demonstration Test

| Description | Source | MMBtu/day |
|---|---|---|
| Gas Turbine | S-201 | 42,720 |
| HRSG | S-202 | 8,376 |
| Auxiliary Boiler | S-203 | 9,024 |
| Auxiliary Boiler | S-204 | 9,024 |
| Auxiliary Boiler | S-205 | 9,024 |

Verification: As part of the Air Quality Reports, the Applicant shall include information on the date and time when the daily fuel consumption exceeds the daily limits included in Table 1.1. The reports shall also include a summary of the daily fuel consumption in MMBtu (high heating value (HHV)) for each source of emissions listed in Table 1.1.

**AQ·11.1**. During the PG&E Firm Capacity Demonstration Test, the daily heat input rates for combined sources shall not exceed the limits set forth in Table 2.1 below. This demonstration test shall be performed only once and shall not continue for more than 10 consecutive days. This condition only applies during the Demonstration Test.

**TABLE 2.1**
Maximum Daily Heat Input Limits
For Combined Source During
The Firm Capacity Demonstration Test

| Source Numbers | MMBtu/day |
|---|---|
| S-201 + S-202 | 51,069 |
| S-203 + S-204 + S-205 | 16,416 |
| S-201 + S-203 + S-204 + S-205 | 59,136 |
| S-201 + S-202 + S-203 + S-204 + S-205 | 67,512 |

Verification: As part of the Air Quality Reports, the Applicant shall include information on the date and time when the daily fuel consumption exceeds the daily limits included in Table 2.1.

The reports shall also include a summary of the daily fuel consumption in MMBtu (high heating value (HHV)) for each combination of source numbers listed in Table 2.1.

**AQ-35**.1. During the PG&E Firm Capacity Demonstration Test, emission from the project (S-201, S-202, S-203, S-204, and S-205) shall not exceed the limits specified in Table 5.1 below, during any calendar day. This demonstration test shall be performed only once and shall not continue for more than 10 consecutive days. This condition applies only during the Demonstration Test.

**TABLE 5.1**
Maximum Daily Emission Limits During
The Firm Capacity Demonstration Test

| Pollutant | Emission Limit |
|---|---|
| Oxides of Nitrogen (NO2) | 1105.2 lbs/day |
| Carbon Monoxide (CO) | 496.5 lbs/day |
| Precursor Organic Compound (POC) | 358.1 lbs/day |
| Sulfur Dioxide (SO2) | 56.8 lbs/day |

**AQ-37**. The stack heights of the emission points (P-201. P-203. P-204. and P-205) shall be at least 243 feet above mean sea level (approximately 230 feet above grade level at the stack base).

Verification: 45 days prior to the release to the manufacturer of the emission stack's" approved for construction" drawings, the Applicant shall submit the drawings to the CEC CPM.

**AQ-38**. Prior to initial operation of (S-201. S-202. S-203. S-204. and S-205). The Applicant shall install. calibrate. and operate a BAAQMD approved continuous monitoring and recording system for oxides of nitrogen. carbon monoxide, and either oxygen or carbon dioxide for each emission point (P-201. P-203. P-204. and P-205). The Applicant shall also obtain BAAQMD approval of the location and number of these monitors.

Verification: One hundred and twenty (120) days before initial operation, the Applicant shall submit to the BAAQMD and the CEC CPM a continuous emissions monitoring plan. Within sixty (60) days of receipt of the plan. The BAAQMD and the CEC CPM will advise the Applicant of the acceptability of the plan; otherwise the plan shall be deemed approved.

**AQ·39**. Prior to initial operation of 5-201. S-202. S-203. S-204. and S-205. The Applicant shall install, calibrate. and operate a District approved continuous monitoring and recording system for inlet temperature to the Oxidation Catalysts (A-201. A-203. A-205. and A-207) and the SCR Systems (A-202. A-204. A-206. and A-208). The Applicant shall also obtain District approval of the location and numbers of these monitors.

Verification: One hundred and twenty (120) days before initial operation, the Applicant shall submit to the BAAQMD and the CEC CPM continuous monitoring plan for the inlet temperature of the Oxidation Catalysts and the SCR systems. Within sixty (60) days of receipt of the plan, the

BAAQMD will advise the Applicant and the CEC CPM of the acceptability of the plan: otherwise the plan shall be deemed approved.

**AQ-40**. Prior to initial operation of (S·201. S-202. 5-203. S-204. and S-205), the Applicant shall install. calibrate. and operate a BAAQMD approved continuous monitoring and recording system for fuel consumption at each source (S·201. S-202. S·203. 5-204. and S·205).

Verification: One hundred and twenty \1201 days before initial operation. The Applicant shall submit to the BAAQMD and the CEC CPM a plan for the continuous monitoring and recording for fuel consumption. Within sixty (60) days of receipt of the plan, the BAAQMD and the CEC CPM will advise the Applicant of the acceptability of the plan; otherwise the plan shall be deemed approved.

**AQ-41**. The Applicant shall provide stack sampling ports and platforms, the location of which shall be subject to BAAQMD's approval.

Verification: One hundred and twenty (120) days before initial operation, the Applicant shall submit to the BAAQMD and the CEC CPM a plan for the installation of stack sampling ports and platforms. Within sixty (60) days of receipt of the plant, the BAAQMD will advise the Applicant and the CEC CPM of the acceptability of the plan; otherwise the plan shall be deemed approved.

AQ-45 Within 180 days of the issuance of the Authority to Construct, the Applicant shali contact the BAAQ:MD's Technical Services Division regarding requirements for the continuous monitors, sampling ports, platforms, and source tests required by Conditions AQ-38 -through AQ-44. All source testing and monitoring shall be conducted according to the BAAQMD's Manual of Procedures.

**AQ-47**. Within no later than 90 days from the initial start up date of the project. The C&H Sugar refinery Boilers (S-131. S-135. and S-1361 shall be shut down and permanently disabled. and the Permits to Operate for these Boilers shall be surrendered to the BAAQMD.

Verification: Five (5) working days after the Permits to Operate the existing C&H boilers are surrendered. the Applicant shall send a letter to CEC CPM informing the CEC CPM of this action. The letter should also have information on how the boilers were permanently disabled.

**AQ-49**. Applicant shall obtain emission offsets in the amount of 193.02 tons/year of Nitrogen Oxides and 64.35 tons/year of Precursor Organic Compounds. Applicant shall exert its best efforts to obtain a portion of these offsets from the north Bay Area.

Verification: Within five (5) working days after the BAAQMD issues the Authority to Construct, the Applicant shall submit to the CEC CPM, copies of the emission offset contracts and the Authority to Construct.

**AQ-101 through AQ-134 added pursuant to Commission Order 97-0716-1(b). See also FN 1 herein.**

**AQ-101** The S-201 Gas Turbine and S-202 Heat Recovery Steam Generator (HRSG) shall be fired on natural gas exclusively. (BACT for S02 and PM)

Verification: The owner/operator shall submit to the California Energy Commission (CEC) Compliance Project Manager (CPM) an Air Quality Report every January and July. The Air Quality Report shall include two components: an exceptions report, and a complete data report. The exceptions report shall be written, and shall identify all instances where any of the Conditions of Certification have not been met. The complete data report shall be submitted in electronic form, and shall contain all of the data required to demonstrate compliance with the daily and annual limitations on heat inputs and air pollutant emissions.

**AQ-102** The heat input rate to the Gas Turbine shall not exceed 1,780 million BTU per hour, averaged over any rolling 3-hour period. If approved and adopted by the District, the heat input rate to the Gas Turbine shown above shall be increased to the level adopted by the District as long as that level does not exceed 1,935 million BTU per hour. (Cumulative Increase)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date and time when the hourly fuel consumption exceed this hourly limit. The owner/operator shall provide the CEC CPM with notice of any District adopted increase in the Gas Turbine fuel input limit at most ten working days after this change is approved and adopted by the District.

**AQ-103** The heat input rate to the HRSG shall not exceed 349 million BTU per hour, averaged over any rolling 3-hour period. (Cumulative Increase)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date and time when the hourly fuel consumption exceed this hourly limit.

**AQ-104** The combined heat input rate to the Gas Turbine and HRSG shall not exceed 2,129 million BTU per hour, averaged over any rolling 3-hour period. (PSD for NO)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date and time when the hourly fuel consumption exceed this hourly limit.

**AQ-105** The combined heat input rate to the Gas Turbine and HRSG shall not exceed 51,096 million BTU per calendar day. (PSD for PM 10)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date when the daily fuel consumption exceed this limit.

**AQ-106** The combined heat input rate to the Gas Turbine and HRSG shall not exceed 15,613,000 million BTU per calendar year. (Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date after which this annual limit was exceeded.

**AQ-107** The HRSG shall not be operated unless the Gas Turbine is operating. (BACT for NOx, CO, POC)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the hours and dates when this condition was violated.

**AQ-108** The Gas Turbine and HRSG shall be abated by the properly operated and properly maintained Oxidizing Catalyst (A-20l) and Selective Catalytic Reduction System (A-202), in series. (BACT and TRMP)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall provide information on any major problem in the operation of the Oxidizing Catalyst and Selective Catalytic Reduction System for the Gas Turbine and HRSG. The information shall include at a minimum the date and description of the problem and the steps taken to resolve the problem.

**AQ-109** The owner/operator of the S-20l Gas Turbine and S-202 HRSG shall meet all of the requirements listed in a. through f. below, except during a Gas Turbine Startup or a Gas Turbine Shutdown. (BACT, TRMP, and PSD)

a. Nitrogen oxide emissions at P-20l (the combined exhaust point for the S-20l Gas Turbine and the S-202 HRSG after control by the A-20l and A-202 Catalysts) shall not exceed 39.2 pounds per hour, calculated as N02 and averaged over any rolling 3-hour period. (PSD for NOx)
b. The nitrogen oxide concentration at P-20l shall not exceed 5.0 ppmv, corrected to 15% oxygen on a dry basis, and averaged over any rolling 3-hour period. (BACT for NOx)
c. Carbon monoxide emissions at P-20l shall not exceed 46.6 pounds per hour, averaged over any rolling 3-hour period. (PSD for CO)
d. The carbon monoxide concentration at P-20l shall not exceed 10.0 ppmv, corrected to 15% oxygen on a dry basis and averaged over any rolling 3-hour period. (BACT for CO)
e. The temperature of the A-20l Oxidizing Catalyst shall be maintained at a minimum of 550 OF. (TRMP for formaldehyde, benzene, and PAR's)
f. Ammonia (NH 3) emissions at P-20l shall not exceed 20 ppmv, corrected to 15% oxygen on a dry basis and averaged over any rolling 3-hour period. (TlUvfP for NH3)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall indicate the date, time, and duration of any violation of this Condition. The owner/operator shall also include quantitative information on the severity of the violation, e.g. if the minimum temperature before the oxidizing catalysts was lower than 550°F, the owner/operator should report the average and minimum temperatures measured and the duration of the violation. Conditions for the Auxiliary Boilers (8-203, 8-204, and 8-205)

**AQ-110.** The Auxiliary Boilers (S-203, S-204, and S-205) shall be fired on natural gas exclusively. (BACT for S02 and PM10)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the dates when this conditions was violated.

**AQ-111.** The heat input rate to each Auxiliary Boiler (S-203, S-204, or S-205) shall not exceed 376 million BTU per hour, averaged over any rolling 3-hour period. (Cumulative Increase)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date and time when the hourly fuel consumption exceed this hourly limit.

**AQ-112.** The combined heat input rate to the Auxiliary Boilers (S-203, S-204, and S-205) shall not exceed 18,048 million BTU per calendar day. (PSD for PM10)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date when the daily fuel consumption exceed this limit.

**AQ-113** The combined heat input rate to the Auxiliary Boilers (S-203, S-204, and S-205) shall not exceed 6,575,000 million BTU per calendar year. (Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date after which this annual limit was exceeded.

**AQ-114** The S-203 Auxiliary Boiler shall be abated by the properly operated and properly maintained Oxidizing Catalyst (A-203) and Selective Catalytic Reduction System (A-204), in series. (BACT and TRMP)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall provide information on any major problem in the operation of the Oxidizing Catalyst and Selective Catalytic Reduction System for the Auxiliary Boilers. The information shall include at a minimum the date and description of the problem and the steps taken to resolve the problem.

**AQ-115.** The S-204 Auxiliary Boiler shall be abated by the properly operated and properly maintained Oxidizing Catalyst (A-20S) and Selective Catalytic Reduction System (A-206), in series. (BACT and TRMP)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall provide information on any major problem in the operation of the Oxidizing Catalyst and Selective Catalytic Reduction System for the Auxiliary Boilers. The information shall include at a minimum the date and description of the problem and the steps taken to resolve the problem.

**AQ-116** The S-205 Auxiliary Boiler shall be abated by the properly operated and properly maintained Oxidizing Catalyst (A-207) and Selective Catalytic Reduction System (A-208), in series. (BACT and TRMP)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall provide information on any major problem in the operation of the Oxidizing Catalyst and Selective Catalytic Reduction System for the Auxiliary Boilers. The information shall include at a minimum the date and description of the problem and the steps taken to resolve the problem.

**AQ-117** The owner/operator of the Auxiliary Boilers (S-203, S-204, and S-20S) shall meet all of the requirements listed in a. through f. below, except during an Auxiliary Boiler Startup or an Auxiliary Boiler Shutdown. (BACT, TRMP, and PSD)

a. Nitrogen oxide emissions at P-202, P-203, or P-204 (the exhaust point for each Auxiliary Boiler after control by the Oxidizing Catalyst and SCR Catalyst) shall not exceed 3.7 pounds per hour, calculated as NO2and averaged over any rolling 3-hour period. (PSD for NO2)
b. The nitrogen oxide concentration at P-202, P-203, or P-204 shall not exceed 8.2 ppmv, corrected to 3% oxygen on a dry basis, and averaged over any rolling 3-hour period. (BACT for NO2)
c. Carbon monoxide emissions at P-202, P-203, or P-204 shall not exceed 3.0 pounds per hour, averaged over any rolling 3-hour period. (PSD for CO)
d. The carbon monoxide concentration at P-202, P-203, or P-204 shall not exceed 11.0 ppmv, corrected to 3% oxygen on a dry basis and averaged over any rolling 3-hour period. (BACT for CO)
e. The temperature of the Oxidizing Catalysts (A-203, A-205, and A-207) shall be maintained at a minimum of 430 of. (TRMP for formaldehyde, benzene, and PAR's)
f. Ammonia (NH3) emissions at P-202, P-203, or P-204 shall not exceed 20 ppmv, corrected to 3% oxygen on a dry basis and averaged over any rolling 3-hour period. (TRMP for NH3)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall indicate the date, time, and duration of any violation of this Condition. The owner/operator shall also include quantitative information on the severity of the violation. Conditions for All Sources Combined (S-201, S-202, S-203, S-204, and S-205)

**AQ-118** The combined heat input rate to the Gas Turbine (S-201), HRSG (S-202), and Auxiliary Boilers (S-203, S-204, and S-205) shall not exceed 57,544 million BTU per calendar day. (pSD, CEC Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date when the daily fuel consumption exceed this limit.

**AQ-119** The combined heat input rate to the Gas Turbine (S-201), HRSG (S-202), and Auxiliary Boilers (S-203, S-204, and S-205) shall not exceed 19,023,000 million BTU per calendar year. (Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date after which this annual limit was exceeded.

**AQ-120** Emissions from the Gas Turbine, HRSG, and three Auxiliary Boilers combined (S201, S-202, S-203, S-204, and S-205), including emissions generated during Gas Turbine Startups, Gas Turbine Shutdowns, Auxiliary Boiler Startups, and Auxiliary Boiler Shutdowns, shall not exceed the following limits during any calendar day:
a. 969.7 pounds of NO" (as N0 2 ) per day (CEC Offsets)
b. 745.0 pounds of CO per day (Cumulative Increase)

c. 352.6 pounds of POC (as CH 4) per day (CEC Offsets)
d. 329.1 pounds of PM10 per day (PSD)
e. 48.5 pounds of S02 per day (Cumulative Increase)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall indicate the date of any violation of this Condition. The owner/operator shall also include quantitative information on the severity of the violation.

**AQ-121** Emissions from the Gas Turbine, HRSG, and three Auxiliary Boilers combined (S201, S-202, S-203, S-204, and S-205), including emissions generated during Gas Turbine Startups, Gas Turbine Shutdowns, Auxiliary Boiler Startups, and Auxiliary Boiler Shutdowns, shaH not exceed the following limits during any calendar year:

a. 160.85 tons of Nox (as N02 ) per year (Offsets, PSD)
b. 73.27 tons of CO per year (Cumulative Increase)
c. 48.45 tons of POC (as CR 4) per year (Offsets)
d. 58.19 tons of PM\o per year (PSD)
e. 8.01 tons of S02 per year (Cumulative Increase)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date after which these annual limits were exceeded.

**AQ-122** Maximum projected annual emissions from the Gas Turbine, HRSG, and three Auxiliary Boilers combined (S-201, S-202, S-203, S-204, and S-205) shall not exceed the following limits:

a. 4318.6 pounds of formaldehyde per year
b. 116.1 pounds of benzene per year
c. 78.7 pounds of Specified PAR's per year during any calendar year, unless the owner/operator meets the requirements of (d), (e), and (f) below:
d. The owner/operator shaH perform a risk analysis using the emission rates determined by source test and the most current Bay Area Air Quality Management District (District) approved procedures and unit risk factors in affect at the time of the analysis. The cancer risk calculated by this first analysis shall not exceed either 4 in one million or the maximum allowable risk (considering the use of TBACT) under the Risk Management Policy in effect at the time of the analysis, whichever is greater.
e. The owner/operator shall perform a second risk analysis using the emission rates determined by source test and the procedures and unit risk factors in effect when the Determination of Compliance was issued. The cancer risk calculated from this second risk analysis shall not exceed 4 in one million.
f. Both of these risk analyses shaH be submitted to the District and the CEC CPM within 60 days of the source test date. The owner/operator may request in this submittal that the District and the CEC CPM revise the carcinogenic compound emission limits specified above. If the owner/operator demonstrates to the satisfaction of the APCO that these revised emission limits will satisfy the conditions stated in parts d. and e. above, the District and the CEC CPM may then (at the discretion of the APCO and the CEC CPM) adjust the carcinogenic compound
g. emission limits listed above. (TRMP)

Verification: Receipt and approval by the District and the CEC CPM of the reports required in this Condition will constitute a verification of compliance with this Condition.

**AQ-123** The owner/operator shall demonstrate compliance with Conditions #102 - #108, #109.a. - #109.e., #111 - #116, #117.a.- #117.e., #118, #119, #120.a., #120.b., #121.a, and #121.b. by using properly operated and properly maintained continuous monitors (during all hours of operation including equipment Startup and Shutdown periods) for all of the following parameters:

a. Firing Hours and Fuel Flow Rates at each of the following sources: S201, S-202, S-203, S-204, and S-205.
b. Oxygen (02) Concentrations, Nitrogen Oxides (NO ) Concentrations, x and Carbon Monoxide (CO) Concentrations at each of the following stacks: P-201, P-202, P-203, and P-204.
c. Inlet Temperatures at each of the following abatement devices: A-201, A-203, A-205, and A-207.

The owner/operator shall record all of the above parameters every 15 minutes (excluding normal calibration periods) and shall summarize all of the above parameters for each clock hour. For each calendar day, the owner/operator shall calculate and record the total Firing Hours and the average hourly Fuel Flow Rates, Concentrations, and Temperatures.

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

d. Heat Input Rate at each of the following sources: S-20 I, S-202, S-203, S-204, and S-205.
e. Corrected NO Concentrations, NO Emissions measured as N02 Corrected CO Concentrations, and CO Emissions at each of the following stacks: P-201, P-202, P-203, and P-204.

For each source or stack, the owner/operator shall record the above parameters (123.d. and 123.e.) every 15 minutes (excluding normal calibration periods). For each source, the owner/operator shall calculate and record the total Heat Input Rate for every clock hour and the average hourly Heat Input Rate for every rolling 3- hour period. For each calendar day, the owner/operator shall calculate and record, on an hourly basis, the cumulative total Heat Input Rate since 12:00 AM for: each source; the Gas Turbine and the HRSG Combined; the three Auxiliary Boilers Combined; and all five sources (S-201, S-202, S-203, S-204, and S-205) combined. The owner/operator shall calculate and record the average NO Emissions, CO2 Emissions, and Corrected NOx and CO Concentrations for every clock hour and for every rolling 3-hour period. For each calendar day, the owner/operator shall calculate and record, on an hourly basis, the cumulative total NOx emissions and cumulative total CO emissions, since 12:00 AM, for: each source; the Gas Turbine and the HRSG combined; the three Auxiliary Boilers combined; and all five sources (S-201, S-202, S-203, S-204, and S-205) combined. For each calendar day, the owner/operator shall calculate and record the average hourly: Heat Input Rates, Corrected NO Concentrations, NO Emissions, corrected CO concentrations, and CO emissions; for each source. For each calendar year, the owner/operator shall calculate and record, on a daily

basis, the cumulative total NOx emissions and cumulative total CO Emissions, since January 1 at 12:00 AM, for all five sources (S-20I, S-202, S-203, S-204, and S-205) combined.

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

Verification: Compliance with conditions AQ-131 and AQ-132 shall be deemed as verification of this condition.

**AQ-124** In order to demonstrate compliance with Conditions #120.c.-#120.e., and #121.c.-#121.e., the owner/operator shall calculate (on a daily basis): the Precursor Organic Compound (p0C) Emissions, Fine Particulate Matter (PM10) Emissions, and Sulfur Dioxide (S02) Emissions; from each source. The owner/operator shall use the actual Heat Input Rates calculated for Condition #123, actual Gas Turbine Startup Times, actual Gas Turbine Shutdown Times, and District approved emission factors to calculate these emissions. For each calendar day, POC, PM 10 and SO2. Emissions shall be summarized for: the Gas Turbine and HRSG combined; the three Auxiliary Boilers Combined; and the five sources (S-201, S-202, S-203, S204, and S-205) combined. For each calendar year, the owner/operator shall calculate and record (on a daily basis) the cumulative total POC, PM 10 and S02 Emissions, since January 1 at 12:00 AM, for all five sources (S-201, S-202, S-203, S-204, and S-205) combined.

(Offsets, PSD, Cumulative Increase)

Verification: Compliance with conditions AQ-131 and AQ-132 shall be deemed as verification of this condition.

**AQ-125** In order to demonstrate compliance with Conditions #109.f. and 117.f., the owner/operator shall determine the Corrected Ammonia (NH 3) Concentration and NH 3 Emissions in a stack (P-201, P-203, P-204, or P-205) using either District approved emission calculation methods or District approved source test methods. Ammonia Concentration and Emissions shall be calculated and recorded for any hours that the owner/operator suspects that ammonia concentration may have exceeded the limits in 109.f. or 117.f. In addition, District and the CEC CPM staff may, at any time, request the owner/operator calculate Ammonia Concentration and Emissions to verify compliance with Conditions #109.f. and #117.f. (TRMP)

Verification: Compliance with conditions AQ-131 and AQ-132 shall be deemed as verification of this condition.

**AQ-126** In order to demonstrate compliance with Condition #122, the owner/operator shall calculate and record on an annual basis the maximum projected annual emissions of: Formaldehyde, Benzene, and Specified PAR's. Maximum projected annual emissions shall be calculated using the maximum Heat Input Rate of 19,023,000 :MM BTU/year and the highest emission factor (pounds of pollutant per :MM BTU of Heat Input) determined by any source test at the Gas Turbine, HRSG, or Auxiliary Boilers. (TRMP)

Verification: Compliance with conditions AQ-131 and AQ-132 shall be deemed as verification of this condition.

**AQ-127** In order to demonstrate compliance with Conditions #109, #120, and #123, the owner/operator shall conduct, on an annual basis, a District approved source test on stack P-201 while the S-201 Gas Turbine and S-202 Heat Recovery Steam Generator are operating at maximum allowable operating rates. The owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and emissions, particulate matter (PM 10) emissions, and ammonia concentration. The owner/operator shall also meet all applicable testing requirements specified in Volume V of the District's Manual of Procedures for continuous emissions monitors. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall notify the District's Source Test Section and the CEC CPM in writing of the source test protocols and projected test dates at least 7 days before the test is to begin. Source test results shall be submitted to the District and the CEC CPM within 30 days of conducting the tests.

Verification: Compliance with conditions AQ-131 and AQ-132 shall be deemed as verification of this condition.

**AQ-128** In order to demonstrate compliance with Conditions #117, #120, and #123, the owner/operator shall conduct, on an annual basis, a District approved source test on either stack P-202, P-203, or P-204 while the associated Auxiliary Boiler (S-203, S-204, or S-205) is operating at maximum allowable operating rates. The owner/operator shall ensure that each Auxiliary Boiler is tested at least once every five years. The owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and emissions, particulate matter (PM 10) emissions, and ammonia concentration. The owner/operator shall also meet all applicable testing requirements specified in Volume V of the District's Manual of Procedures for continuous emissions monitors. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall notify the District's Source Test Section and the CEC CPM in writing of the source test protocols and projected test dates at least 7 days before the test is to begin. Source test results shall be submitted to the District and the CEC CPM within 30 days of conducting the tests.

Verification: Compliance with conditions AQ-131 and AQ-132 shall be deemed as verification of this condition.

**AQ-129** In order to demonstrate compliance with Conditions #122 and #125, the owner/operator shall conduct, on a biennial basis, a District approved source test on stack P-201 while the S-201 Gas Turbine and S-202 Heat Recovery Steam Generator are operating at maximum allowable operating rates. Unless the requirements of 129.b. have been met, the owner/operator shall determine the formaldehyde, benzene, and Specified PAH emission rates (in pounds/M~1 BTU). If any of the above pollutants are not detected (below the analytical detection limit), the emission concentration for that pollutant shall be deemed to be one half (50%) of the detection limit concentration.

a. The owner/operator shall calculate the maximum projected annual emission rate for each pollutant by multiplying the pollutant emission rate (pounds/MM BTU) determined from the source test by 19,023,000 MM BTU/year.
b. If three consecutive biennial source tests demonstrate that the emission rates for benzene and total Specified PAH's are less than the maximum projected annual emission rates shown below, then the owner/operator may discontinue future testing for that pollutant:

| | | |
|---|---|---|
| Benzene | ≤ | 80.0 pounds/year1 |
| Specified PAH's | ≤ | 7.0 pounds/year |

(TRMP)

Verification: The owner/operator shall notify the District and the CEC CPM within seven (7) working days before the owner/operator plans to conduct source testing as required by this condition. Source test results shall be submitted to the District and the CEC CPM within thirty (30) days of conducting the test.

**AQ-130** The owner/operator shall submit all reports (such as: monthly CEM reports, monitor breakdown reports, emission excess reports, equipment breakdown reports, etc.) as required by District Rules or Regulations and in accordance with all procedures and time limits specified in the Rule, Regulation, Manual of Procedures, or Enforcement Division Policies & Procedures Manual. (2-6-502)

Verification: Submittal of the reports to the CEC CPM constitutes verification of compliance with this condition. All reports shall be submitted to the CEC CPM within thirty (15) *(sic)* days after they are due according to District Rules and Regulations.

**AQ-131** The owner/operator shall maintain all records and reports on site for a minimum of 5 years. These records shall include but are not limited to: continuous monitoring records (firing hours, fuel flows, emissions, temperatures, monitor excesses, breakdowns, etc.), source test and analytical records, emission calculation records, records of plant upsets and related incidents. The owner/operator shall make all records and reports available to District and the CEC CPM staff upon request. (2-6-501)

Verification: During site inspection, the owner/operator shall make all records and reports available to the District, California Air Resources Board, and CEC staffs.

**AQ-132** The owner/operator shall notify the District and the CEC CPM of any violations of these Permit Conditions. Notification shall be submitted within a timely manner and in accordance with all applicable District Rules, Regulations, and the Manual of Procedures. If the notification and reporting requirements for a particular permit condition violation are not explicitly described in a District Rule, Regulation, or the Manual of Procedures, the owner/operator shall submit written notification (facsimile is acceptable) to the Enforcement Division within no later than 96 hours from the first occurrence of the violation.

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the dates when these violations occurred and when the owner/operator notified the District and the CEC CPM.

**AQ-133.** Emissions, averaged over any rolling three hour period shall not exceed the limits described in the table below, except during start up or shut down periods

Controlled Emission Limits (lb/hr)
Excluding Start Up and Shut Down Periods

| Source Numbers | POC | PM10 | SO2 |
|---|---|---|---|
| S-201 | 2.8 | 8.7 | 1.5 |
| S-201 + S-202 | 12.9 | 10.8 | 1.8 |
| S-203 or S-204 or S-205 | 0.9 | 2.25 | 0.3 |
| S-201 + S-202 + S-203 + S-204 + S-205 | 14.5 | 14.9 | 2.4 |

Verification: This permit Condition will be verified with the implementation of Condition AQ-131 and AQ-132. For POC, PM10, and SO2, compliance with this condition can be demonstrated with the emission factors developed during the annual source test of conditions AQ-127 and AQ-128, which together with the maximum hourly heat input rates of conditions AQ-102, AQ-103, AQ-104, and AQ-111 will ensure compliance with the hourly emission levels of this condition.

**AQ-134.** The emissions rates from the Gas Turbine during a start up or shut down of the gas turbine shall not exceed the list established in table below. These limits apply to any 60 minute period, not a three hour average.

**TABLE**
GAS TURBINE EMISSION LIMITS
During a Start Up or Shut Down

| Pollutant | Start Up (lbs/hr) | Shut Down (lbs/hr) |
|---|---|---|
| Oxides of Nitrogen (NOX) | 160 | 55 |
| Carbon Monoxide (CO) | 430 | 235 |

Verification: This permit Condition will be verified with the implementation of Condition AQ-120 and AQ-121. In addition, in the semiannual Air Quality Reports, the owner/operator shall indicate the date, times and duration of any violation to the NOx or CO limits presented in this Condition.

## VISUAL RESOURCES

**VIS-1**. The Applicant shall plant and maintain vegetation to screen the south side of the C&H sugar bin building and project facilities at the eastern end of the project site from public views to the south and east to the extent feasible without screening public views of the Carquinez Strait.

Protocol: The Applicant shall submit to the California Energy Commission (CEC) Compliance Project Manager (CPM) for review and approval a specific plan describing its proposal. The plan shall include but not be limited to:

- providing a planting plan. a section drawing, and a perspective sketch of the proposal;
- specifying the possible plant species to be used: for the sugar bin building, native evergreen species capable at maturity of screening at least 75 percent of the vertical height of the sugar bins shall be used.
- specifying maintenance procedures, Including any needed irrigation. pruning, and replacement of unsuccessful plantings, to ensure mat the goal of this Condition continues to be fulfilled: and
- After the plan is approved by the CEC CPM, Crockett Cogeneration shall implement the plan. The initial planting shall be completed not later than six months after mechanical completion of the power plant.

Verification: Not later than 120 day prior to scheduled commercial operation of the project, the Applicant shall submit its proposed vegetation screening plan to the CEC CPM for review and approval. The Applicant shall notify the CEC CPM in writing within seven days after completing the proposed planting that the planting is ready for inspection. Applicant shall provide to the CEC CPM for review and approval a status report regarding the condition of the vegetation in the annual compliance report.

**VIS-2** The Applicant shall properly implement its proposed visual resources Mitigation 2 (to paint the proposed project, the existing C&H refinery stack. and the existing C&H sugar bin building), modified to achieve the goal of harmonizing the color of the structures with Carquinez Strait.

Protocol: The Applicant shall submit to the CEC CPM for review and approval a specific color plan to be used in implementing the requirement. The plan shall include:

- the method for incorporating participation by the public and public agencies. specifically including the San Francisco Bay Conservation and Development Commission {BCDC);
- a procedure for submission of color samples and selection of color(s} to be field tested;
- a procedure for field-testing the color{s) chosen to determine suitability to achieve the goal of the Condition;
- a detailed schedule for completion of the painting; and.
- a procedure to ensure proper painting maintenance for the life of the project.

After receiving approval of the plan from the CEC CPM, the Applicant shall initiate the plan. After the color(s) for the project nave been selected. the Applicant shall submit a sample of the color(s) and a simulation of the project using the color(s) to the CEC CPM for review and approval and to BCDC. The CEC CPM shall consult with, and give significant weight to the recommendation of BCDC and its staff, which may consult with its Design Review Board for guidance in this matter.

The Applicant shall complete all required painting not later than 180 days after mechanical completion of the project.

For any structures which will be colored during manufacture, the Applicant shall not specify the color(s) of such structures to the vendor until the Applicant receives notification of the CEC CPM's approval of the painting plan the Applicant shall not paint the final coat on any structures until the Applicant receives notification of approval of the color(s) from the CEC CPM. The Applicant shall notify the CEC CPM in writing within seven days after all precolored structures have been erected and all structures to be painted in the field have been painted and the structures are ready for inspection.

After approval of the plan by the CEC CPM. the Applicant shall implement the plan according to the schedule and shall ensure that proper painting maintenance is performed for the life of the project.

Verification: Not later than 30 days after certification of the project, the Applicant shall submit its proposed plan to the CEC CPM for approval. Not later than 30 days after the color(s) have been selected, the Applicant shall submit to the CEC CPM the required sample and simulation and documentation that the sample and simulation have also been submitted to BCDC. The Applicant shall notify the CEC CPM in writing within seven days after completing the approved painting that the structures are ready for inspection. In the Annual Compliance Report during operation. the Applicant shall provide to the CEC CPM for review and approval a status report regarding painting maintenance.

**VIS-3**. The Applicant shall properly implement its proposed visual resources Mitigation 3, Le. to place existing electric distribution lines and telephone lines along Loring Avenue underground from Rolph Street to Vallejo Street.

Protocol: The Applicant shall submit to the CEC CPM for review and approval a specific description of its proposal. The plan shall provide"

- a text description and a detailed map of the lines to be placed underground;
- a detailed description of the procedure to be followed to place the lines underground; and
- a schedule for implementation of this Condition.

After approval by the CEC CPM, the Applicant shall implement the plan.

The undergrounding shall be completed not later than 180 days after the completion of construction of the power plant.

Verification: Not later than 18 months after the start of construction of the project. the Applicant shall submit Its proposed plan to the CEC CPM for approval. At least seven days in advance, the Applicant shall notify the CEC CPM In writing of the planned date that the undergrounding procedure will start to enable the CEC CPM to inspect implementation of the plan. Not later than seven days following completing the undergrounding procedure the Applicant shall notify the CEC CPM in writing that the undergrounding has been completed and is ready for inspection.

**VIS-4.** The Applicant shall design and install all lighting such that lights are not directly visible from public viewing areas (including Crockett and Glen Cove) and illumination of the vicinity and the nighttime sky is minimized consistent with safety requirements.

Protocol: The Applicant shall submit to the CEC CPM for review and approval a detailed lighting plan for the project. demonstrating how this Condition will be satisfied. The plan shall be designed to incorporate the following commitments:

- Exterior light fixtures shall be hooded with lights directed downward or toward the area to be illuminated;
- High illumination areas not occupied on a continuous basis such as maintenance platforms or the main entrance shall be provided with switches or motion detectors to light the area only when
- occupied; and
- The stack shall not be illuminated except as may be required by the Federal Aviation Administration.

The plan shall include a complaint resolution procedure to be employed in the event that a member of the public complains about project lighting.

Lighting shall not be Installed before the plan is approved.

The Applicant shall not begin operating me project unit the Applicant has received nonce from the CEC CPM that this Condition has been satisfied.

Verification: Not later than 360 days after the start of construction of the project. the Applicant shall provide the lighting plan to the GEG GPM. The Applicant shall notify the CEC CPM in writing within seven days of completing lighting installation that the lighting is ready for inspection.

**VIS-5**. The Applicant shall design and construct the gas turbines turbine/air cooled condenser building to a height no higher than 4 feet below the roof peak ridge-line of the existing C&H Sugar refinery bulk storage sugar bin building.

Verification: see Facility Design Condition of Certification

**VIS-6**. The Applicant shall design and construct the heat recovery steam generator (HRSG) stack and auxiliary steam boiler stacks so as not to exceed a height of 244 feet above mean sea level. The Applicant shall design and construct the stacks so that the combined stack arrangement does not exceed horizontal cross section dimensions of 22 feet by 26.5 feet.

Verification: see Facility Design Condition of Certification

**VIS-7.** If the auxiliary boiler stacks are separately visible from the HRSG stack (i.e., not combined into one insulated stack with separate flues), the Applicant shall locate the auxiliary boiler stacks on the north side of the HRSG stack.

Verification: see Facility Design Condition of Certification

**VIS-8.** To the extent feasible, the Applicant will optimize the final detailed stack design to further reduce the cross sectional area of the stack arrangement through reduction or elimination of the spacing between stacks or elimination of one of the auxiliary boiler stacks.

Verification: See Facility Design Condition of Certification

**VIS-9.** The Applicant shall take immediate action to eliminate within 30 minutes any visible plume that forms.

Protocol
To eliminate any visible plume, the Applicant shall increase the temperature of the flue gases from the auxiliary boilers and the gas turbine/HRSG.

Verification: Not later than sixty (60) days prior to facility start-up the Applicant shall submit. to the CEC CPM for review and approval, a plan that specifies the steps that the Applicant will take to eliminate the plume and the means that the Applicant will use to verify that the plume has been eliminated.

**VIS-10.** The Applicant shall use concrete delivered by truck rather than a concrete batch barge to construct the project.

Verification: In each Monthly Compliance Report during construction, the Applicant shall notify the CEC CPM that it used concrete delivered by truck rather than a concrete batch barge to construct the project.

## SOCIOECONOMICS

**SOC-l.** The Applicant shall make a good faith effort to maximize the employment of residents of Crockett for the construction of the project to the extent consistent with state and federal law.

Protocol: For union positions, the Applicant shall make a good faith effort in negotiating a collective bargaining agreement with the Contra Costa Building Trades Council to maximize the employment of residents of Crockett for the construction of the project. Whenever practical, on the job training opportunities will be provided for entry level positions.

For non-union positions, the program shall include local outreach and recruitment to Include advertising positions in local area newspapers and sending copies of job postings to relevant local agencies and schools. Applicant shall provide interested Crockett residents preference for open positions In such cases where two final candidates are equally qualified, i.e., both are able to perform the essential functions of the position, meet the physical and safety requirements, and have equal experience, education, training, and job knowledge.

The Applicant shall submit a detailed plan to implement the program to me California Energy Commission (CEC) Compliance Project Manager (CPM) for review and approval. The implementation plan shall contain but not be limited to: (1) performance objectives for the program; (2) specific methods to accomplish those objectives; and (3) procedures to revise the plan if performance objectives are not met. Nothing in this Condition shall be interpreted to mean or infer quotas.

Verification: Not later than 15 days after certification of the project. Or a date mutually agreeable to the Applicant and the CEC CPM, the Applicant shall submit the detailed plan to the CEC CPM for review and approval. The Applicant shall begin to implement the program within seven days after receiving approval of the plan from the CEC CPM. The Applicant shall present the results of implementation of the program to the CEC CPM in the Monthly Compliance Reports for review and approval.

**SOC-2.** The Applicant shall institute a program to maximize the employment of residents of Crockett for the operation of the project. to the extent consistent with state and federal law.

Protocol: The program shall include outreach and training to provide interested Crockett residents with an opportunity to obtain the training necessary to Qualify for entry level job classifications to be used for operation of the project. The Applicant shall submit a detailed plan to implement the program to the California Energy Commission (CEC) Compliance Project Manager (CPM) for review and approval. The implementation plan shall contain but not be limited to: (1) performance objectives for the program; (2) specific methods to accomplish those objectives; and (3) procedures to revise the plan If performance objectives are not met. Nothing in this Condition shall be interpreted to mean or Infer Quotas.

Verification: Not later than 90 days after certification of the project, or a date mutually agreeable to the Applicant and the CEC CPM, the Applicant shall submit the detailed plan to the CEC CPM for review and approval. The Applicant shall begin to implement the program within seven

days after receiving approval of the plan from the CEC CPM. The Applicant shall present the results of implementation of the program to the CEC CPM in the Monthly Compliance Reports for review and approval for the first year of operation and in the annual compliance report thereafter.

**SOC-3**. Prior to commencing construction me Applicant shall formalize its agreement with the John Swett Unified School District (District) for costs associated with construction and operation of the project.

