LOS ESTEROS CRITICAL ENERGY FACILITY
APPLICATION FOR CERTIFICATION

Volume 2

Prepared for

Calpine c*Power

6601 Koll Center Parkway
Pleasanton, California 94566

Prepared by

CH2MHILL

2485 Natomas Park Drive
Sacramento, California 95833

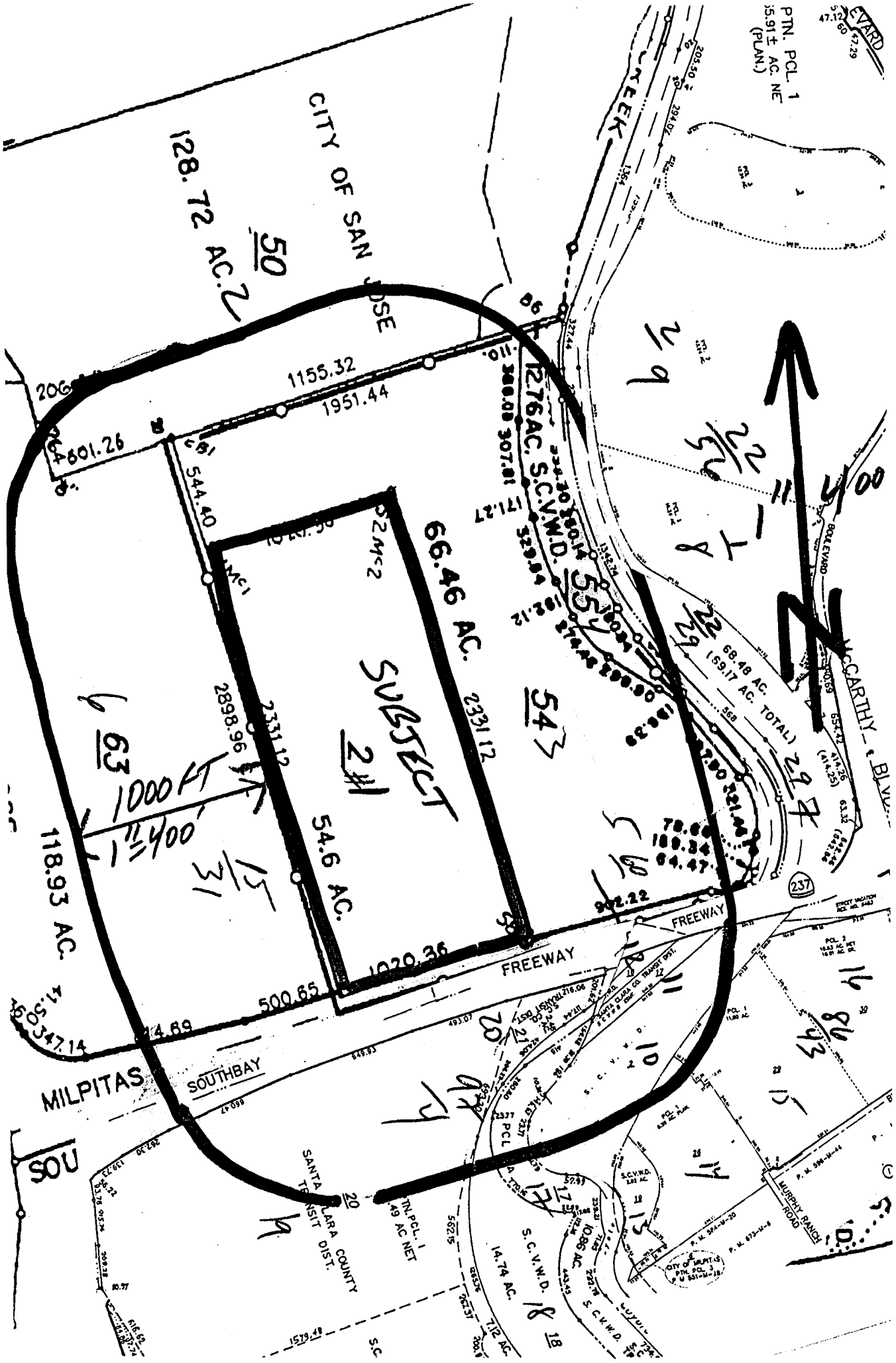
August 2001

Appendix 1.0

REAL PROPERTY in an unincorporated area of the County of Santa Clara, State of California, described as follows:

Beginning at a 10" x 10" Gate post standing at the common corner for lands formerly of William Boots and lands now or formerly of the heirs of C. H. Cropley, deceased, in the North line of the Alviso and Milpitas Road and from which post a pipe driven in the center line of said Road bears South 15° 41' East 33 feet; and running thence along the North line of said Road North 73° 42' East 15.46 chains to a stake marked S. B and iron pipe from which a maple 12" in diameter marked B.T.S.B. bears North 30° East 1.30 feet and a double maple 3 feet in diameter marked B.T.S.B. bears North 50° West 3.80 feet; thence leaving said Road and running parallel to the line between lands formerly of William Boots and lands now or formerly of the heirs of C. H. Cropley, North 15° 41' West 35.32 chains to a stake marked S. 2 & Mc2 and iron pipe; thence parallel to the line between lands formerly of said Boots and Mary E. McCarthy (formerly the Bellew Tract) South 73° 42' West 15.46 chains to a stake marked S. Mc standing in the fence line between the lands of said Boots and the C. H. Cropley heirs, and being distant South 15° 41' East 8.40 chains from the Northwest corner of the tract deeded by Mary E. Hough Boots, et al, to William Boots by Deed of July 18, 1906 and recorded in the Office of the County Recorder of Santa Clara County in Book 310 of Deeds, page 315; thence along said line between lands formerly of said William Boots and lands formerly of the C. H. Cropley heirs, South 15° 41' East 35.32 chains to the place of beginning, and being a part of the above mentioned tract of William Boots in the Rancho Rincon de los Esteros patented to Francisco Berryessa and B. Alviso. Courses true. Variation 17 deg. East.

APN: 15-31-002
ARB: 15-31-002



CITY OF SAN JOSE
128.72 AC.
50
1155.32
1951.44
601.26
544.40
12.76 AC. S.C.V.W.D.
66.46 AC.
SUBJECT
2
54.6 AC.
2898.96
2331.12
118.93 AC.
1000 FT
1"=400'
68.48 AC.
(69.17 AC. TOTAL)
McCARTHY BLVD.
FREEWAY
1020.36
500.65
347.14
MILPITAS
SOUTHBAY
SANTA CLARA COUNTY TRANSIT DIST.
S.C.V.W.D.
14.74 AC.
MURPHY RANCH ROAD
PTN. PCL. 1
(PLAN.)

```
# 1      *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :City Of Milpitas Et Al                      Parcel         :015 31 002
Site     :1515 Alviso-Milpitas Alviso 95002           Xfered         :12/01/1998
Mail     :1515 Alviso-Milpitas Alviso Ca 95002        Price          :
Use      :92 Agr,Field Crops,Non-Orchard              MapGrid        :
Zoning   :A-20S                                       Owner Phone    :
Census   :Tract:              Block:                  Tenant Phone   :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:54.60
# 2      *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :San Jose City Of                            Parcel         :015 31 050
Site     :Zanker Rd Alviso 95002                      Xfered         :12/21/1976
Mail     :Zanker Rd Alviso Ca 95002                   Price          :
Use      :00 * Unknown Land Use *                     MapGrid        :
Zoning   :                                            Owner Phone    :
Census   :Tract:              Block:                  Tenant Phone   :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:128.72
# 3      *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Smith Elizabeth C Et Al                     Parcel         :015 31 054
Site     :(Land Only) Alviso 95002                    Xfered         :05/02/1984
Mail     :1677 Isabel Dr San Jose Ca 95125            Price          :
Use      :93 Agr,Pasture,Grazing And Range Land       MapGrid        :
Zoning   :                                            Owner Phone    :
Census   :Tract:              Block:                  Tenant Phone   :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:
# 4      *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Santa Clara Valley Water Dist               Parcel         :015 31 055
Site     :*No Site Address*                           Xfered         :12/23/1992
Mail     :                                            Price          :
Use      :00 * Unknown Land Use *                     MapGrid        :
Zoning   :                                            Owner Phone    :
Census   :Tract:              Block:                  Tenant Phone   :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:
# 5      *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :City Of Milpitas                            Parcel         :015 31 060
Site     :(Land Only) Alviso 95002                    Xfered         :06/29/1998
Mail     :455 E Calaveras Blvd Milpitas Ca 95035      Price          :
Use      :93 Agr,Pasture,Grazing And Range Land       MapGrid        :
Zoning   :M1                                          Owner Phone    :
Census   :Tract:              Block:                  Tenant Phone   :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:
# 6      *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :San Jose City Of                            Parcel         :015 31 063
Site     :*No Site Address*                           Xfered         :01/01/1973
Mail     :                                            Price          :
Use      :00 * Unknown Land Use *                     MapGrid        :
Zoning   :                                            Owner Phone    :
Census   :Tract:              Block:                  Tenant Phone   :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:
# 7      *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Mc Carthy Richard I Trustee Estate Of Et Al Parcel         :022 29 029
Site     :565 Mccarthy Blvd Milpitas 95035            Xfered         :04/21/1988
Mail     :550 Newport Center Dr Newport Beach Ca 92660Price          :
Use      :16 Ind,Non-Mfg,Combo Mfg & Non-Mfg          MapGrid        :793 H6
Zoning   :A Agricultural                              Owner Phone    :
Census   :Tract:5046.98       Block:2                 Tenant Phone   :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:55.91
# 8      *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Mc Carthy Richard I Trustee Estate Of Et Al Parcel         :022 56 001
Site     :*No Site Address*                           Xfered         :04/21/1988
Mail     :550 Newport Center Dr Newport Beach Ca 92660Price          :
Use      :69 Vacant,Urban                             MapGrid        :
Zoning   :M1                                          Owner Phone    :
Census   :Tract:              Block:                  Tenant Phone   :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:16.24
```

Information compiled from various sources. First American Real Estate Solutions, L.P. makes no representations or warranties as to the accuracy or completeness of information in this report.

```
# 9      *---------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Mc Carthy Richard I Trustee Estate Of Et Al Parcel          :022 56 002
Site     :*No Site Address*                           Xfered          :04/21/1988
Mail     :550 Newport Center Dr Newport Beach Ca 92660Price           :
Use      :69 Vacant,Urban                             MapGrid         :
Zoning   :M1                                          Owner Phone     :
Census   :Tract:              Block:                  Tenant Phone    :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:43.24
# 10     *---------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :S C V W D                                   Parcel          :086 43 002
Site     :Southbay Fwy Milpitas 95035                 Xfered          :09/25/1985
Mail     :5750 Almaden Ex San Jose Ca 95118           Price           :
Use      :00 * Unknown Land Use *                     MapGrid         :
Zoning   :                                            Owner Phone     :
Census   :Tract:              Block:                  Tenant Phone    :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:
# 11     *---------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Santa Clara County Transit District         Parcel          :086 43 017
Site     :Southbay Fwy Milpitas 95035                 Xfered          :09/26/1975
Mail     :Southbay Fy Milpitas Ca 95035               Price           :
Use      :00 * Unknown Land Use *                     MapGrid         :
Zoning   :A-Bd                                        Owner Phone     :
Census   :Tract:              Block:                  Tenant Phone    :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:
# 12     *---------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Santa Clara Valley Water Dist               Parcel          :086 43 018
Site     :*No Site Address*                           Xfered          :12/02/1994
Mail     :                                            Price           :
Use      :00 * Unknown Land Use *                     MapGrid         :
Zoning   :Pub                                         Owner Phone     :
Census   :Tract:              Block:                  Tenant Phone    :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:
# 13     *---------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Santa Clara Vly Water Dist                  Parcel          :086 43 019
Site     :*No Site Address*                           Xfered          :03/10/1995
Mail     :                                            Price           :
Use      :69 Vacant,Urban                             MapGrid         :
Zoning   :I                                           Owner Phone     :
Census   :Tract:              Block:                  Tenant Phone    :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:
# 14     *---------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Kla-Tencor Corporation                      Parcel          :086 43 026
Site     :*No Site Address*                           Xfered          :04/01/1999
Mail     :160 Rio Robles San Jose Ca 95134            Price           :Non-Disc
Use      :14 Ind,Mfg,Research And Development         MapGrid         :
Zoning   :I                                           Owner Phone     :408-875-3000
Census   :Tract:              Block:                  Tenant Phone    :
Bedrm:      Bth:     TotRm:      YB:2000  Gar:        Pool:       BldgSF:        Ac:8.27
# 15     *---------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Lease Plan Usa                              Parcel          :086 43 029
Site     :5 Technology Dr Milpitas 95035              Xfered          :12/01/1995
Mail     :1 Technology Dr Milpitas Ca 95035           Price           :
Use      :14 Ind,Mfg,Research And Development         MapGrid         :813 H1
Zoning   :I                                           Owner Phone     :
Census   :Tract:5050.04       Block:1                 Tenant Phone    :
Bedrm:      Bth:     TotRm:      YB:      Gar:        Pool:       BldgSF:        Ac:
# 16     *---------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Lease Plan Usa                              Parcel          :086 43 030
Site     :*No Site Address*                           Xfered          :12/01/1995
Mail     :1 Technology Dr Milpitas Ca 95035           Price           :
Use      :14 Ind,Mfg,Research And Development         MapGrid         :
Zoning   :I                                           Owner Phone     :
Census   :Tract:              Block:                  Tenant Phone    :
Bedrm:      Bth:     TotRm:      YB:1997  Gar:        Pool:       BldgSF:194,597 Ac:10.91
```