Protocol: The Applicant shall execute an agreement with the District for such compensation. The Applicant shall comply with the terms of that agreement.

Verification: Not later than 30 days after certification of the project. Or a date mutually agreeable to the Applicant. the John Swett Unified School District. and the CEC CPM. the Applicant shall provide to the CEC CPM a copy of the agreement signed by the Applicant and the District. Within seven days after any performance date for the Applicant in the agreement. the Applicant shall submit to the CEC CPM documentation that the requirement has been fulfilled.

**SOC-4.** The Applicant shall pay $300.000 per fiscal year to the Crockett Community Foundation, a tax-exempt charity to be formed to receive and disburse funds for the benefit of the Crockett community_ Payments shall commence in the fiscal year ending June 30. 1996. and shall continue for 30 years escalating at 3 percent per year. Payments shall be made semiannual on November 10 and May 10, beginning November 10. 1995. In the event the Crockett Community Foundation is not in existence at the time that any payment pursuant to this certification is due. such payment shall be made to an independent trustee for the benefit of the Crockett Community.

Verification: The Applicant shall present evidence, satisfactory to the CEC CPM. of executing such payments in the monthly compliance reports for the month after such payments are made. with a summary of such payments in the annual compliance report.

**SOC-5.** Upon request. the Applicant shall advance to the Crockett Community Foundation up to $100.000 per year. beginning in the fiscal year ending June 30. 1993. for any purpose including payment of attorneys' fees in excess of the $15.000 to be paid by the Applicant pursuant to Condition SOC-6. Such advances shall be credited against the first annual payment to be made by the Applicant to the Crockett Community Foundation as required by Condition SOC-4. Applicant shall exercise its best efforts to encourage the formation of the Crockett Community Foundation.

Verification: The Applicant shall present evidence satisfactory to the CEC CPM, of executing such payments in the monthly compliance reports for the month after such payments are made, with a summary of such payments of an actions take to encourage formation of the Crockett Community Foundation in the annual compliance report.

**SOC-6**. The Applicant shall pay attorneys' fees not to exceed $15,000 incurred by the Crockett Advisory Committee in negotiating the benefits package and in the formation of the Crockett Community Foundation.

Verification: Upon presentation of a statement of attorneys' fees signed by the Chairperson of the Crockett Advisory Committee (or other designee as named by the County) or the Chairperson of the Crockett Community Foundation. as applicable. the Applicant shall timely pay attorneys' fees, up to $15,000.

**SOC-7.** Applicant shall be a guarantor and be secondarily liable for the payment commitment of C&H Sugar Company to pay $30,000 annually for a period of 15 years to the Crockett Community Foundation, commencing in the fiscal year ending June 30, 1996, and for the payment commitment of C&H Sugar Company to pay the Crockett Community Foundation $650,000 by December 31,1997, if C&H does not relocate its corporate offices from Concord to Crockett within its existing buildings by December 31, 1997, Applicant shall not be liable as a guarantor or secondarily liable for the above payments if compliance with Condition SOC·9 results in an executed contract reflecting C&H's payment commitments.

Verification: Beginning with the monthly compliance report for August 1996, and continuing in the August monthly compliance report for 15 years, Applicant shall provide evidence satisfactory to the CEC CPM that C&H Sugar Company has made the annual payment or, if C&H Sugar Company has not made such payment, evidence that Applicant has made the payment. In the monthly compliance report for March 1998. The Applicant shall provide evidence satisfactory to the CEC CPM that: 1) C&H Sugar Company has relocated its corporate offices from Concord to Crockett within its existing buildings. or 2) C&H Sugar Company has paid $650.000 to the Crockett Community Foundation, or 3) the Applicant has paid $650.000 to the Crockett Community Foundation (such amount shall not include the payments made by Applicant under Condition SOC-4).

**SOC-8**. The Applicant shall use due diligence and all good-faith efforts to execute a contract with Contra Costa County incorporating Conditions SOC-4, SOC-5. and SOC-6. no later than 90 days after the Commission's final decision on this application.

Verification: No later than four months after the Commission's final decision on this application, Applicant shall provide a copy of the executed contract between Applicant and Contra Costa County, or provide evidence satisfactory to the CEC CPM demonstrating Applicant's due diligence and good faith efforts to execute a contract with Contra Costa County.

**SOC-9**. Applicant shall use due diligence and all good faith efforts to ensure that Contra Costa County and C&H Sugar execute a contract whereby C&H Sugar pays $30,000 annually for a period of 15 years to the Crockett Community Foundation. commencing in the fiscal year ending June 30, 1996. and whereby C&H Sugar agrees to relocate its corporate offices. no later than December 31, 1997, from Concord to Crockett within its existing buildings, or pay $650,000 to the Crockett Community Foundation by December 31,1997.

Verification: No later than four months after the Commission's final decision on this application, Applicant shall provide the CEC-CPM a copy of the executed contract between C&H Sugar and Contra Costa County, or provideevidence satisfactory to the CEC~CPM demonstrating Applicant's due diligence and good-faith efforts to ensure execution of such Contract.

**SOC-10**. Applicant shall pay for and complete an alternative roadway study, including feasibility studies as may be required, to Contra Costa County's satisfaction. The study shall be conducted in cooperation with the Crockett community and Contra Costa County, and shall be completed no later than 180 days after certification of the project or by November 1, 1993, whichever occurs first.

Verification: Applicant shall provide a copy of the completed alternative roadway study to the CEC CPM no later than 180 days after certification of the project or by November 1, 1993, whichever occurs first.

**SOC-11** Applicant shall provide an annual report of Contra Costa County expenditures made pursuant to Contra Costa County Board of Supervisor's Resolution No. 92~ 757.

Verification: Applicant shall provide a copy of the report to the CEC CPM and to the Crockett Community Foundation within 90 days of the close of the county's fiscal year.

## NOISE

**NOISE·1**. The Applicant shall use the Noise Complaint Resolution Form submitted to CEC staff on June 12. 1992 (Data Response NOISE-1). to handle complaints made during the site clearing, construction or operation phases of the project. The Form includes procedures for logging complaints, identifying appropriate contact personnel, responding to complaints, and determining the nature of the problem. The Applicant shall publish a telephone number for receiving noise complaints. The telephone number shall be published in local newspapers prior to construction and operation. The Applicant shall contact the person(s) making the complaint within 24 hours, and promptly conduct an investigation to determine the natureand cause of a complaint. take all reasonable measures to resolve the complaint. and prepare a report documenting the complaint and actions taken.

Each report shall include a summary of the complaint. plan for investigation and resolution, final result of the noise resolution efforts and, if obtainable. a signed statement by the source of the complain;: verifying that the noise problem has been resolved.

Verification: Prior to beginning construction and operation the Applicant shall submit to the CEC CPM a copy of the local newspaper article in which thee telephone number and its purpose was identified. The Applicant shall file written records of noise complaints and resolution actions with the Contra Costa County Community Development Department, and with the CEC CPM in me next monthly compliance report during construction; or within 30 days after a complaint is filed during operation and subsequently within 30 days of resolution of the complaint.

**NOISE-2**. Prior to beginning construction, the Applicant shall conduct an ambient noise level verification survey to verify existing ambient noise levels at multiple sites in Glen Cove. The survey shall be developed and conducted. in consultation with the CEC, and the City of Vallejo. and the Glen Cove Home Owner's Association.

Verification: Prior to the beginning of construction. the Applicant shall submit to the CEC CPM the results of the ambient noise levels verification survey.

**NOISE·3**. The project. under normal operating conditions, shall not exceed a maximum continuous noise level of 53 dBA from the plant at the closest receptor on Loring Avenue in Crockett and 63 dBA from the plant at 400 feet north of the turbine building's north wall. The Applicant shall conduct an operational noise survey in the communities of Crockett and Glen Cove within 90 days of project startup and during normal operating conditions to verify compliance with this condition. The survey sites should be the same as those used by the Applicant in the June 1992 pre-project ambient noise survey. The Applicant shall consult with the State Lands Commission and the City of Vallejo Planning Division to identify an additional survey sites in Glen Cove to be included in the operational noise survey. Following the survey, the Applicant shall prepare a report which summarizes the survey results and identifies specific additional mitigation measures, If needed. which will be applied to equipment or the facilities. If additional noise mitigation is needed. the Applicant shall consider using the following measures:

a. conduct a noise survey of the C&H Sugar refinery to identify intrusive noise activities and propose measures to mitigate the activity;
b. Install noise abatement structures and/or install wall(s) in open space north of the power plant to reduce operational noise;
c. adding additional sound insulation to the gas turbine generator building; and,
d. shield the air inlet to the gas-turbine with noise abatement structure(s) and/or wall(s) to reduce operational noise.

A follow-up survey may be required by the CEC CPM. as the result of independent measurements made by the CEC staff and in consultation with the State Lands Commission, the Contra Costa County Community Development Department or the City of Vallejo Planning Division, to confirm the effectiveness of any additional noise mitigation measures, if needed.

Verification: The Applicant shall submit a copy of the noise survey report to the State Lands Commission. the Contra Costa County Community Development Department, the City of Vallejo Planning Division, and to the CEC CPM within 45 days of completing the survey. If additional noise mitigation is required. the Applicant shall submit a plan and schedule for implementing the mitigation measure(s) and a justification for its selection of the mitigation measure{s) along with the noise survey report.

FN 79 of Decision re NOISE-3 - normal operating conditions exclude upset conditions.

**NOISE·4**. The Applicant shall create and keep a file of noise mitigation and complaint related information which will be referred to as the Noise Mitigation and Complaint File. This file will be kept on site at the Crockett Cogeneration facility and will be available for review by ·the State Lands Commission. Contra Costa County Community Development Department, the City of Vallejo Planning Division, the City of Benicia Planning Department. and CEC compliance staff at all times. Included in the noise mitigation and complaint file shall be the following items:

1. Vendors' acoustic specifications of all noise emitting equipment and vendor· recommended schedules for maintaining noise control devices on these units.
2. A log of noise control device maintenance for all noise-emitting equipment and corresponding receipts or vouchers for the maintenance performed. signed by the mechanic performing the work.
3. The report for each noise complaint received.

Verification: The Noise Mitigation and Complaint File shall be made available. upon request. for inspection and review by authorized representatives of the State Lands Commission, Contra Costa County, the City of Vallejo. the City of Benicia and the CEC.

**NOISE-5**. The Applicant shall conduct an occupational noise survey to iidentify the noise hazardous areas in the facility. The survey shall be conducted after the facility is in full operation. The survey shall be conducted by a qualified person In accordance with the provisions of Title 8, California Code of Regulations sections 5095·5100 (Article 1051 and Title 29, Code of Federal Regulations, Part 191). The survey results shall be used to determine the magnitude of employee noise exposure. The Applicant shall prepare a report on the survey results and. if

necessary, identify proposed mitigation measures that will be employed to comply with the California and Federal regulations.

Verification: The Applicant shall submit the noise survey report to the CEC CPM within 60 days of the completion of the survey. The Applicant shall also make the report available to Cal/OSHA upon request.

**NOISE-6**. The Applicant shall investigate feasible noise reduction measures for the primary steam relief valve(s}, and any other steam relief valve{s) in the system serving the steam generated by the Crockett Cogeneration facility that have a potential to produce noise levels in excess of community noise criteria (60 dB DNL) with the additional intent of minimizing annoyance from obtrusive noise. The Applicant shall develop a proposal and schedule to reduce steam relief valve noise, and complete all steam relief valve noise reduction measures prior to operator of the Crockett Cogeneration Facility.

Verification: The Applicant shall submit the results of the investigation, and their proposal and schedule for reducing steam relief valve noise. To the State Lands Commission, the Contra Costa County Community Development Department, the City of Vallejo Planning Division, the City of Benicia Planning Department and the CEC CPM at least 180 days prior to operation of the Crockett Cogeneration facility. The Applicant shall notify the above agencies upon completion of the steam relief valve noise reduction measures.

**N01SE-7**. The Applicant shall complete the installation of noise abatement structures in the open spaces between the C&H Sugar storage bins within six months following the start of demolition activities. The purpose of installing the noise abatement structures shall be to reduce operational project noise levels along Loring Avenue. The structures shall be maintained in a manner which insures that at least 90 percent of their initial calculated abatement efficiency continues for the life of the Crockett Cogeneration Facility.

Verification: The Applicant shall submit a written and graphic description of the proposed noise abatement structures and schedule for installation to the CEC CPM no less than 60 days prior to the start of installation. The Applicant shall notify the CEC CPM upon completing the installation of the noise abatement structures, and provide a description of the design and performance characteristics of the noise abatement structures and their calculated noise abatement efficiency. A copy of the notification and descriptive information shall be included in the Noise Complaint and Mitigation File located at the Crockett Cogeneration facility.

**NOISE-8** The Applicant shall restrict noisy construction activities to the period from 7 a.m. to 7 p.m. Mondays through Fridays.

Verification: The Applicant shall file with the CEC CPM in the monthly compliance report a summary of the complaints regarding noise between the hours of 7 p.m. to 7 a.m. The monthly compliance report shall also include a summary of noise activities conducted during the previous month and a confirmation that those activities were limited to the period of 7 a.m. to 7 p.m. Mondays through Fridays.

**NOISE-9** The Applicant shall equip all diesel powered construction equipment with appropriate exhaust mufflers to minimize intrusive noise during construction. The periodic inspection and preventive maintenance program for such equipment shall include inspecting and repairing defective exhaust system components.

Verification: Prior to the Start of construction, the Applicant shall submit to the CEE: CPM a list of diesel powered construction equipment to be used on the project and a copy of the preventive maintenance program.

**NOISE-10**. The Applicant shall comply with worker noise exposure regulations contained in California Code of Regulations Title 8. Section 5096 et §§g.

Verification: Applicant shall report the results of any inspections conducted by CAL-OSHA in the monthly compliance report.

**N01SE-11**. The Applicant shall use noise barriers and construction activity modifications where feasible and effective during Site clearing and construction to reduce intrusive noise levels along Loring Avenue.

Verification: At least 45 days prior to demolition, the Applicant shall submit to the CEC CPM a plan to reduce intrusive construction noise levels along Loring Avenue. Applicant shall include in the monthly compliance report. a summary of the measures taken and their effectiveness.

**N01SE·12**. The turbine generator shall be enclosed in a sound attenuating building located north of the C&H Sugar storage site.

Verification: At least 45 days prior to the s:an of construction, the Applicant shall submit to the CEC CPM a plot plan of the overall layout of the facilities demonstrating compliance with this Condition.

**NOISE·13**. The air inlet to the gas turbine shall be located on the north side of the turbine building.

Verification: At least 45 days prior to the start of new construction, the Applicant shall submit a plot plan of the overall layout of the facilities demonstrating compliance with this Condition.

## TRAFFIC & TRANSPORTATION

**TRANS-1**. The Applicant shall comply with the Contra Costa County and Caltrans restrictions on oversize or overweight limit vehicles. Crockett Cogeneration shall obtain necessary transportation permits from the County and Caltrans.

Verification: In its Monthly Compliance Reports. the Applicant shall notify the California Energy Commission (CEC) Compliance Project Manager (CPM) of any oversize/overweight transportation permits obtained during the reporting period. The Applicant shall maintain copies of these permits in its compliance file for a period of at least six months after the start of commercial operation.

**TRANS-2.** The Applicant shall comply with Contra Costa County and Caltrans requirements for encroachment on a public right-of-way. The Applicant shall obtain the necessary encroachment permits from the County and Caltrans.

Verification: In its Monthly Compliance Reports. the Applicant shall notify the CEC CPM of any encroachment permits obtained during the reporting period. The Applicant shall maintain copies of these permits in its compliance file for a period of at least six months after the start of commercial operation.

**TRANS-3.** The Applicant shall implement the following measures to reduce traffic impacts during construction:
a. Stagger shifts for administrative and management personnel to reduce the number of vehicles on local Crockett streets during shift changes.
b. Stagger shifts for construction workers to minimize conflict with C&H refinery worker shifts. and to minimize congestion during the peak hours at 7·8 a.m. and 4-6 p.m.
c. Schedule deliveries. including heavy truck traffic during the non-peak traffic hours before or after shift changes.
d. Monitor the effectiveness of the above traffic reduction measures.

Verification: In its Monthly Compliance Reports. The Applicant shall notify the CEC CPM of the implementation and the effectiveness of the above measures. If any of the measures are determined to be ineffective by the CEC CPM. the Applicant shall recommend modifications to the CEC CPM for approval prior to implementation.

**TRANS-4.** The Applicant shall ensure that all construction related personnel utilize designated. park either in the lot under I-80 or In me Loring Avenue lot and monitor this assigned parking. In order to minimize parking traffic impacts in the Loring neighborhood the following measures shall be used.
Protocol:
1. Job site rules shall be established which will prohibit employees from parking on community streets and require employees to park only in their assigned lot. Employees failing to abide by the parking rules will be subject to disciplinary action, including termination for repeated violations.
2. Employees shall be assigned parking spaces either in the Loring Avenue parking lot or in the

1~80 parking lot. A positive identification or permit program. such as decals. shall be established to assist in monitoring parking in assigned lots. Parking In the Loring Avenue lot shall be limited to 100 spaces with 20 of those spaces reserved for shuttle vans, visitors. And supervisory personnel. All vehicles not assigned spaces in the Loring Avenue lot shall be required to park in the I-80 lot.
3. Car pooling shall be encouraged and a proactive. incentive based car pooling program will be implemented. Preference shall be given to car pools for assigned parking in the Loring Avenue lot. During the period of construction when more than 80 craft-related vehicles will be present. the remaining spaces assigned to craft workers in the Loring Avenue lot shall be reserved for carpools with a carpool consisting of two or more workers.
4. Construction workers shall be directed to use the I-80 exit to Wanda Street to Port Street under the I-80 bridge. The shuttle vans and all construction workers using the Loring Avenue parking lot shall be required to use a route from the I-80 parking which enters the western end of the C&H property at Port Street. proceeds through the C&H property and passes behind the Crockett Museum (subject to Southern Pacific's approval) to Rolph Street. The route will then proceed down Loring Avenue to Bay Street. A single entrance to the Loring Avenue parking lot for all vehicles will be provided at Bay Street.
5. During construction of the underground transmission line and gas line on Loring Avenue between Rolph and Bay Streets, flagmen and detours shall be used to reroute traffic as follows:

During construction between Bay and West Streets (approximately 2 weeks) employee cars will be diverted into the C&H lot at West Street and directed behind the fire station to the Loring Avenue lot.
During construction between West and Rolph Streets {approximately 2 weeks) employee cars will be diverted from Rolph Street, to Winslow Street. to West Street and then onto Loring to the Bay Street entrance to the lot.

Verification: In its Monthly Compliance Report to the CEC CPM during the construction period. the Applicant shall verify that 1) all construction personnel are using their assigned lots. 2) the shuttle van service, and the workers assigned to the Loring Avenue lot. are using the above specified route from the I-80lot to the Loring Avenue parking lot and 3) during the construction period when more than 80 craft-related vehicles are present. the remaining spaces assigned to craft workers in the Loring Avenue lot have been reserved for carpools (with a carpool consisting of two or more workers. The Applicant shall also summarize any complaints from the Crockett residents and actions that have been taken to resolve those complaints.

**TRANS-5.** The Applicant shall conduct monthly surveys to assure that the target vehicle occupancy (VOC) ratio of 1:1.5 is being achieved during project construction.

Protocol: The number of project related personal vehicles will be related to the number of project workers employed at the time of the survey. If the results of this analysis reveal that the target 1;1.5 VOC is not being achieved. Crockett Cogeneration will implement a ride-sharing program to reduce vehicle occupancy. Crockett Cogeneration and its construction contractors will, through a rideshare coordinator, coordinate this ride-sharing program to provide employee briefings on the advantages of and procedures to create carpools, provide a Rideshare Bulletin

Board, and generally provide incentives for carpooling. The goal of this program will be to achieve a vehicle occupancy ratio of 1 :1.5 or better.

Verification: The Applicant, in its Monthly Compliance Report to the CEC CPM, shall report the results of the vehicle occupancy survey, its correlation to the number of construction-related workers employed at the time of the survey, and the resulting VOC ratio. If a ride-sharing program is needed, the elements and implementation schedule and subsequent results of the program will be included in the subsequent Monthly Compliance Report(s).

**TRANS~6.** The Applicant shall assure that delivery of major power plant equipment and materials (including the gas turbines and accessory skids. Steam turbine generator. HRSG components and HRSG stack components, air cooled condenser components. main transformer, and auxiliary boilers) will be by barge or rail.

Verification: In its Monthly Compliance Report to the CEC CPM. The Applicant shall summarize the method of delivery of major power plant equipment and materials. as delineated above. during the month.

**TRANS-7.** The Applicant shall assure that all federal and state regulations for the transport of hazardous materials are observed.

Verification: The Applicant shall maintain in its compliance file copies of all documentation related to hazardous material shipments.

**TRANS-8**. The Applicant shall repave, including raising manhole covers if necessary. the impacted sections of Crockett Community streets in which the underground electric transmission, natural gas supply lines, and local utility lines along Loring Avenue are installed following completion of construction. Repaving shall be performed in accordance with Contra Costa County Public Works Department standards and shall include the raising of manhole covers at no expense to local districts.

Verification: In its next monthly compliance report following repaving of those impacted sections of Crockett Community streets identified above. the Applicant shall provide documentation of Contra Costa County Public Works Department's approval of the completed repaving work.

**TRANS-9.** The Applicant shall consult and reach agreement with the Contra Costa County Public Works Department regarding deliveries of project related equipment and materials by heavy trucks.

Protocol:
1. Heavy truck traffic. including concrete trucks, shall use only designated routes for the delivery of project related equipment or materials.
2. A bond will be posted to assure the repair of any damage to Pomona and Port Streets and any over Crockett roads caused by project related traffic. The size of the bond shall be determined in

consultation with the Contra Costa County Public Works Department.
3. "Before and after" video evidence of pavement conditions of these routes shall be made in order to determine the necessity for remedial actions.
4. The Applicant shall provide appropriate replacement for damaged pavement including the raising of manhole covers in consultation with the Contra Costa County Public Works Department.

Verification: Prior to the start of construction, the Applicant shall notify the CEC CPM that agreement has been reached with Contra. Costa County regarding heavy truck traffic. A copy of the agreement shall be supplied to the CEC CPM.

The Applicant shall notify the CEC CPM if the County determines that damage to the local Crockett Community roads requires remedial action. The Applicant shall provide a schedule for completing the work. The Applicant shall, in its next periodic Compliance Report, notify the CEC CPM at completion of any required remedial action and the approval of the Contra Costa County Public Works Department.

**TRANS-10.** The Applicant shall schedule concrete truck deliveries during the turbine foundation pour so that those deliveries occur during a mid-week period. preferably on a Thursday in a week in which the C&H Sugar refinery is In shut-down. so as to minimize traffic conflicts. The Applicant shall notify the residents at Crockett of the date and schedule tor the turbine foundation pour

Verification: At least 30 days prior to the turbine foundation pour, the Applicant shall notify the CEC CPM ot the delivery schedule of the concrete trucks for the foundation pour. and the schedule of notification of the pour to the Crockett residents.

**TRANS-11**. The Applicant shall coordinate project construction traffic with Caltrans District 4 so as to minimize traffic and transportation conflicts with the Carquinez Bridge restoring project.

Verification: In its monthly report to the CEC CPM, the Applicant shall report any communications it has had with Caltrans District 4.

# LAND USE

**LAND-1**. Crockett Cogeneration shall not design or operate facilities to handle more than 4,000 tons of hazardous waste or 12.500 tons of hazardous materials per year. as contained in Chapter 84·63 (Land Use Permits for Development Projects Involving Hazardous Waste or Hazardous Material) of the Contra Costa County Ordinance Code for Planning and Zoning.

Verification: Crockett Cogeneration shall notify 'he CEC CPM in its Periodic Compliance Reports after the beginning of operation of the project, of the quantities of hazardous wastes and hazardous materials which it has handled during the reporting period.

**LAND-2**. The Applicant shall. prior to the start of construction. execute a lease. or lease amendment. with the State Lands Commission for the portion of the property on which the cogeneration project will be located.

Verification: Prior to the start of construction, the Applicant shall notify the CEC CPM within 30 days of obtaining a lease, or lease amendment, from the State Lands Commission. A copy of the lease, or lease amendment. shall be maintained in the Applicant's compliance files and win be available to the CEC CPM for inspection.

**LAND-3**. The Applicant shall, by instrument or instruments acceptable to counsel for the BCDC, dedicate to a public agency or otherwise permanently guarantee such rights for the public to the new approximately 10,000 square-foot public access area(s) to the extent the Applicant is legally able to do so. The instrument(s) shall create rights in favor of the public which shall commence no later than after completion of construction of any public access improvements required by this authorization and prior to the use of any structures authorized herein. Such instrument shall be in a form that meets recordation requirements of Contra Costa County and shall include a legal description of the property being restricted and a map that clearly shows and labels the line of highest tidal action, the property being restricted for public access, the legal description of the property and of the area being restricted for public access, and other appropriate landmarks and topographic features of the site, such as the location and elevation of the top of bank of any levees, any significant elevation changes, and the location of the nearest public street and adjacent public access areas. Approval or disapproval of the instrument shall occur within 30 days after submittal for approval and shall be based on the following:

(a) Sufficiency of the instrument to create legally enforceable rights and duties to provide the public access area required by this authorization;
(b) Inclusion of an exhibit to the instrument that clearly shows the area to be reserved with a legally sufficient description of the boundaries of such area; and
(c) Sufficiency of the instrument to create legal rights in favor of the public for public access that will run with the land and be binding on any subsequent purchasers, licensees, and users.

Within 30 days after approval of the instrument by the BCDC, the Applicant shall record the instrument and shall provide evidence of recording to the BCDC and the CEC CPM. No changes

shall be made to the instrument after approval without the express written consent by or on behalf of the BCDC.

Verification: Prior to the commencement of any grading or construction activity, the Applicant shall submit to the CEC CPM a copy of the instrument submitted to the counsel for the BCDC, and shall keep the CEC CPM informed of the progress of approval by the BCDC. Within 30 days after approval of the instrument, the Applicant shall record the instrument and shall provide evidence to the BCDC and the CEC CPM of such recording. If any changes are proposed to be made to the instrument after approval the counsel for the BCDC and the CEC CPM shall be notified of such intent.

**LAND-4**. The Applicant shall make available the approximately 10,000 square-foot area, as generally shown on Exhibit A of the BCDC report to the CEC, dated December 3, 1992, exclusively to the public for unrestricted public access for walking, sitting, viewing, fishing, picnicking, and related purposes. If the Applicant wishes to change, redesign. or use the public access area for other than public access purposes. it shall obtain prior written approval by or on behalf of the San Francisco Bay Conservation and Development Commission.

Verification: Six (6) months (or at a time that is mutually agreeable to the CEC CPM and BCDC) after the start of commercial operation of the cogeneration plant, the Applicant shall certify to the CEC CPM that the area shown on Exhibit A of the BCDC report to the CEC, dated December 3, 1992, is available exclusively to the public for the uses outlined above. If the Applicant wishes to change, redesign, or use the public access area for other than public access purposes it shall notify the CEC CPM that it is applying to the BCDC for written approval, and shall keep the CEC CPM informed of the results of that application.

**LAND-5**. The Applicant shall file an amendment with the CEC CPM, at least 60 days prior to any abandonment. of its intent to abandon the public access fishing pier or other improvements in the Bay. Further, if the condition of the improvements have deteriorated to the point that public health, safety or welfare is adversely affected, the Applicant. its assigns or successors in interest, or the owner of the improvements shall be required to remove such improvements within 60 days or such other reasonable time as the CEC. in consultation with the BCDC, determines is appropriate.

Verification: The Applicant shall file an amendment with the CEC CPM. at least 60 days prior to any abandonment, of its intent to abandon the public access fishing pier or other improvements in the Bay. If the CEC CPM, or BCDC determines that the condition of the Improvements have deteriorated to the point that public health. Safety or welfare is adversely affected. the CEC compliance dispute resolution process will be initiated.

**LAND-6**. The areas and improvements within the total 10,000 square-foot area shall be permanently maintained by and at the expense of the Applicant or its assignees. Such maintenance shall include. but is not limited to, repairs to all path surfaces, replacement of any plant materials deposited within the access areas, removal of any encroachments into the access areas. and assuring that the public access signs remain in place and visible. Within 30 days after

notification by the CEC CPM, the Applicant shall correct any maintenance deficiency noted in a CEC CPM or BCDC staff inspection of the site.

Verification: The Applicant shall affirm in its annual compliance to the CEC CPM report that It 15 maintaining the public access areas. The Applicant shall verify in writing to the CEC CPM that maintenance deficiencies have been corrected within 30 days of notification of such deficiencies.

**LAND-7**. The Applicant may transfer maintenance responsibility to a public agency u: another parry acceptable to the CEC (based upon the recommendation of the BCDC), The transfers to a new party in interest may be made, but only provided that the transferee agrees in writing, acceptable to counsel for the CEC (based upon the recommendation of the BCDC, to be bound by all terms and conditions of the permit.

Verification: The Applicant shall maintain a copy of such a maintenance transfer agreement in its compliance files for the life of the project, and shall make the agreement available to the CEC CPM upon request

**LAND-8**. The Applicant may impose reasonable rules on the use of the areas required to be provided for public access provided such rules are first approved by or on behalf of CEC CPM (in consultation with the BCDC and do not significantly affect the public nature of the area nor unreasonably' burden public use. Rules may include restricting hours of use and delineating appropriate behavior.

Verification: The Applicant shall, 30 days prior to availability of the public access for public use, provide to the CEC CPM for review and approval a copy of its proposed rules on the use of the public access areas.

**LAND-9**. The project owner shall enter into a Memorandum of Agreement (MOA) with the East Bay Regional Park District and the San Francisco Bay Conservation and Development Commission (BCDC) in the form attached to the project owner's Petition for Modification of Public Access Provisions of Certification. If the project owner enters into the MOA and makes the deposit of $438,664 as required in the MOA, the project owner shall not be required to comply with Conditions of Certification LAND-3 through LAND-8 and FDGN 28- FDGN-32. If BCDC returns the deposited funds of $438,664 to the project owner because of the failure by the East Bay Regional Park District to implement its required actions under the MOA, then the project owner shall proceed to comply with Conditions of Certification LAND-3 through LAND-8 and FDGN 28- FDGN-32, except that such Conditions of Certification shall be modified to (1) extend that date of completion of the public access pier to the date twenty-two (22) months after the return of the funds, and (2) incorporate the providions of Section II, paragraphs 1.d, 1.e, and 1.f of the revised BCDC report to the Commission dated August 18, 1994. In this case, the project owner shall not be required to comply with the Conditions of Certification LAND-11 through LAND-16 and FDGN-33 through FDGN-36. The project owner shall perform its obligations under the MOA.

Verification: The project owner shall submit to the CPM a copy of the executed MOA and shall keep the CPM informed of the progress on requirements of the MOA and shall report to the CPM any nonperformance of its obligations under the MOA.

**LAND-10**. The project owner shall provide $438,664 to partially fund construction and maintenance of public access improvements at the East Bay Regional Park District's Eckley site identified by BCDC in the revised report of BCDC to the Commission dated August 18, 1994. Such amount shall be placed in an interest-bearing escrow account in BCDC's name to be disbursed by BCDC only in accordance with the MOA and shall report to the CPM any nonperformance of its obligations under the MOA.

Verification: Not later than 45 days after the Commission of adoption of this amendment to the conditions of certification the project owner shall provide evidence satisfactory to the CPM that the account has been established and the required funds placed on deposit in that account.

**LAND-11**. The project owner shall make available an approximately 3,000 square foot area, in the Loring Avenue parking lot adjacent to the C&H Sugar bins, generally equivalent to that shown on Exhibit A of the BCDC report to the Commission dated August 18, 1994, exclusively to the public for unrestricted public access for walking, viewing, and related purposes. If the project owner wishes to use the public access area for other than public access purposes, it shall obtain prior written approval by BCDC.

Verification: Six (6) months (or at a time that is mutually agreeable to the CPM and BCDC) after the start of commercial operation of the cogeneration plant, the project owner shall submit to the CPM evidence that an area equivalent to that shown on Exhibit A of the BCDC report to the Commission, dated August 18, 1994, is available exclusively to the public for the uses outlined above. If the project owner wishes to change, redesign, or use the public access area for other than public access purposes it shall notify the CPM that it is applying to the BCDC for written approval, and shall keep the CPM informed of the results of that application.

**LAND-12**. The project owner shall, by instrument or instruments acceptable to BCDC, dedicate to a public agency or otherwise permanently guarantee such rights for the public to the approximately 3,000 square-foot public access area(s) to the extent the project owner is legally able to do so. The instrument(s) shall create rights in favor of the public which shall commence no later than after completion of construction of any public access improvements required by this authorization and prior to the use of any structures authorized herein. Such instrument shall be in a form that meets recordation requirements of Contra Costa County and shall include a legal description of the property being restricted and a map that clearly shows and labels the line of access, the legal description of the property and of the area being restricted for public access, and other appropriate landmarks and topographic features of the site, such as the location and elevation of the top of bank and any levees, any significant elevation changes, and the location of the nearest public street and adjacent public access areas. Approval or disapproval of the instrument shall occur within 30 days after submittal for approval and shall be based on the following:

(1) Sufficiency of the instrument to create legally enforceable rights and duties to provide the public access area required by this authorization;

(2) Inclusion of an exhibit to the instrument that clearly shows the area to be reserved with a legally sufficient description of the boundaries of such area; and

(3) Sufficiency of the instrument to create legal rights in favor of the public for public access that will run with the land and be binding on any subsequent purchasers, licenses, and users.

Within 30 days after approval of the instrument by BCDC, the project owner shall record the instrument and shall provide evidence of recording to BCDC and the CPM. No changes shall be made to the instrument after approval without the express written consent by BCDC.

Verification: Not later than 30 days after Commission approval of this condition of certification, the project owner shall submit to the CPM a copy of the instrument submitted to BCDC, and shall keep the CPM informed of the progress of approval by BCDC. Within 30 days after approval of the instrument, the project owner shall record the instrument and shall provide evidence to BCDC and the CPM of such recording. If any changes are proposed to be made to the instrument after approval, BCDC and the CPM shall be notified of such intent.

**LAND-13**. The project owner shall, upon prior arrangement, conduct tours of the cogeneration facility for the public.

Verification: In Annual Compliance Reports to the CPM, the project owner shall report requests for public tours and the dates upon which public tours were conducted.

**LAND-14**. The areas and improvement within the total 3,000 square-foot area shall be permanently maintained by and at the expense of the project owner or its assignees. Such maintenance shall include, but is not limited to, repairs to all path surfaces, replacement of any plant materials deposited within the access areas, removal of any encroachments into the access areas, and assuring that the public access signs remain in place and visible. Within 30 days after notification by the CPM, the project owner shall correct any maintenance deficiency noted in a CPM or BCDC inspection of the site.

Verification: The project owner shall affirm in its annual compliance report to the CPM that it is maintaining the public access areas. The project owner shall verify in writing to the CPM that maintenance deficiencies have been corrected within 30 days of notification of such deficiencies.

**LAND-15**. The project owner may transfer maintenance responsibility to a public agency or another party acceptable to the Commission (based on the recommendation of BCDC) at such time as the property transfers to a new party in interest, but only provided that the transferee agrees in writing, acceptable to the Commission (based on the recommendation of BCDC), to be bound by all terms and conditions of the permit.

Verification: The project owner shall receive written consent from the CPM (based upon the recommendation of the BCDC) prior to the transfer of any maintenance responsibilities. The

project owner shall maintain a copy of such maintenance transfer agreement in its compliance files for the life of the project, and shall make the agreement available to the CPM upon request.

**LAND-16**. The project owner may impose reasonable rules on the use of the areas required to be provided for public access provided such rules are first approved by the CPM (in consultation with BCDC) and do not significantly affect the public nature of the area nor unreasonably burden public use. Rules may include restricting hours of use and delineating appropriate behavior.

Verification: The project owner shall, 30 days prior to availability of the public access for public use, provide to the CPM for review and approval a copy of its proposed rules on the use of the public access areas.

## FACILITY DESIGN

**FDSE-1.** The Applicant shall furnish to the CEC CPM and to the CBO {FN 120}, a schedule of structural plan submittal, a Master Drawing List, and a Master Specifications List. The schedules shall contain a description and list of proposed submittal packages for structural plans, calculations, and specifications for critical electrical and mechanical equipment, and the estimated submittal date. The Applicant shall furnish monthly schedule updates to the CBO and the CEC CPM.

Verification: At least 60 days (or a lesser number of days mutually agreeable to the CBO){121} prior to the start of the first increment of new construction (the first increment of construction is defined as the start of excavation for foundations), the Applicant shall submit the schedule, Master Drawing List, and Master Specifications List to the CBO and to the CEC CPM and provide monthly schedule updates in the Monthly Compliance Report.

**FDGN-2.** The Applicant shall submit to the CBO for review and approval, a copy to the CEC CPM, the overall layout of the facilities showing how the power plant, as proposed, complies with applicable provisions of the Americans with Disabilities Act (ADA).

Verification: At least 45 days prior to the start of new construction, the Applicant shall submit the overall layout of the facilities and indicate how the facilities, as proposed, comply with applicable provisions of the ADA.

**FDGN-3**. The Applicant shall make payments to the CBO equivalent to the listed in the 1991 Uniform Building Code (UBC), Chapter 3, 304 and Table No. 3-A; Chapter 70, Section 7007 and Table No. 70-A and 70-B for plan review and permits. If Contra Costa County has adjusted the UBC fees by Code or Ordinance, the Applicant shall pay the adjusted fees.

Verification: The Applicant shall make payments to the CBO at the time of submittal of the plans, calculations, specifications, and the soils report. The Applicant shall send a copy of the transmittal letter to the CEC CPM in the next Monthly Compliance Report indicating that the applicable fees have been paid.

**FDCE-4.** The Applicant shall assign to the project at least one qualified and responsible civil engineer registered in California. The civil engineer(s) shall:

- design (or be responsible for design), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities to comply with the Commission's Decision. These include, but are not limited to, grading, site preparation, excavations and compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems;
- monitor construction progress to ensure compliance with the design intent;
- provide consultation to the responsible construction engineer during the construction phase of the project and recommend changes in the design of the civil works facilities and changes in the construction procedures; and

- be directly responsible for the construction of all the facilities enumerated above, and also be responsible for the conformance of all civil work construction with applicable LORS, and approved plans and specifications.

The tasks performed by the responsible engineer(s) may be divided between two or more civil engineers, as long as each engineer is responsible for a particular segment of the project (e.g. proposed earthwork, related civil works, civil structures, transmission line civil works, etc). No segment of the project shall have more than one responsible engineer.

If the civil engineer is subsequently reassigned or replaced the Applicant shall, within ten (10) days, submit the name, qualifications, and registration number of the newly assigned engineer to the CBO and the California Energy Commission's Compliance Project Manager (CEC CPM).

Verification: At least fourteen 14 days prior to the start of site preparation, the Applicant shall submit to the CEC CPM and to the CBO the name and registration number of the responsible engineer(s) assigned to the project to perform the duties set forth in this Condition.

**FDCE-5.** The Applicant shall assign to the project a qualified civil engineer registered in California and fully competent and proficient in soil mechanics. The civil engineer shall:

- review all the soils engineering reports, engineering geology reports, and prepare a final soils grading report;
- prepare the soils engineering reports required by chapter 70 of the UBC;
- be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in chapter 70 of the UBC;
- recommend field changes to the responsible civil engineer and to the construction engineer;
- review the geotechnical report, field exploration report, tests, and engineering analyses detailing the nature and extent of the site soils that may be susceptible to rapid settlement or collapse when saturated under load; and
- prepare reports on foundation investigation to comply with chapter 29 of the UBC.

If the civil engineer is subsequently reassigned or replaced, the Applicant shall, within ten (10) days, submit the name, qualifications and registration number of the newly assigned engineer to the CBO and the CEC CPM.

This civil engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations.

Verification: At least fourteen (14) days prior to the start of site preparation, the Applicant shall submit to the CEC CPM and to the CBO the name and registration number of the responsible engineer assigned to the project to perform the duties set forth above.