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```
# 17     *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Santa Clara County Transit District                  Parcel        :097 04 017
Site     :Zanker Rd San Jose 95134                             Xfered        :09/26/1975
Mail     :Zanker Rd San Jose Ca 95134                          Price         :
Use      :00 * Unknown Land Use *                              MapGrid       :
Zoning   :                                                     Owner Phone   :
Census   :Tract:              Block:                           Tenant Phone  :
Bedrm:      Bth:     TotRm:      YB:      Gar:                 Pool:       BldgSF:        Ac:
# 18     *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Santa Clara Valley Water Dist                        Parcel        :097 04 018
Site     :*No Site Address*                                    Xfered        :12/02/1994
Mail     :                                                     Price         :
Use      :00 * Unknown Land Use *                              MapGrid       :
Zoning   :                                                     Owner Phone   :
Census   :Tract:              Block:                           Tenant Phone  :
Bedrm:      Bth:     TotRm:      YB:      Gar:                 Pool:       BldgSF:        Ac:
# 19     *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Santa Clara County Transit District                  Parcel        :097 04 020
Site     :*No Site Address*                                    Xfered        :09/26/1975
Mail     :                                                     Price         :
Use      :00 * Unknown Land Use *                              MapGrid       :
Zoning   :                                                     Owner Phone   :
Census   :Tract:              Block:                           Tenant Phone  :
Bedrm:      Bth:     TotRm:      YB:      Gar:                 Pool:       BldgSF:        Ac:
# 20     *--------------------:    MetroScan / Santa Clara    :-----------------------*
Owner    :Santa Clara County Transit District                  Parcel        :097 04 021
Site     :*No Site Address*                                    Xfered        :09/26/1975
Mail     :                                                     Price         :
Use      :00 * Unknown Land Use *                              MapGrid       :
Zoning   :                                                     Owner Phone   :
Census   :Tract:              Block:                           Tenant Phone  :
Bedrm:      Bth:     TotRm:      YB:      Gar:                 Pool:       BldgSF:        Ac:
```

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Plug into Clean Power . . .

CALPINE c*Power

FAX COVER SHEET

Date: July 6, 2001 **Phone:** (916) 920-0212

To: Jerry Salamy **Fax:** (916) 614-3407

Company: CH2M-Hill, Sacramento

From: Lauren Hirshberg **Fax:** (925) 249-8877

Subject: Power Purchase Agreement between California Department of Water Resources ("CDWR") and Calpine Corporation ("Calpine") for the Los Esteros Critical Energy Facility ("LECEF")

Number of pages being transmitted (including transmittal sheet): 2

Comments:

PRIVILEGED AND CONFIDENTIAL

This facsimile message is strictly for the use of the addressee named herein and may contain legally privileged and confidential information. In the event that the reader is not the addressee, or the agent, servant or employee of the addressee, we hereby advise you that any copying of the information contained in this message or other distribution of it is strictly prohibited. If you received the transmission in error, please notify us immediately by telephone and return the original transmission to Calpine at the postal address given below. Calpine will reimburse you all reasonable costs incurred by you in so notifying us and returning the transmission to us.

6601 Koll Center Parkway, Suite 100, Pleasanton, California 94566

CALPINE c* Power

July 5, 2001

VIA FEDERAL EXPRESS

Jane Luckhardt, Esq.
Downey, Brand, Seymour & Rohwer
555 Capital Mall, 10th Floor
Sacramento, California 95814

Re: ***Power Purchase Agreement between California Department of Water Resources ("CDWR") and Calpine Corporation ("Calpine") for the Los Esteros Critical Energy Facility ("LECEF")***

Dear Ms. Luckhardt:

Transmitted herewith is the Power Purchase Agreement between CDWR and Calpine for the LECEF. Please prepare a confidential filing for inclusion in our AFC.

Please contact me with any questions. Thank you.

Sincerely,

Todd Stewart

TS/lh
Enclosure
cc: Mr. Jerry Salamy (w/out encl.)
Mr. Douglas Buchanan (w/out encl.)
Ms. Tracey Marquit (w/encl.)

6601 Koll Center Parkway, Suite 100 • Pleasanton, CA 94566 • Phone (925) 249-3700 • Fax (925) 249-8877

APPENDIX 1D

Persons Who Prepared the AFC

Section	Title	Preparer	Company
	Project Director	Douglas Buchanan	Calpine c*Power
	CH2M HILL Project Manager	Jerry Salamy	CH2M HILL
1.0	Executive Summary	Jerry Salamy	CH2M HILL
2.0	Project Description	John Hathaway	CH2M HILL
		Jerry Salamy	CH2M HILL
		Todd Stewart	Calpine c*Power
3.0	Demand Conformance	John Hathaway	CH2M HILL
4.0	Facility Closure	John Hathaway	CH2M HILL
5.0	Electric Transmission	Steve Miller	Commonwealth Associates, Inc.
6.0	Natural Gas Supply	John Hathaway	CH2M HILL
7.0	Water Supply	Dave Richardson	CH2M HILL
		Priya Patel	CH2M HILL
8.0	Environmental Information		
8.1	Air Quality	Gary Rubenstein	Sierra Research
8.2	Biological Resources	Jaque Forrest	CH2M HILL
		EJ Koford	
8.3	Cultural Resources	James Bard	CH2M HILL
8.4	Land Use	Valerie Young	CH2M HILL
8.5	Noise	Mark Bastasch	CH2M HILL
8.6	Public Health	John Lowe	CH2M HILL
8.7	Worker Safety	Trish Bondurant	CH2M HILL
8.8	Socioeconomics	John Carrier	CH2M HILL
8.9	Agriculture and Soils	Andrew Sloan	CH2M HILL
8.10	Traffic and Transportation	Jeanne Acutanza	CH2M HILL
8.11	Visual Resources	Thomas Priestley	CH2M HILL
8.12	Hazardous Material Handling	John Hathaway	CH2M HILL
8.13	Waste Management	John Hathaway	CH2M HILL
8.14	Water Resources	Dave Richardson	CH2M HILL
		Priya Patel	CH2M HILL
8.15	Geologic Hazards & Resources	Tom Lae	CH2M HILL
8.16	Paleontological Resources	Lanny Fisk	Paleo Resource Consultants
9.0	Alternatives	Jerry Salamy	CH2M HILL

Section	Title	Preparer	Company
10.0	Engineering	Gary Carr	WRMS
Appendices			
1A	Legal Description	Todd Stewart	Calpine c*Power
1B	Adjacent Property Owners		Data Pro
1C	Department of Water Resources Power Purchase Contract	Jerry Salamy	CH2M HILL
1D	List of Preparers	Jerry Salamy	CH2M HILL
8.1	Air Quality	Gary Rubenstein	Sierra Research
8.2	Biological	EJ Koford	CH2M HILL
		Jacque Forrest	
8.8	Environmental Justice	Mark Assam	CH2M HILL
8.8B	Contact Reports	John Carrier	CH2M HILL
10	Engineering Appendices	Gary Carr	WRMS

CALPINE C* POWER'S PROPOSED CONDITIONS OF CERTIFICATION FOR THE LOS ESTEROS CRITICAL ENERGY FACILITY

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STANDARD CONDITIONS OF CERTIFICATION

GENERAL CONDITIONS INCLUDING COMPLIANCE MONITORING AND CLOSURE PLAN

INTRODUCTION

The project General Conditions Including Compliance Monitoring and Closure Plan (Compliance Plan) has been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated and closed in conjunction with air and water quality, public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission (Energy Commission) and specified in the written decision on the Application for Certification or otherwise required by law.

The Compliance Plan is composed of the following elements:

1. General conditions that:

   - set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
   - set forth the requirements for handling confidential records and maintaining the compliance record;
   - state procedures for settling disputes and making post-certification changes; and
   - state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions; and
   - establish requirements for facility closure plans.

2. Specific technical conditions of certification:

   - Specific conditions of certification follow the General Conditions and contain the measures normally required to mitigate most potential adverse project impacts associated with construction, operation and closure to an insignificant level. Each specific technical condition of certification includes a verification provision that describes the method of verifying that the condition has been satisfied. **Additional Conditions of Certification needed to mitigate specific project impacts will be developed during the Commission Siting process.**

GENERAL CONDITIONS OF CERTIFICATION

COMPLIANCE PROJECT MANAGER (CPM) RESPONSIBILITIES

A CPM will oversee the compliance monitoring and shall be responsible for:

1. ensuring that the design, construction, operation, and closure of the project facilities is in compliance with the terms and conditions of the Commission Decision;
2. resolving complaints;
3. processing post-certification changes to the conditions of certification, project description, and ownership or operational control;
4. documenting and tracking compliance filings; and,
5. ensuring that the compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies and the Energy Commission when handling disputes, complaints and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, it should be understood that the approval would involve all appropriate staff and management.

The Commission has established a toll free compliance telephone number of **1-800-858-0784** for the public to contact the Commission about power plant construction or operation-related questions, complaints or concerns.

PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING

The CPM may schedule pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings will be to assemble both the Energy Commission's and the project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's conditions of certification to confirm that they have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings shall ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight or inadvertence and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process may need to be publicly noticed unless they are confined to administrative issues and process.

ENERGY COMMISSION RECORD

The Energy Commission shall maintain as a public record, in either the Compliance file or Docket file, for the life of the project (or other period as required):

1. all documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
2. all monthly and annual compliance reports filed by the project owner;
3. all complaints of noncompliance filed with the Energy Commission; and,
4. all petitions for project or condition changes and the resulting staff or Energy Commission action taken.

PROJECT OWNER RESPONSIBILITIES

It is the responsibility of the project owner to ensure that the general compliance conditions and the conditions of certification are satisfied. The general compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, compliance conditions, or ownership. Failure to comply with any of the conditions of certification or the general compliance conditions may result in reopening of the case and revocation of Energy Commission certification, an administrative fine, or other action as appropriate.

ACCESS

The CPM, responsible Energy Commission staff, and delegate agencies or consultants, shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

COMPLIANCE RECORD

The project owner shall maintain project files on-site or at an alternative site approved by the CPM, for the life of the project. The files shall contain copies of all “as-built” drawings, all documents submitted as verification for conditions, and all other project-related documents for the life of the project, unless a lesser period is specified by the conditions of certification.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files.

COMPLIANCE VERIFICATIONS

Each condition of certification is followed by a means of “verification”. The verification describes the Energy Commission’s procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified, as necessary by the CPM, and in most cases without full Energy Commission approval.

Verification of compliance with the conditions of certification can be accomplished by:

5. reporting on the work done and providing the pertinent documentation in monthly and/or annual compliance reports filed by the project owner or authorized agent as required by the specific conditions of certification;
6. appropriate letters from delegate agencies verifying compliance;
7. Energy Commission staff audit of project records; and/or
8. Energy Commission staff inspection of mitigation and/or other evidence of mitigation.

Verification lead times (e.g., 90,60 and 30-days) associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the involved condition(s) of certification by condition number and include a brief description of the subject of the submittal**. The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All submittals shall be addressed as follows:

Compliance Project Manager
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

If the project owner desires Energy Commission staff action by a specific date, they shall so state in their submittal and include a detailed explanation of the effects on the project if this date is not met.

COMPLIANCE REPORTING

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

Compliance Matrix

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all compliance conditions in a spreadsheet format. The compliance matrix must identify:

1. the technical area,
2. the condition number,
3. a brief description of the verification action or submittal required by the condition,
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.),
5. the expected or actual submittal date,
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable, and
7. the compliance status for each condition (e.g., “not started”, “in progress” or “completed date”).

Completed or satisfied conditions do not need to be included in the compliance matrix after they have been identified as completed/satisfied in at least one monthly or annual compliance report.

Pre-Construction Matrix

Prior to commencing construction a compliance matrix addressing only those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner’s **first** compliance submittal. It will be in the same format as the compliance matrix referenced above.

Tasks Prior to Start of Construction

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Project owners frequently anticipate starting project construction as soon as the project is certified. In some cases it may be necessary for the project owner to file submittals prior to certification if the required lead-time extends beyond the date anticipated for start of construction. It is also important that the project owner understand that pre-construction activities that are initiated prior to certification are performed at the owner’s own risk. Failure to allow specified lead-time may cause delays in start of construction.

Various lead times for verification submittals to the CPM for conditions of certification are established to allow sufficient staff time to review and comment, and if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

Monthly Compliance Report

The first Monthly Compliance Report is due the month following the Energy Commission business meeting date that the project was approved, unless the otherwise agreed to by the CPM. The first Monthly Compliance Report shall include an initial list of dates for each of the events identified on the Key Events List. The Key Events List is found at the end of this section.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and five copies of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Monthly Compliance Report;
3. an initial, and thereafter updated, compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);
4. a list of conditions which have been satisfied during the reporting period, and a description or reference to the actions which satisfied the condition;
5. a list of any submittal deadlines that were missed accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to conditions of certification;
7. a listing of any filings with, or permits issued by, other governmental agencies during the month;
8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance conditions of certification;
9. a listing of the month's additions to the on-site compliance file; and
10. any requests to dispose of items that are required to be maintained in the project owner's compliance file.
11. a listing of complaints, notices of violation, official warnings, and citations received during the month; a description of the resolution of any complaints which have been resolved, and the status of any unresolved complaints.

Annual Compliance Report

After the air district has issued a Permit to Operate, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over the life of the project unless otherwise specified by the CPM. Each Annual Compliance Report shall identify the reporting period and shall contain the following:

1. an updated compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);
2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;
3. documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Annual Compliance Report;
4. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;
5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. a listing of filings made to, or permits issued by, other governmental agencies during the year;
7. a projection of project compliance activities scheduled during the next year;
8. a listing of the year's additions to the on-site compliance file, and
9. an evaluation of the on-site contingency plan for unexpected facility closure, including any suggestions necessary for bringing the plan up to date [see General Conditions for Facility Closure addressed later in this section].
10. a listing of complaints, notices of violation, official warnings, and citations received during the year; a description of the resolution of any complaints which have been resolved, and the status of any unresolved complaints.

CONFIDENTIAL INFORMATION

Any information, which the project owner deems confidential shall be submitted to the Energy Commission's Docket with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information, which is determined to be confidential, shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq.

DEPARTMENT OF FISH AND GAME FILING FEE

Pursuant to the provisions of Fish and Game Code Section 711.4, the project owner shall pay a filing fee in the amount of eight hundred and fifty dollars ($850). The payment instrument shall be provided to the Commission's Project Manager at the

time of project certification and shall be made payable to the California Department of Fish and Game. The Commission's Project Manager will submit the payment to the Office of Planning and Research at the time of filing of the notice of decision pursuant to Public Resources Code Section 21080.5.

REPORTING OF COMPLAINTS, NOTICES, AND CITATIONS

Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering, with date and time stamp recording. The telephone number shall be posted at the project site and easily visible to passersby during construction and operation.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies of all complaint forms, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt, to the CPM. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form on the following page.

COMPLAINT REPORT/RESOLUTION FORM

PROJECT NAME:
AFC Number:

COMPLAINT LOG NUMBER _____
Complainant's name and address:

Phone number:

Date and time complaint received:

Indicate if by telephone or in writing (attach copy if written):
Date of first occurrence:

Description of complaint (including dates, frequency, and duration):

Findings of investigation by plant personnel:

Indicate if complaint relates to violation of a CEC requirement:
Date complainant contacted to discuss findings:

Description of corrective measures taken or other complaint resolution:

Indicate if complainant agrees with proposed resolution:
If not, explain:

Other relevant information:

If corrective action necessary, date completed:
Date first letter sent to complainant: _____(copy attached)
Date final letter sent to complainant: _____(copy attached)

This information is certified to be correct.
Plant Manager's Signature: _____ Date:

(Attach additional pages and supporting documentation, as required.)

FACILITY CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made which provide the flexibility to deal with the specific situation and project setting which will exist at the time of closure. LORS pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place, planned closure, unexpected temporary closure and unexpected permanent closure**.**

PLANNED CLOSURE

This planned closure occurs at the end of a project's life, when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

UNEXPECTED TEMPORARY CLOSURE

This unplanned closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster, or an emergency.

UNEXPECTED PERMANENT CLOSURE

This unplanned closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned.

GENERAL CONDITIONS FOR FACILITY CLOSURE

PLANNED CLOSURE

In order that a planned facility closure does not create adverse impacts, a closure process, that will provide for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least twelve months prior to commencement of closure activities (or other period of time agreed to by the CPM). The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission.

The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site.
2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;
3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and
4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

Also, in the event that there are significant issues associated with the proposed facility closure plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Commission may hold public hearings as part of its approval procedure.

In addition, prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Commission CPM for the purpose of discussing the specific contents of the plan.

As necessary, prior to, or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety or the environment, but shall not commence any other closure activities, until Commission approval of the facility closure plan is obtained.

UNEXPECTED TEMPORARY CLOSURE

In order to ensure that public health and safety and the environment are protected in the event of an unexpected temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety, and environmental impacts, are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less that 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days (unless other arrangements are agreed to by the CPM), the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment (also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management).

In addition, consistent with requirements under unexpected permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unexpected temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, e-mail, etc., within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of circumstances and expected duration of the closure.

If the CPM determines that a temporary closure is likely to be permanent, or for a duration of more than twelve months, a closure plan consistent with that for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

UNEXPECTED PERMANENT CLOSURE

The on-site contingency plan required for unexpected temporary closure shall also cover unexpected permanent facility closure. All of the requirements specified for unexpected temporary closure shall also apply to unexpected permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the unlikely event of abandonment.

In the event of an unexpected permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, e-mail, etc., within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan consistent with that for a planned closure shall be developed and submitted to the CPM within 90 days of the permanent closure (or other period of time agreed to by the CPM).

DELEGATE AGENCIES

To the extent permitted by law, the Energy Commission may delegate authority for compliance verification and enforcement to various state and local agencies that have expertise in subject areas where specific requirements have been established

as a condition of certification. If a delegate agency does not participate in this program, the Energy Commission staff will establish an alternative method of verification and enforcement. Energy Commission staff reserves the right to independently verify compliance.

In performing construction and operation monitoring of the project, the Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). The Commission staff retains this authority when delegating to a local CBO. Delegation of authority for compliance verification includes the authority for enforcing codes, the responsibility for code interpretation where required, and the authority to use discretion as necessary, in implementing the various codes and standards.

Whenever an agency's responsibility for a particular area is transferred by law to another entity, all references to the original agency shall be interpreted to apply to the successor entity.

ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Commission Decision. The specific action and amount of any fines the Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, inadvertence, unforseeable events, and other factors the Commission may consider.

Moreover, to ensure compliance with the terms and conditions of certification and applicable laws, ordinances, regulations, and standards, delegate agencies are authorized to take any action allowed by law in accordance with their statutory authority, regulations, and administrative procedures.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1230 et. seq., but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by current law or regulations.

INFORMAL DISPUTE RESOLUTION PROCEDURE

The following procedure is designed to informally resolve disputes concerning interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of

the public, may initiate this procedure for resolving a dispute. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents.

This procedure may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1230 et. seq., but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The procedure encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be referred to the full Energy Commission for consideration via the complaint and investigation process. The procedure for informal dispute resolution is as follows:

REQUEST FOR INFORMAL INVESTIGATION

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter and within seven (7) working days of the CPM's request, provide a written report of the results of the investigation, including corrective measures proposed or undertaken, to the CPM. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to provide an initial report, within forty-eight (48) hours, followed by a written report filed within seven (7) days.

REQUEST FOR INFORMAL MEETING

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within fourteen (14) days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;
2. secure the attendance of appropriate Energy Commission staff and staff of any other agency with expertise in the subject area of concern as necessary;

3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner; and,

4. after the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum which fairly and accurately identifies the positions of all parties and any conclusions reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230 et. seq.

FORMAL DISPUTE RESOLUTION PROCEDURE-COMPLAINTS AND INVESTIGATIONS

If either the project owner, Energy Commission staff, or the party requesting an investigation is not satisfied with the results of the informal dispute resolution process, such party may file a complaint or a request for an investigation with the Energy Commission's General Counsel. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1230 et. seq.

The Chairman, upon receipt of a written request stating the basis of the dispute, may grant a hearing on the matter, consistent with the requirements of noticing provisions. The Commission shall have the authority to consider all relevant facts involved and make any appropriate orders consistent with its jurisdiction (Title 20, California Code of Regulations, sections 1232 - 1236).

POST CERTIFICATION CHANGES TO THE COMMISSION DECISION: AMENDMENTS, INSIGNIFICANT PROJECT CHANGES AND VERIFICATION CHANGES

The project owner must petition the Energy Commission, pursuant to Title 20, California Code of Regulations, section 1769, to 1) delete or change a condition of certification; 2) modify the project design or operational requirements; and 3) transfer ownership or operational control of the facility.

A petition is required for **amendments** and for **insignificant project changes**. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the Commission's Docket in accordance with Title 20, California Code of Regulations, section 1209. The criteria that determine which type of change process applies are explained below.

AMENDMENT

A proposed change will be processed as an amendment if it involves a change to the requirement or protocol (and in some cases the verification) portion of a condition of certification, an ownership or operator change, or a potential significant environmental impact.

INSIGNIFICANT PROJECT CHANGE

The proposed change will be processed as an insignificant project change if it does not require changing the language in a condition of certification, have a potential for significant environmental impact, and cause the project to violate laws, ordinances, regulations or standards.

VERIFICATION CHANGE

The proposed change will be processed as a verification change if it involves only the language in the verification portion of the condition of certification. This procedure can only be used to change verification requirements that are of an administrative nature, usually the timing of a required action. In the unlikely event that verification language contains technical requirements, the proposed change must be processed as an amendment.

KEY EVENT LIST

PROJECT _____ DATE ENTERED

DOCKET # _____ PROJECT MANAGER

EVENT DESCRIPTION	***DATE ASSIGNED***
Date of Certification	
Start of Construction	
Completion of Construction	
Start of Operation (1st Turbine Roll)	
Start of Rainy Season	
End of Rainy Season	
Start T/L Construction	
Complete T/L Construction	
Start Fuel Supply Line Construction	
Complete Fuel Supply Line Construction	
Start Rough Grading	
Complete Rough Grading	
Start of Water Supply Line Construction	
Completion of Water Supply Line Construction	
Start Implementation of Erosion Control Measures	
Complete Implementation of Erosion Control Measures	

TECHNICAL CONDITIONS

AIR QUALITY

AQ-1 Prior to the commencement of project construction, the project owner shall prepare a Construction Fugitive Dust Mitigation Plan that will specifically identify fugitive dust mitigation measures that will be employed for the construction of the project and related facilities.

a) The Construction Fugitive Dust Mitigation Plan shall specifically identify measures to limit fugitive dust emissions from construction of the project site, the raw water pipeline, pump station and tank sites. Measures that shall be addressed include the following:

- The identification of the employee parking area(s) and surface of the parking area(s);
- the frequency of watering of unpaved roads and disturbed areas;
- the application of chemical dust suppressants;
- the stabilization of storage piles and disturbed areas;
- the use of gravel in high traffic areas;
- the use of paved access aprons;
- the use of posted speed limit signs;
- the use of wheel washing areas prior to large trucks leaving the project site; and