**FDSE-6.** The Applicant shall assign to the project at least one responsible design engineer who is either a registered structural engineer with the authority to use the title Structural Engineer in California or a registered California Civil Engineer who is fully competent and proficient in the design of power plant structures and equipment supports. The design engineer shall:

- Be directly responsible for the design of the proposed structures and equipment supports;
- insure that the facility is designed and constructed to meet the height and width requirements as specified in Visual Resources Conditions of Certification VIS-5 through VIS-8.
- provide consultation to the responsible construction engineer during design and construction of the project;
- monitor construction progress to ensure compliance with the design intent;
- evaluate and recommend necessary changes in design; and
- prepare and sign all major building plans, specifications and calculations.

The tasks performed by the responsible engineer(s) may be divided between two or more civil or structural engineers, as long as each engineer is responsible for a particular segment of the project. No segment of the project shall have more than one responsible civil or structural engineer.

If the responsible design engineer is subsequently reassigned or replaced, the Applicant shall, within ten (10) days, submit the name, qualifications, and registration number of the newly assigned engineer to the CBO and the CEC CPM.

Verification: At least 60 days prior to submittal of building plans, the Applicant shall identify to the CBO and the CEC CPM the name and the qualifications of the responsible design engineer assigned to the project to perform the duties set forth in this Condition.

**FDSE-7.** The Applicant shall assign, as a resident engineer, a registered civil engineer in the State of California, who shall be present on site as required to monitor construction activities, who shall have authority to halt construction and to require changes or remedial work if the work does not conform to the applicable requirements and who shall be responsible for the special and continuous inspections required by UBC Section 306. All welding (including structural piping, tanks, and pressure vessels) shall be inspected by a certified weld inspector as required (AWS and/or ASME as applicable).

If the civil engineer, certified weld inspector, or the certified special inspector is subsequently replaced or re-assigned, the Applicant shall within ten (10) days submit the name(s) and qualifications of the newly assigned individual(s) the CBO and CEC CPM.

Verification: At least fourteen (14) days prior to the start of an activity requiring special inspection, the Applicant shall submit to the CEC CPM and to the CBO the name(s), and registration number(s) of the responsible engineer(s), certified weld inspector(s), or the certified special inspector(s) assigned to the project to perform the duties set forth above. The Applicant shall notify the CEC CPM of all CBO approvals or disapprovals of the resident registered civil engineer, weld inspector, or special inspector, within five (5) days of the approval or disapproval.

**FDME-8.** The Applicant shall assign to the project at least one qualified and responsible mechanical engineer, registered in California. The Mechanical engineer(s) shall be responsible for, and sign and stamp a statement with each mechanical submittal to the CBO that the proposed final design plans, specifications, and calculations conform with all of the Mechanical Engineering Design requirements set forth in the Commission Decision.

The tasks performed by the responsible mechanical engineer(s) be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project. No segment of the project shall have more than one responsible engineer.

If the mechanical engineer is subsequently reassigned or replaced the Applicant shall, within ten (10) days, submit the name, qualifications, and registration number of the newly assigned mechanical engineer to the CBO and the CEC CPM.

Verification: At least fourteen (14) days prior to the start of first increment of construction, the Applicant shall submit to the CEC CPM and to the CBO the name, and registration number of the responsible engineer(s) assigned to the project to perform the above duties.

**FDEE-9.** The Applicant shall assign to the project a qualified California registered electrical engineer who shall be responsible for the electrical design of the project, and shall sign and stamp all electrical design drawings, plans, specifications, calculations and applicable quality control documents. The transmission line may be the responsibility of a separate California registered electrical engineer.

The tasks performed by the responsible engineer(s) may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g. proposed earthwork, related civil works, civil structures, transmission line civil works, etc). No segment of the project shall have more than one responsible engineer.

If the electrical engineer is subsequently reassigned or replaced the Applicant shall, within ten (10) days, submit the name, qualifications, and registration number of the newly assigned engineer to the CBO and the CEC CPM.

Verification: At least fourteen 14 days prior to the submittal of the first set of electrical plans, the Applicant shall submit to the CEC CPM and to the CBO the name and registration number of the responsible engineer(s) assigned to the project to perform the above duties.

**FDCE-10.** Prior to the start of site grading, the Applicant shall submit to the CBO for review and approval the following:

- The proposed drainage structures, and the grading plan to conform to the requirements of Contra Costa County Ordinance Code Title 7, Division 716;
- erosion and sedimentation control plan (combined grading plan); and
- the calculations and specifications signed and stamped by the responsible civil engineer.

Verification: At least fourteen (14) days prior to the start of site grading, the Applicant shall submit to the CBO for review and approval the above described documents. When the work described above conforms with all applicable requirements, the Applicant shall provide a statement to the CEC CPM, signed by the responsible civil engineer, confirming that the proposed grading plan, erosion and sedimentation control plan (combined grading plan), drainage structures, calculations, and specifications comply with the applicable LORS and with the civil engineering criteria and requirements set forth in the Commission's Decision. The Applicant shall also verify that, as applicable, the work set forth above has been inspected and approved by the CBO.

**FDCE-11.** The Applicant's responsible civil engineer shall, if appropriate, stop all earthwork and construction in the effected areas when the Applicant's engineering geologist identifies unforseen adverse geologic conditions. The Applicant shall prepare and submit, within five (5) days, modified plans, specifications, and calculations to the CBO based on these new conditions. The Applicant shall obtain approval from the CBO before resuming earthwork and construction in the affected areas.

Verification: The Applicant shall provide, to the CEC CPM, the CBO's approval to resume earthwork and construction in the effected areas within five (5) days of the CBO granting approval.

**FDGN-12.** Prior to the start of any increment of construction, the Applicant shall obtain CBO approval to commence that increment of construction, upon approval of the plans, specifications, calculations, and quality assurance/quality control procedures submitted or pending final approval if agreed to by the CBO. Upon completion of the increment of construction, the Applicant shall request the CBO's inspection and approval of said construction.

Verification: Ten (10) days prior to the start of any increment of construction, the Applicant shall transmit to the CEC CPM a copy of the CBO's agreement to commence that increment of project construction, including a copy of the signed and stamped engineer's plans. The Applicant shall transmit a copy of the CBO's inspection approvals to the CEC CPM in the Monthly Compliance Report following completion of any inspection.

**FDCE-13.** All plant site grading operations shall be subject to inspection by the CBO and the CEC CPM. The Applicant shall perform inspections in accordance with Chapters 3, 29 and 70 of the UBC. If the Applicant's inspector discovers that work is not being done in accordance with the approved plans, the discrepancies shall be reported immediately to the CBO, the CEC CPM, and Applicant's responsible civil engineer. The Applicant shall prepare a written report detailing the discrepancies and non-compliance items and send copies to the CBO and the CEC CPM.

Verification: Within five (5) days of the discovery of the discrepancies, the Applicant shall prepare a nonconformance report (NCR) to be included in the daily reports. These reports shall reference the corresponding Conditions of Certification and copies shall be sent to the CEC CPM.

**FDCE-14.** After completion of the finish grading, and construction of the erosion and sedimentation control facilities, the Applicant shall file with the CEC CPM the CBO's approval of the final "as-graded" plans, and "as-built" plans for the erosion and sedimentation control facilities.

Verification: Within thirty (30) days of the construction of the drainage facilities and their protective devices, the Applicant shall file the responsible civil engineer's signed statement verifying that the installation of the drainage facilities and other protective devices and all erosion control measures were completed in accordance with the final approved combined grading plans and that the facilities are adequate for their intended function. The Applicant shall file this report with the CEC CPM in the next Monthly Compliance Report.

**FDSE-15**. Prior to the start of any increment of construction, the Applicant shall submit to the CBO, for review and approval, applicable drawings and specifications for the following:

- project structures;
- foundations, equipment supports and anchorages;
- field fabricated tanks;
- turbine/generator pedestal;
- ASME pressure vessels;
- switchyard equipment, and;
- power piping.

The Applicant shall obtain approval from the CBO for the final design plans, specifications, calculations, soils report, and applicable quality control procedures. The Applicant shall submit a copy of the transmittal package for the designated critical elevated structures (i.e., turbine generator support and foundation, tank foundation, and structures taller than 20 feet e.g. stacks, air cooled condenser) to the CEC CPM.

If there are conflicting requirements, the most conservative shall govern (i.e., highest loads, or lowest allowable stresses). Plans, calculations, and specifications for foundations that support structures should be filed concurrently with the structure plans, calculations, and specifications. The final plans, calculations, and specifications shall clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design and be signed and stamped by the responsible design engineer.

Verification: 30 days prior to the start of any increment of construction, the Applicant shall submit the responsible design engineer's signed statement to the CBO and to the CEC CPM that the final design plans, specifications and calculations conform with all of the requirements set forth in the Commission's Decision. The Applicant shall submit four (4) copies of the plans and three (3) copies of the specifications, calculations, and other required documents to the CBO and one (1) copy of each to the CEC CPM of the designated critical elevated structures at least 90 days prior to the start of field fabrication and installation of each structure, equipment support, or foundation. If the CBO discovers nonconformance with the stated requirements, the CBO shall notify the Applicant within 45 days of the submittal date and shall return the

nonconforming plans to the Applicant for correction. The Applicant shall resubmit the corrected plans within 20 days of receipt of the nonconforming submittal.

The Applicant shall submit written notice to the CEC CPM that the proposed building plans, specifications, and calculations have been determined by the CBO to be in conformance with the requirements set forth in the applicable LORS and that the CBO has approved them.

**FDSE-16.** The Applicant shall obtain the CBO's approval of any completed work as being in conformance with the approved final building plans.

Verification: Within ten (10) days of the completion of any structure, Applicant's responsible design engineer shall submit to the CBO and to the CEC CPM: (a) a written notice that the structure is ready for final inspection, and (b) a signed statement that the structure conforms to the final approved building plans. The marked up "as-built" drawing for the construction of structural and architectural work shall be submitted to the CBO. Changes approved by the CBO shall be identified on the "as-built" drawings.

The CBO shall inspect the completed structure and review the submitted documents. When the work and the "as-built" plans conform with the approved final building plans, the CBO shall give the Applicant final approval and shall notify the CEC CPM of such final approval. The CBO shall also issue a Certificate of Occupancy after final approval.

**FDSE-17** The Applicant shall submit to the CBO the number of required sets of each of the following:

- Concrete cylinder strength test reports, (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, and quantity of concrete placement from which sample was taken, mix design designation and parameters);
- concrete pour sign-off sheets;
- bolt torque inspection reports (including location of test, date, bolt size, recorded torques);
- field weld inspection reports, (including type of weld, location of weld, inspection of Non Destructive Testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number [ref: AWS and ASME]); and
- reports covering other structure activities requiring special inspections in accordance with UBC, Section 306.

Verification: The CBO shall review the above reports and shall indicate his/her approval or disapproval to the Applicant within 14 days with one copy to the CEC CPM, provided specific test results comply with identified requirements. If disapproved, the CBO shall immediately advise the CEC CPM of the reason for disapproval.

**FDSE-18.** All structural work shall be subject to inspection by the CBO and CEC CPM.

Verification: Applicant shall notify the CBO and CEC CPM in writing at least 15 days prior to the time the work is ready for inspection.

**FDME-19.** Prior to the start of any increment of piping construction, the Applicant shall submit for CBO review and approval the proposed final design drawings, specifications, calculations, and applicable quality control (QC) procedures for each plant piping system, other than domestic and refrigeration. The Applicant shall design and install all piping, other than domestic and refrigeration, to the appropriate code listed herewith. Upon completion of construction of any piping system, the Applicant shall request the CBO's inspection approval of said construction.

The responsible engineer, registered to practice mechanical engineering in the State of California, shall submit a signed and stamped statement to the CBO that the proposed final design plans, specifications, and calculations conform with all of the piping requirements set forth in the Commission Decision. The responsible engineer also shall submit a signed and stamped statement to the CBO that all of the other piping systems, except domestic and refrigeration, have been designed, fabricated, and installed in accordance with all applicable ordinances, regulations, laws, and industry standards, including:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code) or
- ANSI B31.8 (Gas Transmission and Distribution Piping Code); and,
- National Fire Protection Association (NFPA).

Verification: Thirty (30) days prior to the start of any increment of construction, the Applicant shall submit to the CEC CPM a copy of the transmittal letter to the CBO of the proposed final design plans, specifications, calculations and quality control procedures for that increment of construction of piping systems, including a copy of the signed and stamped engineer's certification of conformance with the Commission Decision.

The Applicant shall submit to the CBO the above listed design plans, specifications, calculations and quality control procedures for approval. The Applicant shall submit to the CEC CPM a copy of the signed and stamped-engineer's certification of compliance with applicable LORS and standards following submittal of same to the CBO. The Applicant shall transmit a copy of the CBO's inspection approvals to the CEC CPM in the Monthly Compliance Report following completion of any inspection.

**FDME-20**. For all pressure vessels installed in the plant, the Applicant shall submit to the CBO and Cal/OSHA, prior to operation, the code certification papers and other documents required by LORS. The Applicant shall request written notification from the CBO that the plan check and installation are in accordance with the code requirements.

The Applicant shall ensure that all boilers and fired and unfired pressure vessels are designed, fabricated and installed in accordance with American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section I or Section VIII, and CCR, Title 8, Chapter 4, including those prefabricated vessels furnished by vendors.

Upon completion of the installation of any pressure vessel, Applicant shall request the appropriate CBO and/or Cal/OSHA inspection of said installation.

The responsible design engineer, registered to practice mechanical engineering in the State of California, shall stamp and sign all pressure vessel drawings, specifications, and calculations. The responsible design engineer shall submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the CCR, Title 8 and ASME Boiler and Pressure Vessel Code Section I or Section VIII.

Verification: Thirty (30) days prior to the start of construction or installation of any pressure vessel, the Applicant shall submit to the CBO for review and approval calculations, specifications, and quality control procedures, including a copy of the signed and stamped engineer's certification and a transmittal letter to the CEC CPM. The Applicant shall send copies of the CBO approvals to the CEC CPM in the following Monthly Compliance Report. The Applicant shall transmit a copy of the CBO's and/or Cal/OSHA inspection to the CEC CPM in the Monthly Compliance Report following completion of any inspection.

**FDME-21.** Prior to the start of construction of any heating, ventilating, air conditioning (HVAC) or refrigeration system, the Applicant shall submit to the CBO for review and approval the design plans, specifications, calculations, and quality control procedures for that system. The Applicant shall design and install all heating, ventilating, air conditioning, and refrigeration systems within buildings and related structures in accordance with the Uniform Mechanical Code and other applicable standards, ordinances and laws. Upon completion of any increment of construction, the Applicant shall request the CBO's inspection and approval of said construction.

The final plans, specifications, and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical design engineer, registered to practice mechanical engineering in the State of California, shall sign and stamp all plans, drawings, and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications, and calculations conform with all applicable LORS.

Verification: Thirty (30) days prior to the start of construction of any HVAC or refrigeration system, the Applicant shall transmit to the CEC CPM a copy of the transmittal letter to the CBO of the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the design engineer certifying compliance with the applicable standards, ordinances, and laws. The Applicant shall send copies of CBO comments and approvals to the CEC CPM in the next Monthly Compliance Report. The Applicant shall transmit a copy of the CBO's inspection approvals to the CEC CPM in the Monthly Compliance Report following completion of any inspection.

**FDME-22.** Prior to the start of each increment of plumbing construction, the Applicant shall submit for the CBO's approval the final design plans, specifications, calculations, and quality control procedures for all plumbing systems, potable water systems, drainage systems (including sanitary drain and waste), toilet rooms, building energy conservation systems, and temperature

control and ventilation systems, including water and sewer connection permits issued by the county.

The Applicant shall design, fabricate, and install:

a. Plumbing in accordance with Title 24, CCR, Division 5, Part 5, and the Uniform Plumbing Code, as revised by Contra Costa County.

b. Potable water system in accordance with Title 24, CCR, Division 5, Part 5, Article P10, and the Uniform Plumbing Code, as revised by Contra Costa County.

c. Drainage system including sanitary drain and waste system in accordance with Title 24, CCR, Division 5, Part 5, Articles P4, P5, P6, and P7, and the Uniform Plumbing Code, as revised by Contra Costa County.

d. Toilet rooms and number of toilet rooms in accordance with the Uniform Plumbing Code, Appendix C, as revised by Contra Costa County, and Title 24, CCR, Part 2.

e. Building energy conservation systems in accordance with Title 24, CCR, Division 5, Chapter 2-53, Part 2.

f. Temperature control and ventilation systems in accordance with Title 24, CCR, Division 5, Chapter 2-53, Part 2.

Upon completion of any increment of construction, the Applicant shall request the CBO's inspection approval of said construction.

The final plans, specifications, and calculations shall clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical design engineer, registered to practice mechanical engineering in the State of California, shall stamp and sign all plans, drawings, and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications, and calculations conform with all of the requirements set forth in the Commission Decision.

Verification: Thirty (30) days prior to the start of construction of any of the above systems, the Applicant shall submit a copy of the transmittal letter to the CBO of the final design plans, specifications, and calculations, including a copy of the signed and stamped statement from the design engineer certifying compliance with the applicable LORS, to the CEC CPM. The Applicant shall transmit a copy of the CBO's inspection approvals to the CEC CPM in the next Monthly Compliance Report following completion of any inspection.

**FDSE-23**. The Applicant shall file with the CBO and CEC CPM design changes to the final plans as required by UBC, Section 303, submitting the revised drawings, specifications, calculations, and a complete description of and supporting rationale for the proposed change to the CBO, and shall notify the CBO of the intended filing.

Verification: Applicant shall notify the CBO at least 15 days prior to the intended filing of design changes and shall submit three (3) sets of revised drawings and two (2) copies of the other above mentioned documents to the CBO, with one (I) set of all these to the CEC CPM. The CBO shall return two sets of submittal stamped and signed with the CBO's approval to the Applicant within 30 days, provided the plans comply with the stated requirements and shall notify the CEC CPM that the CBO has approved the revised plans.

**FDEE-24.** With the exception of the transmission line (covered under separate Conditions), the Applicant shall not begin any increment of electrical construction until plans for that increment have been submitted for review and approval by the CBO. These plans, together with design changes and design change notices shall remain on the site for one year after completion of construction. The Applicant shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS.

Verification: The Applicant shall submit electrical inspection reports to the CEC CPM in the Monthly Compliance Report. Prior to the initial turbine roll, the Applicant shall submit to the CEC CPM a statement signed by the CBO that the electrical equipment has been installed, inspected, and approved. The following activities shall be reported in the Monthly Compliance Report:

- Receipt or delay of major electrical equipment.
- Testing or energization of major electrical equipment.
- The number of electrical drawings approved or submitted for approval, and the number still to be submitted.

**FDEE-25.** The Applicant shall submit to the CBO three copies of items a and b for review and approval and one copy of item c:

a. Final design plans to include:

- one-line diagrams for the 230 kV, 13.8 kV, 4.16 kV and 480 V systems;
- system grounding drawings;
- general arrangement or conduit drawings; and
- other plans as required by the CBO.

b. Final calculations to establish:

- short-circuit ratings of equipment;
- ampacity of feeder cables;
- voltage drop in feeder cables;
- coordination study calculations for fuses, circuit breakers and protective relay settings;
- system grounding requirements;
- lighting energy calculations; and
- other calculations as required by the CBO.

c. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Commission Decision and the NEC.

Verification: Thirty (30) days prior to the start of each increment of electrical equipment installation, the Applicant shall submit to the CEC CPM a copy of the transmittal letter to the CBO, verifying that copies of the appropriate items listed above were submitted to the CBO for review and approval.

**FDGN-26.** Crockett shall keep the CBO informed regarding the status of construction.

Verification: Crockett shall submit a weekly construction progress report to the CBO within five (5) days after the end of each week. If a discrepancy is discovered during construction the Applicant shall, within five (5) days, prepare and submit the nature of the discrepancies to CBO and the CEC CPM. The Applicant shall prepare a Non Conformance Report (NCR). The reports shall reference this Condition of Certification.

**FDGN-27.** The Applicant shall design, construct, and inspect the project in accordance with applicable design criteria and mandatory industry standards identified, under the Facility Design section of Appendix C.

Verification: Within 30 days of the start of commercial operation (commercial operation is defined as the PG&E Firm Capacity Availability Date) of the Project, the Applicant shall submit to the CEC CPM a statement of verification, signed by the responsible engineers, attesting that all design, construction, and inspection requirements of the applicable LORS, installation requirements, and the Commission's Decision have been met in the areas of civil engineering, structural engineering, mechanical engineering, and electrical engineering.

**FDGN-28.** Public Access

a. The Applicant shall revise the conceptual design of the proposed public access improvements to be consistent with the recommendations of the Bay Commission's Design Review Board (DRB) made at the September 17, 1 992 meeting and present the revised design for review and approval by the Bay Commission's DRB.

b. Upon obtaining DRB approval, the Applicant shall submit specific construction plans for the public access improvements to the Bay Commission for review and approval as provided for below.

c. Plan Review. No work whatsoever on public access improvements shall be commenced pursuant to this authorization until final precise site, engineering, grading, architectural, and landscaping plans and any other relevant criteria, specifications, and plan information for that portion of the work have been submitted to, reviewed, and approved in writing by or on behalf of the Bay Commission. The specific drawings and information required will be determined by the Bay Commission's staff. To save time, preliminary drawings should be submitted and approved prior to final drawings.

(1) Site, Architectural, and Landscaping Plans. Site, architectural, and landscaping plans shall include and clearly label the 5.9-foot contour line above Mean Sea Level (the

line of highest tidal action), the line 100 feet inland of the line of highest tidal action, property lines, the boundaries of all areas to be reserved for public access purposes and open space, grading, details showing the location, types, dimensions, and materials to be used for all structures, irrigation, landscaping, drainage, seating, parking, signs, lighting, fences, paths, trash containers, utilities and other proposed improvements.

(2) Engineering Plans. Engineering plans shall include a complete set of contract drawings and specifications and design criteria. The design criteria shall be appropriate to the nature of the project, the use of any structures, soil and foundation conditions at the site, and potential earthquake-induced forces. Final plans shall be signed by the professionals of record and be accompanied by:

(i) Evidence that the design complies with all applicable codes; and
(ii) Evidence that a thorough and independent review of the design details, calculations, and construction drawings has been made.

Plans submitted shall be accompanied by a letter requesting plan approval, identifying the type of plans submitted, the portion of the project involved, and indicating whether the plans are final or preliminary. Approval or disapproval shall be based upon:

(3) completeness and accuracy of the plans in showing the features required above, particularly the line of highest tidal action, property lines, and the line 100-feet inland of the line of highest tidal action, and any other criteria required by this authorization;

(4) consistency of the plans with the terms and conditions of this authorization;

(5) the provision of the amount and quality of public access to and along the shoreline and in and through the project to the shoreline required by this authorization;

(6) consistency with legal instruments reserving public access and open space areas;

(7) assuring that any fill in the Bay does not exceed this authorization and will consist of appropriate shoreline protection materials as determined by or on behalf of the Bay Commission;

(8) consistency of the plans with the recommendations of the Design Review Board;

(9) assuring that appropriate provisions have been incorporated for safety in case of seismic event.

Plan review shall be completed by or on behalf of the Bay Commission within 45 days after receipt of the plans to be reviewed.

Verification: The Applicant shall submit construction plans for the public access improvements to the Bay Commission DRB for review and approval, and a copy to the CEC CPM at least 60 days (or a lesser number of days mutually agreeable to the Bay Commission DRB, and to the

CBO) prior to the start of construction of the public access. When permit for construction has been granted, the Applicant shall submit a copy of the permit to the CEC CPM in the next Monthly Compliance Report.

**FDGN-29.** Public Access: Conformity with Final Approved Plans

All public access work, improvements, and uses shall conform to the final approved plans. Prior to any use of the facilities authorized herein, the appropriate design professional(s) of record shall certify in writing that, through personal knowledge, the work covered by the authorization has been performed in accordance with the approved design criteria and in substantial conformance with the approved plans. No noticeable changes shall be made thereafter to any final plans or to the exterior of any constructed structure, outside fixture, lighting, landscaping, signage, landscaping, parking area, or shoreline protection work without first obtaining written approval of the change(s) by or on behalf of the Bay Commission.

Verification: When the work described above conforms with all applicable requirements, the Applicant shall provide a statement to the CEC CPM, signed by the responsible engineer of record, confirming that the work complies with the applicable LORS, the approved plans, and with requirements set forth in the Energy Commission's Decision.

**FDGN-30.** Public Access: Discrepancies between Approved Plans and Special Conditions.

In case of any discrepancy between final approved plans and Conditions or the BCDC Consistency Report or legal instruments approved pursuant to this certification, the Condition or the legal instrument shall prevail. The Applicant is responsible for assuring that all plans accurately and fully reflect the Special Conditions of this certification and any legal instruments submitted pursuant to this authorization or the BCDC authorization.

Verification: If a discrepancy is discovered during construction, the Applicant shall, within five (5) days, prepare and submit the nature of the discrepancies to CBO and the CEC CPM. The Applicant shall prepare a Non Conformance Report (NCR). The reports shall reference this Condition of Certification.

**FDGN-31.** Public Access: Construction.

The public access improvements authorized herein shall be built in conformance with the plan entitled "Crockett Cogeneration Public Access Proposal" prepared by EDAW, Inc., as revised pursuant to Condition 28-C above. Final plans for the authorized shoreline protection improvements shall be prepared and submitted for BCDC review in accordance with Special Condition 28-C above. No changes to the design of the project shall be made without the prior written approval of the Bay Commission's staff.

Verification: When the work described above has been completed, and prior to any use of the public access facilities, the appropriate design professional(s) of record shall certify in writing that, through personal knowledge, the work covered by the authorization has been performed in accordance with the approved design criteria, the final approved plans, and is in substantial

conformance with the approved plans, and requirements set forth in the Energy Commission's Decision. The Applicant shall verify that, the work has been inspected and approved by the CBO.

**FDGN-32** Improvements Within the Total Public Access Area.

Prior to the production of any steam or electrical power, the Applicant shall begin the installation of the public access area. The Applicant shall complete the construction of the public access area and make it available for public use within six months of the project's commercial operation. The public access area shall generally include the following improvements:

(1) A 150-foot-long and 12-foot-wide path and steps from the parking lot adjacent to Loring Avenue to the belvedere platform;

(2) An elevator for use by persons with handicaps to use access to the fishing pier;

(3) A belvedere of approximately 700 square feet which provides views of the plant, passing trains and the fishing pier;

(4) Fenced stairs leading to the 15-foot-wide shoreline path with adequate landings;

(5) Fencing along the shoreline path and on the stairs which effectively precludes public access to the railroad tracks and the switching yard;

(6) No fewer than 15 public access signs, including two Bay Trail markers with two public shore signs for each direction of Loring Avenue, one at the beginning of the path on the site; several interpretive signs describing the operations of the sugar refinery, the ecology and history of the Carquinez Strait, the sugar refinery and the cogeneration plant, and signs which inform people and contractors of the gas pipeline and transmission line in the pedestrian bridge and a sign which describes the likelihood and effects of a toxic release such as ammonia, sulfuric acid, sodium hydroxide or other potential releases;

(7) Six to eight public access parking spaces (exact number to be determined by the Design Review Board during detail design review) to be located in the parking lot adjacent to the pedestrian bridge;

(8) A 20-foot-wide approximately 55 foot-long path leading to the public pier, a portion of which will be constructed on pile-supported fill;

(9) An approximately 2,500-square-foot circular public access pier built on pile-supported fill with handrails and a partially enclosed shelter which does not impede views; and,

(10) At least 5 benches, 3 trash containers, a bicycle rack for at least 5 bicycles, a drinking fountain and a fish cleaning facility to be located on the public access pier.

Verification: Prior to the beginning of construction, the Applicant shall submit to the CEC CPM and BCDC for review and approval a schedule for the installation of the public access area including a timetable for the beginning of construction/installation of the above items based on the BCDC's November 19, 1992 report Condition II-F Improvements.

**FDGN-33.** Improvements Within the Total Public Access Area. The Project owner shall complete the construction of the public access area and make it available for public use within six months of the project's commercial operation. The public access area shall generally include the following improvements equivalent to that shown on Exhibit A of the BCDC report to the Commission dated August 18, 1994;

(1) Parking (six spaces, at least one of which would be handicapped accessible);
(2) An approximately 2,000 square-foot landscaped plaza;
(3) An entry sign, and two or three interpretive signs describing the cogeneration plant operations, sugar refinery operations, and historical information about the Carquinez Strait. The cogeneration and refinery interpretive signs would be oriented to these two facilities, while the historical interpretive sign would over look the Carquinez Strait.

Verification: Upon the completion of construction of the public access improvements, the project owner shall submit to the CPM and BCDC a notice of that completion.

**FDGN-34.** Plan Review. No work whatsoever on public access improvements shall be commenced pursuant to this authorization until final precise site, engineering, grading, architectural, and landscaping plans and any other relevant criteria, specifications, and plan information for that portion of the work have been submitted to, reviewed, and approved in writing by BCDC. The specific drawings and information required will be determined by BCDC's staff. To save time, preliminary drawings should be submitted and approved prior to final drawings.

a. Site, Architectural, and Landscaping Plans. Site, architectural, and landscaping plans shall include and clearly label the 5.9 foot contour line above Mean Sea Level (the line of highest tidal action, property lines, the boundaries of all areas to be reserved for public access purposes and open space, grading, details showing the location, types, dimensions, and materials to be used for all structures, irrigation, landscaping, drainage, seating parking, signs lighting, fences, paths, trash containers, utilities and other proposed improvements.

b. Engineering Plans. Engineering plans shall include a complete set of contract drawings and specifications and design criteria. The design criteria shall be appropriate to the nature of the project, the use of any structures, soil and foundation conditions at the site, and potential earthquake-induced forces. Final plans shall be signed by the professionals of record and be accompanied by:

(1) Evidence that the design complies with all applicable codes; and,
(2) Evidence that a thorough and independent review of the design details, calculations, and construction drawings has been made.

Plans submitted shall be accompanied by a letter requesting plan approval, identifying the type of plans submitted, the portion of the project involved, and indicating whether the plans are final or preliminary. Approval or disapproval shall be based upon:

(1) completeness and accuracy of the plans in showing the features required above, particularly the line of highest tidal action, property lines, and the line 100-feet inland of the line of highest tidal action, and any other criteria required by this authorization;
(2) consistency of the plans with the terms and conditions of this authorization;
(3) the provision of the amount and quality of public access to and along the shoreline and in and through the project to the shoreline required by this authorization;
(4) consistency with legal instruments reserving public access and open space areas;
(5) assuring that any fill in the bay does not exceed this authorization and will consist of appropriate shoreline protection materials as determined by BCDC;
(6) consistency of the plans with the recommendations of the BCDC Design Review Board;
(7) assuring that the appropriate provisions have been incorporated for safety in case of seismic event.

Plan review shall be completed by BCDC within 55 days after receipt of the plans to be reviewed.

Verification: The project owner shall submit construction plans for the public access improvements to the BCDC Design Review Board for review and approval, and a copy to the CPM at least 60 days (or a lesser number of days mutually agreeable to the BCDC Design Review Board, and to the CBO) prior to the start of construction of the public access. Upon receipt, the project owner shall submit a copy of the permit for construction to the CPM in the next Monthly Compliance Report.

**FDGN-35.** Public Access: Conformity with Final Approved Plans. All public access work, improvements, and uses shall conform to the final approved plans. Prior to any use of the public access facilities authorized here, the appropriate design professional(s) of record shall certify in writing that, through personal knowledge, the work covered by the authorization has been performed in accordance with the approved design criteria and in substantial conformance with the approved plans. No noticeable changes shall be made thereafter to any final plans or to the exterior of any constructed structure, outside fixture, lighting, landscaping signage, landscaping, parking area, or shoreline protection work without first obtaining written approval of the change(s) by BCDC.

Verification: When the work described above conforms with all applicable requirements, the project owner shall provide a statement to the CPM, signed by the responsible engineer of record, confirming that the work complies with the applicable LORS, the approved plans, and with requirements set forth in the Energy Commission's Decision for the Crockett Cogeneration project.

**FDGN-36.** Public Access: Discrepancies between Approved Plans and Special Conditions. In case of any discrepancy between final approved plans and any condition of certification or legal

instruments approved pursuant to this certification, the condition or the legal instrument shall prevail. The project owner is responsible for assuring that all plans accurately and fully reflect the conditions of this certification and any legal instruments submitted pursuant to this authorization or the BCDC authorization.

Verification: If a discrepancy is discovered during construction, the project owner shall, within five (5) days, prepare and submit the nature of the discrepancies to the CBO and the CPM, and shall prepare a Non Conformance Report (NCR). The reports shall reference this condition of certification.

---------**footnotes for Facility Design Conditions** ------
**{120}** CBO is the City or County Chief Building Official, his or her representative or the Energy Commission's duly appointed representative.

**{121}** Unless specifically stated otherwise, this phrase applies to all the verifications that have a time requirement.
**_____end footnotes-------**

## HAZARDOUS MATERIALS HANDLING

**HAZ-1.** The Applicant shall not use any hazardous material in reportable quantities that is not listed in Table 4.3 of the AFC (Crockett 1992), unless approved by the California Energy Commission's (CEC) Compliance Project Manager (CPM).

Verification: Report a list quantities. The Applicant shall provide in the Annual Compliance of hazardous materials used at the facility in reportable

**HAZ-2.** The Applicant shall construct a spill containment curbed area between the rail line used for delivery and the sulfuric acid and caustic soda storage areas. prior to any delivery of acid or caustic soda to the facility. The Applicant is prohibited from using the pedestrian bridge/fishing pier for the delivery of any hazardous or toxic materials.

Verification: At least sixty (60) days prior to commencing construction of the acid or caustic storage facilities. the Applicant shall provide design drawings and specifications for the spill containment structure to the CEC CPM for review and approval.

**HAZ-3.** The Applicant shall install automatic fire suppression sprinklers in the areas where hydrogen is stored.

Verification: At least sixty (60) days prior to commencing construction of the hydrogen storage fire suppression system, the Applicant shall provide design drawings and specifications for the hydrogen storage fire suppression system to the CEC CPM for review and approval. At least 15 days prior to storing hydrogen at the facility. the Applicant shall notify the CEC CPM that the required fire suppression system is installed and functioning.

**HAZ-4.** The Applicant shall install double block and bleed valves for equipment gas shutoff and explosive mixture detection where feasible on all combustion equipment. The Applicant shall also implement procedures for purging all combustion equipment prior to start-up.

Verification: At least sixty (60) days prior to introducing fuel to the facility the Applicant shall provide equipment specifications for main shut off valves. explosive mixture detection, and start-up purge procedures for all combustion equipment to the CEC CPM for review and approval.

**HAZ-5.** The Applicant shall implement procedures and safety management practices to preclude the mixing of ammonia and sulfuric acid at the facility.

Verification: At least sixty (60) days prior to delivery of ammonia or sulfuric acid to the facility, the Applicant shall provide to the CEC CPM a detailed procedure and discussion of safety management practices to be implemented as described above for review and approval. The CEC CPM shall approve or disapprove the detailed procedure within 15 days of receipt. If approved, the CEC CPM shall indicate the necessary changes to Applicant in writing.

**HAZ-6.** The Applicant shall submit the Business Plan required by California Health and Safety Code Chapter 6.95 to the CEC CPM, the local fire district. and the County Health Department for review and comment.

Verification: The Applicant shall submit to the CEC CPM prior to delivery of any hazardous material to the site: (1) copies of written comments from the local fire district and the County Health Department on the project's Business Plan; and (2) a copy of the revised Business Plan. if modified.

## BIOLOGICAL RESOURCES

**BIO-1.** No site preparation work at the project site or ancillary facilities shall begin until the CEC CPM has approved a designated biologist proposed by the Applicant. The Applicant shall submit to the CEC CPM the name, qualifications, address, and telephone number of its designated biologist, If, in the judgment of the CEC CPM, the proposed designated biologist in not acceptable, the Applicant shall submit another individual's name for consideration.

If there is to be a subsequent change in the designated biologist after an individual has already been approved by the CEC CPM, the Applicant shall obtain approval of the new biologist by submitting to the CEC CPM the name, qualifications, address. and telephone number of the proposed replacement within five working days of the termination or release of the preceding designated biologist. An interview by the CEC CPM may be required. No construction activities in areas that could have sensitive biological resources in them, as identified by the CEC CPM, shall be allowed until there is an approved designated biologist.

The Applicant's approved designated biologist shall advise the Applicant or its project manager on the implementation of these Conditions of Certification. and supervise or conduct mitigation, monitoring, and other biology compliance efforts, particularly in areas along the pipeline that are adjacent to or near undeveloped habitat.

The Applicant shall insure that the designated biologist meet the following minimum qualifications: (1) a bachelor's degree in biological science. zoology, botany, ecology, or a closely related field: and 12) current certification of a nationally recognized biological society, such as the Ecological Society of America or the Wildlife Society or a minimum of three years experience in field biology. The biologist shall be able to demonstrate to the satisfaction of the CEC staff that the individual has appropriate education and experience for the biological tasks that must be addressed during project construction and operation. The supervising construction or operation engineer shall act on the advice of the biologist to ensure conformance with the biological resources Conditions of Certification.

The approved designated biologist shall be responsible for providing the project construction engineer with advice regarding biological resource mitigation Implications of any surface disturbing action to be carried out for this project. Any such consultations shall be documented in writing.

Verification: 30 days prior to site preparation, the Applicant will submit to the CEC CPM the name, qualifications, address, and telephone number of the individual selected as the designated biologist. The CEC CPM or designee will determine if the proposed designated biologist is acceptable. Verbal approval may be given, but It will be followed up in writing no later than ten working days after verbal approval is granted. If the proposed designated biologist is not acceptable. the Applicant will submit another name for consideration.

If the Applicant is not in compliance with any aspect of this Condition. The CEC CPM will notify the Applicant of making this determination. Until the Applicant corrects any identified

problem. construction activities will be halted in areas specifically identified by the CEC CPM or designee as appropriate to assure the potential for significant biological impacts is avoided.

For any necessary corrective action taken by the Applicant, a determination of success or failure of such action will be made by the CEC CPM after receipt of notice that corrective action is completed. or the Applicant will be notified by the CEC CPM that coordination with other agencies will require additional time before a determination can be made.

**BIO-2.** The Applicant shall institute an employee environmental awareness program in which each of its own employees. as well as employees of contractors and subcontractors who work on the project site during construction and operation, are informed about biological resource sensitivities associated with the project. This program shall be developed by the designated biologist and consist of on-site or classroom presentations in which supporting written material is made available to all participants. This specific program can be administered by a competent individual acceptable to the designated biologist and the CEC CPM. All participants in the environmental awareness program shall sign an affidavit declaring that the individual understands and will adhere to any guidelines set forth in the program material. The signed affidavits shall be kept on file at the work site and made available for examination by the CEC CPM for a period of at least six months after the start of commercial operation.

Verification: Prior to and during construction and operation of the project the CEC CPM or designee will determine via telephone or through visits to the project site, as deemed necessary, whether or not the Applicant has complied with this Condition.

If the Applicant has not complied with all aspects of this Condition, the CEC CPM will notify me Applicant of making this determination. Until the Applicant corrects any identified problem. construction and operations activities by untrained people will be halted in areas specifically identified by the CEC CPM or designee as appropriate to assist in resolving the problem.

For any necessary corrective action taken by the Applicant. a determination of success or failure of such action will be made by the CEC CPM after receipt of notice that corrective action is completed. or the Applicant will be notified by the CEC CPM that coordination with other agencies will require additional time before a determination can be made.

**BIO-3.** While installing the transmission line and natural gas pipelines the Applicant shall have any open portions of the trench covered. if left unattended, in order to prevent any animals. particularly the Alameda whipsnake, from becoming trapped In the trench. At the beginning of each work period, all trenches left unfilled from a previous period's work shall be checked by a person who has been made aware of the potential biological sensitivities in the construction area. This individual shall remove any animal found in the trench and release it out of harm's way, except that if any listed species is found, work shall immediately stop until the Applicant's designated biologist is notified and the designated biologist, upon consultation with appropriate regulatory agency representatives, is able advise the construction foreman on the proper action to take. A prearranged protocol may be established and approved by the appropriate agencies as a contingency measure. If such a protocol is set up, a written copy signed by all parties shall be delivered to the CEC CPM within ten working days.

Verification: Prior to and during construction and operation of the project, the CEC CPM or designee will determine via telephone or through visits to the project site, as deemed necessary, whether or not the Applicant has complied with this Condition.

If the Applicant has not complied with all aspects of this Condition, the CEC CPM will notify the Applicant of making this determination. Until the Applicant corrects any identified problem. construction activities will be halted in areas specifically identified by the CEC CPM or designee as appropriate to assist in resolving the problem.

For any necessary corrective action taken by the Applicant. a determination of success or failure of such action will be made by the CEC CPM after receipt of notice that corrective action is completed. or the Applicant will be notified by the CEC CPM that coordination with other agencies will require additional time before a determination can be made.

**BIO-4.** The Applicant shall comply with all terms of the NPOES permit that may be issued by the San Francisco Bay Regional Water Quality Control Board to the Applicant independently or jointly with any other entity. Within ten working days of receipt. the Applicant shall deliver to the GEG GPM a copy of the NPDES permit issued to it by the San Francisco Bay Regional Water Quality Control Board.

Verification: Within ten working days of receipt, the Applicant will deliver to the GEG GPM a copy of the NPDES permit issued to it by the San Francisco Bay Regional Water Quality Control Board. This permit will be retained in the project compliance files for future reference as necessary.

## WATER RESOURCES AND WATER QUALITY

**WATER-1.** If in the opinion of East Bay Municipal Utility District IEBMUDI existing levels of Water service to the Crockett area are affected as a result of providing water service to the project, the Applicant shall make any modifications required by E8MUD to the local distribution system necessary to maintain existing levels of water service. The Applicant shall keep the California Energy Commission's (CECI Compliance Project Manager (CPM) informed of all EBMUD required modifications on a timely basis.

Verification. In the next Monthly Compliance Report after completion of construction of all facilities for the project's water service the Applicant shall provide a copy to the CEC CPM of the executed "Water Main Extension Agreement" and a letter. signed by and bearing the seal of the responsible engineer. certifying that the facilities required by EBMUD in the "Agreement" have been satisfactorily completed. The Applicant shall notify the CEC CPM of any EBMUD required modifications to the "Agreement" within five working days of the Applicant being notified of such changes.

**WATER·2.** Prior to first turbine roll. the Applicant shall obtain a National Pollutant Discharge Elimination System (NPDESI permit from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCBI for discharges of all wastewater into the Carquinez Strait.

Verification: The Applicant shall submit a copy of the required NPDES permit to the CEC CPM in the next Monthly Compliance Report following its receipt by the Applicant.

**WATER·3.** The Applicant shall prevent all spilled materials and all other wastes generated on the site during construction from reaching the waters of the United States and waters of the State of California. The Applicant shall develop and implement a Spill Prevention Control and Counter· measure Plan which will prevent the entry of all spilled and or waste materials from entering waters of the United States and waters of the State of California.

Verification: At least 15 days prior to start of construction, the Applicant shall submit notification to the CEC CPM attesting that the CBO and the SFBRWQCB have approved a Spill Prevention Control and Counter Measure Plan.

**WATER·4.** The Applicant shall prevent all spilled materials and all other wastes generated on the site during operation of the facility from reaching the waters of the United States and waters of the State of California. The Applicant shall develop and implement a Spill Prevention Control and Counter-measure Plan which will prevent the entry of all spilled and or waste materials from entering waters of the United States and waters of the State of California. In addition, the Plan will include steps that the Applicant will take to diligently remove spilled material and all other wastes during operation.

Verification: At least 30 days prior to first turbine roll. the Applicant shall submit notification to the CEC CPM and BCDC attesting that the CBD and the SFBRWQCB have approved an operational Spill Prevention Control and Countermeasure Plan.

## CULTURAL RESOURCES

**CUL-l.** Prior to the start of construction {defined as any construction related vegetation clearance, ground disturbance and preparation, and site excavation activities on the Crockett Cogeneration project, the Applicant shall provide the California Energy Commission (CEC) Compliance Project Manager (CPM) with the following information: the name, telephone number, resume, and indication of availability for its designated cultural resources specialist.

Protocol: The resume shall include the qualifications of the designated specialist (e.g. someone with a graduate degree in archaeology, anthropology. or cultural resources management, and archaeological field experience in California.

The CEC CPM will review the qualifications of and must approve in writing the Applicant's designated cultural resources specialist prior to the start of construction on the Crockett Cogeneration project.

After CEC CPM approval, the designated specialist shall be available to conduct preconstruction mitigation and provide monitoring and mitigation, as needed. during all construction activities associated with the project.

Verification: Prior to the start of construction on the project, Crockett Cogeneration shall submit to the CEC CPM or designee for review and written approval the name. resume. telephone number. and indication of availability tor its designated cultural resources specialist. The CEC CPM and staff shall have unrestricted access to and open communication with the designated cultural resources specialist{s) at any time.

**CUL-2.** Prior to the start of construction and throughout the construction period, the designated cultural resources specialist shall be prepared to implement as needed the following monitoring and mitigation measures to minimize potential impacts to cultural resources.

Protocol: The monitoring and mitigation measures include the following elements:

If known or previously unknown cultural resources are encountered during construction activities. the designated cultural resource specialist shall have the authority to halt or redirect construction at any time necessary to protect the resources and their locational context.

Work in the Immediate vicinity of the find shall be halted until the designated cultural resources specialist can determine the significance and sensitivity of the find, how the found resources will be protected if construction resumes. and how the mitigation measures will be implemented for recovery of cultural materials.

The Applicant. or its designated representative. shall inform the CEC CPM within one working day of the discovery of any potentially significant cultural resources and discuss the specific measure(s) proposed to mitigate potential impacts to these resources.

The designated cultural resources specialist. representatives of the Applicant, and the CEC CPM or designee shall meet within five working days of the notification of the CEe CPM. if necessary. to discuss the disposition of any finds and any mitigation measures already implemented or to be implemented.

All necessary and required data recovery and mitigation shall be completed within ten days after discovery of the previously unknown cultural resources.

Verification: Prior to the start of construction on the Crockett Cogeneration project. the Applicant shall notify the CEC CPM in writing that the designated cultural resources specialist is available and prepared to implement any necessary monitoring and mitigation measures for cultural resources.

**CUL-3.** Prior to the start of grading and demolition, the Applicant's designated cultural resources specialist shall conduct a data recovery program at and around the building known as the "Bankers Warehouse."

Protocol: The data recovery program shall consist of accurate measurement and recording of dimensions and features of the Bankers Warehouse structure; photographs and drawings or sketches of the building's various elevations; photographs and measurements of construction details. structural components and variations, wood framing, architectural features, hardware used, and any other similar data Which provides insight into industrial construction techniques from the 1880s.

Verification: The Applicant shall submit a copy of the data recovery report to the CEC CPM, for review and approval, within 90 days following completion of the data recovery efforts.

**CUL-4.** The Applicant will have the designated Native American observer available to monitor construction activities at the project site on an as needed basis.

Protocol: I n "Area C," Which is described as within or adjacent to the known archaeological site CA-Cco-253. Crockett Cogeneration will arrange to have a Native American observer present during construction activities In the local streets.

The Applicant will designate a Native American observer, from the county referral list provided by the Native American Heritage Commission (NAHC), or with the approval of the NAHC if the selected observer is not on the list.

The Applicant will provide the CEC CPM with the name and telephone number of the Native American observer at least 30 days prior to the start of any ground disturbance and construction activities in "Area C."

The designated Native American observer will be on-site to monitor site preparation and construction activities within 250 feet of the site of concern In the “Area C" portion of the project.

If additional monitoring of project construction activities is deemed necessary. the designated cultural resources specialist will determine the areas where monitoring is needed and establish a schedule for the monitor to be present. If the likelihood of encountering cultural resources is slight, monitoring can be discontinued at that location.

Verification: Not later than 30 days before construction begins in "Area C," the Applicant will provide the CEC CPM with the name and telephone number of the designated Native American observer.

**CUL-5.** The Applicant shall ensure the recovery, preparation for analysis, analysis and delivery for curation of all collected significant cultural resource materials encountered during data recovery and mitigation activities at the Crockett Cogeneration site and areas of excavation for proiect related gas and electric transmission lines.

Protocol: All cultural materials found shall be mapped and all significant cultural resources shall be removed for analysis and delivery for curation into retrievable storage in a public repository or museum.

Verification: The Applicant shall maintain in its compliance files copies of signed contracts or agreements with the museum(s), university(ies), or other appropriate research specialists which will ensure the necessary recovery, preparation for analysis, analysis, and delivery for curation of cultural resource materials collected during data recovery and mitigation for the project. The Applicant shall keep these files available for inspection by the CEC CPM for a period of at least two years from the date of each agreement.

**CUL-6.** The Applicant shall ensure preparation of a preliminary cultural resources report by me designated cultural resources specialist. if significant cultural resources are found. The Applicant shall submit the preliminary report to the CEC CPM for review, comment, and approval within 90 days following completion of the data recovery and site mitigation work.

Protocol: The preliminary report shall include (but not be limited to) preliminary information on the survey reports, methodology, and recommendations, site records and maps; determinations of sensitivity and significance; data recovery and other mitigation activities; possible results and findings of any analysis to be conducted on recovered cultural resource materials and data; proposed research questions which may be answered or raised by the data Tram the project: and an estimate of the t:rne needed to complete the analysis of recovered cultural materials and prepare a final report.

Verification: A copy of the preliminary cultural resources report shall be submitted to the CEC CPM for review and approval within 90 days following completion of the data recovery and site mitigation work by the designated cultural resources specialist for the project.

**CUL-7.** The Applicant shall ensure preparation of a final cultural resources report by the designated cultural resources specialist if significant cultural resources are found. The Applicant shall submit the final report to the CEC CPM far review, comment, and approval within 90 days following completion of the analysis of the recovered cultural materials and related information.

Protocoll: The final report shall include (but not be limited to) the survey report(sl. methodology, and recommendations; site records and maps; determinations of sensitivity and significance; data recovery and other mitigation activities: results and findings of any special analyses conducted on recovered cultural resource materials and data: and research questions answered or raised by the data from the project.

Verification: A copy of the final cultural resources report shall be submitted to the CEC CPM for review and approval if significant cultural resources are found. The final report shall be submitted to the CEC CPM within 90 days following completion of the analysis of the recovered cultural materials and related information.

**CUL-8.** The Applicant shall submit an original or an original quality copy of the CEC approved data recovery report on the Bankers Warehouse building to the appropriate regional archaeological information center(s), and shall also provide one copy of the original to the CEC CPM.

Protocol: The report(s) sent to the regional information center(s) shall include the following (as applicable to the report): clean and reproducible original copies of all text; originals of any topographic maps showing site and resource locations; original or clear copies of drawings of significant cultural resource materials found during surveys. data recovery, or site mitigation; and photographs (including a set of negatives. if possible) of significant cultural resource materials found and evaluated during project construction.

Verification: The Applicant shall maintain in its compliance files copies of ali documentation related to the filing with the appropriate archaeological information centers of the original materials on the Bankers Warehouse building and, if significant cultural resources are found a final cultural resources report.

## PALEONTOLOGICAL RESOURCES

**PALEO-l.** Prior to the start of construction (defined as any construction-related vegetation clearance, ground disturbance and preparation, or site excavation activities) on the Crockett Cogeneration project. the Applicant shall provide the California Energy Commission (CEC) Compliance Project Manager (CPM) with the following information: the name. telephone number, résumé. and indication of availability for its designated paleontologic resources specialist.

Protocol: The resume shall include the qualifications of their designated specialist (e.g., someone with a graduate degree in geology or paleontology and paleontological field experience in California). The CEC CPM will review the qualifications of, and must approve in writing within ten days of receipt, the Applicant's designated paleontologic resources specialist prior to the start of construction on the Crockett Cogeneration project. After CEC CPM approval. The paleontologic specialist shall be available to prepare a monitoring and mitigation plan as described below. The designated specialist shall also be available to conduct pre-construction mitigation and provide monitoring and mitigation, as needed. during all construction activities associated with the project.

Verification: At least 30 days prior to the start of construction on the Crockett Cogeneration project, the Applicant shall submit to the CEC CPM for review and written approval within ten days of receipt the name. resume, telephone number. and indication of availability for its designated paleontologic resources specialist.

**PALEO-2**. Prior to the start of construction. the designated paleontologic resources specialist shall prepare to implement as needed the following monitoring and mitigation measures to minimize potential impacts to paleontologic resources.

Protocol: The monitoring and mitigation measures include the following elements:

a. If monitoring of project construction activities is deemed necessary, the designated paleontologic specialist will determine the areas where monitoring is needed and establish a schedule for the monitor to be present. If the likelihood of encountering fossil resources is slight. monitoring will be discontinued in that locality;

b. An outline of specific measures proposed to mitigate impacts to particular types of paleontologic resources which may be discovered during earth moving activities;

c. The designated paleontologic resource specialist shall have the authority (to halt or redirect construction at any time necessary to protect known or previously unknown paleontologic resources and their locational context. The halting or redirection of construction shall remain In effect until the designated paleontologic resources specialist has met with the Applicant’s construction managers to determine how the resources will be protected if construction resumes, and how the mitigation measures will be implemented for recovery of fossil materials;

d. If fossil resources are encountered during construction activities, work in the immediate vicinity of the find shall be halted until the designated paleontologic resources specialist can determine the significance and sensitivity of the find. The designated paleontologic specialist shall act in accordance with the following procedures:

   The Applicant, or its designated representative, shall inform the CEC CPM (or designee) within one working day of the discovery of any potentially significant paleontologic resources and discuss the specific measure{s) proposed to mitigate potential impacts to these resources. The designated paleontologic resources specialist, representatives of the Applicant, and the CEC CPM shall meet within five working days of the notification of the CEC CPM, if necessary, to discuss the disposition of any finds and any mitigation measures already implemented or to be implemented. All necessary and required data recovery and mitigation shall be completed within ten days after discovery of the previously unknown paleontologic resources;

e. All vertebrate fossil remains will be collected and any Invertebrate fossil remains will be sampled. All fossil materials found shall be mapped and all significant fossil materials shall be prepared, identified. and removed for analysis and curation in the retrievable storage collection in a public repository or museum, which meets Society of Vertebrete Paleontology (SVP) requirements for the curation of paleontologic resources;

f. The CEC CPM and staff shall have unrestricted and unannounced access to the project site, at any time during pre-construction and construction activities, to observe paleontologic resources monitoring and data recovery activities;

g. The CEC CPM and staff shall have unrestricted access to and open communication with the designated paleontologic resources specialist(s) at any time:

h. The designated paleontologic specialist will invite the USGS geologic researchers to examine and remove matrix samples for analysis from any cuts, excavations, or trenches associated with construction of the project: such examinations are not to delay project construction;

i. The designated paleontologic specialist will complete the necessary analysis of significant paleontologic resource materials found during data recovery and mitigation activities for the project;

j. The designated paleontologic specialist will prepare a final paleontologic resources report if significant paleontologic resources are found; and

k. The designated paleontologic specialist will ensure that original and/or original quality copies of the final paleontologic resources report will be filed with the appropriate museums, paleontologic information repository(ies). and CEC CPM.

Verification: Prior to the start of construction on the Crockett Cogeneration project. the Applicant shall confirm that the designated paleontologic resources specialist is prepared to implement monitoring and mitigation measures for paleontologic resources.

**PALEO-3**. In the monthly Compliance Report. the Applicant shall provide the CEC CPM With copies of any communications initiated or received by the Applicant related to paleontologic monitoring or mitigation work being conducted at the project site.

Protocol: Such communications may include oral or written contacts with the designated paleontologic specialists. staff of the UC Berkeley Museum of Paleontology. the Applicant's contractors or subcontractors, and/or other parties interested in the monitoring and mitigation work.

Verification: In the Monthly Compliance Report. the Applicant shall provide the CEC CPM with copies of all communications initiated or received by the Applicant related to any paleontologic resource monitoring or mitigation work being conducted at the project site.

**PALEO-4**. The Applicant will have the designated paleontologic specialist available to monitor construction activities at the project site on an as-needed basis.

Verification: After CEC approval of the designated specialist, the Applicant shall maintain copies of its contract(s) with the designated paleontologic resources specialist(s) in its compliance files for a period of two years.

**PALEO-5**. The Applicant shall ensure the recovery, preparation jor analysis, and analysis of all collected significant paleontologic resource materials encountered during data recovery and mitigation activities at the Crockett Cogeneration site.

Verification: The Applicant shall maintain in its compliance files copies of signed contracts or agreements with the museum(s), university(ies), or other appropriate research specialists which will ensure the necessary recovery, preparation for analysis, and analysis of paleontologic resource materials collected during data recovery and mitigation for the project. The Applicant shall keep these files available for periodic audit by the CEC CPM.

**PALEO-6**. The Applicant shall ensure preparation of a preliminary paleontologic resources report by the designated paleontologic resources specialist if significant paleontologic resources are found. The Applicant shall submit the preliminary report to the CEC CPM for review. Comment, and approval Within 90 days following completion of the data recovery and site mitigation work.

Protocol: The preliminary report shall include (but not be limited to) preliminary information on the survey report(s), methodology, and recommendations; site records and maps; determinations of sensitivity and significance: data recovery and other mitigation activities; possible results and findings of any analysis to be conducted on recovered paleontologic resource materials and data; proposed research questions which may be answered or raised by the data from the project: and

an estimate of the time needed to complete the analysis of recovered fossil materials and prepare a final report.

Verification: A copy of the preliminary paleontologic resources report shall be submitted to the CEC CPM for review and approval within 90 days following completion of the data recovery and site mitigation work by the designated paleontologic resources specialist for the project.

**PALEO-7**. The Applicant shall ensure preparation of a final paleontologic resources report by the designated paleontologic resources specialist if significant paleontologic resources are found. The Applicant shall submit the final report to the CEC CPM for review, comment, and approval within 90 days following completion of the analysis of the recovered fossil materials and and related information.

Protocol: The final report shall include (but not be limited tal the survey report(s). methodology, and recommendations: site records and maps; determinations of sensitivity and significance; data recovery and other mitigation activities; results and findings of any special analyses conducted on recovered paleontologic resource materials and data; and research questions answered or raised by the data from the project.

Verification: A copy of the final paleontologic resources report shall be submitted to the CEC CPM by the designated paleontologic resources specialist for the project for review and approval if significant paleontologic resources are found. The final report shall be submitted to the CEC CPM within SO days following completion of the analysis of the recovered fossil materials and related information.

**PALEO-8**. The Applicant shall submit an original or an original quality copy of the approved final paleontologic resources report to the appropriate paleontologic information repository(ies) and one copy of the original to the CEC CPM.

Protocol: The report copy sent to the information repository(ies) shall include the following (as applicable to the final report; clean and reproducible, original copies of all text; originals of any topographic maps showing site and resource locations; original or clear copies of drawings of significant paleontologic resource materials found during surveys. Data recovery, or site mitigation; and photographs (including a set of negatives, if possible) of significant paleontologic resource materials found and evaluated during project construction.

Verification: The Applicant shall maintain in its compliance files copies of all documentation related to the filing of the original materials and final paleontologic resources report with the appropriate paleontologic information repository(ies) if significant paleontologic resources are fauna.

**PALEO-9**. The Applicant shall deliver for curation all significant paleontologic resource materials collected during data recovery and mitigation for the project. The materials shall be delivered for curation in a public repository, which meets SVP requirements for the curation of paleontologic resources.

Verification: The Applicant shall maintain in its compliance files copies of signed contracts or agreements with the museum{s), university(ies), or other appropriate public repository(ies) by which the Applicant has provided for delivery for curation of the paleontologic resource materials collected during data recovery and site mitigation for the project.

## SOIL RESOURCES

**SOIL-l.** Prior to initiation of site grading or earthmoving activities at the cogeneration plant or accessory facilities, and at the proposed office building site, the Applicant will submit and have approved an erosion control plan to the CEC and Contra Costa County Department of Public Works. The plan will be developed by a qualified professional engineer and will incorporate the mitigation measures identified in Exhibit 1. SOIL3 to 7. by the Applicant in written and graphic form depicted on a construction drawing(s) of appropriate scale. The elements of the plan shall include:

- Temporary and permanent storm runoff control ditches;
- All culverts:
- Outfall structures and energy dissipaters:
- Areas of storage/disposal for natural gas pipeline spoil;
- Topsoil stockpiles along transmission line corridor and transmission line access roads, if necessary;
- Areas where fertilizer/mulch will be applied;
- All areas to be reseeded and a description of the seed mixture to
- be used; and
- A segment-by-segment characterization at the erosion and sediment control measures to be implemented along all construction access roads.

In addition the plan will include a schedule of land disturbing and stabilization activities. A maintenance program Including provisions for frequency of inspection, reseeding of vegetated areas, and repair or reconstruction of damaged structures for the life of the project will also be included in the plan.

Verification: Sixty (60) days, or a shorter time period agreed to by the CEC CPM, prior to the start of grading on the project the Applicant shall submit, to the County Public Works Department and the CEC Compliance Project Manager (CPM) a proposed erosion and sediment control plan for approval. This plan shall include the information required by this Condition.

**SOIL-2**. The Applicant shall implement the measures identified in the CEC and County approved erosion and sediment control plan. Monitoring and maintenance of the permanent erosion and sediment control measures shall be continued for the life of the project.

Verification: The Applicant shall submit to the County Department of Public Works and the CEC CPM a final erosion and sediment control plan to verify that the measures in the approved plan have been implemented. For the life of the project, the Applicant shall also Identify In the annual report any erosion control problems that occurred during the previous year and the actions taken to remedy the problem.

**SOIL-3.** One month in advance of the following activities, the Applicant shall notify the CEC CPM of the date of the: 1) start of rough site grading for the power plant Site; 2) start of construction of the natural gas pipeline. underground transmission line and the transition station; and 3) completion of implementing erosion control measures.

Verification: In the monthly activity report prior to the start of these activities, the Applicant shall inform the CEC CPM of these dates. If the start dates for these activities change subsequent to the monthly report. the Applicant shall inform the CEC CPM of the new dates by either a letter or a telephone call.

## WASTE MANAGEMENT

**WASTE-l.** The Applicant shall obtain a hazardous waste generator identification number from the Department of Toxic Substances Control prior to generating any hazardous waste.

Verification: The Applicant shall keep its copy of the identification number on file at the project site and notify the California Energy Commission (CEC) Compliance Project Manager (CPM) via the monthly compliance report of its initial receipt.

**WASTE-2.** Non-hazardous construction and operation wastes which cannot be salvaged or recycled shall be disposed of by the Applicant or its contractors at facilities approved by the San Francisco Bay Regional Water Quality Control Board and the California Integrated Waste Management Board through its appropriate county local enforcement agency. Hazardous wastes which must be disposed of shall be taken to the Kettleman Hills facility or any alternate Class I facility permitted by the California Department of Toxic Substances Control and the appropriate Regional Water Quality Control Board.

Verification: The Applicant shall keep on tile at the project site for three years and make available for CEC staff review, upon request, copies of all receipts from landfills for wastes delivered for disposal. This shall include hazardous waste manifests. In annual compliance reports, Crockett Cogeneration shall provide the CEC CPM with an analysis summarizing the types and quantities of wastes delivered to each facility during the year.

**WASTE-3.** The Applicant shall not store hazardous waste on-site for more than 90 days unless It obtains a variance or permit as a storage facility from the Department of Toxic Substance Control (DTSC).

Verification: The Applicant shall notify the CEC CPM in writing within 10 days of any application to DTSC requesting a storage variance or permit.

**WASTE·4,** The Applicant shall notify the CEC CPM of any waste management· related enforcement action taken or proposed to be taken against it, or against any waste hauler or disposal facility operator (of which the Applicant has knowledge) with which the Applicant contracts.

Verification: The Applicant shall notify the CEC CPM in writing within 10 days of becoming aware of any such impending enforcement action.

**WASTE-5**. The Applicant shall prepare a waste management plan for all wastes generated during construction and operation of the facility. The plan shall contain, at a minimum. the following:

a. A description of all waste streams, including projections of frequency, amounts generated and hazard classifications;
b. Methods of managing each waste, including treatment methods and companies contracted with for treatment services. Waste testing methods to assure correct classification. methods of transportation, disposal requirements and sites. and recycling plans; and,

c. Procedures that the Applicant will employ to prevent construction materials and construction waste from falling into the Bay.

Verification: Prior to construction, the Applicant shall submit a waste management plan to the CEC CPM and BCDC for review. In the Annual Compliance Report, the Applicant shall document how actual waste management activities during the year compared with planned management methods.

## QUALIFYING FACILITY STATUS

**QF-1.** The facility shall be operated in accordance with the requirements of Title 18 CFR section 292.205(a). The Applicant shall maintain: monthly records of fuel consumption in the gas turbine and HRSG duct burner (including startup and shutdown), electrical energy produced by the cogeneration power plant, electrical and mechanical energy attributable to cogeneration steam produced by C&H Sugar equipment. and net thermal use derived from cogeneration steam and annual calculations. based upon these data, of the FERC operating standard and efficiency standard achieved by the plane

Verification: The Applicant shall maintain the above records and calculations at the project site. and make 'them available for audit by the California Energy Commission's (CEC) Compliance Project Manager (CPM) at any reasonable time. The Applicant shall also submit the above calculations of operating standard and efficiency standard to the CEC CPM in each Annual Compliance Report following first power generation from the plant.

**QF~2.** If the project s:lould fail to comply with the FERC Qualifying Cogeneration Facility requirements of Title 18 CFR sections 292.205(a) or 292.206. the Applicant will inform the CEC CPM, Bay Conservation and Development to satisfy the QF Status at the time of term finance closing. Upon request of CEC staff to provide a legal opinion. the Applicant shall deliver the legal opinion no later than 90 days after CEC staff requests such opinion.

## TRANSMISSION LINE SAFETY AND NUISANCE

**TLSN-l.** Prior to beginning construction of the transmission line, the Applicant shall obtain a verification from the responsible electrical engineer, registered in the State of California, stating that the Crockett Cogeneration Project will be constructed in accordance with CPUC GO-95. GO-128 and with Title 8. California Code of Regulations.

Verification: The Applicant shall submit the required statement covering the transmission line to the CEC CPM at least 30 days before the start of construction of the transmission line.

**TLSN-2.** The Applicant shall make every reasonable effort to locate and correct on a case-by-case basis, all causes of radio and television interference attributed to the transmission line facilities. In addition to any necessary transmission line repairs. corrective action shall include. but shall not be limited to, adjusting or modifying receivers, adjusting, repairing, replacing or adding antennas, antenna signal amplifiers. filters or lead-in cables.

The Applicant shall maintain written records of all complaints of radio or television Interference attributed to the transmission facilities and corrective actions taken in response to any such complaints. Upon request the Applicant shall make these records available to the CEC CPM or an authorized representative, All complaints shall be recorded, in writing, and shall include explicit notations of the corrective actions performed. Complaints which did not result in corrective action being taken or for Which there was no resolution shall be described and justified. The record shall be signed by the Applicant and also by the complainant to indicate concurrence with the corrective action or with the justification for no corrective action.

Verification: All such records shall be summarized and included in the Annual Compliance Reports.

**TLSN·3.** The Applicant shall ensure that all ungrounded metallic fences. gates and other large permanent metallic objects adjacent to the transmission line right-at-way that might be sources of nuisance shocks are grounded.

Verification: At least 10 days prior to the scheduled energization of the transmission line. the Applicant shall file a verification with the CEC CPM demonstrating compliance with this condition.

**TLSN-4** The Applicant shall engage a consultant, from a list provided by the CEC CPM, who shall malee measurements of the electric and magnetic field strengths at representative points along the route of the underground transmission line, pedestrian bridge, Walkway, belvedere, and fishing pier. Readings along the transmission line shall be taken near the location of the proposed switchyard, in front of the residences along the transmission line route and at the location of the transition station. Readings shall be taken prior to construction and after energization the transmission line.

Verification. The Applicant shall file a copy of the first set of measurements with the CEC CPM at least 10 days prior to the scheduled energization of the project transmission line. The post

construction measurements shall be filed within 15 days after energization of the transmission line.

## TRANSMISSION SYSTEM ENGINEERING

**TSE-1.** The Applicant shall not begin construction until the Special Facilities Agreement has been executed.

Verification: No later than 30 days prior to the start of construction, the Applicant shall provide executed copies of the final Special Facilities Agreement (SFA) to the California Energy Commission's (CEC) Compliance Project Manager (CPM)

Within 20 days after receipt of the SFA, the CEC CPM will advise the Applicant if construction is authorized. The 20-day period shall not start until the CEC CPM has determined that the SFA and all relevant documents have been provided.

**TSE-2.** The Applicant shall ensure that the design, construction, and operation of the proposed transmission facilities will conform to the requirements listed below. The substitution of "or equal" equipment and equivalent switchyard configurations is acceptable. Failure to establish "or equal" status shall be a violation of certification:

a. The switchyard will include one main power transformer rated at 18/240 kV. The transformer will be designed to carry up to 300 MVA. Transformer losses will be considered in the selection of the transformer. The main transformer will connect to PGandE through a single 230 kV switchyard circuit breaker. The 230 kV breaker will be rated for operation at a maximum voltage of 242 kV. The maximum continuous current carrying capability of the breaker will be 2,000 amps, with an interrupting duty of 40,000 amps, which is suitable for the application;
b. The 230 kV cable will form a single electrical circuit (radial tie) exiting the switchyard above the ground for a few yards over the Southern Pacific Railroad, under a pedestrian bridge and then extending underground approximately 8,000 feet from the switchyard to a transition station to be located on the PGandE Lakeville-Sobrante 230 kV right-of-way. At that point the radial tie will tap into the existing Lakeville-Sobrante #1 230 kV transmission line. The outlet route shall not substantially deviate from the corridor route shown in Figure TSE-2; of Exhibit 1, TSE-8 and included as Figure TSE-1 in this Decision.
c. The underground cable will be 1750 kcmil copper with oil/paper insulation within 8 5/8 inch diameter conduit. The underground conduit will be 8 5/8" diameter by 0.250" wall thickness steel pipe. The above ground conduit will be stainless steel pipe. The cable will have normal capacity of 275 MVA;
d. The transmission facilities shall meet or exceed the requirements of GO-128;
e. The Interconnection facilities shall be designed, operated, and maintained in accordance with the PGandE Special Facilities Agreement; and,
f. No other generating unit or transmission circuit may be connected to the Crockett switchyard or outlets without prior authorization of the CEC staff.

Verification: No later than 60 days prior to planned construction of the transmission facilities, the Applicant shall submit for approval to the CEC CPM electrical one-line diagrams signed and sealed by a registered professional electrical engineer in responsible charge, a route map, and an

engineering description of equipment and the configurations covered by requirements 2a, 2b and 2c above. The substitution of "or equal" equipment and equivalent substation configurations shall be identified and justified by the Applicant.

**TSE-3.** The Applicant shall inform the CEC CPM of any impending changes which may not conform to the requirements of Conditions TSE-2, a through f above and request approval to implement such changes. No changes shall be made without written approval of the CEC CPM.

Verification: No later than 30 days prior to planned construction of transmission facilities, the Applicant shall inform the CEC CPM of any impending changes which may not conform to requirements of Conditions TSE, a through f, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request.

**TSE-4.** The Applicant shall be responsible for the inspection of the transmission facilities during and after project construction and any subsequent CEC CPM approved changes thereto, to ensure conformance with CPUC GO-128 and PGandE criteria. In case of nonconformance, the Applicant shall inform the CEC CPM in writing within 10 days of discovering such nonconformance and describe the corrective actions to be taken.

Verification: Within 60 days following first successful synchronization of the project, the Applicant shall transmit to the CEC CPM an engineering description(s) and one-line drawings of the "as built" facilities, signed and sealed by a registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-128 and PGandE Transmission System Risk Criteria (Ex. 1 TSE-Appen. B) shall be concurrently provided.

## FIRE SAFETY

**FIRE-1.** Prior to the start of construction, including demolition activities, the Applicant shall submit its Construction Safety Plan and, prior to the start of operations, the Applicant shall submit its Operational Safety Plan to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal-OSHA) for review and comment regarding compliance of the Plan with the provisions of the California Code of Regulations (CCR), Title 8, section 1509 (Construction Safety Orders, Accident Prevention Program) and section 3203 (General Industry Safety Orders, Accident and Illness Prevention Program) and Title 29, Code of Federal Regulations (CFR) 1910. Any and all comments by Cal-OSHA shall be incorporated into the Plan. The Applicant shall implement the Construction and Operational Safety Plans consistent with comments and requirements of Cal-OSHA.

Verification: At least 60 days prior to beginning any construction or demolition activities and at least 60 days prior to beginning operation, respectively, the Applicant shall submit to the California Energy Commission (CEC) Compliance Project Manager (CPM) a copy of the cover letter transmitting its Construction and Operational Safety Plans to Cal-OSHA. Prior to the start of construction or demolition and the beginning of operation, respectively, the Applicant shall also submit Cal-OSHA's comments regarding the compliance of the Safety Plans and establish that any and all comments of recommendations by Cal-OSHA have been incorporated into the Safety Plans.

**FIRE-2.** Prior to commencement of construction or demolition and prior to beginning operation, respectively, the Applicant shall obtain approval of the fire protection procedures in the Construction Safety Plan and the Operational Safety Plan respectively, from the Crockett-Carquinez Fire Protection District (District). The fire protection procedures in each Safety Plan for the project shall address or include, but not be limited to, the following:

- Road maintenance, including but not limited to grading, to ensure access to the facility by emergency vehicles and equipment;
- Water systems for fire protection;
- Flammable and hazardous materials handling and storage;
- Applicable Uniform Fire Codes;
- Plot plan specifying where fire hydrants and fire hydrant pavement markers shall be installed;
- Diagrams of emergency vehicle turnarounds for each roadway of 150 feet in length or greater. Cul-de-sac lengths should be the lengths specified by the Fire Chief;
- Provisions to ensure that the address numbers are visible day and night, and where buildings are recessed behind other buildings, markings on the roadway should provide adequate direction for emergency access;
- Verification that every chimney used in conjunction with any project-related fireplace, or any heating appliance in which solid or liquid fuel is used, shall be maintained with an approved spark arrester, visible from the ground, and as identified in the Uniform Fire Code;

- Indicate points of vehicular access for fire and other emergency equipment, and for safe evacuations;
- Indicate on a plot plan and provide a list of all private roadways greater than 150 feet in length. Indicate if an access road shall be provided within 50 feet of all buildings if the natural grade between the access road and the building is in excess of 30 percent. Where the access road cannot be provided, describe what type of fire protection system shall be provided;
- If automatic electric security gates are used, an approved lock switch is required on each gate in lieu of a key box;
- List the number of fire extinguishers located at the site in accordance with the Uniform Fire Code Section 10.303;
- Provide a plot plan and a detailed description for those locations where flammable liquids are stored or dispensed. All flammable liquid storage and dispensing shall be in accordance with Uniform Fire Code Article 79;
- The Applicant shall provide a description of and the amount of fire training for three designated fire brigade personnel per shift per month; and,
- Automatic fire extinguishing systems identified in buildings shall be required to meet the specifications of the Uniform Fire Code.

Verification: At least 30 days prior to construction and 30 days prior to operation, respectfully, the Applicant shall submit to the CEC CPM the approved fire protection procedures in the Construction and Operational Safety Plans.

**FIRE-3.** The Applicant shall not begin demolition or construction activities unless one of the following has occurred: (1) the Applicant has entered into an agreement with the District for payment to provide adequate fire protection and emergency response services for the portion of the site not in the District; or (2) the Applicant has provided adequate onsite fire fighting and prevention capabilities and emergency response capabilities as determined by the District.

Verification: The Applicant shall submit to the CEC CPM verification from the District that it will provide adequate fire protection and emergency response services for the project, or that adequate capabilities have been provided by the Applicant on-site, at least 30 days prior to initiating demolition or construction activities.

**FIRE-4.** If the Applicant does not enter into an agreement with the District to provide fire protection and emergency response services at least 90 days prior to commencement of demolition or construction, the Applicant shall obtain approval of the fire protection procedures in the Construction and Operational Safety Plans from the CEC CPM.

Verification: At least 60 days prior to demolition or construction, and 60 days prior to operation respectively, the Applicant shall submit to the CEC CPM the Construction and Operational Safety Plan for review, comment, and approval of the fire protection procedures.

**FIRE-5.** The Applicant shall design and install all exterior lighting to meet the requirements contained in the Visual Resources section and in accordance with the American National Standards Practice for Industrial Lighting (ANSI/IES-RP-7)

Verification: Within sixty days after construction is completed, Crockett Cogeneration shall submit a statement to the CEC CPM that the illuminances contained in the ANSI/IES-RP-7 were used as a basis for the design and installation of the exterior lighting.

**FIRE-6.** The Applicant shall submit to the Crockett-Carquinez Fire Protection District, or delegate agent, design and construction plans and specifications for the fire suppression system(s). The plans shall include, but not be limited to, hydrant, piping, sprinkler, and water supply plans, fire detection, alarm, suppression, and other appurtenant systems.

Verification: The Applicant shall submit copies of the plans, specifications, calculations, and other required documents to the Chief Fire Official (CFO) at least 90 days prior to the start of new construction (or a lesser number of days agreeable to the CFO). If the CFO discovers nonconformance with the stated requirements, the CFO shall notify the Applicant within 45 days of the submittal date and shall return the nonconforming plans to the Applicant for correction. The Applicant shall resubmit the corrected plans within 20 days of receipt of the nonconforming submittal.

The Applicant shall submit written notice to the CEC CPM that the proposed plans, specifications, and calculations have been determined, by the CFO, to be in conformance with the requirements as set forth in the applicable LORS and that the CFO has approved them.

## ENGINEERING GEOLOGY

**GEO-1.** The Applicant shall assign to the project an engineering geologist(s) certified by the State of California, to carry out the duties required by the Uniform Building Code (UBC, Section 7006(c)), latest adopted edition.

Verification: At least 30 days prior to the start of construction, the Applicant shall submit to the California Energy Commission (CEC) Compliance Project Manager (CPM) and Chief Building Official (CBO) for approval the name(s) and license number(s) of the certified engineering geologist(s) assigned to the project. The submittal should include a statement that CPM and CBO approval is needed. The CEC CPM and CBO will approve or disapprove of the engineering geologist(s) and will notify the Applicant of its findings within 10 days. If the engineering geologist is replaced, Crockett Cogeneration shall submit for approval the name(s) and license number(s) of the newly assigned individual to the CEC CPM and CBO. Notification of approval/disapproval will be given by the CEC CPM and CBO within 10 days of receipt of the notice of personnel change.

**GEO-2.** The assigned engineering geologist shall be responsible to carry out the duties required by UBC Section 7006(c), the latest adopted edition, including:

a. Prepare the "Engineering Geology Report" required by UBC Section 7006(c): Section 7006(c) Plans and Specifications. When required by the building official, each application for a grading permit shall be accompanied by two sets of plans and specifications, and supporting data consisting of a soils engineering report and engineering geology report. The plans and specifications shall be prepared and signed by a civil engineer when required by the building official. That report shall contain that information described in UBC Section 7006(f) (Engineering Geology Report). The engineering geology report required by subsection (c) shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and opinions and recommendations covering the adequacy of the site to be developed by the proposed grading.

   Recommendations included in the report and approved by the building official shall be incorporated in the grading plans or specifications.

b. Monitor geologic conditions during construction and approve actual mitigation measures used to protect the facilities from geologic hazards.

c. Prepare the final "Geologic Grading Report" after completion of grading as required by UBC Section 7015(a)3. A geologic grading report prepared by the engineering geologist, including a final description of the geology of the site and any new information disclosed during the grading and the effect of same on recommendations shall be incorporated in the approved grading plan. He shall render a finding as to the adequacy of the site for the intended use as affected by geologic factors.

Verification: a) Within 10 days of submittal of the application(s) for grading permit(s) to the County Chief Building Official (CBO), other designated authority or the CEC's duly authorized representative, the Applicant shall submit a signed statement to the CEC CPM verifying that the Engineering Geology Report has been submitted to the CBO as a supplement to the plans and specifications and that the recommendations contained in the report are incorporated into the plans and specifications; b) within 90 days following completion of the final grading, Crockett Cogeneration shall submit a copy of the geologic grading report required by UBC Section 7015(a)3 to the CEC CPM.