- the methods that will be used to clean tracked-out mud and dirt from the project site onto public roads.

b) The following measures should be addressed for the transportation of the borrow fill material to the project site and the raw water pumping station: the use of covers on the vehicles, the wetting of the material, and insuring appropriate freeboard of material in the vehicles.

Verification: At least sixty (60) days prior to the start of construction, the project owner shall provide the CPM with a copy of the Construction Fugitive Dust Mitigation Plan for approval.

AQ-2 The project owner shall ensure that all heavy earthmoving equipment, including bulldozers, backhoes, compactors, loaders, motor graders and trenchers, cranes, dump trucks, and other heavy duty construction related trucks, have been properly maintained and the engines tuned to the engine manufacturers' specifications.

Verification: The project owner shall submit to the CPM, via the Monthly Compliance Report, documentation which demonstrates that the contractor's heavy earthmoving equipment is properly maintained and the engines are tuned to the manufacturers' specifications. The project owner shall maintain all records on the site for six (6) months following the start of commercial operation.

AQ-3 No air contaminant shall be released into the atmosphere which causes a public nuisance.

Verification: The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), and the Commission.

AQ-4 At least thirty (30) days prior to commencement of construction, the project owner shall provide the District with written documentation that all necessary offsets have been acquired or that binding contracts to secure such offsets have been entered into.

Verification: The project owner shall provide copies of all the necessary ERC certificates to the CPM no later than thirty (30) days prior to the commencement of construction.

AQ-5 The District must be notified thirty (30) days prior to any compliance source test, and a source test plan must be submitted for approval fifteen (15) days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within sixty (60) days of testing.

Verification: The project owner shall notify the CPM and the District thirty (30) days prior to any compliance source test. The project owner shall provide a source test plan to the CPM and District for CPM and District approval fifteen (15) days prior to testing. The results and field data collected by the source tests shall be submitted to the CPM and the District within sixty (60) days of testing.

AQ-6 The source test plans for the initial and seven-year source test shall include a method for measuring the VOC/CO surrogate relationship that will be used to demonstrate compliance with VOC lb/hr, lb/day, and lb/twelve month rolling average emission limits.

Verification: The project owner shall provide a source test plan to the CPM and District for the CPM and District approval fifteen (15) days prior to testing.

AQ-7 The project owner shall notify the District of : a) the date of initiation of construction no later than thirty (30) days after such date; b) the date of

anticipated startup not more than sixty (60) days nor less than thirty (30) days prior to such date; and c) the date of actual startup within fifteen (15) days after such date.

Verification: The project owner shall notify the CPM and the District of the date of initiation of construction no later than thirty (30) days after such date. The project owner shall notify the CPM and the District of the date of anticipated startup not more than sixty (60) days nor less than thirty (30) days prior to such date, and the date of actual startup within fifteen (15) days after such date.

AQ-8 The project owner shall maintain hourly records of NOx, CO and ammonia emission concentrations (ppmv @ 15% O2), and hourly, daily and twelve month rolling average records of NOx and CO emissions. Compliance with hourly, daily, and twelve month rolling average VOC emission limits shall be demonstrated by the CO CEM data and the VOC/CO relationship determined by annual CO and VOC source tests.

Verification: The project owner shall compile the required data and submit the quarterly reports to the CPM within thirty (30) days of the end of the quarter as required by Condition AQ-10.

AQ-9 The project owner shall maintain records of SOx lb/hr, lb/day, and lb/twelve month rolling average emissions. SOx emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations.

Verification: The project owner shall provide records of the information described above as part of the quarterly reports submitted to the CPM.

AQ-10 The project owner shall maintain the following records: occurrence, duration, and type of any startup, shutdown, or malfunction; performance testing, evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, maintenance of any continuous emission monitor; emission measurements, total daily and rolling twelve month average hours of operation, hourly quantity of fuel used, and gross three hour average operating load.

Verification: The project owner shall compile required data and submit the information to the CPM in quarterly reports submitted no later than sixty (60) days after the end of each calendar quarter.

AQ-11 All records required to be maintained by this permit shall be maintained for a period of five (5) years and shall be made readily available for District inspection upon request.

Verification: The project owner shall make the site available for inspection by representatives of the District, CARB, and the Commission.

AQ-12 Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA.

Verification: The project owner shall compile the required data in the formats discussed above and submit the results to the CPM quarterly.

AQ-13 The project owner shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one (1) hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary.

Verification: The project owner shall comply with the notification requirements of the District and submit written copies of these notification reports to the CPM as part of the quarterly reports specified in Condition AQ-10.

AQ-14 The District shall be notified in writing within ten (10) days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations.

Verification: The project owner shall comply with the notification requirements of the District and submit written copies of these notification reports to the CPM as part of the quarterly reports specified in Condition AQ-10.

AQ-15 Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District.

Verification: The project owner shall submit the continuous emission monitor audit results with the quarterly reports required in Condition AQ-17.

AQ-16 The project owner shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F.

Verification: The project owner shall submit the continuous emission monitor results with the quarterly reports required in Condition AQ-17.

AQ-17 The project owner shall submit a written report to the APCO for each calendar quarter, within thirty (30) days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred.

Verification: The project owner shall compile the required data and submit the quarterly reports to the CPM and the APCO within thirty (30) days of the end of the quarter.

AQ-18 The project owner shall submit an application to the District to comply with Rule 2540 - Acid Rain Program, twenty-four (24) months before the unit commences operation.

The project owner shall file its application with the District at least twenty-four (24) months prior to the commencement of operation of any of the combustion turbine generators.

PUBLIC HEALTH

No standard Conditions of Compliance

BIOLOGICAL RESOURCES

BIO-1 The project owner will implement the mitigation measures identified in Application for Certification. The project owner's proposed mitigation measures will be incorporated into the final Biological Resources Mitigation Implementation and Monitoring Plan (see Condition of Certification **BIO-**, below) unless the mitigation measures conflict with mitigation required by the U. S. Fish and Wildlife Service and the California Department of Fish and Game that is contained in their respective Biological Opinions and Incidental Take Permit. (Exhibits 57 and 58).

Protocol: The project owner will:

1. Site transmission line poles, access roads, pulling sites, and storage and parking areas to avoid sensitive resources whenever possible.
2. Avoid all wetlands.

3. Design and construct transmission lines and poles to reduce the likelihood of electrocutions of large birds.

4. Bury any pipelines that cross streams and dry creek beds below the scour depth for each waterway. Streambeds disturbed during construction will be recontoured so that drainage patterns are not changed from pre-construction conditions.

5. Implement a Worker Environmental Awareness Program.

6. Hire a qualified biologist, who is acceptable to Energy Commission, USFWS, and CDFG staff, to conduct pre-construction surveys no more than fourteen (14) days prior to initiation of construction in any portion of the project area.

7. Implement CDFG approved take avoidance measures for the blunt-nosed leopard lizard.

8. Clearly mark construction area boundaries with stakes, flagging, and/or rope or cord to minimize inadvertent degradation or loss of adjacent habitat during facility construction. All equipment storage will be restricted to designated construction zones or areas that are currently not considered sensitive species habitat.

9. Post signs and/or fence the power plant site and laydown areas to restrict vehicle access to designated areas.

10. Institute traffic restraints and signs to minimize temporary disturbances. A 20-mph speed limit will be implemented on the project site.

11. Designate a specific individual as a contact representative between La Paloma, USFWS, Energy Commission, and CDFG to oversee compliance with mitigation measures detailed in the Biological Opinion.

12. Provide a qualified wildlife biologist to monitor all activities that may result in incidental take of listed species or their habitat.

13. Conduct compliance inspections once per week and provide an annual compliance report to the Energy Commission, the appropriate USFWS Field Office, and the appropriate CDFG Region office.

14. Limit transmission line construction to daylight hours. For areas of high concentrations of nocturnal sensitive species (giant kangaroo rat, San Joaquin kit fox, Tipton kangaroo rat), work activities will be minimized during nighttime hours. Night lighting will be hooded.

15. Provide wildlife escape ramps for construction areas that contain steep-walled holes or trenches.

16. Fence open holes or trenches within 50-feet of giant kangaroo rat burrows. Fence will be hardware cloth or similar materials that are approved by USFWS and CDFG.

17. Inspect trenches each morning for entrapped animals prior to the beginning of construction. Construction will be allowed to begin only after trapped animals are able to escape voluntarily.

18. Inspect all construction pipes, culverts, or similar structures with a diameter of 4-inches or greater for kit foxes prior to pipe burial. Pipes to be left in trenches overnight will be capped.

19. Provide a post-construction compliance report, within forty-five (45) calendar days of completion of the project, to the USFWS, CDFG, and the Energy Commission.

20. Complete, and institute, a habitat reclamation plan once temporarily disturbed habitat disturbance is completed. Annual inspections will occur for three (3) years to check for compliance with the reclamation plan goals.

21. Make certain that all food-related trash will be disposed of in closed containers and removed at least once a week. Feeding of wildlife shall be prohibited.

22. Prohibit firearms except for those carried by security personnel.

23. Prohibit pets from the project site.

24. Minimize the use of rodenticides and herbicides in the project area.

25. Report all inadvertent deaths of San Joaquin kit fox, San Joaquin antelope squirrel, giant kangaroo rat, or blunt-nosed leopard lizard to the appropriate project representative. Injured animals will be reported to CDFG, and the project owner will follow instructions that are provided by CDFG.

26. Consult with USFWS, CDFG, and Energy Commission regarding appropriate protection measures for sensitive species following resolution of any emergency situation that takes place in sensitive habitat during clean-up activities.

27. Acquire compensation lands to satisfy the requirements of state and federal endangered species acts, consistent with standard USFWS and CDFG compensation requirements for impacts to listed species habitats.

Verification: At least sixty (60) days prior to start of any project related ground disturbance activities, the project owner shall provide the Energy Commission Compliance Project Manager (CPM) with the final version of the BRMIMP for this project, and the CPM will determine the plan's acceptability within fifteen (15) days of receipt of the final plans. Implementation of the above measures shall be included in the BRMIMP

BIO-2 Construction site and/or ancillary facilities preparation (described as any ground disturbing activity other than allowed geotechnical work) shall not

begin until an Energy Commission CPM approved Designated Biologist is available to be on-site.

The Designated Biologist must meet the following minimum qualifications:

1. a Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
3. one year of field experience with biological resources found in or near the project area; and
4. an ability to demonstrate to the satisfaction of the CPM the appropriate education and experience for the biological resources tasks that must be addressed during project construction and operation.

If the CPM determines the proposed Designated Biologist to be unacceptable, the project owner shall submit another individual's name and qualifications for consideration. If the approved Designated Biologist needs to be replaced, the project owner shall obtain approval of a new Designated Biologist by submitting to the CPM the name, qualifications, address, and telephone number of the proposed replacement. No disturbance will be allowed in any designated sensitive areas until the CPM approves a new Designated Biologist and the new Designated Biologist is on-site.

Verification: At least ninety (90) days prior to the start of any ground disturbance activities, the project owner shall submit to the CPM for approval the name, qualifications, address, and telephone number of the individual selected by the project owner as the Designated Biologist. If a Designated Biologist is replaced, the information on the proposed replacement as specified in the Condition must be submitted in writing at least ten working days prior to the termination or release of the preceding Designated Biologist.

BIO-3 The CPM approved Designated Biologist shall perform the following during project construction and operation:

1. Advise the project owner's supervising construction or operations engineer on the implementation of the biological resources Conditions of Certification;
2. Supervise or conduct mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as wetlands and special status species; and

3. Notify the project owner and the CPM of any non-compliance with any biological resources Condition of Certification.

Verification: During project construction, the Designated Biologist shall maintain written records of the tasks described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the CPM. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report.

BIO-4 The project owner's supervising construction and operations engineer shall act on the advice of the Designated Biologist to ensure conformance with the biological resources Conditions of Certification.

Protocol: The project owner's supervising construction and operating engineer shall halt, if necessary, all construction activities in areas specifically identified by the Designated Biologist as sensitive to assure that potential significant biological resources impacts are avoided.

The Designated Biologist shall:

1. Inform the project owner and the supervising construction and operating engineer when to resume construction; and
2. Advise the CPM if any corrective actions are needed or have been instituted.

Verification: Within two (2) working days of a Designated Biologist notification of non-compliance with a Biological Resources Condition or a halt of construction, the project owner shall notify the CPM by telephone of the circumstances and actions being taken to resolve the problem or the non-compliance with a Condition. For any necessary corrective action taken by the project owner, a determination of success or failure will be made by the CPM within five (5) working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

BIO-5 The project owner shall develop and implement a CPM approved Worker Environmental Awareness Program in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or related facilities (including any access roads, storage areas, transmission lines, water and gas lines) during construction and operation, are informed about sensitive biological resources associated with the project.

The Worker Environmental Awareness Program must:

1. be developed by the Designated Biologist and consist of an on-site or training center presentation in which supporting written material is made available to all participants;

2. discuss the locations and types of sensitive biological resources on the project site and adjacent areas;
3. present the reasons for protecting these resources;
4. present the meaning of various temporary and permanent habitat protection measures; and
5. identify whom to contact if there are further comments and questions about the material discussed in the program.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Each participant in the on-site Worker Environmental Awareness Program shall sign a statement declaring that the individual understands and shall abide by the guidelines set forth in the program materials. The person administering the program shall also sign each statement.

Verification: At least sixty (60) days prior to the start of rough grading, the project owner shall provide copies of the Worker Environmental Awareness Program and all supporting written materials prepared by the Designated Biologist and the name and qualifications of the person(s) administering the program to the CPM for approval. The project owner shall state in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. The signed statements for the construction phase shall be kept on file by the project owner and made available for examination by the CPM for a period of at least six (6) months after the start of commercial operation. During project operation, signed statements for active project operational personnel shall be kept on file for the duration of their employment and for six (6) months after their termination.

BIO-6 Prior to start of any ground disturbance activities, the project owner shall acquire an Incidental Take Permit from the California Department of Fish and Game (CDFG) (per Section 2081(b) of the California Endangered Species Act) and implement the permit terms and conditions. (See also Exhibit 58).

Verification: No less than five (5) days prior to the start of any project related ground disturbance activities the project owner shall submit to the CPM a copy of the final CDFG Incidental Take Permit. Permit terms and conditions will be incorporated into the Biological Resources Mitigation Implementation and Monitoring Plan. (See also Condition of Certification **BIO-8**.)

BIO-7 Prior to the start of any ground disturbance activities, the project owner shall provide final copies of the Biological Opinion per Section 7 of the federal endangered species act obtained from the U. S. Fish and Wildlife Service and incorporate the terms of the agreement into the Biological

Resources Mitigation Implementation and Monitoring Plan. The project owner will implement the terms and conditions contained in the Biological Opinion (See also Condition of Certification **BIO-8**.)

Verification: At least sixty (60) days prior to the start of any project related ground disturbance activities the project owner shall submit to the CPM a copy of the Biological Opinion. Permit terms and conditions will be incorporated into the Biological Resources Mitigation Implementation and Monitoring Plan. (See also Condition of Certification **BIO-8**.)

BIO-8 The project owner shall submit to the CPM for review and approval a copy of the final Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and shall implement the measures identified in the plan.

The final BRMIMP shall identify:

1. All mitigation, monitoring, and compliance measures recommended by the Applicant referred to, as well as those contained in, Condition of Certification **BIO-1;**
2. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;
3. All mitigation measures provided in the USFWS Biological Opinion and the CDFG Incidental Take Permit (Exs. 57 and 58);
4. All provisions specified in the CDFG Streambed Alteration Agreement Notification #4-176-98 (Ex. 10);
5. All required mitigation measures for each sensitive biological resource (including burrowing owl avoidance measures recommended by CDFG in its September 1995 staff report on burrowing owl mitigation; Ex. 59);
6. Required habitat compensation, including provisions for acquisition, enhancement, and management for any temporary and permanent loss of sensitive biological resources;
7. A detailed description of measures that will be taken to avoid or mitigate temporary disturbances from construction activities;
8. All locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction;
9. Aerial photographs of all areas to be disturbed during project construction activities - one set prior to site disturbance and one set subsequent to completion of mitigation measures. Include planned timing of aerial photography and a description of why times were chosen;
10. Monitoring duration for each type of monitoring and a description of monitoring methodologies and frequency;

11. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
12. All performance standards and remedial measures to be implemented if performance standards are not met;
13. A discussion of biological resources related facility closure measures; and
14. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval.

Verification: At least sixty (60) days prior to start of any project related ground disturbance activities, the project owner shall provide the CPM with the final version of the BRMIMP for this project, and the CPM will determine the plan's acceptability within fifteen (15) days of receipt of the final plan. The project owner shall notify the CPM five (5) working days before implementing any modifications to the BRMIMP.

Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which mitigation and monitoring plan items are still outstanding.

BIO-9 The project owner will incorporate into the planned permanent or unexpected permanent closure plan measures that address the local biological resources. The biological resources facility closure measures will also be incorporated into the BRMIMP. (See Condition of Certification **BIO-8**, above)

The planned permanent or unexpected permanent closure plan will address the following biological resources related mitigation measures:

1. Removal of transmission conductors when they are no longer used and useful;
2. Removal of all power plant site facilities; and
3. Measures to restore wildlife habitat to promote the re-establishment of native plant and wildlife species.

Verification: At least twelve (12) months (or a mutually agreed upon time) prior to the commencement of closure activities, the project owner shall address all biological resources related issues associated with facility closure in a Biological Resources Element. The Biological Resources Element will be incorporated into the Facility Closure Plan and include a complete discussion of the local biological resources and proposed facility closure mitigation measures.

CULTURAL RESOURCES

CUL-1 Prior to the start of project construction (defined as any construction-related vegetation clearance, ground disturbance and preparation, and site excavation activities), the project owner shall provide the California Energy Commission (Commission) Compliance Project Manager (CPM) with the name and resume for the designated cultural resource specialist who will develop and implement the project's cultural resource monitoring and mitigation plan. Project construction shall not begin until the designated cultural resource specialist approved by the CPM is available to be on-site.

Protocol: The protocols are as follows:

1. The resume for the designated cultural resource specialist shall include all information needed to demonstrate that the specialist meets the minimum qualifications specified in the US Secretary of Interior Guidelines, as published by the State Office of Historic Preservation (1983). These minimum qualifications shall include the following: a graduate degree in anthropology, archaeology, California history, cultural resource management, or other comparable fields; at least three years of archaeological resource mitigation and field experience in California; and at least one year's experience in each of the following areas: leading archaeological resource field surveys; leading site and artifact mapping, recording, and recovery operations; marshalling and using equipment necessary for cultural resource recovery and testing; preparing recovered materials for analysis and identification; determining the need for appropriate sampling and/or testing in the field and in the lab; directing the analyses of mapped and recovered artifacts; completing the identification and inventory of recovered cultural resource materials; and the preparation of appropriate reports to be filed with the receiving curation repository, the SHPO, all appropriate regional archaeological information center(s), and the CPM.
2. The resume for the designated cultural resource specialist shall include a list of specific projects the specialist has previously worked on; the role and responsibilities of the specialist for each project listed; and the names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

Verification: At least ninety (90) days prior to the start of construction on the project, the project owner shall submit the names and resumes for its designated cultural resource specialist, and the specialist's team members, to the CPM for review and written approval.

At least ten (10) days prior to the start of construction, the project owner shall confirm to the CPM that the approved designated cultural resource specialist is available and prepared to implement the cultural resource Conditions of Certification at the start of construction.

At least ten (10) days prior to the termination or release of a designated cultural resource specialist, the project owner shall obtain CPM approval of the replacement specialist by submitting to the CPM the name and resume of the proposed new designated cultural resource specialist. Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

CUL-2 Prior to the start of project construction, the project owner shall provide the designated cultural resource specialist and the CPM with maps and drawings showing the final project design and site layout, and the final alignment of all linear facilities. The routes for the linear facilities shall be provided on 7.5 minute quad maps, showing post mile markers (including "tic marks" for tenths of a mile), final center lines and right-of-way boundaries, and the location of all the various areas where surface disturbance may be associated with project-related access roads, storage yards, laydown sites, pull sites, pump or pressure stations, switchyards, electrical tower or pole footings, and any other project components.

Protocol: The designated cultural resource specialist may request, and the project owner shall provide, enlargements of portions of the 7.5 minute maps presented as a sequence of strip maps for the linear facility routes. The strip maps shall include post mile and tenth of a mile markers and show the detailed locations of proposed access roads, storage or laydown sites, tower or pole footings, and any other areas of disturbance associated with the construction and maintenance of project-related linear facilities. The project owner shall also provide copies of any such enlargements to the CPM at the same time as they are provided to the specialist.

Verification: At least seventy-five (75) days prior to the start of construction on the project, the project owner shall provide the designated cultural resource specialist and the CPM with final drawings and site layouts for all project facilities and maps at appropriate scale(s) for all areas potentially affected by project construction. If the designated cultural resource specialist requests enlargements or strip maps for linear facility routes, the project owner shall also provide a set of these maps to the CPM at the same time as they are provided to the specialist.

CUL-3 Prior to the start of project construction, the designated cultural resources specialist shall prepare, and the project owner shall submit to the CPM for review and written approval, a draft Cultural Resource Monitoring and Mitigation Plan to identify general and specific measures to minimize potential impacts to sensitive cultural resources. The Cultural Resources Monitoring and Mitigation Plan prepared for the Energy Commission per this Condition may also become part of the Archaeological Resources Treatment Plan required by the US Bureau of Land Management (BLM) permit process. [The BLM permit usually applies to archaeological resource surveys, testing, monitoring and mitigation, and data and

resource recovery that takes place on lands managed by the BLM and/or other federal agencies.]

The CPM will review, and must approve in writing, the Cultural Resources Monitoring and Mitigation Plan. After CPM approval, the project owner's designated cultural resource specialist and designated cultural resource team shall be available to implement the Monitoring and Mitigation Plan as needed throughout project construction. After the project owner receives written CPM approval of the plan, the project owner shall make the designated cultural resource specialist and designated cultural resource team available to implement the Monitoring and Mitigation Plan as needed throughout project construction.

Protocol: The Cultural Resources Monitoring and Mitigation Plan shall include, but not be limited to, the following elements and measures:

1. A proposed research design that includes a discussion of questions that may be answered by the mapping data and artifact recovery conducted during monitoring and mitigation activities, and by the post-construction analysis of recovered data and materials.
2. A discussion of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the pre-construction, construction, and post-construction analysis phases of the project.
3. A discussion of the mitigation team leadership and organizational structure, and the inter-relationship of team roles and responsibilities associated with completion of the tasks identified in (b), above.
4. A discussion of the need for Native American observers or monitors, the procedures to be used to select them, the areas or post-mile sections where they will be needed, and their role and responsibilities.
5. Incorporation of the Applicant's mitigation measures, as set forth in the Staff Assessment and in the AFC.
6. A discussion of measures, such as flagging or fencing, to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during construction and/or operation, and identification of areas where these measures are to be implemented. The discussion shall address how these measures will be implemented prior to the start of construction and how long they will be needed to protect the resources from project-related effects.