# 5.0 POTENTIAL EFFECTS ON THE PUBLIC AND PROPERTY OWNERS

Consistent with the requirements of Title 20, California Code of Regulations, section 1769(a)(1)(G), this section addresses the proposed Amendment's effects on the public and nearby property owners. No new additional impacts to the public or property owners are anticipated as a result of the installation and operation of the Natural Gas Compression Equipment.

## *5.1 Potential Effects on the Public*

The Project site is entirely located within the existing Facility, which is adjacent to a variety of land uses, including residential and recreational. The Facility is located in an industrial complex dominated by the C&H Refinery. The C&H Refinery surrounds the Facility, except for portions facing north, south, and to the east. The construction and operation of the Natural Gas Compression Equipment will not create any noise impacts on the public and property owners beyond those already addressed in the Final Commission Decision for the CCP.

It is anticipated that a limited number of truck trips will be necessary to deliver the various components of the Natural Gas Compression Equipment, construction equipment and materials. However, to reduce the effects on the public and property owners and to maintain consistency with the Conditions of Certification set forth in the Final Commission Decision, deliveries will be scheduled during non-peak traffic hours and either before or after shift changes and appropriate permits will be obtained for any oversized loads. Given that there will be approximately ten truck trips needed for equipment and materials delivery and since the expected use of vehicles for delivery will be similar to those being used at the C&H Refinery for other deliveries, the increase in traffic due to delivery is expected to be imperceptible and the resulting impact on the public and property owners will be less than significant.

All equipment laydown areas will be located at the Facility. Standard tractor truck and flatbed trailers, as well as standard light-duty trucks and automobiles, will be used for delivery. There is sufficient existing employee parking for the additional personnel during delivery and construction; therefore, there will be no significant impacts to employee parking.

The Project will not have an impact on utilities or public services associated with the Natural Gas Compression Equipment. In fact, because of the decrease in gas pressure from PG&E's gas line, the proposed modifications create a net benefit and reduced impacts to PG&E's supply line. The proposed modifications to the Facility will not have an increased impact on fire protection, police protection, or hospital services as the scale of Project construction is minor and the operations of the Facility will remain unchanged.

## *5.2 Potential Effects on Property Owners*

Since the proposed modifications do not change the operational envelope of the Facility and do not expand or change the Facility footprint, and since the Project will not have any new or additional impacts beyond those addressed in the Final Commission Decision for CCP, the Project will not have any new or additional impacts on nearby property owners.

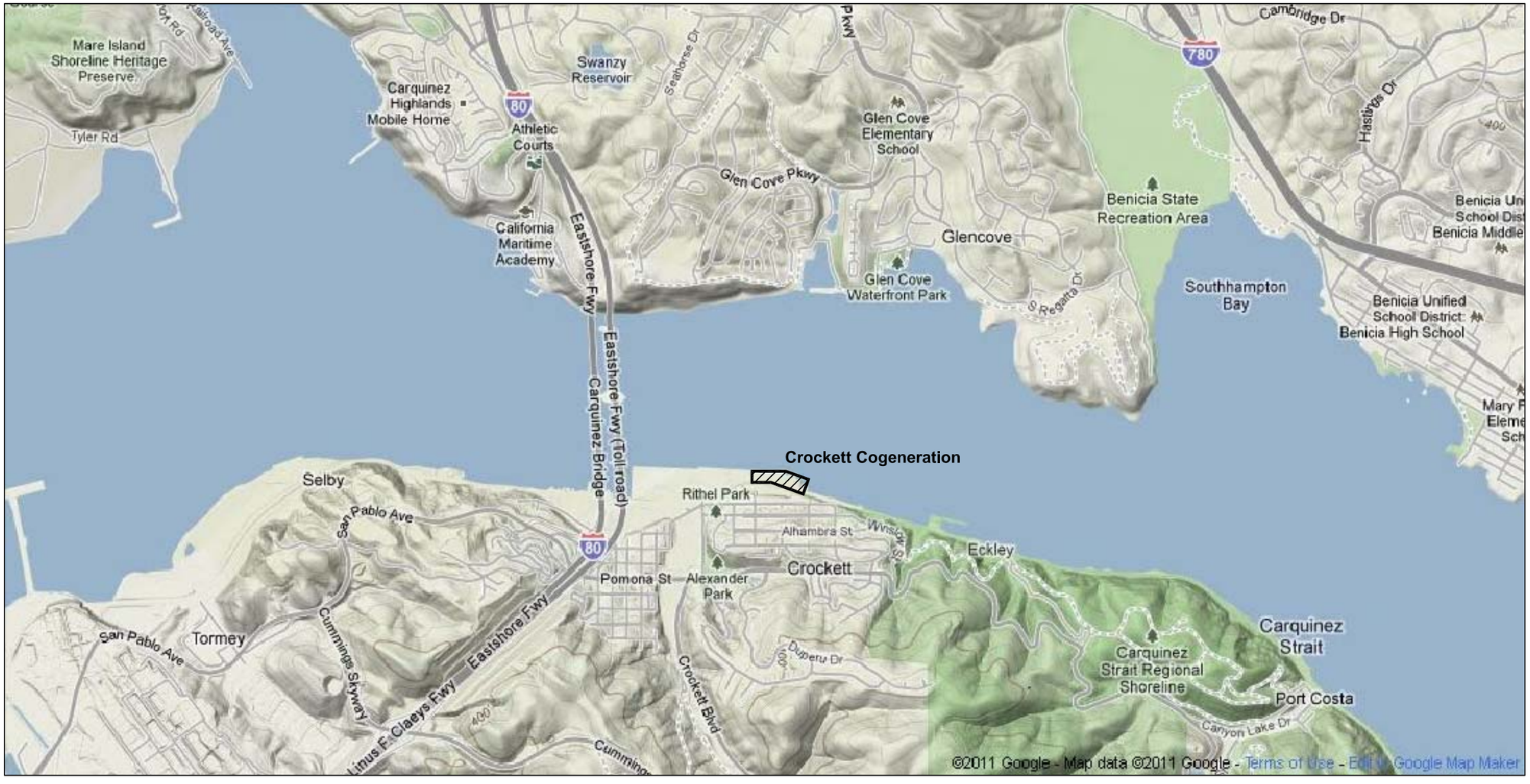



**FIGURE 1**

**environ strategy consultants, inc.**
1036 W. Taft Avenue Suite 200 • Orange, 92865 • (714) 919–6500

0 2000 3000 4000

APPROX. SCALE: 1" =2000'

## Topographic Map of Area

**Crockett Cogeneration**
**550 Loring Avenue**
**Crockett, CA 94525**

| | |
|---|---|
| PROJECT NO.: | 717–A |
| DATE: | 10/25/2011 |
| FILE NAME: | crockett_topo |

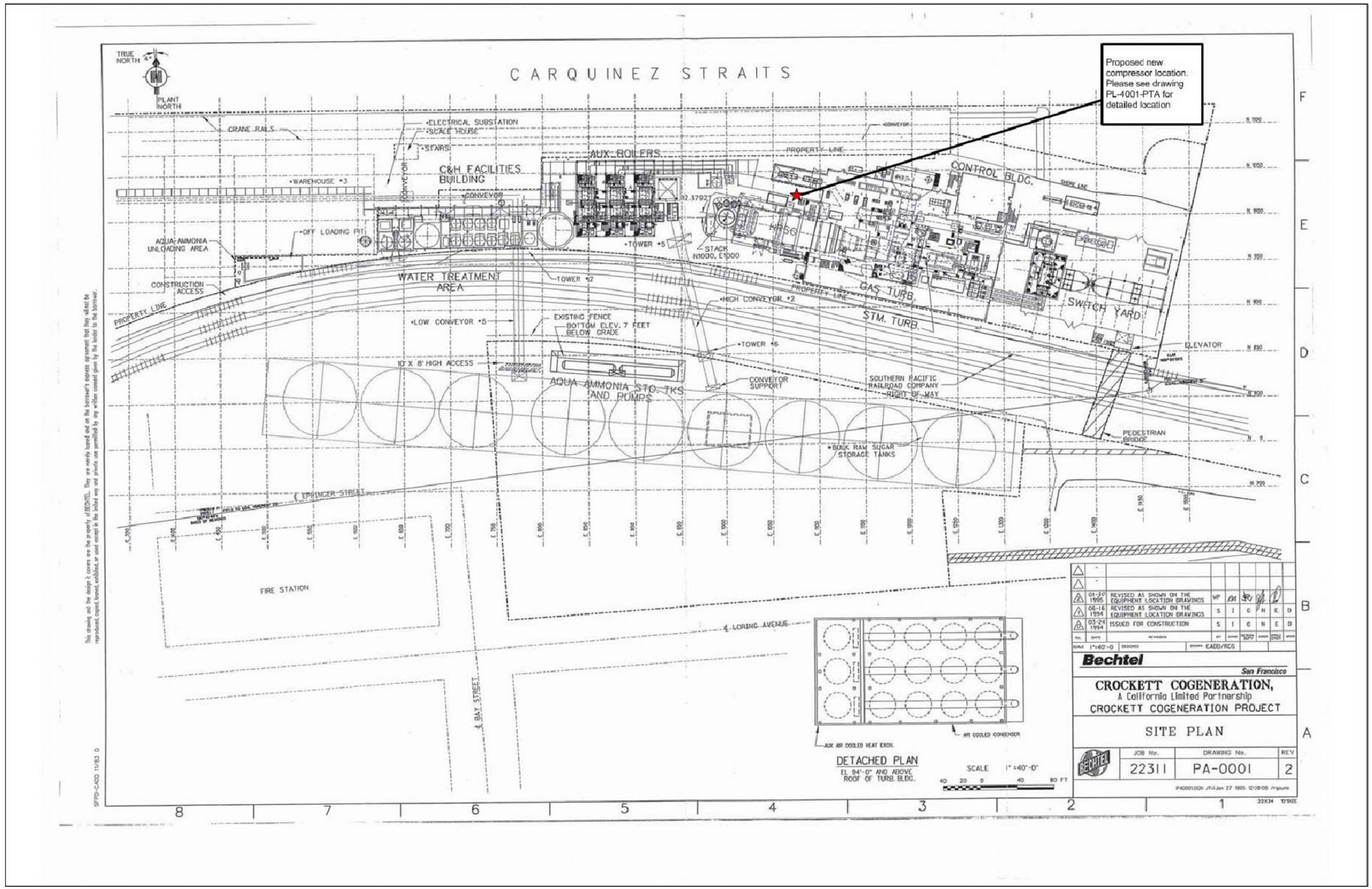



FIGURE 2

| | | | |
|---|---|---|---|
| **environ strategy consultants, inc.**<br>1036 W. Taft Avenue, Suite 200 • Orange, CA 92865 • (714) 919-6500 | NOT TO SCALE | Site Plan<br>Crockett Cogeneration<br>550 Loring Avenue<br>Crockett, CA 94525 | PROJECT NO.: 717-A<br>DATE: 10/26/2011<br>FILE NAME: PA-0001 |

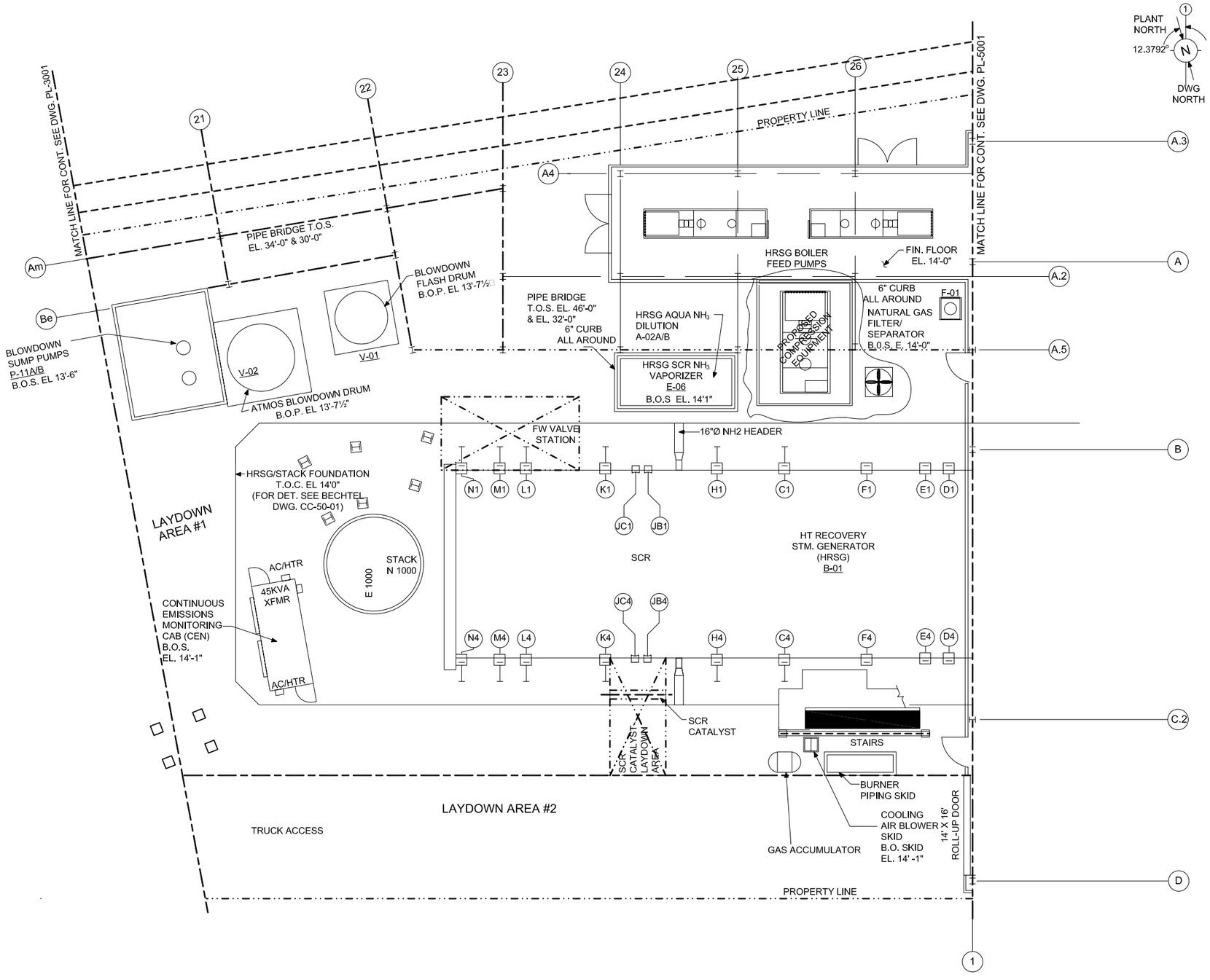



FIGURE 3

| | | | |
|---|---|---|---|
| **environ strategy** consultants, inc.<br>1036 W. Taft Avenue, Suite 200 • Orange, CA 92865 • (714) 919–6500 | NOT TO SCALE | Equipment Location HRSG Area<br>Crockett Cogeneration<br>550 Loring Avenue<br>Crockett, CA 94525 | PROJECT NO.: 717–A<br>DATE: 10/26/2011<br>FILE NAME: PL–4001–PTA |

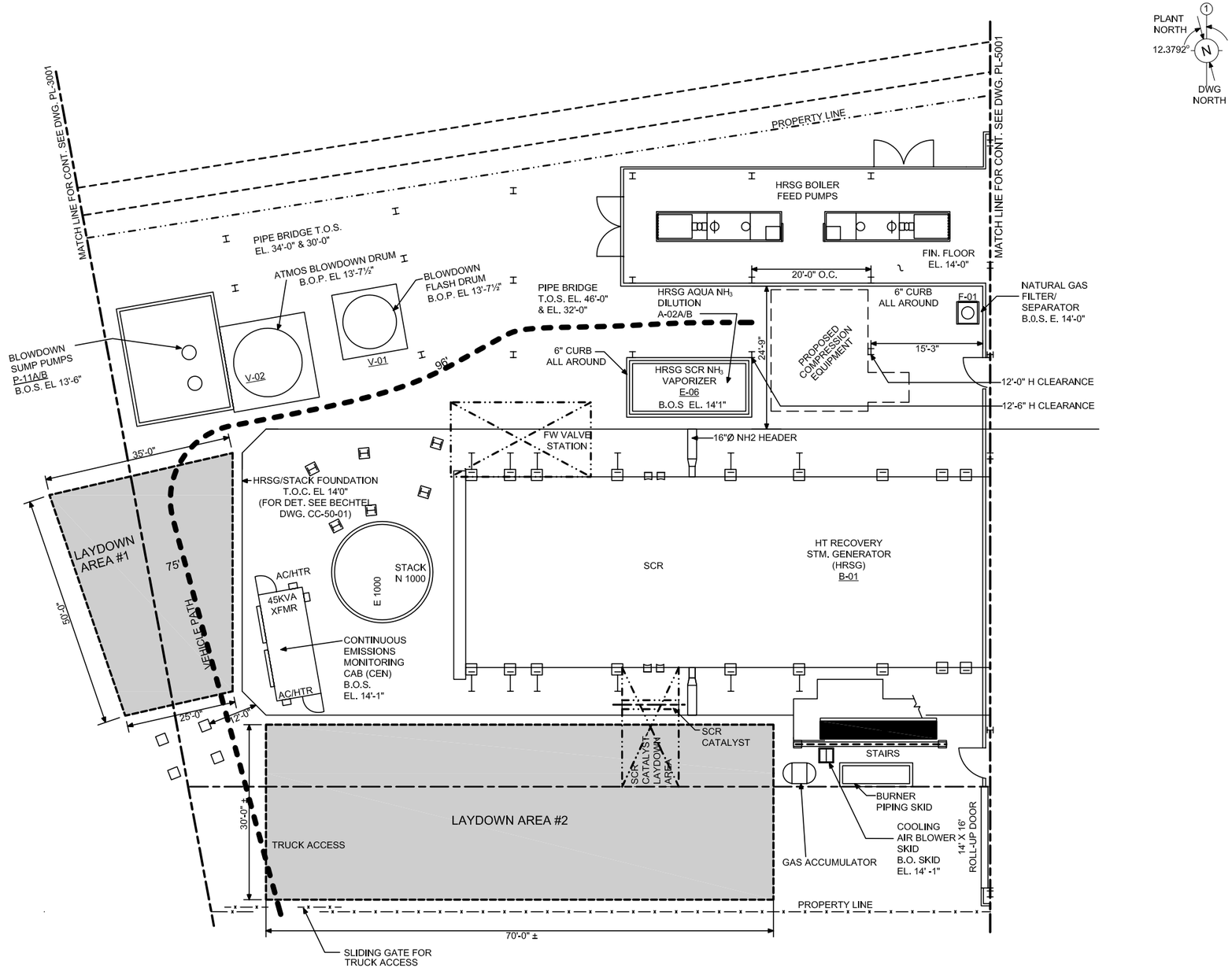



FIGURE 4

environ strategy consultants, inc.
1036 W. Taft Avenue, Suite 200 • Orange, CA 92865 • (714) 919–6500

NOT TO SCALE

# Truck Laydown Areas

Crockett Cogeneration
550 Loring Avenue
Crockett, CA 94525

| | |
|---|---|
| PROJECT NO.: | 717–A |
| DATE: | 11/28/2011 |
| FILE NAME: | PL–4001–PTA |

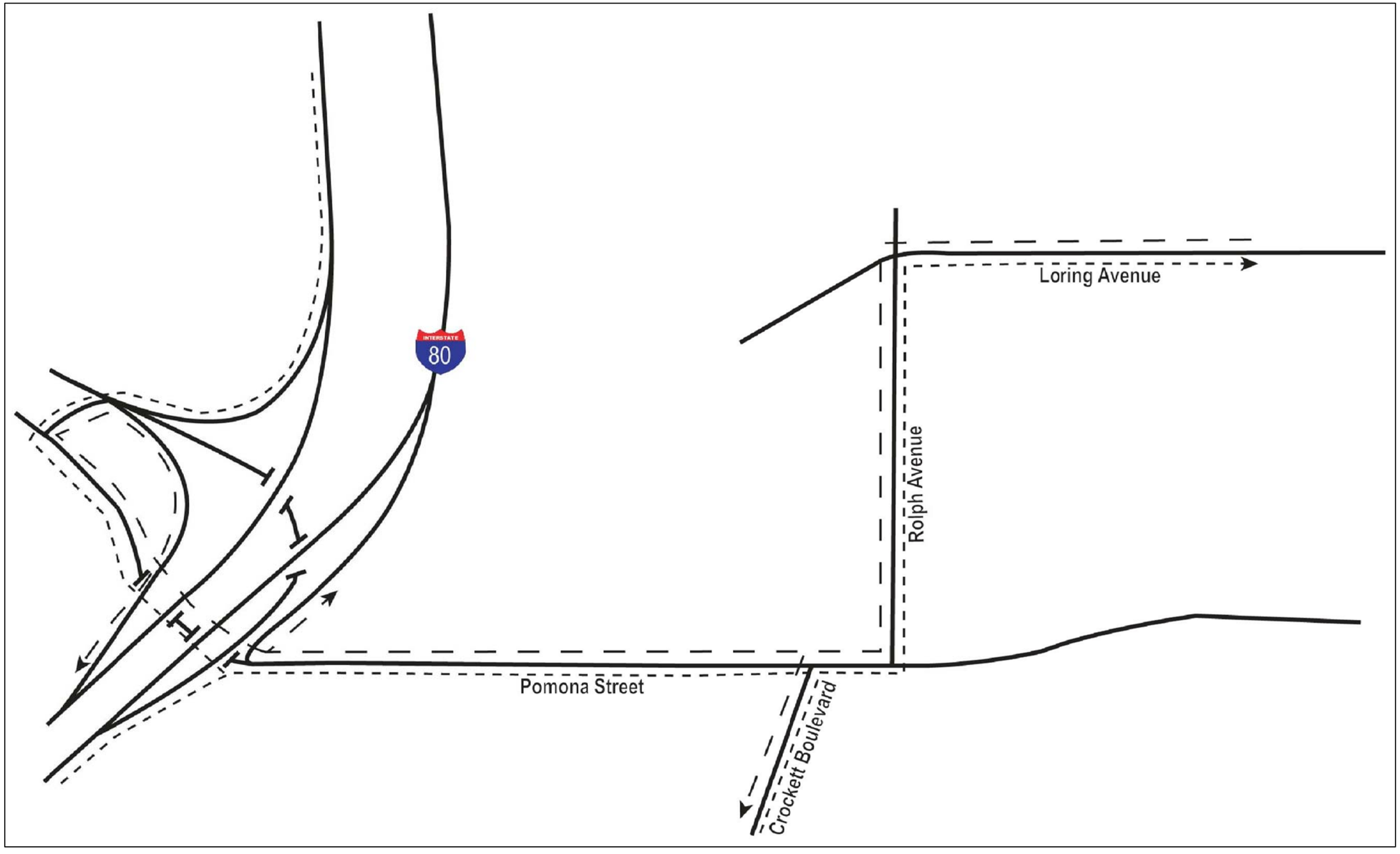



FIGURE 5

environ strategy consultants, inc.
1036 W. Taft Avenue, Suite 200 • Orange, CA 92865 • (714) 919–6500

NOT TO SCALE

# Construction Worker Trip Routes

Crockett Cogeneration
550 Loring Avenue
Crockett, CA 94525

| | |
|---|---|
| PROJECT NO.: | 717–A |
| DATE: | 12/09/2011 |
| FILE NAME: | PL–4001–PTA |


0 1000 2000

APPROX. SCALE: 1" = 1000'

## LEGEND

**R** - S Regatta

**C** - Chartmaster

**L** - Loring/Jackson

**W** - West/Edwards

**P** - Pomona/Bishop

**B** - Baldwin/Emerson

- Place of Worship
- Schools
- Hospital or Medical Clinic
- Library

environ strategy consultants, inc.

1036 W. Taft Avenue, Suite 200
Orange, CA 92865

FIGURE 6

LAND USE MAP

CROCKETT COGENERATION
550 LORING AVENUE
CROCKETT, CA 94525

DATE
12/15/2011

PROJECT NO.
717-A

FILE NO.
Figure 6

# Geotechnical Evaluation

Support for Design of New Gas Compressor Foundation
Crockett Cogeneration Natural Gas Power Plant
Crockett, California

*Prepared for:*
**Crockett Cogeneration**

*Prepared by:*
**AMEC, Oakland, California**

December 2011

Project 11162010

December 6, 2011

Project OD1116201.000

Mr. Carlos Sanchez
Consolidated Asset Management Services
Representing Crockett Cogeneration, Ltd.
34759 Lencioni Ave.
Bakersfield, California 93308

**Subject:** **Geotechnical Evaluation**
**New Gas Compressor Foundation**
Crockett Cogeneration Natural Gas Power Plant
Crockett, California

Dear Mr. Sanchez:

AMEC Geomatrix, Inc. (AMEC) is pleased to submit this geotechnical evaluation report for a new natural gas compressor foundation design at the Crockett Cogeneration Natural Gas Power Plant in Crockett, California. This report was developed in accordance with our proposal dated October 13, 2011 and Purchase Order Number 2011511, dated October 13, 2011. Our evaluation included compiling and reviewing existing data, performing a site reconnaissance, performing engineering evaluations and analyses, developing geotechnical recommendations for the design and construction of the foundation elements, and preparing this report.

If you have any questions about this report, please do not hesitate to call any of the undersigned. It has been a pleasure working with you and we look forward to working with you on other future phases of the project.

Sincerely yours,
AMEC Geomatrix, Inc.

Justin D. Phalen, PE, GE
Project Engineer

Marc J. Ryan, PE, GE
Principal Engineer

JPD/MJR/LU
\\Oad-fs1\doc_safe\16000s\162010\3000\Final Crockett Cogen Rpt\1 txt, cvrs\Crockett Cogen Cvrltr.doc

Enclosures:

AMEC Environment & Infrastructure
2101 Webster Street, 12th Floor
Oakland, California 94612-3066
USA
Tel (510) 663-4100
Fax (510) 663-4141
amec.com

## TABLE OF CONTENTS

## TABLE OF CONTENTS
(Continued)

### FIGURES



### APPENDICES

# GEOTECHNICAL EVALUATION
New Gas Compressor Foundation
Crockett Cogeneration Natural Gas Power Plant
Crockett, California

## 1.0 INTRODUCTION

This report presents the results of the geotechnical evaluation that AMEC performed to support the design of a proposed new gas compressor at the Crockett Cogeneration Natural Gas Power Plant (CCNGPP) in Crockett, California. The location of the project is shown on the Site Location Map (Figure 1).

### 1.1 PURPOSE AND SCOPE

The purpose of this study was to provide a geotechnical evaluation for two specific locations at the site and provide geotechnical engineering recommendations for the foundation design of the proposed equipment. The following information, recommendations, and schematic design criteria are presented in this report:

- Summary of previous geotechnical and geologic studies performed at the site;
- Description of subsurface soil and groundwater conditions encountered in the logs of the borings performed by others;
- Description of site terrain, site history, geology, site seismicity, and geologic hazards;
- Site classification in accordance with ASCE 7-05 to be used for seismic design; and,
- Preliminary discussion of primary geotechnical considerations and preliminary design recommendations.

Our scope of services to accomplish the above-stated purposes was outlined in our proposal dated October 13, 2011.

### 1.2 REPORT ORGANIZATION

A brief project description is presented in Section 2.0. Section 3.0 discusses the previous geotechnical and geologic studies performed at the site. A general description of the site conditions is provided in Section 4.0. Section 5.0 discusses the key geotechnical considerations associated with the project and provides geotechnical recommendations for preliminary design of the equipment foundation elements. Section 6.0 describes the basis for our recommendations and Section 7.0 includes a list of references.

This report includes two appendixes. A summary of the existing data reviewed is included in Appendix A. Appendix B contains photographs taken during a site visit to the CCNGPP on October 19, 2011.

## 2.0 PROJECT DESCRIPTION

It is our understanding that the CCNGPP is considering an equipment upgrade that will feature a new natural gas compressor and skid weighing up to 65,000-lbs with plan dimensions of about 8 feet by 18 feet. Two locations are being considered for the placement of the compressor and skid (Figure 2); both are in relatively congested areas containing existing plant facilities. Location 1 is an area near the center of the plant currently surfaced with concrete slabs with nearby structural mats, spread footings, piers, and grade beams for the support of the adjacent facilities. Location 2 is at the far eastern edge of the plant, adjacent to a three-story steel-framed pedestrian bridge tower. It is currently surfaced with asphaltic concrete and occupied by a pipe and tool storage shed.

The project will consist of preparing one of the two selected sites by moving, or removing existing facilities in the proposed footprint, demolishing existing surface features (concrete slab or asphaltic concrete), installing the selected foundation elements, and installing the gas compressor skid at grade. This geotechnical evaluation report was prepared to support the design of the foundation elements for the new compressor.

## 3.0 DATA REVIEW AND SITE RECONNAISSANCE

The preliminary evaluation performed for the proposed equipment upgrade consisted of a detailed review of existing geotechnical/geologic reports prepared for the existing facilities and a cursory site reconnaissance to examine existing conditions at the ground surface.

### 3.1 DATA REVIEW

AMEC reviewed existing geologic and geotechnical information provided by Crockett Cogeneration that was issued primarily for the design of the existing plant facilities. The following sources contained information pertinent to our evaluation of the geotechnical conditions:

- Geofon, Inc. (1991) Geotechnical Investigation, Proposed Aqueous Ammonia Storage Tanks, C&H Cogeneration Project, Crockett, California
- Woodward-Clyde Consultants (1986a) Preliminary Geotechnical Engineering and Seismic Exposure Study, Crocker Cogeneration Project
- Woodward-Clyde Consultants (1986b) Supplementary Geotechnical Studies – Western Portion of Crockett Cogeneration Plant
- Woodward-Clyde Consultants (1984) Preliminary Geotechnical Engineering Seismic Exposure Study, Crocker Cogeneration Project

A total of seven (7) auger borings have been drilled at the plant site in the general vicinity of the two proposed locations, as shown on Figure 2. Logs of these seven borings are presented in Appendix A. Six of the borings were advanced through undocumented fill and into underlying bedrock. Section 4.4 includes a discussion of the subsurface stratigraphy in more detail. Samples collected from the exploratory borings were tested in the laboratory for moisture content, unit weight, and undrained shear strength Woodward-Clyde Consultants (1986a, 1986b).

### 3.2 SITE RECONNAISSANCE

On October 19, 2011 AMEC representative, Mr. Justin Phalen, met with Mr. David Poling, Operation and Maintenance Manager for the CCNGPP, and observed conditions at the two proposed locations for the new gas compressor. These observations were generally intended to evaluate the geotechnical performance of the existing site facilities and to note whether there were any obvious signs of foundation distress that may have been a result of long-term movements (e.g., noticeable cracks or offsets in concrete slabs that may indicate settlement or heave). In both proposed locations, there were no immediately clear signs of distress to existing foundation elements, indicating that the facilities have been performing well (from a geotechnical standpoint) since construction in 1994. Individual hairline cracks (approximately 1 to 2 mm wide) were noted running through the middle of three of the concrete slabs at Location 1. However, there was no vertical offset associated with the cracks, and it was unclear whether or not they was associated with differential settlement of the slab or with thermal expansion/contraction of the concrete. Photos taken during the site reconnaissance are included in Appendix B.

## 4.0 SITE AND SUBSURFACE CONDITIONS

This section summarizes the overall site and subsurface conditions at the CCNGPP site. Sections 4.1 and 4.2 describe the general geologic and seismic setting, respectively. The local development history of the site is described in Section 4.3. Site-specific descriptions of existing site, subsurface, and groundwater conditions are provided in Section 4.4. Geologic hazards are discussed in Section 4.5.

### 4.1 GEOLOGIC SETTING

The CCNGPP is located at the water's edge on the south shore of the Carquinez Strait near where the strait drains into the northeast end of San Pablo/San Francisco Bay (Figure 1). The bay occupies a broad, shallow depression that developed in response to minor crustal extension between the San Andreas fault on the west and Hayward fault on the east. The San Francisco Bay depression appears to be a pull-apart basin that has been slowly subsiding during late Quaternary time (the past 700,000 years) and perhaps longer. The basin and associated waterways are predominantly filled with late Quaternary alluvial, fluvial, and estuarine deposits, overlying older basement rocks.

The oldest rocks in the San Francisco Bay area are Jurassic to Cretaceous (195 to 65 millions of years [Ma] before present) marine sedimentary rocks and associated igneous and metamorphic rocks of the Franciscan Complex. The Franciscan Complex is predominantly graywacke (sandstone) and interbedded shale, with lesser amounts of submarine basalt (greenstone), chert, serpentinite, and rare high-pressure metamorphic rocks known collectively as blueschist. The local bedrock at the CCNGPP is comprised of the sedimentary Great Valley Complex formed during the Cretaceous period (146 to 65 Ma), (Graymer et al., 2006). Great Valley bedrock is described as interbedded layers of sandstone, siltstone, claystone and shale. The siltstone and claystone units have the potential to be particularly dispersive, friable, and prone to slaking when exposed to water. Outcrops of Great Valley are observed in the vicinity along the shoreline on the upslope side of the Union Pacific Railroad tracks where the rock was cut for the railroad alignment.

Younger alluvial deposits (locally known as Bay Mud) of Holocene age (less than 11,000 years old) overlie the older bedrock at some areas, particularly below the water level elevation at the edge of the old shoreline. These deposits are soft to medium stiff and are historically very compressible.

## 4.2 SEISMICITY

Based on the record of historical earthquakes and its position astride the North American-Pacific plate boundary, the San Francisco Bay region is considered to be one of the more seismically active regions of the world. During the past 200 years, faults within this plate boundary zone have produced numerous small-magnitude and at least fifteen moderate to large (i.e., M > 6) earthquakes affecting the Bay Area (Toppozada et al., 1981; Ellsworth, 1990; Bakun, 1999). The U.S. Geological Survey (USGS) 2007 Working Group on California Earthquake Probabilities (WGCEP, 2008) estimated an approximately 67 percent probability that at least one major moment magnitude earthquake ($M_W \geq 6.7$) would occur in the San Francisco Bay Area before 2037.

Many active faults within the Bay Area contribute to this aggregate probability, and several may have significance with regard to potential earthquake ground shaking at the CCNGPP. Major active faults near the project site include the Concord-Green Valley, Hayward and San Andreas faults, situated, respectively, approximately 6.3 miles [10.2 km] east, 8.8 miles [14.2 km] southwest, and 26.7 miles [42.9 km] west-southwest of the site (Jennings and Bryant, 2010). The WGCEP (2008) estimated a 31 percent probability of a $M_W$ 6.7 or larger earthquake on the northern Hayward fault, the closer of the fault's segments to the site. The WGCEP (2008) estimated a 21 percent probability of a $M_W$ 6.7 or larger earthquake on the San Andreas fault during that same period. Several moderate-magnitude, nineteenth and early twentieth century events on the Hayward and San Andreas faults produced Modified Mercalli Intensity (MMI) VII to VIII effects in the site vicinity (Toppozada et al., 1981; Toppozada and

Parke, 1982a, 1982b), including the magnitude 6.9 event on the southern Hayward fault in October 1868 and the magnitude 8 ($M_W$ 7.8) San Francisco earthquake in April 1906 (Bakun, 1999). The 1989 $M_W$ 6.9 Loma Prieta earthquake produced MMI effects of VI-VII in the general site vicinity (Plafker and Galloway, 1989).

Other faults mapped in the vicinity of the CCNGPP include the Franklin and Pinole faults.

## 4.3 LOCAL DEVELOPMENT HISTORY

Review of historic Sanborn Fire Insurance Maps for Crockett, California indicates that the CCNGPP property has been through a series of development and redevelopment stages since the latter part of the 19th century (Sanborn 1899, 1906, 1913, 1924, 1929, 1945). The earliest maps from 1899 show that the majority of the existing plot had already been created from fill, most likely generated from the railroad cut immediately to the south. The land was primarily used as a warehouse lot for the Pacific Coast Grain Warehouse Company and subsequently owned and operated by Western Grain and Sugar Product Company, and then by California and Hawaiian Sugar Refining Corporation. The September 1906 map shows little improvement since 1899 and does not mention any damage to the facility resulting from the $M_w$ 7.8 San Francisco Earthquake of April 1906. By 1913, three 60-foot diameter steel storage tanks were installed near the eastern edge of the property. By 1929, nearly the entire plot was used for sugar processing and storage and remained in this capacity for most of the 20$^{th}$ century. Construction of the current natural gas plant facilities commenced in 1994 with the plant becoming fully operational in 1996.

## 4.4 EXISTING SURFACE AND SUBSURFACE CONDITIONS

As mentioned in Section 4.1, the CCNGPP is located at the water's edge on the south shore of the Carquinez Strait near where the strait drains into the northeast end of San Pablo/San Francisco Bay. The facility is bordered by the Union Pacific railroad and Loring Avenue to the south, the C&H Sugar Factory to the west, and the waters of the Carquinez Strait to the north and east. The following sections describe existing surface and subsurface conditions at the plant and, specifically, at the two proposed gas compressor locations.

### 4.4.1 Existing Surface Conditions

The CCNGPP occupies the eastern end of a large marine fill constructed for the Bulk Raw Sugar Wharf in the late 1800's. The plant is roughly rectangular in shape with maximum plan dimensions of approximately 150 feet by 900 feet. The surface is primarily covered with concrete slabs and mats for the support of existing facilities, asphaltic concrete in areas that are used as walkways and for supporting minor transient loads, and areas of crushed rock to protect exposed grades. The site is relatively level within the plant boundaries with minor grading to facilitate surface drainage. Based on the original plant drawings, existing surface elevations in the vicinity of the site range between about +10 to +13 feet (project datum).

The existing site facilities and structures are supported on various configurations of large diameter (2.5 to 4 feet) cast-in-place drilled piers with connecting grade beams between 2 and 6 ½ feet deep, shallow spread footings, and structural mats up to 6 feet thick.

The proposed Location 1 is in a congested area between the main turbine generator to the south and a steel structure that houses boiler feed pumps to the north (Figure 2). The roughly 16-feet by 24-feet of workable area is surfaced with a reinforced concrete slab about 8-inches thick and is flanked on the east and west by two 2½ foot diameter drilled piers approximately 30 deep that are supporting an overhead pipe bridge. There exists a natural gas filter with footing plan dimensions of about 5½ by 5½ feet within the footprint of proposed Location 1 that is planned to be moved a few feet east to accommodate the new gas compressor.

The proposed Location 2 is at the far eastern edge of the plant immediately east of a three-story steel-framed pedestrian bridge tower. The tower is founded on four 2½ foot diameter drilled piers approximately 30 feet deep. The roughly 22-feet by 35-feet of workable area is surfaced with asphaltic concrete and occupied by a pipe and tool storage shed.

### 4.4.2 Subsurface Conditions

Our understanding of the subsurface conditions is based on review of the available geotechnical borings logs described in Section 3.1. No additional investigation work was performed for this project. The site stratigraphy generally consists of old (pre-1900) undocumented marine fill overlying normally consolidated soft to medium stiff marine sediments (Bay Mud) overlying bedrock of the Great Valley Complex. It is postulated that the materials used to create the marine fill were predominantly borrowed from the spoils generated from the shoreline excavation cut for the adjacent railroad. Based on available boring data, the fill consists of a variable mix of gravel, sand and clay with most samples collected from the fill being characterized as "gravelly clay" and "clayey sand and gravel." The fill is generally described as loose to dense and soft to medium stiff. In the vicinity of Location 1, the fill is expected to be about 6 to 8 feet thick. In the vicinity of Location 2, the fill is expected to be about 3 to 5 feet thick.

The Bay Mud in the vicinity of the CCNGPP is described from the borings as being predominantly medium stiff with localized areas of softer and stiffer pockets. Bay Mud is typically characterized as being particularly clayey, highly plastic, and highly compressible. Being that the existing site fills have been compressing the native marine sediments for over 100 years, it is likely that the Bay Mud is in a more favorably consolidated state than if it were undisturbed. In the vicinity of Location 1, the Bay Mud is expected to be about 2 to 7 feet thick, becoming thicker from south to north. Less than two feet of Bay Mud is expected in vicinity of Location 2.