7. A discussion of where monitoring of project construction activities is deemed necessary by the designated cultural resource specialist. The specialist will determine the size or extent of the areas where monitoring is to occur and will establish a schedule for the monitor(s) to be present. If the designated specialist determines that the likelihood of encountering cultural resources in certain areas is slight, the specialist may discontinue monitoring in that location.

8. A description of a set of reporting procedures, prepared in concert with the project owner, to be used by all project personnel to notify the designated cultural resource specialist of any unexpected finds of cultural resources during construction-related activities.

9. A description of the work curtailment procedures, prepared in concert with the project owner, to be followed if cultural resources are unexpectedly discovered during project construction.

10. A discussion of the requirement that all cultural resources encountered will be recorded and mapped (may include photos) and all significant or diagnostic resources will be collected for analysis and eventual curation into a retrievable storage collection in a public repository or museum that meets the US Secretary of Interior standards and requirements for the curation of cultural resources.

11. A discussion of the availability and the designated specialist's access to equipment and supplies necessary for site mapping, photographing, and recovering any cultural resource materials encountered during construction.

12. Identification of the public institution that has agreed to receive any data and cultural resources recovered during project-related monitoring and mitigation work. Discussion of any requirements, specifications, or funding needed for the materials to be delivered for curation and how they will be met. Also include the name and phone number of the contact person at the institution.

Verification: At least sixty (60) days prior to the start of construction on the project, the project owner shall provide the draft Cultural Resources Monitoring and Mitigation Plan prepared by the designated cultural resource specialist to the CPM for review and written approval. If the CPM does not approve the draft plan, the project owner, the designated cultural resources specialist, and the CPM shall meet to discuss comments and work out necessary changes.

CUL-4 Prior to the start of project construction, the designated cultural resources specialist shall prepare an employee training program. The project owner shall submit the cultural resources training program to the CPM for review and written approval.

Protocol: The training program will discuss the potential to encounter cultural resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training program shall also include the set of resource reporting procedures and work curtailment procedures that workers are to follow if previously unknown cultural resources are encountered during project activities. The training program will be presented by the designated cultural resource specialist or another qualified person approved by the

CPM and may be combined with other training programs prepared for biological resources, hazardous materials, or any other areas of interest or concern.

Verification: At least forty-five (45) days prior to the start of construction on the project, the project owner shall submit to the CPM (or designee) for review, comment, and written approval, the proposed employee training program, the set of reporting procedures, and the work curtailment procedures that the workers are to follow if previously unknown cultural resources are encountered during construction. The project owner shall provide the CPM with the name and resume for the person proposed to conduct the training.

The CPM shall provide the project owner with written approval or disapproval of the proposed trainer, the proposed employee training program, the set of reporting procedures, and the work curtailment procedures. If the CPM does not approve of the proposed trainer, the draft employee training program, or the proposed procedures, the project owner, the designated cultural resources specialist, and the CPM shall meet to discuss comments and work out necessary changes.

CUL-5 Prior to the start of construction and throughout the project construction period as needed for all new employees, the project owner shall ensure that the designated cultural resource specialist provides the CPM-approved training to all project managers, construction supervisors, and workers. The project owner shall ensure that the designated specialist provides the workers with the CPM-approved set of procedures for reporting any sensitive resources that may be discovered during project-related ground disturbance.

Verification: The project owner shall provide the CPM with documentation, in the Monthly Compliance Report, that the designated cultural resource specialist has presented the employee training program and has provided the set of procedures to all project managers, construction supervisors, and all workers.

CUL-6 The designated cultural resource specialist or their delegated monitor shall have the authority to halt or redirect construction if potentially significant previously unknown cultural resource sites or materials are encountered during project-related ground disturbance including grading, augering, excavation and/or trenching. The designated cultural resource specialist shall notify the CPM within 24 hours of the find and work stopage.

The halting or redirection of construction shall remain in effect until: a) the designated cultural resource specialist determines that the materials are not significant; or b) the specialist meets with the CPM, and any necessary data recovery and mitigation have been completed. After construction is halted or redirected, the designated cultural resource specialist shall act in accordance with the following procedures:

- The designated cultural resource specialist, representatives of the project owner, and the CPM shall confer within five working days of the notification of the CPM to determine what, if any, data recovery or other mitigation is needed.
- If data recovery or other mitigation measures are required, the designated cultural resource specialist and team members shall monitor construction activities and implement data recovery and mitigation measures, as needed.
- All necessary and required data recovery and mitigation shall be completed as expeditiously as possible after discovery of any previously unknown cultural resources, unless additional time is agreed to by all parties.

Verification: At least thirty (30) days prior to the start of construction, the project owner shall provide the CPM with a letter confirming that the designated cultural resource specialist has the authority to halt construction activities in the vicinity of a cultural resource find. The project owner shall also provide the CPM, for review and written approval, a set of work curtailment procedures to be followed if previously unknown cultural resources are discovered during construction.

CUL-7 Throughout the project construction period, the project owner shall provide the designated cultural resource specialist and the CPM with a current schedule of anticipated monthly project activity (presented on a week-by-week basis) and a map indicating the area(s) where construction activities will occur. The designated cultural resource specialist shall consult daily with the project superintendent or construction field manager to confirm the area(s) to be worked on the next day(s).

Verification: The project owner shall provide the designated cultural resource specialist and the CPM with a week-by-week schedule of the upcoming construction activities, one month in advance, as well as maps showing where the construction activity is scheduled to take place. These advance schedules are to be provided to the CPM with the Monthly Compliance Report.

CUL-8 Throughout the pre-construction reconnaissance surveys and the construction monitoring and mitigation phases of the project, the designated cultural resource specialist shall keep a daily log of any resource finds and the progress or status of the resource monitoring, mitigation, preparation, identification, and analytical work being conducted for the project. The designated specialist shall prepare a weekly summary report on the progress or status of cultural resource-related activities. The weekly summary reports are to be filed with the project owner for inclusion in the Monthly Compliance Report to the CPM. The designated resource specialist may informally discuss the cultural resource monitoring and mitigation activities with Commission technical staff.

Verification: Throughout the project construction period, the project owner shall include in the Monthly Compliance Reports to the CPM copies of the weekly summary reports prepared by the designated cultural resource specialist on the progress or status of cultural resource monitoring and mitigation activities.

CUL-9 The designated cultural resource specialist or their delegated monitor shall be present to monitor construction-related ground disturbance, including grading, excavation, trenching, and/or augering in the vicinity of previously recorded archaeological sites, in areas where significant cultural resources have been identified during project construction, and at any other locations specified in the approved monitoring and mitigation plan.

Protocol: If the designated cultural resource specialist determines that full-time monitoring is not necessary in certain portions of the project area or along portions of the linear facility routes, the designated specialist shall notify the project owner and the CPM of the changes. The designated cultural resource specialist shall use mile post markers and boundary stakes placed by the project owner to identify areas where monitoring is being reduced or is no longer deemed necessary.

The daily logs prepared by the designated cultural resource specialist shall indicate, by tenths of a post mile, where and when monitoring has taken place and where monitoring has been deemed unnecessary.

Verification: The project owner shall include in the Monthly Compliance Reports to the CPM copies of the weekly summary reports prepared by the designated cultural resource specialist on project-related cultural resource activities.

CUL-10 The project owner shall ensure the recovery, preparation for analysis, and preparation for curation of all cultural resource materials encountered and collected during pre-construction surveys and during the monitoring, data recovery, mapping, and mitigation activities related to the project.

Verification: The project owner 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 cultural resource materials collected during data recovery and mitigation for the project. The project owner shall maintain these files for a period of at least five (5) years after completion of the Final Cultural Resources Report and the files shall be kept available for periodic audit by the CPM.

CUL-11 The project owner shall ensure preparation of a Preliminary Cultural Resource Report following completion of data recovery and site mitigation work. The preliminary report is to be prepared by the designated cultural

resource specialist and the project owner shall submit the preliminary report to the CPM for review, comment, and written approval.

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; discussion of 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 recovered from the project; and an estimate of the time needed to complete the analysis of recovered cultural resource materials and prepare a final report.

If no cultural resource materials are recovered during project construction, the CPM-approved Preliminary Cultural Resource Report shall also serve as the final report and shall be filed with appropriate entities, as described in Condition **CUL-14** below.

Verification: The designated cultural resource specialist shall prepare a preliminary report on the cultural resources monitoring and mitigation activities conducted for the project. The report shall be prepared within ninety (90) days following completion of the data recovery and site mitigation work. Within seven (7) days after completion of the report, the project owner shall submit a copy of the Preliminary Cultural Resources Report to the CPM for review, comment, and written approval.

CUL-12 The project owner shall ensure the preparation of a Final Cultural Resources Report by the designated cultural resource specialist, if significant or diagnostic cultural resources are found. The Final Cultural Resources Report shall be completed following completion of the analysis of the recovered cultural materials and related information.

Protocol: The Final Cultural Resources Report, shall include (but not be limited to): the survey report(s), methodology, and recommendations; site records and maps; description and inventory list of recovered cultural materials; determinations of significance and potential eligibility; data recovery and other mitigation activities; results and findings of any special analyses conducted on recovered cultural resource materials; research questions answered or raised by the data from the project; and the name and location of the public institution receiving the recovered cultural resources for curation.

Verification: The Final Cultural Resources Report shall be prepared by the designated cultural resource specialist for the project within ninety (90) days following completion of the analysis of the recovered cultural materials and preparation of related text, maps, tables, charts, photos, etc.. Within seven (7) days

after completion of the report, the project owner shall submit a copy of the Final Cultural Resources Report to the CPM for review and approval.

CUL-13 The project owner shall submit an original, an original-quality copy, or a computer disc copy of the CPM-approved Final Cultural Resources Report to the public institution receiving the recovered data and materials for curation, to the SHPO, and to the appropriate regional archaeological information center(s). If the final report is submitted to these entities on a computer disc, the disc files must meet SHPO requirements for format and content. A legible copy of the approved final report shall be filed with the Commission CPM, with a request for confidentiality if needed to protect any sensitive resources or sites.

Protocol: The copies of the Final Cultural Resources Report to be sent to the curating institution, the SHPO, and the regional information center(s) shall include the following (as applicable to the project findings set forth in 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 or diagnostic cultural resource materials found during pre-construction surveys, during project-related monitoring, data recovery, and mitigation; and photographs of the site(s) and the various cultural resources materials recovered during project monitoring and mitigation and subjected to post-recovery analysis and evaluation. The project owner shall provide the curating institution with a set of negatives for all of these photographs.

Verification: The project owner shall maintain, in its compliance files, copies of all documentation related to the filing of the original materials and the Commission-approved Final Cultural Resources Report with the public institution receiving the recovered data and materials for curation, the SHPO, and the appropriate archaeological information center(s). If no significant cultural resources were recovered, then the preliminary report shall serve as the final report and copies of the preliminary report shall be filed with these same agencies.