Great Valley bedrock is exposed at the southern end of the site in the cut for the railroad, and generally dips moderately to the north through the middle of the CCNGPP where it then dips quickly off into the channel of the Carquinez Straight. Figure 2 shows top of bedrock elevation contours interpreted by Woodward Clyde Consultants (1986b) based on borings drilled at the site. Depth to bedrock from the top of the concrete slab at Location 1 is expected to be about 7 to 15 feet, becoming deeper from south to north. Depth to bedrock from the top of the asphaltic concrete at Location 2 is expected to be about 3 to 5 feet.

Because of the age of the fill materials it is possible that they contain constituents of concern (particularly heavy metals) known to be hazardous. According to the documents provided to AMEC for the review of existing site conditions, there exists no current study to specifically address soil contamination concerns. Field exploration and other evaluations that are commonly used to assess the presence of substances that may be of an environmental concern were beyond the scope of this study.

### 4.4.3 Groundwater Conditions

Groundwater was encountered at fairly consistent depths of about 6 to 8 feet (elevation +4 to +6 ft) in all existing borings in the vicinity of the two proposed locations. Fluctuations in local groundwater levels are expected to be tidally influenced and directly related to the free water elevation in the Carquinez Strait.

## 4.5 GEOLOGIC HAZARDS

Potential geologic/geotechnical hazards assessed for the site include surface fault rupture, liquefaction and related phenomena, site slope stability, and swelling or shrinking soils. The assessment of these potential hazards is presented in this section. Discussion of site classification related to seismic analysis and design of the proposed facility is presented in Section 5.2.

### 4.5.1 Surface Fault Rupture

No active or potentially-active faults have been identified in the immediate vicinity of the CCNGPP according to the California Geological Society (Jennings and Bryant, 2010). The site is located approximately 6.3 miles west of the fault rupture zone established along the Concord-Green Valley fault. Additionally, observations of the site and surrounding areas do not indicate the presence of geologic conditions, geomorphic features or lineaments suggestive of active or inactive faults crossing the project site. Based on this information, we judge that the potential for surface fault rupture at the new CCNGPP is negligible.

### 4.5.2 Liquefaction

Liquefaction is a soil behavior phenomenon in which a soil loses a substantial amount of strength due to high excess pore-water pressure generated by strong earthquake ground shaking. Recently-deposited (i.e., within about the past 11,000 years) and relatively

unconsolidated soils and artificial fills located below the ground water surface are considered susceptible to liquefaction (Youd and Perkins, 1978). Typically, the soils that are most susceptible to liquefaction include relatively clean, loose, uniformly graded sand, silty sand, and non-plastic silt deposits (e.g., National Research Council, 1985).

As discussed previously in this report, the geotechnical data gathered during previous investigations indicate that the fill soils at the CCNGPP are predominantly loose to dense clayey gravels, clayey sands, and gravelley clays most likely sourced from bedrock excavated for the adjacent railroad alignment. Predominantly clayey soils typically are not considered to be susceptible to earthquake-induced liquefaction. Predominantly granular soils, such as sand and gravels with low fines contents, do comprise some zones of the undocumented fill in the vicinity of Location 1. However, most of these zones are above the groundwater table and are therefore not considered to be susceptible to liquefaction. There does exist the possibility of more granular soils existing below the groundwater table that may generate unacceptable levels of excess pore pressure as a result ground shaking from design-level earthquakes. These soils are more commonly found closer to the existing wharf as the fill slopes down into the channel.

We note that no evidence of liquefaction and/or related effects was reported for the CCNGPP site or vicinity for the great 1906 San Francisco earthquake (Lawson, 1908; Youd and Hoose, 1978), nor for the 1989 Loma Prieta Earthquake (Tinsley and others, 1998). However, short of a performing current and thorough geotechnical investigation study, the potential for liquefaction cannot be eliminated. USGS indicates that the areas in the vicinity of the CCNGPP that are largely comprised of fill materials have a very high liquefaction susceptibility (Witter et al., 2006). Therefore, we are of the opinion that the hazard due to potential soil liquefaction at the proposed CCNGPP site is low to very high, depending on soil and rock conditions in the immediate vicinity of the facility in question. Location 1, in this case, has a much higher potential for liquefaction than Location 2, primarily due to the thicker fill section that is potentially below the ground water table. Location 2 has a much thinner fill section, which is not anticipated to be below the groundwater table.

### 4.5.3 Site Instability/Landsliding

Lateral spreading, which is the lateral displacement of surficial soils, is usually associated with the liquefaction of underlying soils. Because the potential liquefaction hazard at the site is judged to be low to very high, and a significant portion of the CCNGPP is built on an undocumented fill that is sloped into the adjacent waterway, we expect that the potential for lateral spreading to occur also is low to very high.

### 4.5.4 Soil Swelling or Shrinkage Potential

The surficial fill clayey soils and Bay Mud are likely critically expansive, and are prone to significant volume change (shrinkage and swelling) with seasonal fluctuations in soil moisture. Such shrink/swell behavior can damage shallow foundation elements, such as footings and slabs-on-grade, which are supported by these soils, if not properly designed. Measures to mitigate for soil expansion are discussed in Section 5.3.

## 5.0 DISCUSSIONS AND PRELIMINARY GEOTECHNICAL RECOMMENDATIONS

Based on the results of our evaluation, it is our opinion that both Locations 1 and 2 are suitable for the proposed natural gas compressor and skid, provided proper foundation support is provided. Based on discussions with the owner's representative, the preferred foundation alternative is a shallow structural mat (rather than any type of deep foundation system, such as drilled piers, micropiles, etc.). We are of the opinion that the proposed natural gas compressor and skid can be supported on a structural mat foundation that bears on undisturbed competent native rock or a thickened section of Select Fill on existing fill. The recommendations presented below are considered appropriate for a shallow foundation design given the variable soil conditions at the site.

The key geotechnical issues for design and construction of the proposed foundation are the excavation support that will be required to excavate to the design depth, groundwater considerations during construction, mitigation of expansive soils, effect of new loads on existing adjacent foundation elements, seismic considerations, and groundwater considerations during and after construction. These issues are discussed in more detail in the following sections.

### 5.1 EQUIPMENT FOUNDATION

The proposed natural gas compressor and skid can be supported on a structural mat foundation that will have one of three different bearing scenarios: A) bearing directly on native, undisturbed bedrock (Location 2), B) bearing on a pad of Select Fill that is supported by undisturbed bedrock (Location 2), or C) bearing on a thickened section of Select Fill on top of undocumented fill/Bay Mud (Location 1). Recommendations for associated earthwork associated with the three scenarios mat foundation are presented in Section 5.3. A mat foundation subgrade prepared in accordance with the requirements described in Section 5.3.4 can be designed with the geotechnical parameters provided below.

A mat foundation constructed in accordance with the recommendations provided in Section 5.3.4 will have an allowable net bearing capacity as shown below:

| Loading Condition | Allowable Bearing Capacity | | |
|---|---|---|---|
| | (A) Directly on Bedrock | (B) Pad of Select Fill on Bedrock | (C) Pad of Select Fill on Undocumented Fill |
| Dead Load | 8,000 psf | 4,000 psf | 1,000 psf |
| Dead + Long-Term Live Load | 12,000 psf | 6,000 psf | 1,500 psf |
| Total Load (Including Seismic) | 16,000 psf | 8,000 psf | 2,000 psf |

These bearing capacities are net values; therefore, the weight of the foundations can be neglected for design purposes. Lateral loads can be dissipated through the interface friction of the mat foundation and the prepared subgrade using a coefficient of friction of 0.35.

We anticipate that some settlement of the proposed mat will occur as a result of elastic compression and/or consolidation of the underlying rock, Select Fill, undocumented fill, and Bay Mud directly beneath the new equipment. For bearing scenario A, we estimate that total settlement of the equipment due to elastic compression of the underlying rock will not exceed ¼-inch. For bearing scenario B, we estimate that total settlement of the equipment due to elastic compression of the pad of Select Fill will not exceed ½-inch. For bearing scenario C, we estimate that total settlement of the equipment due to consolidation of the undocumented fill and/or Bay Mud will not exceed 2½ -inches. Differential settlement for all three bearing scenarios can be expected to be about half of the total settlement. In order to accommodate any expected settlement and not allow any new loads from the compressor to be transferred to existing facilities, the mat foundation should not be allowed to be structurally connected to any existing foundation mat, grade beam, or slab. Additionally, the vertical capacity of adjacent drilled piers within 5 feet of the edge of the new mat should be reevaluated for newly imposed loads.

### 5.2 SEISMIC DESIGN PARAMETERS

This section presents seismic design parameters as recommended by the 2010 California Building Code (CBC), similar to those recommended by ASCE/SEI 7-10 (ASCE, 2010). Dames & Moore (1954) and Woodward-Clyde Consultants (1986b) measured undrained shear strengths in the Bay Mud generally in the range of about 900 to 1,200 psf and measured undrained shear strengths in the undocumented fill generally in the range of 725 to 2,100 psf in the upper 15 feet. The measured shear strength of bedrock in the CCNGPP is generally greater than 10,000 psf. Based on this information, soil profile type D is appropriate for Location 1 and soil profile type C is appropriate for Location 2 for characterizing seismic design parameters in accordance with the CBC.

In accordance with the CBC, the following seismic design parameters would be the minimum requirement for the seismic design aspects of the structure at ***Location 1***.

- Soil Profile Type (site class): D "Stiff Soil"
- Site Risk Category: IV
- Seismic Design Category: D
- MCE Mapped Short Period Acceleration: $S_{MS}$ = 1.50g
- MCE Mapped Long Period (T=1 second) Acceleration: $S_{M1}$ = 0.90g
- MCE Design Short Period Spectral Response Acceleration: $S_{DS}$ = 1.00g
- MCE Design Long Period (T=1 sec) Spectral Response Acceleration: $S_{D1}$ = 0.60g

In accordance with the CBC, the following seismic design parameters would be the minimum requirement for the seismic design aspects of the structure at ***Location 2***.

- Soil Profile Type (site class): C "Very Dense Soil and Soft Rock"
- Site Risk Category: IV
- Seismic Design Category: D
- MCE Mapped Short Period Acceleration: $S_{MS}$ = 1.50g
- MCE Mapped Long Period (T=1 second) Acceleration: $S_{M1}$ = 0.78g
- MCE Design Short Period Spectral Response Acceleration: $S_{DS}$ = 1.00g
- MCE Design Long Period (T=1 sec) Spectral Response Acceleration: $S_{D1}$ = 0.52g

## 5.3 EARTHWORK

This section generally describes the work necessary to prepare Location 1 and Location 2 for construction of the new natural gas compressor and skid foundation. Excavation conditions, groundwater conditions, and backfilling associated with subgrade preparation are discussed. Procedures that should be followed to protect the soils exposed in excavations are also discussed.

### 5.3.1 Site Preparation

Any existing facilities within the footprint of the selected location should be removed and/or relocated. Concrete slabs or asphaltic concrete should be saw-cut to at least the dimensions of the proposed mat and should be completely broken up and removed. Any below-ground utilities within the mat footprint should be identified and planned to be relocated.

### 5.3.2 Excavation Conditions and Ground Support

Excavations of the site soils should be possible with conventional small to mid-size heavy earth moving equipment (e.g., backhoes, bobcats). AMEC recommends that the contractor be required to exercise extreme caution when excavating the final two feet of the foundation areas. Excavation equipment that can disturb the structure subgrades (e.g., backhoes with buckets having large claws to loosen the earth) should be avoided when excavating to final subgrade. The exposed foundation area surfaces of the planned structures also must be

protected as described in Section 5.3.4, Subgrade Preparation / Protection of Exposed Foundation Surfaces.

As indicated in Section 4.4.2, Location 1 is expected to have about 6 to 8 feet of undocumented fill over 2 to 7 feet of Bay Mud. If Location 1 is selected, it is recommended that at least 5 feet of fill be excavated and replaced with Select Fill (Section 5.3.5) under the footprint of the proposed mat foundation. Location 2 is expected to have about 3 to 5 feet of undocumented fill or Bay Mud over bedrock. If Location 2 is selected, it is recommended that the fill and Bay Mud be excavated to undisturbed bedrock and replaced with Select Fill (Section 5.3.5) under the footprint of the proposed mat foundation.

The methods required to maintain stable conditions in excavations and temporary slopes during construction will depend on the nature of the material exposed in the excavation, the construction schedule, and the contractor's operation and equipment, among other factors. Because of the relatively confined working space at Location 1, excavations with inclined side slopes will not likely be used during construction. Location 2 may have enough room to facilitate sloped excavations on one or two sides. Vertical cuts will require appropriate measures to support the adjacent ground and nearby existing facilities. Construction costs associated with ground support measures are sometimes underestimated when project-specific requirements are not identified. Excavations having vertical sidewalls deeper than 3 feet will require effective means to adequately support the ground and to protect workers. Excavations shallower than 3 feet may require support depending on the location of the excavation relative to the existing facilities, the anticipated soil conditions, and/or the contractor's activities in the vicinity of the excavation. Adequate protection of workers in excavations must be provided by the contractor at all times during construction. Anywhere that excavations are made, unexpected caving of trench and excavation walls could occur at any time or place, regardless of the depth of the excavation or trench.

If inclined side slopes are to be used (portions of Location 2, perhaps) temporary excavation slopes in site soils should conform to CAL-OSHA requirements. Flatter side slopes may be required (and should be anticipated) if the contractor intends to stockpile materials and/or use heavy equipment adjacent to the cut. Flatter slopes also may be necessary if localized instability is observed during construction.

The ground support system should be installed without leaving nearby improvements unsupported. Installation and removal of the support measures must not affect nearby structures/facilities. The support measures should be left in place if their removal might cause: (1) the excavation bottom or adjacent ground to become disturbed, (2) the excavation wall to collapse, and/or (3) damage a nearby structure or facility or the newly-completed structure. If pressure-treated wood is used, it should be left in place and cut off about 2 feet below the ground surface. Wood that is subject to rotting should not be used.

Existing structures, foundations, and improvements adjacent to the required excavations may require underpinning during construction. AMEC recommends that the contractor be responsible for the evaluation of underpinning and ground support requirements and for the design of all underpinning and ground support measures. The contractor also should be required to submit underpinning and excavation plans for review prior to construction.

Project specifications should place full responsibility on the contractor for the planning, design, construction, maintenance, and removal of the ground support measures required for worker protection and the prevention of ground movement/settlement that may damage nearby facilities/structures, underground utilities, and other improvements. Ground support measures and temporary cut slopes used in construction should conform to all state and federal safety regulations and requirements. To help mitigate ground movement/settlement, stockpiling earth and other construction materials near open excavations should be avoided. In no case should stockpiling occur closer to excavations than federal or state regulatory agencies allow.

Structures, pipelines, and any other improvement that may be subject to distress/damage during construction should be periodically monitored and/or surveyed. If movement is detected, measures should be undertaken immediately to prevent additional movement and damage. The contractor should be made responsible for the repair of all damage that results from the new construction.

Precautions should be taken to limit access to the excavations by people and equipment. Workers entering excavations should be protected from raveling and sloughing soils; safety railings should be installed around the excavations.

### 5.3.3 Dewatering Requirements

Groundwater is not expected in excavations shallower than about elevation +6 feet. If possible, excavations should be made in the drier months (i.e., June through September) to minimize difficulties associated with higher groundwater levels that may occur during the winter rainy season and rain/surface water inflows. For excavations that extend below groundwater, a sump system will likely be required to control groundwater and to prevent the bottom of the excavation from heaving or becoming quick.

The contractor should be made responsible for the design, construction, operation, maintenance, and removal of any system that is implemented to control the inflow of surface water and groundwater. The system should be designed to prevent migration and pumping of soil fines with discharge water. The contractor must plan the dewatering and excavations carefully so that stable and dry excavations are maintained continuously throughout construction. The dewatering design proposed by the contractor should be presented in an excavation dewatering plan.

Disposal of water from construction dewatering must also be planned carefully. Because of regulatory requirements, discharging pumped groundwater directly into nearby drainages or storm drain systems may require permits from the regulatory agencies having jurisdiction over the project. Groundwater should be tested prior to disposal for substances that are of an environmental concern. If encountered during construction, this water will require special handling. Options that the contractor may use for disposal of pumped groundwater should be identified and evaluated during design.

### 5.3.4 Subgrade Preparation / Protection of Exposed Foundation Surfaces

The subgrade soils exposed in the excavation should be protected from erosion, air or water slaking, and changes in moisture content that could cause expansion, shrinkage, and/or degradation of the exposed surface. The subgrade should be prepared as soon as possible after excavation.

If work is done during the winter rainy season in exposed areas (i.e, Location 2), AMEC recommends that a minimum 4-inch thick pad of controlled density fill (CDF) be poured on the excavated subgrade as quickly as possible (i.e., within 24 hours) after the foundation area is exposed in the final cut surface. Before the CDF pad is prepared, the exposed soil surface should be clean and dry. Under no circumstances should groundwater, rainfall, surface runoff, or construction water be allowed to pond on the exposed or unprotected soil surfaces. If left unprotected, the subgrade soils could degrade quickly; their properties will change under the action of earthmoving equipment, worker activities, and wetting or drying caused by the elements.

#### *5.3.4.1 Subgrade Preparation for Bearing Scenario "A"*

We recommend that the subgrade in areas excavated to bedrock with the mat foundation bearing directly on bedrock be prepared as follows:

1. The final exposed excavation subgrade surface should be undisturbed, leveled, and moisture conditioned
2. If the final excavation surface is anticipated to be open for more than 24 hours, or exposed to wet weather conditions, a 4-inch thick pad of CDF should be placed in the excavation bottom.

#### *5.3.4.2 Subgrade Preparation for Bearing Scenario "B"*

We recommend that the subgrade in areas excavated to bedrock with the mat foundation bearing on a pad of Select Fill prepared as follows:

1. The final exposed excavation subgrade surface should be undisturbed, leveled, and moisture conditioned
2. If the final excavation surface is anticipated to be open for more than 24 hours, or exposed to wet weather conditions, a 4-inch thick pad of CDF should be placed in the excavation bottom.

3. Select Fill or CDF should be placed to bring the area to the finished subgrade elevation.

#### *5.3.4.3 Subgrade Preparation for Bearing Scenario "C"*

To provide a uniform bearing surface for the mat foundation in the undocumented fill area, we recommend that the subgrade in this area be prepared as follows:

1. The final exposed excavated subgrade surface should be leveled, moisture conditioned, and compacted to 90 percent relative compaction using standard walk-behind compaction equipment.
2. A non-woven geotextile filter fabric (Mirafi 140NC or equivalent) should be placed on the exposed subgrade surface. Adjacent sections of filter fabric should be overlapped. Filter fabric at the edges should extend up the sidewalls of the excavation.
3. Crushed Rock described in Section 5.3.5 should be placed at least one foot thick over the entire excavation subgrade.
4. The non-woven geotextile filter fabric should be wrapped over the top of the Crushed Rock so that it overlaps and fully encapsulates the crushed rock.
5. Select Fill and/or CDF should be placed over the filter fabric and used to bring the area to the finished subgrade elevation.

### 5.3.5 Fill Materials and Compaction Criteria

It is anticipated that the following fill types will be used during construction of the project:

- Select Fill
- Crushed Rock
- Aggregate Base
- Controlled Density Fill (CDF)

These fill types and associated compaction criteria are discussed in more detail below. It should be noted that when relative compaction is discussed in the text, it is based on the maximum dry density and optimum moisture content of the subject material as determined by ASTM Method D 1557 (latest edition). When the relative density is discussed in the text, it is based on ASTM Methods D 4253 and D 4254 (latest edition). Compaction operations should be performed using mechanical means only; compaction by jetting or flooding is not recommended.

#### *5.3.5.1 Select Fill*

Select fill can be used to backfill the excavations under the mat foundation subgrade. Select Fill should have a maximum plasticity index of 15 and a percentage passing the No. 200 sieve between 5 and 50, and organic content less than 3 percent by volume. The requirement that at least 5 percent pass the No. 200 sieve precludes the use of cohesionless sand as Select Fill. It is anticipated that some of the excavated soils will be suitable for use as Select fill. Select Fill

should contain no rocks larger than 3 inches in the greatest dimension or more than 15 percent larger than 2 inches. Select Fill should be blended and uniformly moisture conditioned to 1 to 3 percent above optimum moisture compacted to at least 95 percent relative compaction. Select Fill should be placed on a firm, unyielding surface in horizontal lifts not exceeding 8 inches in uncompacted thickness.

#### *5.3.5.2 Crushed Rock*

Crushed Rock should be an imported material that consists of durable rock and gravel that is free of deleterious material and free from slaking or decomposition under the action of alternate wetting and drying. We recommend that this material be used to provide support if the excavation is in unstable ground (i.e., Location 1), and be used directly beneath the mat foundation as a moisture break. If placed on soft, saturated, or unstable ground, this material should be underlain and wrapped by a filter fabric selected to prevent the migration of fines into the gravel. Crushed Rock should have a durability index of not less than 40 and should meet the gradation requirements that 90 to 100 percent of the particles pass the ¾-inch sieve and not more than 2 percent pass the No. 200 sieve. Crushed Rock should be uniformly moistened and compacted with at least three passes of approved vibratory compaction equipment, to a relative density of at least 75 percent, or to at least 90 percent relative compaction, whichever results in the highest density. The material should be placed in horizontal lifts that do not exceed 8 inches before being compacted.

#### *5.3.5.3 Aggregate Base*

Imported Aggregate Base material may be used in lieu of, or in conjunction with, Select Fill as backfill of the excavation. This material should meet the requirements in the Caltrans Standard Specifications (most recent edition), Section 26, Class 2 Aggregate Base (¾-inch maximum particle size). Aggregate Base should be uniformly moisture conditioned to a moisture content of 1 to 3 percent above optimum and compacted to at least 95 percent relative compaction. The material should be placed in horizontal lifts that do not exceed 8 inches before being compacted.

#### *5.3.5.4 Controlled Density Fill*

Controlled Density Fill (CDF) may be used in lieu of, or in conjunction with, Select Fill as backfill of the excavation. CDF is also recommended to protect the exposed excavation surface if it is anticipated to be open for more than 24 hours. CDF is also termed "Slurry Cement Backfill" in Section 19 of the Caltrans Standard Specifications (most recent edition). CDF consists of a fluid, workable mixture of aggregate, Portland cement, fly ash, and water and should meet the gradation requirements listed in the Caltrans Standard Specifications.

### 5.3.6 Drainage and Erosion Control

Proper site drainage is important for the long-term performance of the new equipment foundation. Final grades and pavements should be sloped to direct surface water away from the foundation. Collected water should be directed toward suitable discharge facilities. Ponding of surface water should not be allowed anywhere on the site.

## 5.4 CONDITIONS DURING CONSTRUCTION

An AMEC representative should observe earthwork and foundation construction to confirm that subsurface conditions encountered during construction are comparable to those used for developing the recommendations presented in this report. Unanticipated subsurface conditions, which cannot be disclosed fully by exploratory borings and test pits, commonly are encountered and frequently require additional expenditures to attain a properly constructed project. Some contingency funding is recommended in case conditions encountered during construction require additional exploration, testing, or design modifications.

# 6.0 BASIS OF RECOMMENDATIONS

The evaluations made in this report are based on the assumption that soil conditions at the site do not deviate appreciably from those described herein, and are disclosed in the exploratory borings. In the performance of our professional services, AMEC, its employees, and its agents comply with the standards of care and skill ordinarily exercised by members of our profession practicing in the same or similar localities. No warranty, either express or implied, is made or intended in connection with the work performed by us, or by the proposal for consulting or other services or by the furnishing of oral or written reports or findings. We are responsible for the evaluations contained in this report, which are based on data related only to the specific project and location discussed herein. In the event conclusions based on these data are made by others, such conclusions are not our responsibility unless we have been given an opportunity to review and concur in writing with such conclusions.

# 7.0 REFERENCES

American Society of Civil Engineers (ASCE), 2010, "Minimum Design Loads for Buildings and Other Structures," ASCE/SEI 7-10, 650p.

Bakun, W.H., 1999, Seismic activity of the San Francisco Bay region: Bulletin of the Seismological Society of America, v.89, no.3, pp.764-784.

California Building Standards Commission (CBSC), 2010, California Building Code.

California Department of Transportation (Caltrans), 2010, Standard Specifications, State of California; Business, Transportation and Housing Agency, Department of Transportation.

Ellsworth, W.L., 1990, Earthquake history, 1769-1989, in Wallace, R.E. (ed.), The San Andreas fault system, California: U.S. Geological Survey Professional Paper 1515, pp. 153-187.

Geofon, Inc., 1991, Geotechnical Investigation, Proposed Aqueous Ammonia Storage Tanks, C&H Cogeneration Project, Crockett, California

Graymer, R.W., Moring, B.C., Saucedo, G.J., Wentworth, C.M., Brabb, E.E., and Knudsen, K.L., (2006) Geologic Map of the San Francisco Bay Region, published by USGS, Scale 1:275,000.

Jennings, C.W., and Bryant, W.A., 2010, California Geological Society 150th Anniversary Fault Activity Map of California, California Geologic Data Map Serioes, Map No. 6.

Lawson, A.C., 1908, The California earthquake of April 18, 1906; report of the California State Earthquake Investigation Commission: Carnegie Institute, Washington, D.C., Publication 87, v.1 and atlas, 451 p.

National Research Council, 1985, Liquefaction of Soils During Earthquakes, Committee on Earthquake Engineering, Commission on Engineering and Technical Systems, National Academy Press, Washington D.C., 240 p.

Plafker, G., and Galloway, J.P., 1989, Lessons learned from the Loma Prieta, California earthquake of October 17, 1989: U.S. Geological Survey Circular 1045, 48 p.

Sanborn Perris Map Co., 1899, Fire Insurance Map for Crockett, Including Port Costa-Selby, Valona and Rodeo, Contra Costa County, California, Sheet 4, October.

Sanborn Map Co., 1906, Fire Insurance Map for Crockett, Including Port Costa-Selby, Valona and Rodeo, Contra Costa County, California, Sheet 4, September.

Sanborn Map Co., 1913, Fire Insurance Map for Crockett, Including Port Costa and Valona, Contra Costa County, California, Sheet 3, September.

Sanborn Map Co., 1924, Fire Insurance Map for Crockett, Including Valona, Port Costa and Tormey, Contra Costa County, California, Sheet 1, September.

Sanborn Map Co., 1929, Fire Insurance Map for Crockett, Including Valona, Port Costa and Tormey, Contra Costa County, California, Sheet 2, March.

Sanborn Map Co., 1945, Fire Insurance Map for Crockett, Including Carquinez, Port Costa and Tormey, Contra Costa County, California, Rev. 4Sheet 2, October.

Tinsley, J.C., III, Egan, J.A., Kayen, R.E., Bennett, M.J., Kropp, A., and Holzer, T.L., 1998 Maps and descriptions of liquefaction and associated effects: in Holzer, T.L. (ed.), The Loma Prieta, California, Earthquake of October 17, 1989, Liquefaction: U.S. Geological Survey Professional Paper 1551-B, Appendix A, pp. B287-B314.

Toppozada, T.R., and Parke, D.L., 1982a, Area damaged by the 1868 Hayward earthquake and recurrence of damaging earthquakes near Hayward: Proceedings of the Conference on Earthquake Hazards in the Eastern San Francisco Bay Area: California Division of Mines and Geology Special Publication 62, pp. 321-328.

Toppozada, T.R., and Parke, D.L., 1982b, Areas damaged by California earthquakes, 1900-1949: Annual Technical Report - Fiscal Year 1981-1982, California Division of Mines and Geology, Open File Report 82-17, 65 p.

Toppozada, T.R., Real, C.R., and Parke, D.L., 1981, Preparation of isoseismal maps and summaries of reported effects for pre-1900 California earthquakes: Annual Technical Report - Fiscal Year 1980-1981, California Division of Mines and Geology, Open File Report 81-11 SAC, 182 p.

Witter, R.C., Knudsen, K.L., Sowers, J.M., Wentworth, C.M., Koehler, R.D., and Randolph, C.E., 2006, Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, USGS Open File Report 06-1037, Scale 1:200,000.

Woodward-Clyde Consultants, 1986a, Preliminary Geotechnical Engineering and Seismic Exposure Study, Crocker Cogeneration Project, Crockett, California.

Woodward-Clyde Consultants, 1986b, Supplementary Geotechnical Studies – Western Portion of Crockett Cogeneration Plant, Crockett, California.

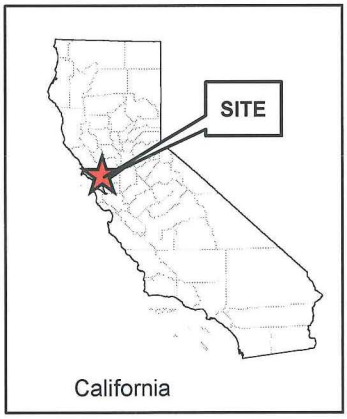
Woodward-Clyde Consultants, 1984, Preliminary Geotechnical Engineering Seismic Exposure Study, Crocker Cogeneration Project, Crockett, California.

Working Group on California Earthquake Probabilities (WGCEP), 2008, "The Uniform California Earthquake Rupture Forecast, Version 2, (UCERF 2)" USGS Open File Report 2007-1437, CGS Special Report 203, SCEC Contribution #1138.

Youd, T.L., and Hoose, S.N., 1978, Historic ground failures in Northern California triggered by earthquakes: U.S. Geological Survey, Professional Paper 993, 177 p.

Youd, T.L., and Perkins, D.M., 1978, Mapping of liquefaction induced ground failure potential: Journal of the Geotechnical Engineering Division, American Society of Civil Engineers, v.104, no.4, pp. 433-446.

# FIGURES

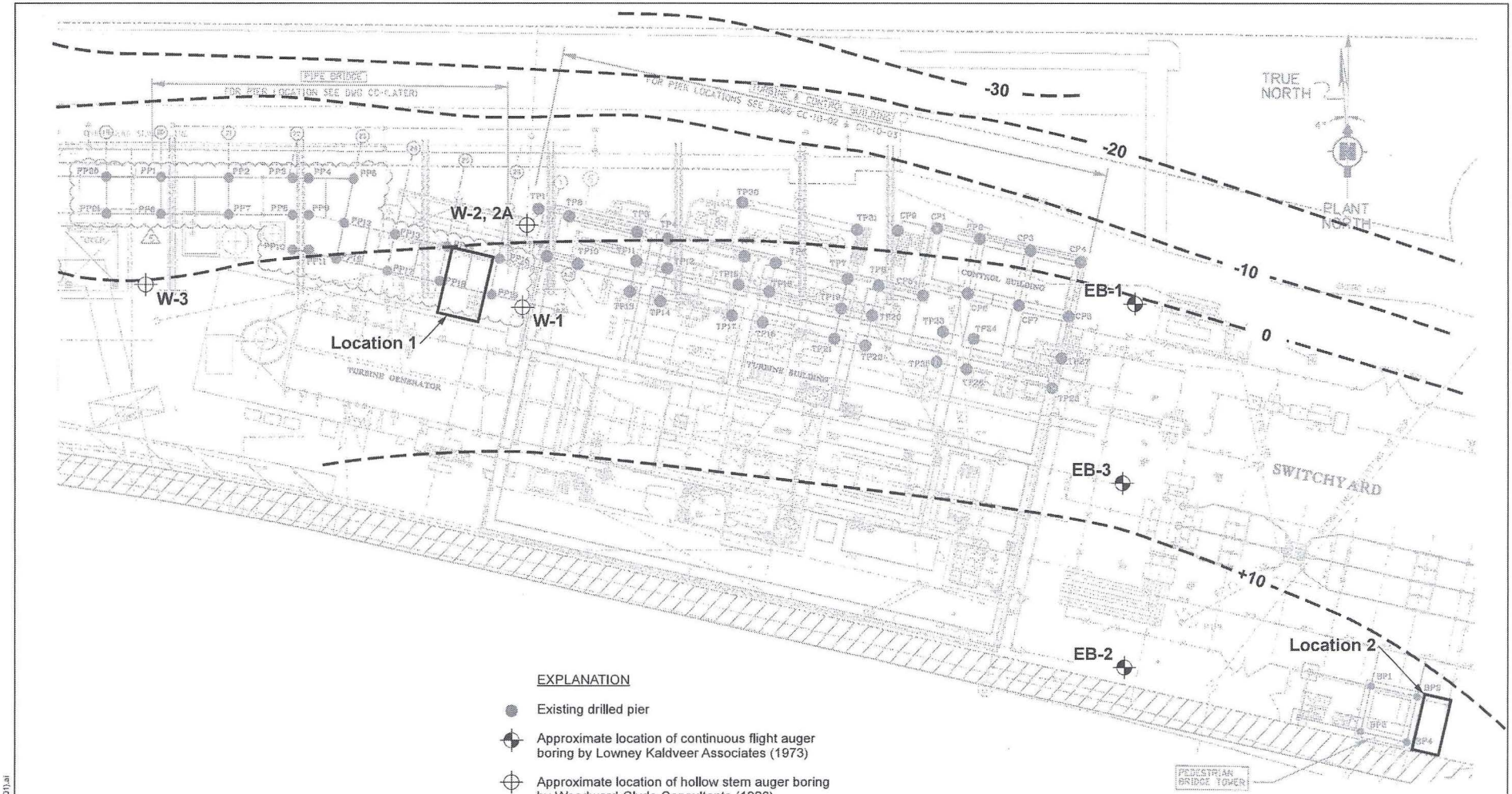




0 4,000 Feet

S:\OD11162010\task_c\11_1021_ger_fig_01crockett.mxd

SITE LOCATION MAP
Crockett Cogeneration Natural Gas Power Plant
Crockett, California

| By: JP | Date: 11/03/2011 | Project No. OD11162010 |
|---|---|---|
| amec | | Figure 1 |



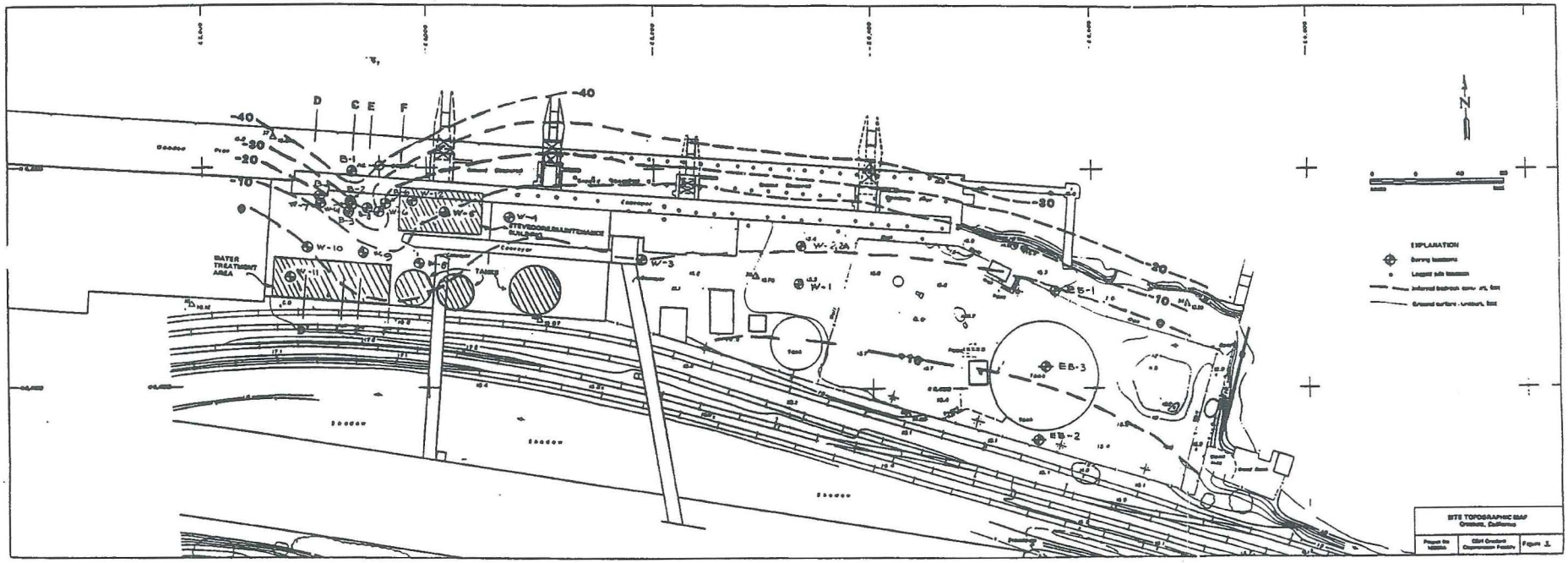

SITE PLAN OF EXISTING FACILITIES AND PROPOSED GAS COMPRESSOR LOCATIONS
Crockett Cogeneration Natural Gas Power Plant
Crockett, California

| By: | Date: 11/04/2011 | Project No. | OD11162010 |
|---|---|---|---|
| amec | | Figure | 2 |

S:\OD11\11621O\task_c\1_1021_ger_fig_02(01).ai

# APPENDIX A

Logs of Borings from Woodward, Clyde & Associates (1986b) and Lowney-Kaldveer Associates (1956)




NOTE: PROPOSED CONSTRUCTION IN WESTERN REGION OF COGENERATION SITE SHOWN CROSS HATCHED; SEE FLUOR'S PLOT PLAN DRAWING NO. 227009-A0-00-5000.

FIGURE 1

Project: CROCKETT COGENERATION PLANT
Crockett, California

# Log of Boring No. W-1

Date Drilled: January 13, 1986
Type of Boring: 8" Hollow Stem Auger
Hammer Weight: 140 lbs., 30" drop

Remarks: Two turns of rope on the rig cathead.

| Depth, ft | Samples | Blows/ft | MATERIAL DESCRIPTION | LABORATORY TESTS: Moisture Content, % | Dry Density, pcf | Unconfined Compressive Strength, psf |
|---|---|---|---|---|---|---|
| | | | Surface Elevation: Ground Surface | | | |
| | | | 5" or 6" Asphalt Concrete | | | |
| | | | AGGREGATE BASE: SILTY SAND AND GRAVEL (SM-SW) Light brown, dry, all grain sizes, gravel to 1" | | | |
| | | | FILL: Gravel, sand, silty clay | | | |
| | 1 | 9 | | | | 100% Recovery |
| | | | SILTY GRAVELLY CLAY (CL) Medium stiff, dark brown, wet, moderately plastic, with sand lenses and shiny metallic particles ( FILL ? ) | | | |
| | 2 | 7 | | | | 100% Recovery |
| | | | CLAYSTONE FRAGMENTS: Severely weathered, dark blue, mixed with dark blue clay | | | |
| | ST | | CLAY (CH) Medium stiff to stiff, blue-gray, wet, highly plastic, some rock fragments | | | |
| 10 | 3 | 15 | | | | |
| | | | BEDROCK: | | | |
| | 4 | | CLAYSTONE Friable, blue-gray, broken fragments become plastic with water | | | 85% Recovery |
| | 5 | | | | | 72% Recovery |
| | | | SILTSTONE AND SANDSTONE Hard, brown greenish-gray, interbedded, with multiple joints, iron staining | | | |
| | 6 | | | | | 72% Recovery |
| 15 | 7 | | (PANOCHE FORMATION) | | | 100% Recovery |
| | | | BOTTOM OF BORING @ 16 feet | | | |

LEGEND FOR ALL BORINGS:

- Soil sample obtained with a 24-in. modified California sampler
- Bedrock sample by rock coring
- Water level at time of drilling

| Proj. No. 16660A | Woodward-Clyde Consultants | Figure A-1 |
|---|---|---|

| Project | CROCKETT COGENERATION PLANT<br>Crockett, California | Log of Boring No. W-2 |
|---|---|---|

Date Drilled: January 13, 1986
Type of Boring: 6" Hollow Stem Auger
Hammer Weight: 140 lbs. 30" drop
Remarks: See "Remarks" in Figure A-1.

| Depth, ft | Samples | Blows/ft | MATERIAL DESCRIPTION | Moisture Content, % | Dry Density, pcf | Unconfined Compressive Strength, psf |
|---|---|---|---|---|---|---|
| | | | Surface Elevation: Ground Surface | | | |
| | | | 5" or 6" Asphalt Concrete | | | |
| | | | AGGREGATE BASE: SILTY SAND AND GRAVEL (SM-SW)<br>Light brown, dry, all grain sizes, gravel to 1" | | | |
| | | | FILL<br>Gravel, sand, silty clay | | | |
| | | | No recovery (piece of blacktop in tube) | | | |
| | | | | | | 75% Recovery |
| | | | CLAYSTONE FRAGMENTS<br>Weathered, friable, blue-gray | | | |
| | | | CLAY (CH) | | | 85% Recovery |
| | | | Soft to medium stiff, blue-gray, wet, highly plastic, with friable, dark blue-gray rock fragments (claystone). Wood fragments in the shoe | | | |
| | | | Wood, solid, seems from a pile or bulkhead, filling 12" of liners and the shoe | | | 100% Recovery |
| | | | BOTTOM OF BORING @ 12' | | | |
| | | | (Hole abandoned. Boring 2 is continued in Boring 2A, located some 6' west of Boring 2) | | | |

| Proj. No. 16660A | Woodward-Clyde Consultants | Figure A-2 |
|---|---|---|

Project: CROCKETT COGENERATION PLANT
Crockett, California

# Log of Boring No. W-2A

Date Drilled: January 13, 1986
Type of Boring: 6" Hollow Stem Auger
Hammer Weight: 140 lbs. 30" drop

Remarks: See "Remarks" on Figure A-1.

| Depth, ft | Samples | Blows/ft | MATERIAL DESCRIPTION | Moisture Content, % | Dry Density, pcf | Unconfined Compressive Strength, psf |
|---|---|---|---|---|---|---|
| | | | Surface Elevation: Ground Surface | | | |
| | | | 5" or 6" Asphalt Concrete | | | |
| | | | AGGREGATE BASE: SILTY SAND AND GRAVEL (SM-SW) Light brown, dry, all grain sizes, gravel to 1" | | | |
| | | | FILL<br>Gravel, sand, silty clay | | | |
| | | | CLAYSTONE FRAGMENTS<br>Weathered, friable, blue-gray | | | |
| | | | ATD<br>CLAY (CH)<br>Soft to medium stiff, blue-gray, wet, highly plastic, with friable, dark blue-gray claystone fragments | | | |
| | | | CLAYSTONE FRAGMENTS<br>Severely weathered, blue-gray mixed with blue-gray clay | | | |
| 15 | 1 | 50/3" | BEDROCK: | | | |
| | 2 | | SANDSTONE<br>Hard, brown, fine-grained. Top 10" or 12" only. Moderately weathered | | 100% Recovery | |
| | 3 | | SILTSTONE<br>Hard, greenish-gray, interbedded with brown sandstone, multiple joints, iron staining | | 90% Recovery | |
| 20 | 4 | | (PANOCHE FORMATION) | | 90% Recovery | |
| | | | BOTTOM OF BORING @ 22 feet | | | |

Proj. No. 16660A | Woodward-Clyde Consultants | Figure A-3

Project: CROCKETT COGENERATION PLANT
Crockett, California

# Log of Boring No. W-3

Date Drilled October 6, 1986 Remarks

Type of Boring 8" Hollow Stem Auger

Hammer 140 lb, 30" Drop

| Depth Ft | Samples | Blows/Ft | MATERIAL DESCRIPTION | Moisture Content, % | Dry Density, pcf | Unconfined Compress Strength, psf |
|---|---|---|---|---|---|---|
| | | | Surface Elevation approx. 12 feet | | | |
| | | | 6" Asphalt Concrete | | | |
| | | | AGGREGATE BASE, SANDY GRAVEL (GW)<br>Dry, red-brown | | | |
| | | | FILL<br>Clayey Gravel (GC), dry, dense, gray, with some sand | | | |
| 5 | 1 | 10 | | | | |
| | | ATD | | | | |
| | 2 | 12 | | | | |
| 10 | | | CLAYSTONE/SANDSTONE<br>with clay-filled seams, dark gray-green, highly fractured | | | |
| | 3 | 50/3" | BEDROCK:<br>CLAYSTONE/SANDSTONE<br>with clay-filled seams, dark gray-green, hard drilling | | | |
| 15 | | | becoming medium hard drilling, silty claystone with sandstone seams | | | |
| | 4 | 45/6" | | | | |
| 20 | | | BOTTOM OF BORING @ 18.5 FEET | | | |

LEGEND FOR ALL BORINGS

- 2" Diam. modified California sampler
- ATD — Water level at time of drilling
- 2-1/2" Diam. modified California sampler

25

30

Project: 16660A | Woodward-Clyde Consultants | Figure A-

| DRILL RIG Continuous Flight Auger | SURFACE ELEVATION --- | LOGGED BY [illegible] |
|---|---|---|
| DEPTH TO GROUNDWATER [illegible] | BORING DIAMETER 8 inches | DATE DRILLED 6/15/73 |

| DESCRIPTION AND REMARKS | COLOR | CONSIST | SOIL TYPE | DEPTH (feet) | JARS | SACKS | SPLIT SPOON | SHELBY TUBE | MOISTURE CONTENT % | DRY DENSITY lbs/cu.ft |
|---|---|---|---|---|---|---|---|---|---|---|
| GRAVELLY SAND, silty with some clay | reddish brown | very loose | SM-GM | 1 | x | | | | 12 | 98 |
| | | | | 2 | | | | | | |
| | | | | 3 | x | | | | 8 | 87 |
| | | | | 4 | | | | | | |
| SILT, gravelly and sandy with some clay | blue-green | stiff | ML-GM | 5 | x | | | | 15 | 9 |
| | | | | 6 | | | | | | |
| | | | | 7 | | | | | ▽ | |
| | | | | 8 | | | | | | |
| | | | | 9 | | | | | | |
| | | | | 10 | x | | | | 12 | 12 |
| SHALE, highly weathered and fractured with interbedded clay | dark gray | | BEDROCK | 11 | x | | | | 21 | 8 |
| | | | | 12 | | | | | | |
| | | | | 13 | | | | | | |
| | | | | 14 | | | | | | |
| (interbedded with weathered sandstone) | brown | | | 15 | x | | | | 24 | 29 |
| | dark gray | | | 16 | | | | | | |
| | | | | 17 | | | | | | |
| CLAYSTONE, with interbedded sandstone | dark gray & brown | | | 18 | | | | | | |
| | | | | 19 | x | | | | 14 | 100/7" |
| | | | | 20 | | | | | | |

LOWNEY · KALDVEER ASSOCIATES

Foundation/Soil/Geological Engineers

EXPLORATORY BORING LOG

55,000-BARREL FUEL STORAGE TANK
Crockett, California

| PROJECT NO | DATE | SHEET NO. | BORING NO. |
|---|---|---|---|
| 354-1 | June, 1973 | 1 OF 2 | EB-1 |

| | | |
|---|---|---|
| DRILL RIG [illegible] | SURFACE ELEVATION ---- | LOGGED BY [illegible] |
| DEPTH TO GROUNDWATER [illegible] | BORING DIAMETER 8 inches | DATE DRILLED 6/15/73 |

| DESCRIPTION AND REMARKS | COLOR | CONSIST | SOIL TYPE | DEPTH (feet) | JARS | SACKS | SPLIT SPOON | SHELBY TUBE | MOISTURE CONTENT % | PENETRATION RESISTANCE BLOWS/FT |
|---|---|---|---|---|---|---|---|---|---|---|
| CLAYSTONE with interbedded sandstone (Con't.) | Dark gray & brown | BEDROCK | | [illegible] | | | | | 14 | [illegible] |
| [illegible] = 24.3 feet<br><br>Notes: (1) The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.<br><br>(2) Water level recorded 3 hours after drilling. | | | | | | | | | | |

LOWNEY · KALDVEER ASSOCIATES

Foundation/Soil/Geological Engineers

EXPLORATORY BORING LOG

55,000-BARREL FUEL STORAGE TANK
Crockett, California

| PROJECT NO | DATE | SHEET NO. | BORING NO. |
|---|---|---|---|
| 354-1 | June, 1973 | 2 OF 2 | EB-1 |

| DRILL RIG | SURFACE ELEVATION | LOGGED BY |
|---|---|---|
| DEPTH TO GROUNDWATER | BORING DIAMETER | DATE DRILLED 6/15/73 |

| DESCRIPTION AND REMARKS | COLOR | CONSIST | SOIL TYPE | DEPTH (feet) | JARS | SACKS | SPLIT SPOON | SHELBY TUBE | MOISTURE CONTENT % | PENETRATION RESISTANCE BLOWS/FT |
|---|---|---|---|---|---|---|---|---|---|---|
| GRAVELLY SAND, clayey | [illegible] brown | [illegible] | SC-SC | 3 | X | | | | 14 | 15 |
| CLAY, gravelly and sandy with silt | [illegible] brown | [illegible] | CL-CL | 2 | X | | | | 17 | 13 |
| | | | | 4 | X | | | | 9 | 11 |
| SHALE, [illegible], weathered and fractured with interbedded claystone | dark gray | | [illegible]CK | 5 6 7 8 | | | | | ▽ | |
| SANDSTONE, highly weathered with interbedded claystone | yellowish brown | | | 9 10 11 12 13 | X | | | | 18 | 86/17" |
| CLAYSTONE | gray | | | 14 15 16 17 | X | | | | 10 | 76/9" |
| Note: (1) The stratification lines represent the approximate boundary between material types and the transition may be gradual. (2) Water level encountered 2 hours after drilling. | | | | | X | | | | 10 | 69/8" |
| Bottom of Boring = 17.5 Feet | | | | 18 | | | | | | |

LOWNEY · KALDVEER ASSOCIATES

Foundation/Soil/Geological Engineers

# EXPLORATORY BORING LOG

55,000-BARREL FUEL STORAGE TANK
Crockett, California

| PROJECT NO | DATE | SHEET NO | BORING NO |
|---|---|---|---|
| 354-1 | June, 1973 | 1 OF 1 | EB-2 |

| DRILL RIG | SURFACE ELEVATION | LOGGED BY |
|---|---|---|
| DEPTH TO GROUNDWATER | BORING DIAMETER | DATE DRILLED 6/15/73 |

| DESCRIPTION AND REMARKS | COLOR | CONSIST. | SOIL TYPE | DEPTH (feet) | JARS | SACKS | SHELBY TUBE | SHELBY PISTON | MOISTURE CONTENT % | PENETRATION RESISTANCE BLOWS/FT |
|---|---|---|---|---|---|---|---|---|---|---|
| SANDY CLAY, gravelly | Brown | [illegible] dense | CL-SC | 1 | x | | | | 8 | 25 |
| CLAY, gravelly and sandy with silt | Blue-green | stiff | CL-GC | 3 | x | | | | 12 | 11 |
| SHALE, highly weathered and fractured with abundant interbedded clay | dark gray | BEDROCK | | 5 | x | | | | 10 | 9 |
| | | | | 6 | | | | | ▽ | |
| | | | | 10 | x | | | | 20 | 4 |
| | | | | 11 | | | | | 13 | Pushed (1,200 psi) |
| CLAYSTONE with interbedded sandstone | gray & brown | | | 12 | x | | | | | 50/4" |
| | | | | 15 | | | | | | |
| | | | | 16 | x | | | | | 50/2" |
| Bottom of boring = 16.3 feet | | | | 17 | | | | | | |

Notes: (1) The stratification lines represent the approximate boundary between material types and the transition may be gradual.

(2) Water level recorded at the time of drilling.

LOWNEY · KALDVEER ASSOCIATES

Foundation/Soil/Geological Engineers

EXPLORATORY BORING LOG

55,000-BARREL FUEL STORAGE TANK
Crockett, California

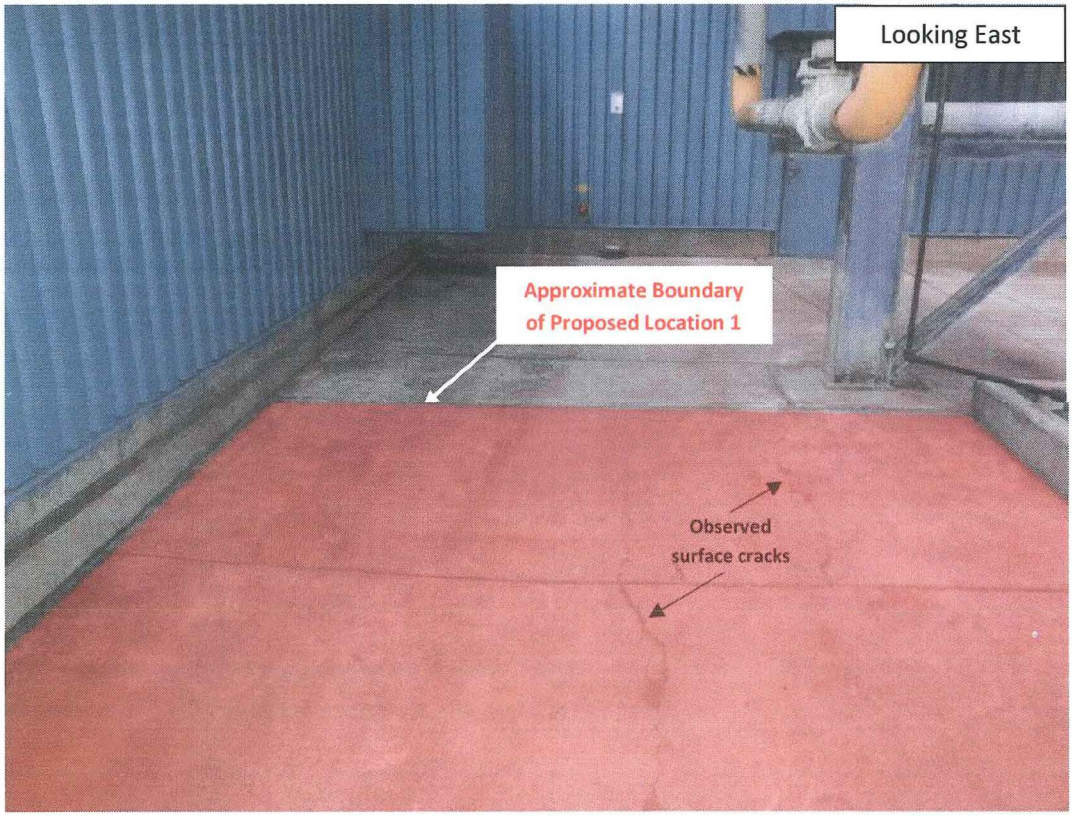
| PROJECT NO | DATE | SHEET NO. | BORING NO. |
|---|---|---|---|
| 354-1 | June, 1973 | 1 OF 1 | EB-3 |

## APPENDIX B

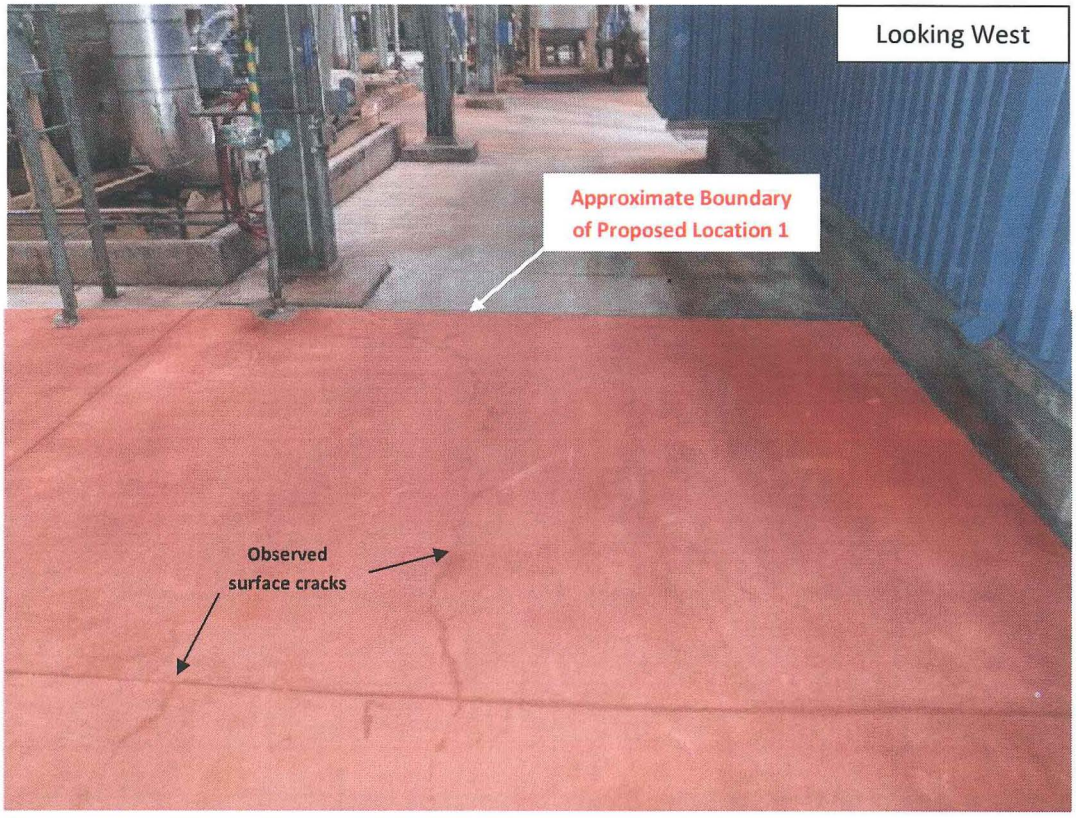
Photos of Proposed Locations taken October 19, 2011

## Location 1


Looking South
Approximate Boundary
of Proposed Location 1


Looking East
Approximate Boundary
of Proposed Location 1
Observed
surface cracks

# Location 1

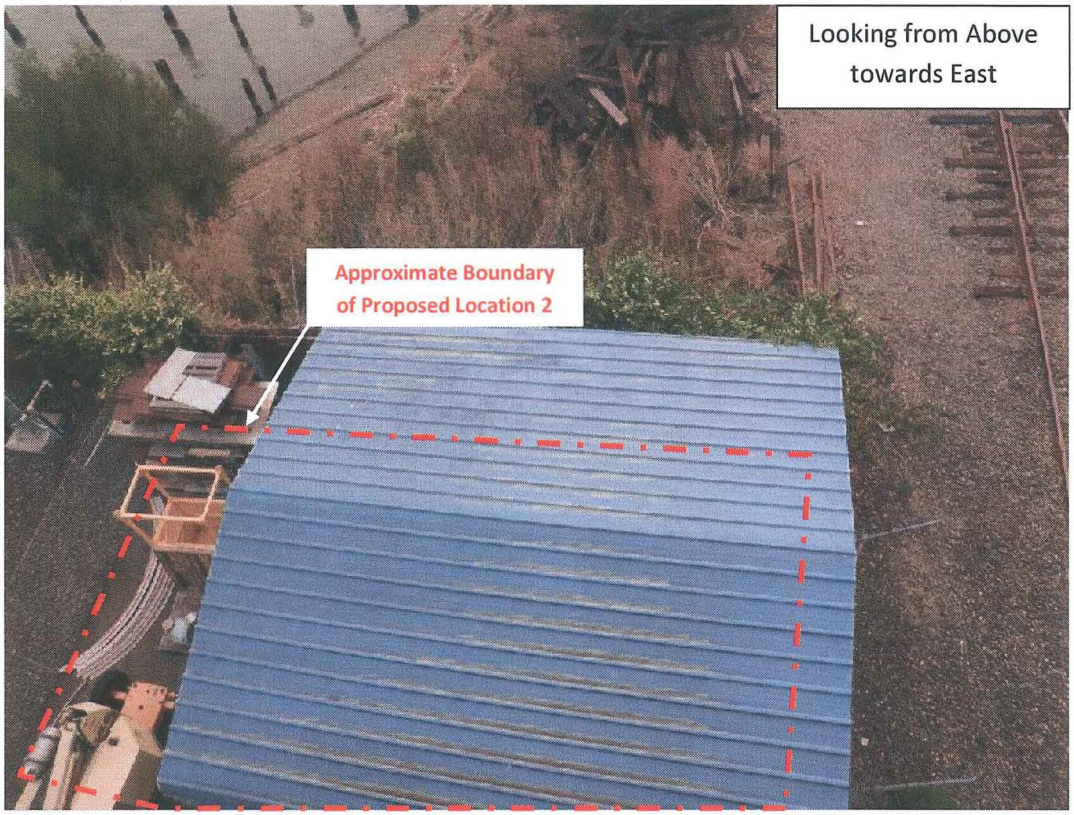

Looking West
Approximate Boundary
of Proposed Location 1
Observed
surface cracks

## Location 2


Looking South
Approximate Boundary
of Proposed Location 2


Looking Southwest
Approximate Boundary
of Proposed Location 2
JLG

## Location 2


Looking from Above towards East
Approximate Boundary of Proposed Location 2


Looking East
Proposed Location 2 Just Outside of Photo

# Report of
# Environmental Noise Evaluation

## Crockett Cogeneration Power Plant,
## Crockett,
## Contra Costa County,
## California

**For**
**Stoel Rives,**
**Sacramento, CA**

**By**
**Graham Custard, M.Sc., INCE**
**Shaw Environmental**
**Stoughton, MA**

**December 2011**

## Introduction

A gas-fired cogeneration Power Plant, of 240 MW capacity, was built in about 1993 at the east end of C&H Sugar refinery in the town of Crockett, Contra Costa, California. It is proposed to install compressor equipment at the power plant, of about 1200 HP capacity, in order to improve the continuity of the facility's gas supply. This report considers the current noise climate in the vicinity of the Plant and the noise impact of the proposed compressor.

The Power Plant occupies waterfront overlooking the Carquinez Strait in the lee of steeply rising ground to its south, southwest and southeast. Many of the dwellings in the town of Crockett are screened from the Plant by the topography and, immediately to the south, by a series of large sugar storage bins, or silos. The silos were modified in order to act as a continuous barrier to the sound emitted by the Plant. A railway, carrying passenger and goods traffic, runs east-west along the coast and alongside the refinery and Plant. Twin bridges on the west side of the refinery carry the I-80 highway across the water of Carquinez Strait. The Plant looks northwards across this water to dwellings of Glen Cove, about 3000 to 4000 feet away, which are part of the city of Vallejo. The Plant location is shown in Figure 1, for which the annotations are explained later.

The California Energy Commission (CEC) issued Noise Conditions of Certification in 1992 before the Power Plant was constructed. These Conditions required a noise survey to verify existing ambient noise levels in the vicinity of Crockett and across the water at Vallejo. Since this survey was conducted almost 20 years ago, a new noise assessment was undertaken in September 2011 to investigate the existing prevailing noise environment and how this may affect the noise impact and mitigation of the proposed gas compressor.

## Noise Descriptors and Criteria

In considering environmental noise, the terms 'sound' and 'noise' are used interchangeably, but noise usually refers to unwanted sound. The level of the noise or sound is measured in decibels, dB. When the effects of noise on people are considered, the levels are described in terms of A-weighted decibels, dBA, to represent the manner in which our ears respond to the frequency content (tones) of the sound. Levels expressed as dBA give more emphasis to the frequencies that we hear clearly, in particular those used for speech communication, while the less audible lower and higher frequency sounds are reduced in emphasis. The A-weighting is electronically applied in noise meter readings to obtain a total sound level in terms of dBA directly.

A consequence of human hearing is that a change of sound level by up to 3 dBA is not noticeable if the frequency composition is broadly similar before and after the change. An increase of 10 dBA in the sound level is perceived as being approximately twice as loud, and a reduction of 10 dBA is perceived as being half as loud as before.

Since noise in the environment can vary in level over the space of minutes or hours, various descriptors are available for quantifying sound levels with time. The most commonly encountered is the equivalent continuous level of sound, $L_{eq}$; it represents the average sound energy over the appropriate period of interest, which is typically several minutes to 1 hour. $L_{eq}$ is often used to indicate the potential of a sound to cause annoyance, but the level is easily affected by unwanted, transient sounds such as papers or trees blowing in the wind, wind gusts, dogs barking, closely passing cars in a road, and people talking.

Statistical values, such as $L_{10}$, $L_{50}$ or $L_{90}$ may also be used to represent sound levels exceeded for an appropriate percentage of time. $L_{90}$ is the level exceeded for 90% of the time and is least affected by inadvertent transients, and provides a good representation of the levels of sounds that are more continuous in nature, such as are encountered from distant traffic and power plant in continuous operation. $L_{90}$ is employed as a descriptor of an ambient or background noise level.

For time periods extending over 24 hours, the "Noise Elements" of local plans for Contra Costa County and the city of Vallejo refer to community noise in terms of a metric called the "day-night level", denoted as DNL or Ldn. This uses the average of hourly $L_{eq}$ values in the daytime period of 7am to 10pm, and also $L_{eq}$+10 from 10 pm to 7 am. The 10 dB penalty during night-time accounts for the greater potential for annoyance by external sounds when most people are resting or sleeping.

A continuous sound level of 53.5 dBA by day and night would result in a level of 60 dBA Ldn.

The Vallejo Noise Element has defined a "normally acceptable" level of 60 dBA Ldn outside residential properties, but with a discretion of 65 dBA in some situations (Policy 1). When approving new development, it requires that project-related increases should be no more than 10 dBA in non-residential areas. In residential areas the permitted increase is 5 dBA where the 'with-project' total is less than 60 dBA Ldn, or no more than 3 dBA where it exceeds 60 dBA Ldn.

Similarly, the Contra Costa County Noise Element sets a standard for outside noise levels in residential areas of 60 dBA Ldn (Noise Element Policy #11-2), but it does not appear to limit permitted increases for new projects.

**Noise Evaluation**

The Power Plant and surrounding area were visited on September 8th 2011 to explore the existing noise environment on site and in the surrounding community, and also to select appropriate receptor positions for measurement. Community noise measurements were carried out from the evening of September 8th to 10th 2011 when the Plant was understood to be running close to full capacity and hence in its noisiest condition.

Sound level measurements were carried out with a Rion NA-29E integrating octave band meter. The instrument meets the American National Standards Institute (ANSI) and the International Electrotechnical Commission (IEC) requirements for Type 1 accuracy . It was field calibrated before and after each session of measurements with a Bruel & Kjaer 4230 acoustic calibrator. The meter provided the measurements of $L_{eq}$, statistical data such as $L_{90}$, and frequency analysis of some of the sounds for possible future reference.

The meter and microphone were tripod-mounted, with the microphone at a height of 5 feet above the ground. Attended measurements were undertaken over periods of 15-minutes, which provided a good estimate of the hourly noise levels in the community, but also an opportunity to measure at several receptor positions within a similar time frame. Attended measurements were employed, rather than unattended automatic monitoring, because it was important to gain a subjective impression of the sounds heard at each position and to note extraneous sounds that may have influenced the recorded values.

The Report of Final Decision by the California Energy Commission, 1993, identified several useful survey positions in the Crockett area and one in the Glen Cove area, which influenced the choice of measurement positions for this latest series of measurements. Positions selected in Crockett were:

- adjacent to the Plant on Loring Avenue at the bottom of Jackson St. (referred to as Loring/Jackson),
- southwest of the refinery at the top of West St. where it meets Edwards Ave. (West/Edwards),
- southeast of the plant on higher ground at the junction of Pomona St. and Bishop Rd. (Pomona/Bishop),

- also southeast of the plant at the top of the hill in Emerson Ave close to the junction with Baldwin Ave., (Baldwin/Emerson), previously described as Crolona Heights.

In Glen Cove, two readily accessible locations were chosen which had direct view of the Plant:

- the footpath adjacent to the marina and new dwellings at the bottom of Chartmaster Drive, and
- on South Regatta Drive where new dwellings have been built.

These positions are shown in Figure 1, annotated by a letter as described in Table 1 (see below). During the course of the survey, it was apparent that only three positions are helpful for assessing the noise impact of the addition of the proposed compressor to the existing Plant: Loring/Jackson on the east side of the Plant, and across the water, Chartmaster and South Regatta. This is discussed later.

**Measurements and Results**

The noise measurements are summarized in Tables 1 and 2. Details of all the measurements taken are provided in Appendix A.

Table 1 describes the ambient sound levels in terms of $L_{90}$, which is the level exceeded for 90% of the time. This provides a baseline level as a result of continual, steady sounds, such as sounds emanating from the Plant, the sugar refinery, and which also come from road traffic using the I-80 bridges. This level is least affected by intermittent sounds, such as train horns and passing vehicles in nearby roads.

**Table 1 Receptor Notation (see Figure 1) and existing ambient sound levels $L_{90}$, dBA**

| Notation (Fig. 1) | Road or Intersection | Location relative to power plant | Ambient sound levels, $L_{90}$ dBA | |
|---|---|---|---|---|
| | | | day | night |
| R | S REGATTA | Across the water, N of plant | 52.0 | 48.4 |
| C | CHARTMASTER | Across the water, NE of plant | 51.7 | 49.9 |
| L | LORING/JACKSON | Adjacent to plant on the east side | 51.9 | 51.4 |
| W | WEST/EDWARDS | SW of plant at top of hill | 57.5 | 55.4 |
| P | POMONA/BISHOP | SE of plant up hill | 47.6 | 45.9 |
| B | BALDWIN/EMERSON | SE of plant at top of hill | 49.8 | 47.1 |

Extensive noise control engineering had been employed for the design and construction of the Power Plant in order to meet the Noise Conditions of Certification. Consequently, with the Plant operating at relatively quiet levels compared with a conventional 240 MW power station, the noise environment in its vicinity has been found to be dominated mostly by other noise sources.

For example, southwest of the Plant, at the top of West St. (West/Edwards), it is the I-80 bridge traffic and the sugar refinery which dominate the noise. The sound from the I-80 bridge also carries eastwards as a significant source on the high ground southeast of the power plant (at Pomona/Bishop and Baldwin/Emerson), where some sound from the sugar refinery is also audible. Across the water to the north, the I-80 bridge traffic is also very significant, the sugar refinery is clearly audible and the power plant is best described as only scarcely audible or not audible at all. It is only adjacent to the plant, at Loring/Jackson, that the power plant is clearly audible, but within its design limit of 52 dBA.

Table 1 shows that, at night, the ambient level everywhere is generally less than 50 dBA, except at the top of West St. (West/Edwards), and adjacent to the power plant (Loring/Jackson).

Table 2 describes the sound levels in terms of Leq, which is used for defining the 24-hour Ldn value. Leq is usually a few decibels higher than L90 because of variations and, more significantly, by extraneous sounds such as passing vehicles.

**Table 2 Existing Sound Levels, $L_{eq}$, for determining Ldn**

| Notation | Location | $L_{eq}$ levels, dBA | | | Notes of sound sources |
|---|---|---|---|---|---|
| | | Ld (day) | Ln (night) | Ldn | |
| R | S REGATTA | 58.1 | 52.9 | 60.5 | Intermittent sounds of occasional passing cars on road and infrequent distant train horns from railway on south side, even at night. Steady sound from sugar refinery and I-80 bridge traffic which were clearly audible. Power plant was scarcely audible occasionally, but not audible most times. |
| C | CHARTMASTER | 53.3 | 51.1 | 57.9 | I-80 bridge traffic predominates, plus some sound occasionally from the water's edge. Occasional train horns even at night. Steady sound from sugar refinery, but power plant could not be distinguished, hence was not audible. |
| L | LORING/JACKSON | 54.4 | 53.0 | 59.6 | Intermittent sounds of an occasional passing vehicle along the road in the daytime, train horns and wind chimes and some sounds from within dwellings. Steady sound dominated by sugar refinery and power plant which were both clearly audible. |
| W | WEST/EDWARDS | 60.2 | 57.1 | 64.1 | Continual sounds of I-80 bridge traffic and sugar refinery, with occasional train horns. Power plant not audible. |
| P | POMONA/BISHOP | 54.5 | 47.1 | 55.7 | Intermittent sounds of occasional passing vehicles in day time, not at night. |
| B | BALDWIN/EMERSON | 51.8 | 48.9 | 55.9 | Continual sounds of I-80 bridge traffic; sugar refinery slightly audible, power plant not audible. |

West/Edwards

The top of West St. is close to, and looks down upon, the I-80 bridge traffic. It also looks down on, and is even closer to, the sugar refinery. Both sources are clearly audible at this position and dominate the noise there. The power plant is not audible because it is largely screened by the topography, the buildings of the sugar plant, and it produces less noise than the other nearby sources.

Loring/Jackson

The position of Loring/Jackson is the closest of all measurement locations to the power plant, in front of the dwellings in Loring Avenue, immediately to its south-east side, where there is no extra benefit of screening by the large silos. Although there are occasional passing cars, the traffic here is very infrequent. Train horns are loud but infrequent and trains mostly sound off towards the west end of the sugar refinery as they approach the crossing, which is screened by the silos. Therefore the train horns do not make a significant contribution to the measured Leq over a relatively long period of 15 minutes to 1 hour. The underlying continuous sound is attributable to the sugar refinery and the power plant combined, at a level from 51 to 52 dBA $L_{90}$. This is within the reported design target of 53 dBA at this position, confirmed also by the night-time Leq value which averages to 53 dBA (see Table 2). It is understood that the power plant was running at close to full output at this time.

Pomona/Bishop and Baldwin/Emerson

At the locations of Pomona/Bishop and Baldwin/Emerson on the rising ground to the southeast of the power plant, the fairly quiet ambient noise is dominated by the I-80 bridge which was clearly visible and, at the time, upwind from both locations. The sugar refinery was slightly audible and the power plant was inaudible at these locations. During the daytime, frequent road traffic at this junction increased the $L_{eq}$ value by about 4 dBA compared with the ambient of 47.6 dBA $L_{90}$.

Baldwin Ave just below the junction of Baldwin/Emerson has a direct view of the top of the exhaust stack of the power plant, but its sound was not audible compared with sounds of the I-80 bridge traffic and, to a lesser extent, the sugar refinery.

South Regatta

South Regatta has a clear view of the Plant, but it was only scarcely audible sometimes and not audible most of the time. Both the sugar refinery and the I-80 bridge traffic were clearly audible at all times. Occasionally, train horns could be heard distinctly as trains proceeded along the coastal track beside the refinery. $L_{eq}$ levels were enhanced above $L_{90}$ levels by vehicles

occasionally passing along the road, mostly in the daytime. This sound of local traffic is most responsible for elevating noise above 60 dBA Ldn at this position.

The ambient noise is likely to be greatly affected by wind conditions: a wind from the southwest and across cool water would tend to enhance sound from the bridge at this position, which was believed to be the case at the time of the measurements.

Chartmaster

The Chartmaster position is a footpath at the waterfront end of Chartmaster Drive. The measurement position was adjacent to the marina and in front of new dwellings. There is sometimes the sound of lapping water on the shore, but the noise is mostly dominated by the I-80 bridge traffic at all times of day and night, together with the sugar refinery. The power plant was inaudible at this position at all times of observation. It is believed that it should be retained as a receptor position not only because it is the closest point to the power plant on the north side of the water, but wind conditions might on some occasions make the plant slightly audible as was found at South Regatta; the design of the proposed new plant should take this into account. (A light wind more from the southwest, or very calm and cool water conditions may cause the sound to carry to this location more easily.)

Ldn values at South Regatta and Chartmaster receptors imply that a 3 dBA increase would be permitted under the Vallejo Noise Element if new equipment were introduced to the power station.

Choice of Receptors for this study

Although the Pomona/Bishop and Baldwin/Emerson locations may represent the existing noise climate for the south side of Crockett, and were advocated as useful receptors by the CEC prior to building the Plant, their screening from the Plant by the terrain, trees and other dwellings makes them of less importance in determining the noise impact of the proposed new equipment. Also, the top of West St. is dominated completely by other sound sources and the Plant could not be audible there. Therefore, of the four receptor locations in Crockett, it is only Loring/Jackson that is useful for evaluating the environmental impact of the proposed new equipment and where the compressor has the potential to be heard, assuming no mitigation precautions were applied. Across the water on the north side of the Carquinez Strait, the locations of South Regatta and Chartmaster have clear line of sight to the Plant and are therefore useful for evaluating the impact of the new equipment.

Weekend Sound Levels

Table 3 shows noise readings obtained on Saturday September 10th. Early in the morning, it was found that the ambient sound had reduced considerably, which is attributed to less noise from the sugar refinery (there was still much traffic on the I-80). It is clear from the noise reading at Loring/Jackson that less noise was also coming from the power plant in response to the lower load at the sugar refinery. Measurements later in the day were affected by increasing gusts of wind, especially across the water and at Loring/Jackson (wind blowing in the trees) and were not reliable after about 12:00. These readings further reinforce the strong significance of the sugar refinery in affecting the total noise at the receptors, compared with the Power Plant, during weekdays. It is understood that the new compressor would not be required for weekend duties.

**Table 3 Sound Levels Saturday, Leq and L90**

| Notation | Location | Sound levels, dBA | | | Notes of sound sources |
|---|---|---|---|---|---|
| | | | $L_{eq}$ | $L_{90}$ | |
| R | S REGATTA | 05:00 | **46.8** | **45.8** | |
| | | 12:00 | 58 | 50.7 | Affected by wind gusts |
| C | CHARTMASTER | 05:30 | **47** | **46** | |
| L | LORING/JACKSON | 06:00 | **49.6** | **48.6** | |
| | | 12:30 | 52.7 | 51.8 | Affected by wind gusts |
| W | WEST/EDWARDS | 06:00 | **52.4** | **51.6** | |
| | | 13:00 | 54.8 | 53.6 | Affected by wind gusts |
| P | POMONA/BISHOP | 07:00 | **46.8** | **45.1** | |
| | | 13:30 | **58.9** | **48.3** | Local road vehicles increased Leq |
| B | BALDWIN/EMERSON | 07:30 | **49.2** | **47.6** | |
| | | 14:00 | **48.8** | **47.6** | |

## Predictive Noise Modeling

SoundPlan 7.1 has been used to model the local terrain around the existing power plant, including the coastline of Glen Cove across the water, and the proposed compressor installation (in a building) with relevant surrounding buildings of the existing Plant. The design details of the proposed compressor pump and associated pipework are not presently known; it is understood this will be a reciprocating compressor of approximately 1250 HP capacity, contained within a noise insulated building with its associated pipework. The building is presently at the design stage.

Noise details of a reciprocating compressor have been scaled down from a known sound power spectrum of a 7200 HP compressor (the sound power is a measure of the total sound emitted by the equipment in all directions). The sound power level applied to the model has conservatively assumed 1500 HP. The sound power is therefore assumed to be 111 dBA with its appropriate frequency spectrum (see Table 4).

**Table 4 Sound Power Levels for Reciprocating Compressor**

| Compressor Rating | Sound Power Levels, dB | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Octave Band, Hz -> | 31.5 | 63 | 125 | 250 | 500 | 1 k | 2 k | 4 k | 8 k | dBA |
| 7200 HP | 119 | 123 | 115 | 110 | 111 | 113 | 112 | 105 | 86 | 118 |
| 10LOG(1500/7200) | -6.8 | -6.8 | -6.8 | -6.8 | -6.8 | -6.8 | -6.8 | -6.8 | -6.8 | -6.8 |
| 1500 HP | 112 | 116 | 108 | 103 | 104 | 106 | 105 | 98 | 89 | 111 |

There are several important issues which will mitigate the sound from the compressor and piping equipment by location (see Figure 2):

- It will be screened on the north side by the existing boiler feed pump building;
- It will be screened on the east side by the main turbine building and the land topography;
- It will be screened on the south side by the HRSG boilers and sugar silos and topography;
- It will be partly screened on the west side by the auxiliary boilers and topography;

The above have an important bearing on reducing the noise from the proposed equipment, but additionally:

- It will be enclosed in a sound reducing building;
- Its hours of operation are understood to be weekday daytime only, from about noon to 1800 hrs.

The reduced operating hours would result in no night-time penalty of 10 dB in the Ldn calculation for the new equipment.

At the time of writing, the compressor details, building enclosure and pipe arrangement have not been finalized, but a very conservative calculation in SoundPlan 7.1 assumes the following:

- Sound power of 111 dBA, as shown in Table 4;
- Enclosure in a building of 22g sheet metal with 4 inch thick internal sound absorption;
- Assumption of an average sound absorption within the building of 0.3 (a conservative estimate) with no extra attenuation added for the inside-to-outside reduction due to semi-reverberant environment inside the building (this is equivalent to including a 3 dB design margin in the data).

The noise level within the building is assumed, for the present therefore, to be approximately 104 dBA, which is a conservative situation.

SoundPlan has determined the following sound levels at the key receptors, shown in Table 5, for the compressor only.

**Table 5 Predicted Sound Levels at Key Receptors, Leq dBA (Ld, daytime) for Continuous Operation of the Compressor Equipment Only.**

| Notation | Location | Predicted Sound Levels due to Compressor Only Ld (day) |
|---|---|---|
| R | S REGATTA | 28.0 |
| C | CHARTMASTER | 35.7 |
| L | LORING/JACKSON | 32.6 |

Since the predicted levels at the receptors are more than 10 dBA less than the measured levels, there is no increase to the total noise, as shown in Table 6. This situation would apply for the compressors running by day, or even if they were to run at night. A visual presentation of noise contours for the compressor only noise is shown in Figure 3.

**Table 6 No Impact Change in Ldn at the Key Receptors**

| Notation | Location | Existing Leq levels, dBA | | | Leq Total for Existing Plus Compressor, dBA | | | Change |
|---|---|---|---|---|---|---|---|---|
| | | Ld (day) | Ln (night) | Ldn | Ld (day) | Ln (night) | Ldn | Ldn |
| R | S REGATTA | 58.1 | 52.9 | 60.5 | 58.1 | 52.9 | 60.5 | 0 |
| C | CHARTMASTER | 53.3 | 51.1 | 57.9 | 53.3 | 51.1 | 57.9 | 0 |
| L | LORING/JACKSON | 54.4 | 53.0 | 59.6 | 54.4 | 53.0 | 59.6 | 0 |

Therefore, on the basis of comparing A-weighted sound levels, it is concluded that the proposed new compressor equipment would have no impact at the key receptors.

A review of the predicted daytime octave frequency band spectra (see Table 7) also indicates that there would be no impact at the receptors. Although there is a slight increase in the total noise at low frequencies of 31.5 to 125 Hz, the increase in each octave band is less than 3 dB, which would not be heard.

The ambient noise levels in Table 7 are the average daytime level $L_{90}$ measured at each of the three receptors. The night-time octave band spectra are very similar (within the error expected with this type of measurement) and would present a similar conclusion if the compressor were run at night.

**Table 7 Predicted Increase in Total Noise at Key Receptors in Octave Frequency Bands**

| | | Sound Levels, dB | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Notation** | | **31.5** | **63** | **125** | **250** | **500** | **1 k** | **2 k** | **4 k** | **8 k** |
| R | ambient | 24 | 34 | 40 | 41 | 44 | 45 | 40 | 32 | 22 |
| | 1500 HP | 12 | 25 | 21 | 18 | 18 | 14 | 4 | | |
| | Total | 24 | 35 | 40 | 41 | 44 | 45 | 40 | 32 | 22 |
| | Difference | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | |
| C | ambient | 26 | 36 | 38 | 40 | 45 | 46 | 40 | 29 | 19 |
| | 1500 HP | 19 | 33 | 29 | 26 | 25 | 23 | 15 | | |
| | Total | 27 | 38 | 39 | 40 | 45 | 46 | 40 | 29 | 19 |
| | Difference | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | |
| L | ambient | 26 | 37 | 43 | 44 | 48 | 47 | 42 | 34 | 22 |
| | 1500 HP | 15 | 30 | 20 | 12 | 11 | 16 | 14 | 5 | 15 |
| | Total | 26 | 38 | 43 | 44 | 48 | 47 | 42 | 34 | 22 |
| | Difference | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | |

## Conclusion

For the present stage of design, the following has been concluded:

- The assumptions applied to the model are conservative and include, effectively, a 3 dB design margin in the calculation of sound emitted by the compressor building walls;
- The compressor assumption has been conservatively made for a 1500 HP reciprocating model, although a 1250 HP model is anticipated in the final design;
- The compressor is located behind existing buildings and therefore is less likely to create a noise impact than for an unsheltered or unscreened building;
- The compressor is predicted to produce at least 10 dBA less noise than already exists at the key receptors. Therefore it will have no impact at these receptors.

Further information is anticipated concerning building design, dimensions, compressor equipment and pipework which can be used to refine the model. However, the degree of conservatism built into the present model indicates that no significant impact is likely at the key receptors.

**Figure 1 Map of Local Area Around the Power Plant**

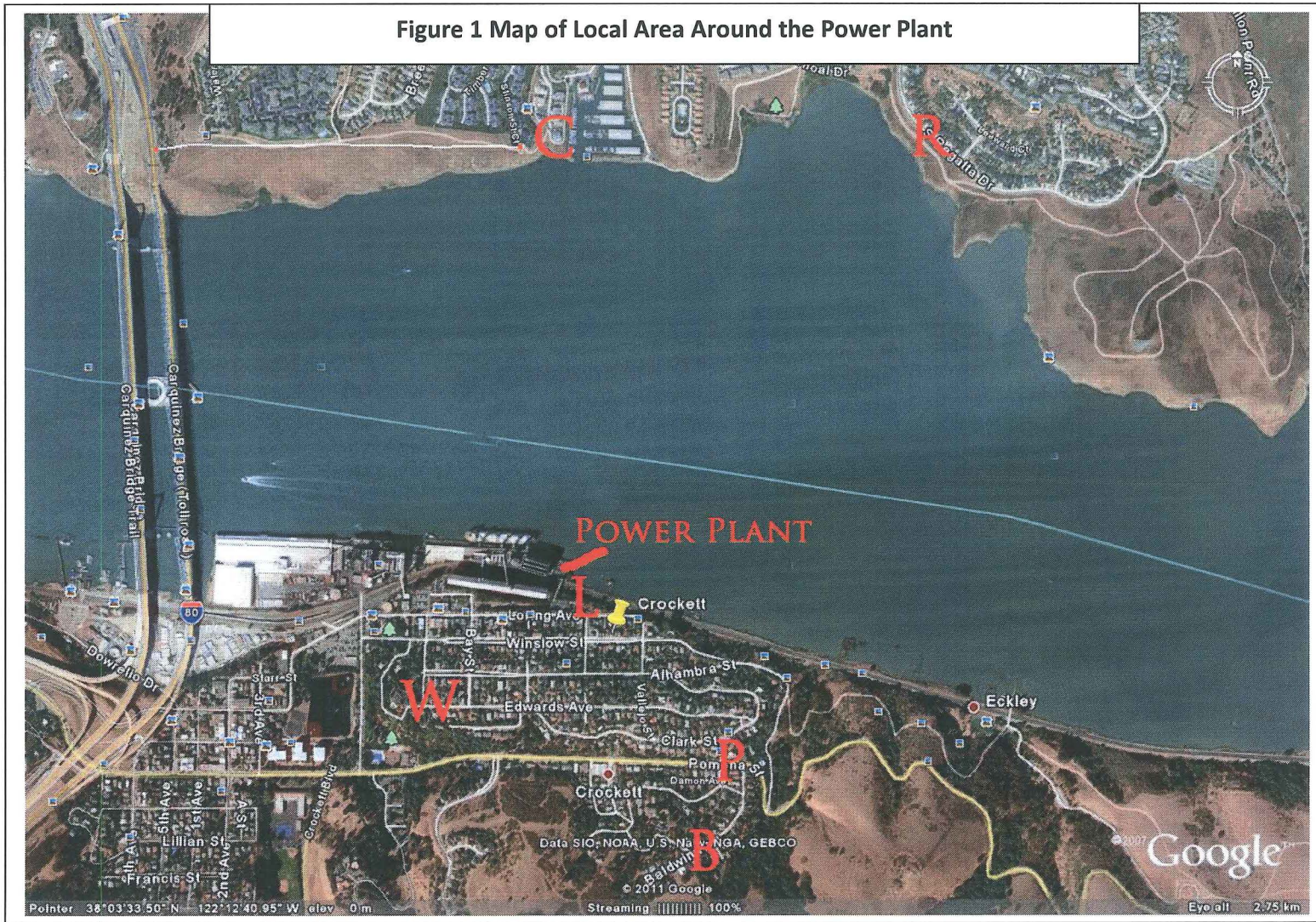


**Figure 2 Existing Plan of Compressor Location and Buildings**

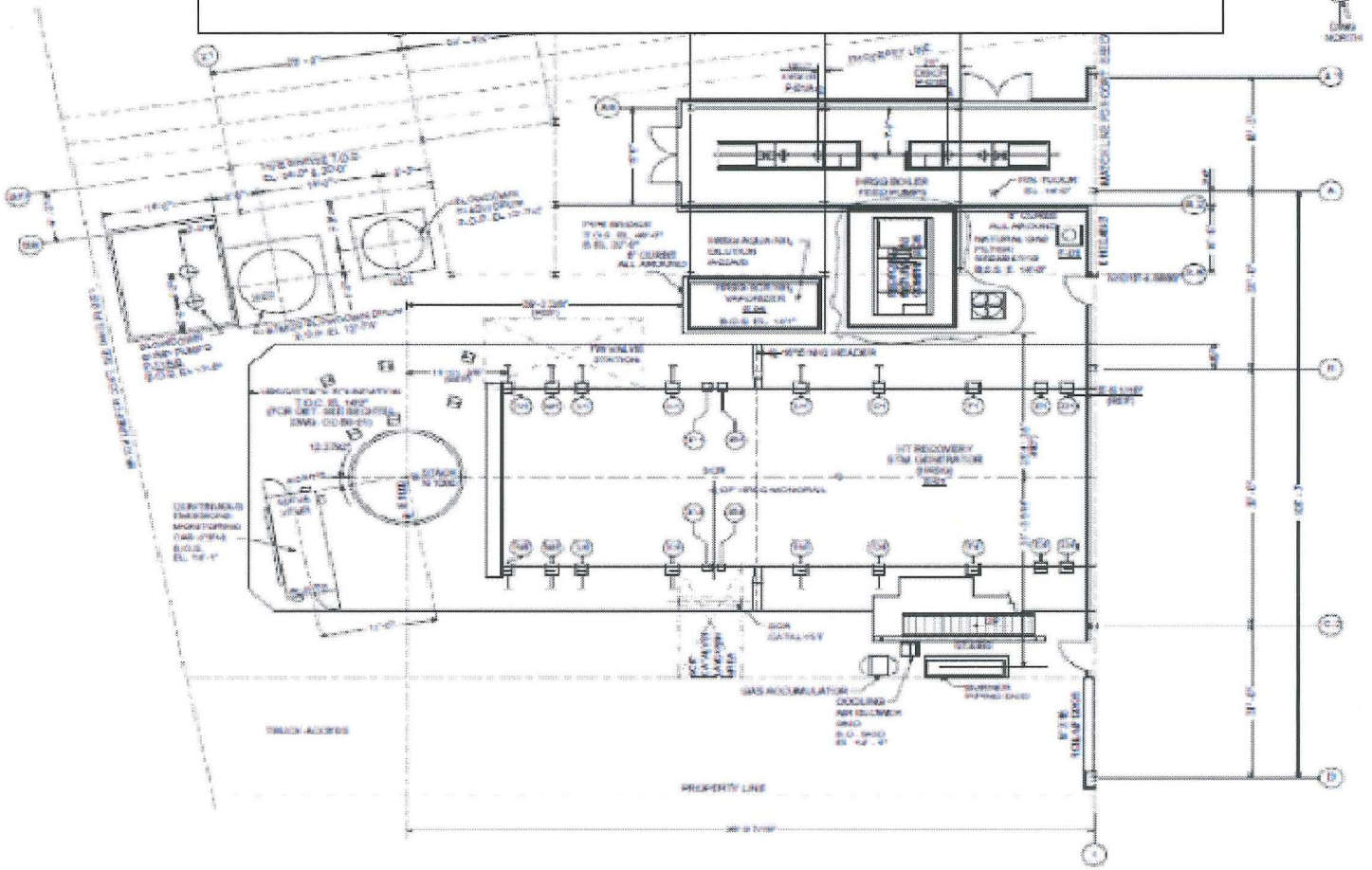
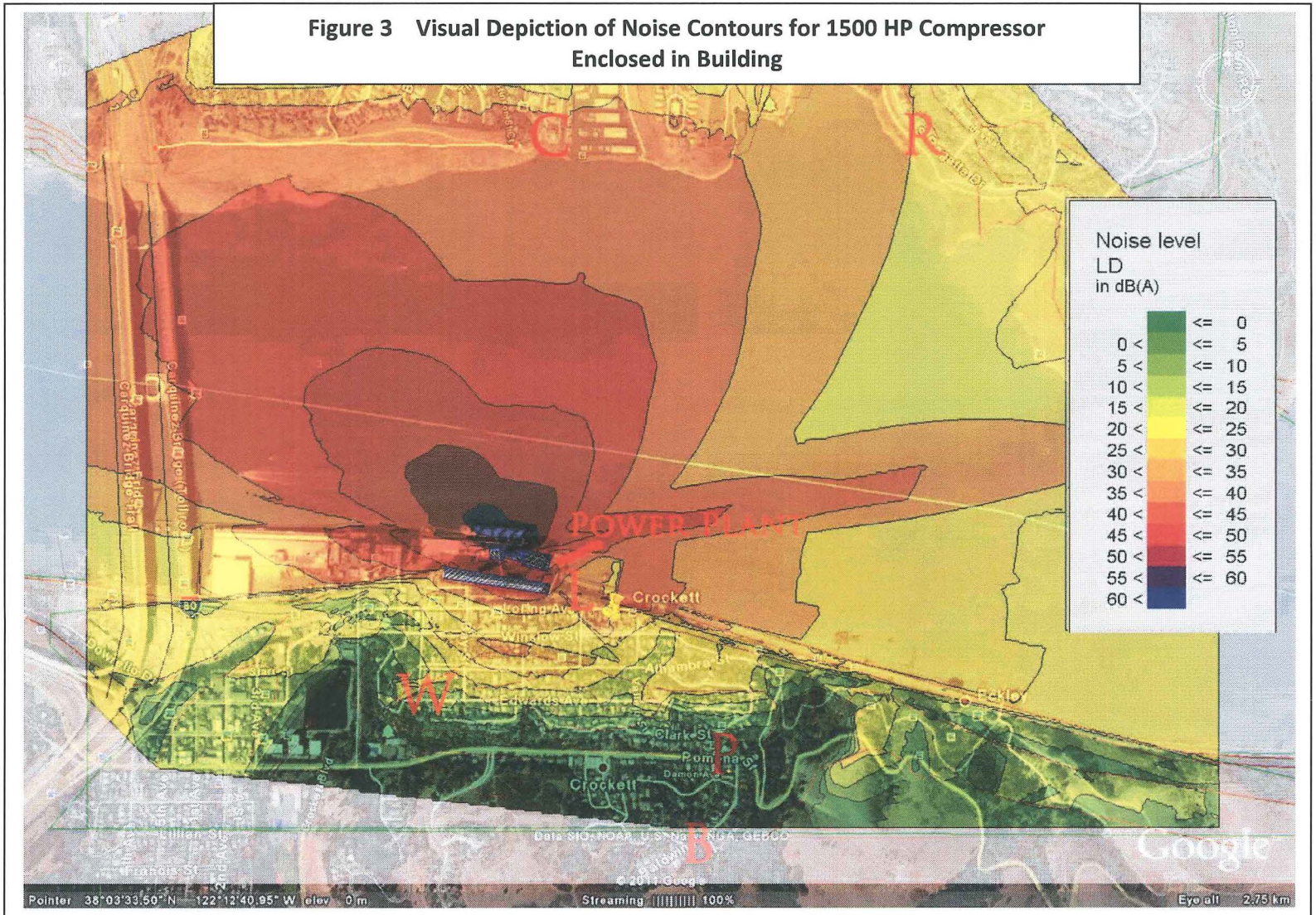


**Figure 3 Visual Depiction of Noise Contours for 1500 HP Compressor Enclosed in Building**



## APPENDIX A

## NOISE READINGS

= day
= night

S REGATTA

| | | Leq | Leq | L90 | L90 | Frequency Spectrum, L90 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **dBA** | ave | **dBA** | ave | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Fri 9th | 2230 | 55.4 | | 49.2 | | 25 | 32 | 39 | 41 | 43 | 44 | 39 | 34 | 25 |
| | 1:30 | 50.5 | | 47.8 | | | | | | | | | | |
| | 4:30 | 50.8 | 52.9 | 48.1 | 48.4 | | | | | | | | | |
| | 8:00 | 58.5 | 58.1 | 50 | 52.0 | 24 | 34 | 40 | 41 | 44 | 45 | 40 | 32 | 22 |
| | 12:30 | 54.4 | | 50.5 | | | | | | | | | | |
| | 17:30 | 58.1 | | 51.3 | | | | | | | | | | |
| | 20:30 | 54.6 | | 51.2 | | | | | | | | | | |
| | | **Ldn =** | **60.5** | | | | | | | | | | | |
| 0500 Sat | | 46.8 | | 45.8 | | 20 | 30 | 38 | 39 | 40 | 40 | 34 | 26 | 15 |
| 1200 | wind | 58 | | 50.7 | | | | | | | | | | |

| CHARTMASTER | | **Leq** | Leq | **L90** | L90 | Frequency Spectrum, L90 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **dBA** | ave | **dBA** | ave | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| Fri 9th | 2300 | 52.2 | | 50.4 | | 25 | 35 | 38 | 41 | 45 | 45 | 40 | 30 | 21 |
| | 1:00 | 50.8 | | 49.7 | | 24 | 39 | 38 | 40 | 44 | 45 | 40 | 30 | 19 |
| | 4:00 | 50.2 | 51.1 | 49.5 | 49.9 | | | | | | | | | |
| | 8:30 | 53.3 | 53.3 | 50.2 | 51.7 | 26 | 36 | 38 | 40 | 45 | 46 | 40 | 29 | 19 |
| | 12:00 | 51.5 | | 50.5 | | | | | | | | | | |
| | 17:00 | 51.7 | | 50.7 | | | | | | | | | | |
| | 20:00 | 51.3 | | 50.2 | | | | | | | | | | |
| | | **Ldn =** | **57.9** | | | | | | | | | | | |
| 0530 Sat | | 47 | | 46 | | 20 | 30 | 38 | 39 | 40 | 40 | 34 | 26 | 15 |
| 1230 | wind | | | | | | | | | | | | | |

| LORING/JACKSON | | **Leq** | Leq | **L90** | L90 | Frequency Spectrum, L90 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **dBA** | ave | **dBA** | ave | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| Thur 8th | 17:30 | 53.5 | | 51.4 | | 26 | 37 | 42 | 42 | 46 | 46 | 40 | 31 | 20 |
| Fri 9th | 0:00 | 53.1 | 53.0 | 51.8 | 51.4 | 26 | 36 | 41 | 43 | 47 | 46 | 43 | 32 | 18 |
| | 3:30 | 52.8 | | 51 | | | | | | | | | | |
| | 10:00 | 56.5 | 54.4 | 52.8 | 51.9 | 26 | 37 | 43 | 44 | 48 | 47 | 42 | 34 | 22 |
| | 14:00 | 53.2 | | 51.3 | | 27 | 37 | 44 | 42 | 46 | 45 | 39 | 30 | 18 |
| | 19:00 | 53.5 | | 52 | | | | | | | | | | |
| | | **Ldn =** | **59.6** | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 0600 | Sat | 49.6 | | 48.6 | | 24 | 35 | 40 | 40 | 44 | 42 | 37 | 29 | 16 |
| 0800 | wind | 52.7 | | 51.8 | | | | | | | | | | |

WEST/EDWARDS

| | | Leq | Leq | L90 | L90 | Frequency Spectrum, L90 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | dBA | ave | dBA | ave | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| Thur 8th | 18:00 | 61.6 | | 57.2 | | 26 | 38 | 46 | 47 | 51 | 54 | 48 | 33 | 21 |
| Fri 9th | 0:30 | 57.1 | 57.1 | 55.9 | 55.4 | 26 | 38 | 48 | 49 | 51 | 53 | 47 | 36 | 24 |
| | 2:00 | 57 | | 54.8 | | | | | | | | | | |
| | 11:30 | 61.1 | 60.2 | 58.7 | 57.5 | | | | | | | | | |
| | 15:30 | 57 | | 56.1 | | | | | | | | | | |
| | 18:30 | 59.9 | | 57.6 | | | | | | | | | | |
| | | **Ldn =** | **64.1** | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 0600 Sat | | 52.4 | | 51.6 | | 22 | 34 | 39 | 42 | 45 | 48 | 43 | 29 | 15 |
| 1300 Sat | | 54.8 | | 53.6 | | | | | | | | | | |

POMONA/BISHOP

| | | Leq | Leq | L90 | L90 | Frequency Spectrum, L90 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | dBA | ave | dBA | ave | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| Thur 8th | 23:30 | 47.4 | | 45.3 | | 18 | 29 | 35 | 37 | 39 | 40 | 37 | 25 | 17 |
| Fri 9th | 3:00 | 46.8 | 47.1 | 45 | 45.9 | | | | | | | | | |
| | 10:30 | 54.8 | 54.5 | 46.5 | 47.6 | | | | | | | | | |
| | 14:30 | 54.2 | | 48.4 | | | | | | | | | | |
| | | Ldn = | 55.7 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 0700 Sat | | 46.8 | | 45.1 | | | | | | | | | | |
| 1330 Sat | | 58.9 | | 48.3 | | | | | | | | | | |

BALDWIN/EMERSON

| | | Leq | Leq | L90 | L90 | Frequency Spectrum, L90 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | dBA | ave | dBA | ave | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| Fri 9th | 2:30 | 48.9 | 48.9 | 47.1 | 47.1 | | | | | | | | | |
| | 11:00 | 52.9 | 51.8 | 49.8 | 49.8 | | | | | | | | | |
| | 15:00 | 50.2 | | 49.7 | | | | | | | | | | |
| | | Ldn = | 55.9 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 0700 Sat | | 49.2 | | 47.6 | | | | | | | | | | |
| 1400 Sat | | 48.8 | | 47.6 | | | | | | | | | | |

AM Peak Hour - Existing Conditions
Traffic Study for a Power Generation Project
County of Contra Costa

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Rolph Ave/Loring Ave

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.105 |
| Loss Time (sec): | 0 | Average Delay (sec/veh): | 7.4 |
| Optimal Cycle: | 0 | Level Of Service: | A |

| Street Name: | Rolph Ave | | | | | | Loring Ave | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 0 1 | 0 | 0 | 1! 0 | 0 | 0 | 0 1! 0 |
| Volume Module: >> Count Date: 5 Dec 2011 << 7:00 - 8:00 am | | | | | | | | | | | | |
| Base Vol: | 25 | 3 | 23 | 0 | 4 | 5 | 10 | 9 | 19 | 55 | 10 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 25 | 3 | 23 | 0 | 4 | 5 | 10 | 9 | 19 | 55 | 10 | 1 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| PHF Volume: | 33 | 4 | 30 | 0 | 5 | 7 | 13 | 12 | 25 | 72 | 13 | 1 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 33 | 4 | 30 | 0 | 5 | 7 | 13 | 12 | 25 | 72 | 13 | 1 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 33 | 4 | 30 | 0 | 5 | 7 | 13 | 12 | 25 | 72 | 13 | 1 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.49 | 0.06 | 0.45 | 0.00 | 0.44 | 0.56 | 0.26 | 0.24 | 0.50 | 0.83 | 0.15 | 0.02 |
| Final Sat.: | 426 | 51 | 392 | 0 | 394 | 493 | 238 | 214 | 451 | 691 | 126 | 13 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.08 | 0.08 | xxxx | 0.01 | 0.01 | 0.06 | 0.06 | 0.06 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | | **** | | **** | | **** | | |
| Delay/Veh: | 7.4 | 7.4 | 7.4 | 0.0 | 7.0 | 7.0 | 7.1 | 7.1 | 7.1 | 7.8 | 7.8 | 7.8 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 7.4 | 7.4 | 7.4 | 0.0 | 7.0 | 7.0 | 7.1 | 7.1 | 7.1 | 7.8 | 7.8 | 7.8 |
| LOS by Move: | A | A | A | * | A | A | A | A | A | A | A | A |
| ApproachDel: | 7.4 | | | 7.0 | | | 7.1 | | | 7.8 | | |
| Delay Adj: | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | 7.4 | | | 7.0 | | | 7.1 | | | 7.8 | | |
| LOS by Appr: | A | | | A | | | A | | | A | | |
| AllWayAvgQ: | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |

Note: Queue reported is the number of cars per lane.





PM Peak Hour - Existing Conditions
Traffic Study for a Power Generation Project
County of Contra Costa

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Rolph Ave/Loring Ave

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.090 |
| Loss Time (sec): | 0 | Average Delay (sec/veh): | 7.3 |
| Optimal Cycle: | 0 | Level Of Service: | A |

| Street Name: | Rolph Ave | | | | | | Loring Ave | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 1 | 0 0 | 0 | 0 | 1! 0 | 0 | 1 | 0 0 |
| Volume Module: >> Count Date: 5 Dec 2011 << 4:00 - 5:00 pm | | | | | | | | | | | | |
| Base Vol: | 11 | 0 | 38 | 1 | 13 | 0 | 5 | 11 | 24 | 52 | 15 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 11 | 0 | 38 | 1 | 13 | 0 | 5 | 11 | 24 | 52 | 15 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| PHF Volume: | 12 | 0 | 43 | 1 | 15 | 0 | 6 | 12 | 27 | 59 | 17 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 12 | 0 | 43 | 1 | 15 | 0 | 6 | 12 | 27 | 59 | 17 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 12 | 0 | 43 | 1 | 15 | 0 | 6 | 12 | 27 | 59 | 17 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.22 | 0.00 | 0.78 | 0.07 | 0.93 | 0.00 | 0.12 | 0.28 | 0.60 | 0.78 | 0.22 | 0.00 |
| Final Sat.: | 209 | 0 | 724 | 59 | 771 | 0 | 117 | 257 | 560 | 649 | 187 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.06 | xxxx | 0.06 | 0.02 | 0.02 | xxxx | 0.05 | 0.05 | 0.05 | 0.09 | 0.09 | xxxx |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Delay/Veh: | 7.0 | 0.0 | 7.0 | 7.3 | 7.3 | 0.0 | 7.0 | 7.0 | 7.0 | 7.6 | 7.6 | 0.0 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 7.0 | 0.0 | 7.0 | 7.3 | 7.3 | 0.0 | 7.0 | 7.0 | 7.0 | 7.6 | 7.6 | 0.0 |
| LOS by Move: | A | * | A | A | A | * | A | A | A | A | A | * |
| ApproachDel: | 7.0 | | | 7.3 | | | 7.0 | | | 7.6 | | |
| Delay Adj: | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | 7.0 | | | 7.3 | | | 7.0 | | | 7.6 | | |
| LOS by Appr: | A | | | A | | | A | | | A | | |
| AllWayAvgQ: | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 |

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Existing Conditions
Traffic Study for a Power Generation Project
County of Contra Costa

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Rolph Ave/Pomona St

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.359 |
| Loss Time (sec): | 0 | Average Delay (sec/veh): | 10.6 |
| Optimal Cycle: | 0 | Level Of Service: | B |

| Street Name: | Rolph Ave | | | | | | Pomona St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Volume Module: >> Count Date: 5 Dec 2011 << 7:15 - 8:15 am | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 10 | 0 | 176 | 172 | 53 | 0 | 0 | 183 | 15 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 10 | 0 | 176 | 172 | 53 | 0 | 0 | 183 | 15 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| PHF Volume: | 0 | 0 | 0 | 12 | 0 | 215 | 210 | 65 | 0 | 0 | 223 | 18 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 12 | 0 | 215 | 210 | 65 | 0 | 0 | 223 | 18 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 12 | 0 | 215 | 210 | 65 | 0 | 0 | 223 | 18 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.92 | 0.08 |
| Final Sat.: | 0 | 0 | 0 | 548 | 0 | 672 | 602 | 654 | 0 | 0 | 622 | 51 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | xxxx | xxxx | xxxx | 0.02 | xxxx | 0.32 | 0.35 | 0.10 | xxxx | xxxx | 0.36 | 0.36 |
| Crit Moves: | | | | | | **** | **** | | | | **** | |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 9.1 | 0.0 | 10.0 | 11.5 | 8.6 | 0.0 | 0.0 | 11.0 | 11.0 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 9.1 | 0.0 | 10.0 | 11.5 | 8.6 | 0.0 | 0.0 | 11.0 | 11.0 |
| LOS by Move: | * | * | * | A | * | A | B | A | * | * | B | B |
| ApproachDel: | xxxxxx | | | 9.9 | | | 10.8 | | | 11.0 | | |
| Delay Adj: | xxxxx | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | xxxxxx | | | 9.9 | | | 10.8 | | | 11.0 | | |
| LOS by Appr: | * | | | A | | | B | | | B | | |
| AllWayAvgQ: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.5 | 0.1 | 0.0 | 0.5 | 0.5 | 0.5 |

Note: Queue reported is the number of cars per lane.





PM Peak Hour - Existing Conditions
Traffic Study for a Power Generation Project
County of Contra Costa

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Rolph Ave/Pomona St

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.287 |
| Loss Time (sec): | 0 | Average Delay (sec/veh): | 9.2 |
| Optimal Cycle: | 0 | Level Of Service: | A |

| Street Name: | Rolph Ave | | | | | | Pomona St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Volume Module: >> Count Date: 5 Dec 2011 << 4:30 - 5:30 pm | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 22 | 0 | 125 | 108 | 196 | 0 | 0 | 116 | 14 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 22 | 0 | 125 | 108 | 196 | 0 | 0 | 116 | 14 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 0 | 0 | 0 | 23 | 0 | 129 | 112 | 202 | 0 | 0 | 120 | 14 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 23 | 0 | 129 | 112 | 202 | 0 | 0 | 120 | 14 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 23 | 0 | 129 | 112 | 202 | 0 | 0 | 120 | 14 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.89 | 0.11 |
| Final Sat.: | 0 | 0 | 0 | 569 | 0 | 702 | 642 | 706 | 0 | 0 | 631 | 76 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | xxxx | xxxx | xxxx | 0.04 | xxxx | 0.18 | 0.17 | 0.29 | xxxx | xxxx | 0.19 | 0.19 |
| Crit Moves: | | | | | | **** | | **** | | | **** | |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 9.0 | 0.0 | 8.5 | 9.3 | 9.6 | 0.0 | 0.0 | 9.1 | 9.1 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 9.0 | 0.0 | 8.5 | 9.3 | 9.6 | 0.0 | 0.0 | 9.1 | 9.1 |
| LOS by Move: | * | * | * | A | * | A | A | A | * | * | A | A |
| ApproachDel: | xxxxxx | | | 8.6 | | | 9.5 | | | 9.1 | | |
| Delay Adj: | xxxxx | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | xxxxxx | | | 8.6 | | | 9.5 | | | 9.1 | | |
| LOS by Appr: | * | | | A | | | A | | | A | | |
| AllWayAvgQ: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.4 | 0.0 | 0.2 | 0.2 | 0.2 |

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Existing plus Project Conditions
Traffic Study for a Power Generation Project
County of Contra Costa

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Rolph Ave/Loring Ave

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.107 |
| Loss Time (sec): | 0 | Average Delay (sec/veh): | 7.5 |
| Optimal Cycle: | 0 | Level Of Service: | A |

| Street Name: | Rolph Ave | | | | | | Loring Ave | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 0 1 0 | 0 | 0 | 1! 0 | 0 | 0 | 0 1! 0 |
| Volume Module: >> Count Date: 5 Dec 2011 << 7:00 - 8:00 am | | | | | | | | | | | | |
| Base Vol: | 25 | 3 | 23 | 0 | 4 | 5 | 10 | 9 | 19 | 55 | 10 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 25 | 3 | 23 | 0 | 4 | 5 | 10 | 9 | 19 | 55 | 10 | 1 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Volum: | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 25 | 3 | 43 | 0 | 4 | 5 | 10 | 9 | 19 | 55 | 10 | 1 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| PHF Volume: | 33 | 4 | 57 | 0 | 5 | 7 | 13 | 12 | 25 | 72 | 13 | 1 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 33 | 4 | 57 | 0 | 5 | 7 | 13 | 12 | 25 | 72 | 13 | 1 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 33 | 4 | 57 | 0 | 5 | 7 | 13 | 12 | 25 | 72 | 13 | 1 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.35 | 0.04 | 0.61 | 0.00 | 0.44 | 0.56 | 0.26 | 0.24 | 0.50 | 0.83 | 0.15 | 0.02 |
| Final Sat.: | 315 | 38 | 541 | 0 | 391 | 489 | 233 | 210 | 443 | 680 | 124 | 12 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.10 | 0.10 | 0.10 | xxxx | 0.01 | 0.01 | 0.06 | 0.06 | 0.06 | 0.11 | 0.11 | 0.11 |
| Crit Moves: | | **** | | | | **** | | **** | | | **** | |
| Delay/Veh: | 7.3 | 7.3 | 7.3 | 0.0 | 7.0 | 7.0 | 7.2 | 7.2 | 7.2 | 7.8 | 7.8 | 7.8 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 7.3 | 7.3 | 7.3 | 0.0 | 7.0 | 7.0 | 7.2 | 7.2 | 7.2 | 7.8 | 7.8 | 7.8 |
| LOS by Move: | A | A | A | * | A | A | A | A | A | A | A | A |
| ApproachDel: | 7.3 | | | 7.0 | | | 7.2 | | | 7.8 | | |
| Delay Adj: | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | 7.3 | | | 7.0 | | | 7.2 | | | 7.8 | | |
| LOS by Appr: | A | | | A | | | A | | | A | | |
| AllWayAvgQ: | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |





PM Peak Hour - Existing plus Project Conditions
Traffic Study for a Power Generation Project
County of Contra Costa

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Rolph Ave/Loring Ave

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.118 |
| Loss Time (sec): | 0 | Average Delay (sec/veh): | 7.4 |
| Optimal Cycle: | 0 | Level Of Service: | A |

| Street Name: | Rolph Ave | | | | | | Loring Ave | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 0 1 0 | 0 | 0 | 1! 0 | 0 | 1 | 0 0 0 |
| Volume Module: >> Count Date: 5 Dec 2011 << 4:00 - 5:00 pm | | | | | | | | | | | | |
| Base Vol: | 11 | 0 | 38 | 1 | 13 | 0 | 5 | 11 | 24 | 52 | 15 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 11 | 0 | 38 | 1 | 13 | 0 | 5 | 11 | 24 | 52 | 15 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Volum: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 |
| Initial Fut: | 11 | 0 | 38 | 1 | 13 | 0 | 5 | 11 | 24 | 72 | 15 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| PHF Volume: | 12 | 0 | 43 | 1 | 15 | 0 | 6 | 12 | 27 | 81 | 17 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 12 | 0 | 43 | 1 | 15 | 0 | 6 | 12 | 27 | 81 | 17 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 12 | 0 | 43 | 1 | 15 | 0 | 6 | 12 | 27 | 81 | 17 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.22 | 0.00 | 0.78 | 0.07 | 0.93 | 0.00 | 0.12 | 0.28 | 0.60 | 0.83 | 0.17 | 0.00 |
| Final Sat.: | 206 | 0 | 711 | 58 | 759 | 0 | 116 | 255 | 557 | 691 | 144 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.06 | xxxx | 0.06 | 0.02 | 0.02 | xxxx | 0.05 | 0.05 | 0.05 | 0.12 | 0.12 | xxxx |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Delay/Veh: | 7.0 | 0.0 | 7.0 | 7.3 | 7.3 | 0.0 | 7.0 | 7.0 | 7.0 | 7.8 | 7.8 | 0.0 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 7.0 | 0.0 | 7.0 | 7.3 | 7.3 | 0.0 | 7.0 | 7.0 | 7.0 | 7.8 | 7.8 | 0.0 |
| LOS by Move: | A | * | A | A | A | * | A | A | A | A | A | * |
| ApproachDel: | 7.0 | | | 7.3 | | | 7.0 | | | 7.8 | | |
| Delay Adj: | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | 7.0 | | | 7.3 | | | 7.0 | | | 7.8 | | |
| LOS by Appr: | A | | | A | | | A | | | A | | |
| AllWayAvgQ: | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 |

AM Peak Hour - Existing plus Project Conditions
Traffic Study for a Power Generation Project
County of Contra Costa

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 Rolph Ave/Pomona St

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.390 |
| Loss Time (sec): | 0 | Average Delay (sec/veh): | 10.9 |
| Optimal Cycle: | 0 | Level Of Service: | B |

| Street Name: | Rolph Ave | | | | | | Pomona St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| Volume Module: >> Count Date: 5 Dec 2011 << 7:15 - 8:15 am | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 10 | 0 | 176 | 172 | 53 | 0 | 0 | 183 | 15 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 10 | 0 | 176 | 172 | 53 | 0 | 0 | 183 | 15 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Volum: | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 10 | 0 | 176 | 192 | 53 | 0 | 0 | 183 | 15 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| PHF Volume: | 0 | 0 | 0 | 12 | 0 | 215 | 234 | 65 | 0 | 0 | 223 | 18 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 12 | 0 | 215 | 234 | 65 | 0 | 0 | 223 | 18 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 12 | 0 | 215 | 234 | 65 | 0 | 0 | 223 | 18 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.92 | 0.08 |
| Final Sat.: | 0 | 0 | 0 | 542 | 0 | 663 | 602 | 654 | 0 | 0 | 617 | 51 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | xxxx | xxxx | xxxx | 0.02 | xxxx | 0.32 | 0.39 | 0.10 | xxxx | xxxx | 0.36 | 0.36 |
| Crit Moves: | | | | | | **** | **** | | | | | **** |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 9.2 | 0.0 | 10.1 | 12.1 | 8.6 | 0.0 | 0.0 | 11.1 | 11.1 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 9.2 | 0.0 | 10.1 | 12.1 | 8.6 | 0.0 | 0.0 | 11.1 | 11.1 |
| LOS by Move: | * | * | * | A | * | B | B | A | * | * | B | B |
| ApproachDel: | xxxxxx | | | 10.0 | | | 11.3 | | | 11.1 | | |
| Delay Adj: | xxxxx | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | xxxxxx | | | 10.0 | | | 11.3 | | | 11.1 | | |
| LOS by Appr: | * | | | B | | | B | | | B | | |
| AllWayAvgQ: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.6 | 0.1 | 0.0 | 0.5 | 0.5 | 0.5 |





PM Peak Hour - Existing plus Project Conditions
Traffic Study for a Power Generation Project
County of Contra Costa

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 Rolph Ave/Pomona St

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.291 |
| Loss Time (sec): | 0 | Average Delay (sec/veh): | 9.3 |
| Optimal Cycle: | 0 | Level Of Service: | A |

| Street Name: | Rolph Ave | | | | | | Pomona St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| Volume Module: >> Count Date: 5 Dec 2011 << 4:30 - 5:30 pm | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 22 | 0 | 125 | 108 | 196 | 0 | 0 | 116 | 14 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 22 | 0 | 125 | 108 | 196 | 0 | 0 | 116 | 14 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Volum: | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 22 | 0 | 145 | 108 | 196 | 0 | 0 | 116 | 14 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 0 | 0 | 0 | 23 | 0 | 150 | 112 | 202 | 0 | 0 | 120 | 14 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 23 | 0 | 150 | 112 | 202 | 0 | 0 | 120 | 14 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 23 | 0 | 150 | 112 | 202 | 0 | 0 | 120 | 14 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.89 | 0.11 |
| Final Sat.: | 0 | 0 | 0 | 568 | 0 | 702 | 635 | 697 | 0 | 0 | 622 | 75 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | xxxx | xxxx | xxxx | 0.04 | xxxx | 0.21 | 0.18 | 0.29 | xxxx | xxxx | 0.19 | 0.19 |
| Crit Moves: | | | | | | **** | | **** | | | **** | |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 9.0 | 0.0 | 8.8 | 9.4 | 9.7 | 0.0 | 0.0 | 9.2 | 9.2 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 9.0 | 0.0 | 8.8 | 9.4 | 9.7 | 0.0 | 0.0 | 9.2 | 9.2 |
| LOS by Move: | * | * | * | A | * | A | A | A | * | * | A | A |
| ApproachDel: | xxxxxx | | | 8.8 | | | 9.6 | | | 9.2 | | |
| Delay Adj: | xxxxx | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | xxxxxx | | | 8.8 | | | 9.6 | | | 9.2 | | |
| LOS by Appr: | * | | | A | | | A | | | A | | |
| AllWayAvgQ: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.4 | 0.0 | 0.2 | 0.2 | 0.2 |