CUL-14 Following the filing of the CPM-approved Final Cultural Resources Report with the appropriate entities, the project owner shall deliver for curation all cultural resources materials, maps and data collected during data recovery and mitigation for the project. The materials shall be delivered for curation into a public repository that meets the US Secretary of Interior requirements for the curation of cultural resources.

Verification: All recovered cultural resources materials shall be delivered for curation within thirty (30) days following the filing of the CPM-approved Final Cultural Resources Report. The project owner shall maintain, in its project history or compliance files, copies of signed contracts or agreements with the museum(s), university(ies), or other appropriate public repository(ies) to which the project owner

has delivered for curation all cultural resources materials collected during data recovery and mitigation for the project.

PALEONTOLOGICAL RESOURCES

PAL-1 Prior to the start of any project-related construction activities (defined as any construction-related vegetation clearance, ground disturbance and preparation, and site excavation activities), the project owner shall ensure that the designated paleontological resources specialist approved by the Energy Commission Compliance Project Manager (CPM) is available for field activities and prepared to implement the Conditions of Certification.

The designated paleontological resources specialist shall be responsible for implementing all the Conditions of Certification and for using qualified personnel to assist in this work.

Protocol: The project owner shall provide the CPM with the name and statement of qualifications for the designated paleontological resources specialist.

1. The statement of qualifications for the designated paleontological resource specialist shall demonstrate that the specialist meets the following minimum qualifications: a degree in paleontology, geology, or paleontological resource management; at least three years of paleontological resource mitigation and field experience in California, including at least one year's experience leading paleontological resource mitigation and field activities.
2. The statement of qualifications shall include a list of specific projects the specialist has previously worked on; the role and responsibilities of the specialist for each project listed; and the names and phone numbers of contacts familiar with the specialist's work on these referenced projects.
3. If the CPM determines that the qualifications of the proposed paleontological resources specialist are not in concert with the above requirements, the project owner shall submit another individual's name and qualifications for consideration.
4. If the approved, designated paleontological resources specialist is replaced prior to completion of project mitigation, the project owner shall obtain CPM approval of the new designated paleontological resources specialist by submitting the name and qualifications of the proposed replacement to the CPM, at least ten (10) days prior to the termination or release of the preceding designated paleontological resources specialist. Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

Verification: At least ninety (90) days prior to the start of construction on the project, the project owner shall submit the name and resume and the availability for its designated paleontological resources specialist to the CPM for review and approval. The CPM shall provide written approval or disapproval of the proposed paleontological resources specialist.

At least ten (10) days prior to the termination or release of a designated paleontological resource specialist, the project owner shall obtain CPM approval of the replacement specialist by submitting to the CPM the name and resume of the proposed new designated paleontological resource specialist. Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

PAL-2 Prior to the start of project construction, the designated paleontological resource specialist shall prepare a Paleontological Resources Monitoring and Mitigation Plan to identify general and specific measures to minimize potential impacts to sensitive paleontological resources, and submit this plan to the CPM for review and approval. After CPM approval, the project owner's designated paleontological resource specialist shall be available to implement the Monitoring and Mitigation Plan as needed throughout project construction.

Protocol: The Paleontological Resources Monitoring and Mitigation Plan shall include, but not be limited to, the following elements and measures:

1. A discussion of the sequence of project-related tasks, such as any pre-construction surveys, fieldwork, flagging, or staking; construction monitoring; mapping and data recovery; fossil preparation and recovery; identification and inventory; preparation of final reports; and transmittal of materials for curation.
2. Identification of the person(s) expected to assist with each of the tasks identified in (a), above, and a discussion of the mitigation team leadership and organizational structure, and the inter-relationship of tasks and responsibilities.
3. Where monitoring of project construction activities is deemed necessary, the extent of the areas where monitoring is to occur and a schedule for the monitoring.
4. An explanation that the designated paleontological resources specialist shall have the authority to halt or redirect construction in the immediate vicinity of a vertebrate fossil find until the significance of the find can be determined.
5. A discussion of equipment and supplies necessary for recovery of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits.

6. Inventory, preparation, and delivery for curation into a retrievable storage collection, in a public repository or museum which meets the Society of Vertebrate Paleontologists standards and requirements for the curation of paleontological resources.

7. Identification of the institution that has agreed to receive any data and fossil materials recovered during project-related monitoring and mitigation work; discussion of any requirements or specifications for materials delivered for curation and how they will be met; and the name and phone number of the contact person at the institution.

Verification: At least sixty (60) days prior to the start of construction on the project, the project owner shall provide the CPM with a copy of the Monitoring and Mitigation Plan prepared by the designated paleontological resource specialist for review and approval. If the plan is not approved, the project owner, the designated paleontological resources specialist, and the CPM shall meet to discuss comments and negotiate necessary changes.

PAL-3 Prior to the start of project construction, the designated paleontological resources specialist shall prepare and conduct an employee training program for all site workers. The project owner shall submit the paleontological resources training program to the CPM for review and approval.

Protocol: The paleontological training program shall discuss the potential to encounter fossil resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during project activities. The training program shall be presented by the designated paleontological resource specialist and may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

Verification: At least thirty days (30) prior to the start of project construction, the project owner shall submit to the CPM (or designee) for review, comment, and written approval, the proposed employee training program and the set of reporting procedures the workers are to follow if paleontological resources are encountered during project construction.

If the employee training program and set of procedures are not approved, the project owner, the designated paleontological resources specialist, and the CPM shall meet to discuss comments and negotiate necessary changes before the beginning of construction.

PAL-4 Prior to the start of construction, and throughout the project construction period as needed for all new employees, the project owner and the designated paleontological resource specialist shall provide the CPM-approved training to all project managers, construction supervisors, and workers who operate ground disturbing equipment. The project owner and construction manager shall provide the workers with the CPM-approved set of procedures for reporting any sensitive paleontological resources or deposits that may be discovered during project-related ground disturbance.

Verification: Prior to the start of construction, and throughout the project construction period as needed for all new employees, the project owner and the designated paleontological resources specialist shall present the CPM-approved paleontological resources training program. The project owner shall provide documentation to the CPM in the Monthly Compliance Report that the employee training and the set of procedures have been provided to all project managers, construction supervisors, and all workers. Documentation for training of additional new employees shall be provided in subsequent Monthly Compliance Reports, as appropriate.

PAL-5 The designated paleontological resource specialist shall be present at all times he or she deems appropriate to monitor construction-related grading, excavation, trenching, and/or augering in areas where potentially fossil-bearing sediments have been identified.

If the designated paleontological resources specialist determines that full-time monitoring is not necessary in certain portions of the project area or along portions of the linear facility routes, the designated specialist shall notify the project owner.

Verification: The project owner shall include in the Monthly Compliance Reports a summary of paleontological activities conducted by the designated paleontological resource specialist.

PAL-6 The project owner, through the designated paleontological resource specialist, shall ensure recovery, preparation for analysis, analysis, identification and inventory, the preparation for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during the monitoring, data recovery, mapping, and mitigation activities related to the project.

Verification: The project owner shall maintain in its compliance files copies of signed contracts or agreements with the designated paleontological resource specialist and other qualified research specialists who will ensure the necessary data and fossil recovery, mapping, preparation for analysis, analysis, identification and inventory, and preparation for and delivery of all significant paleontological resource materials collected during data recovery and mitigation for the project.

The project owner shall maintain these files for a period of three (3) years after completion and approval of the CPM-approved Final Paleontological Resources Report and shall keep these files available for periodic audit by the CPM.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report by the designated paleontological resources specialist. The Paleontological Resource Report shall be completed following completion of the analysis of the recovered fossil materials and related information. The project owner shall submit the paleontological report to the CPM for approval.

Protocol: The report shall include (but not be limited to) a description and inventory list of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the paleontological resources specialist that project impacts to paleontological resources have been mitigated.

Verification: The Paleontological Resources Report shall be submitted under a cover letter stating that it is a confidential document. The report is to be prepared by the designated paleontological resources specialist within ninety (90) days following completion of the analysis of the recovered fossil materials. The project owner shall submit a copy of the Paleontological Resources Report to the CPM for review and approval.

PAL-8 The project owner shall include, in the facility closure plan, a description regarding the potential of the closure activities to impact paleontological resources. If no activities are proposed that would potentially impact paleontological resources, then no mitigation measures for paleontological resource management are required. The conditions for closure will be determined when a facility closure plan is submitted to the CPM twelve months prior to closure of the facility.

Protocol: The closure requirements for paleontological resources are to be based upon the Paleontological Resources Report and the proposed grading activities for closure.

Verification: The project owner shall include a description of closure activities described above in the facility closure plan.

LAND USE

No General Conditions of Certification.

SOCIOECONOMICS

SOCIO-1 The project owner shall pay the statutory school impact development fee as required at the time of filing for the "in-lieu" building permit with the County Department of Engineering and Survey Services and Building Inspection.

Verification: The project owner shall provide proof of payment of the statutory development fee in the next Monthly Compliance Report following the payment.

SOCIO-2 The project owner and its contractors and subcontractors shall recruit employees and procure materials and supplies within the County where the project is located first, and from adjacent counties second, unless:

- to do so will violate federal and/or state statutes;
- the materials and/or supplies are not available; or
- qualified employees for specific jobs or positions are not available; or
- there is a reasonable basis to hire someone for a specific position from outside the local area.

Verification: At least 60 days prior to the start of construction, the project owner shall submit to the Energy Commission Compliance Project Manager (CPM) copies of contractor, subcontractor, and vendor solicitations and guidelines stating hiring and procurement requirements and procedures. In addition, the project owner shall notify the Energy Commission CPM in each Monthly Compliance Report of the reasons for any planned procurement of materials or hiring outside the local regional area that will occur during the next two months. The Energy Commission CPM shall review and comment on the submittal as needed.

VISUAL RESOURCES

VIS-1 Prior to first electricity generation, the project owner shall treat all project structures and transmission lines identified in the treatment plan in non-reflective colors to blend with the existing visual setting.

a. Prior to treatment of any project structures and transmission lines, the project owner shall submit a treatment plan for the project to the California Energy Commission Compliance Project Manager (CPM) for review and approval.

   The treatment plan shall include:

   - specification and 11" x 17" color simulations of the treatment proposed for use on project structures, including structures treated during manufacture;

- a detailed schedule for completion of the treatment; and,
- a procedure to ensure proper treatment maintenance for the life of the project.

b. If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the plan, the project owner shall submit to the CPM a revised plan.

c. After approval of the plan by the CPM, the project owner shall implement the plan according to the schedule and shall ensure that the treatment is properly maintained for the life of the project.

d. For any structures that are treated during manufacture, the project owner shall not specify the treatment of such structures to the vendors until the project owner receives notification of approval of the treatment plan by the CPM.

e. The project owner shall not perform the final treatment on any structures until the project owner receives notification of approval of the treatment plan from the CPM.

f. The project owner shall notify the CPM within one (1) week after all pre-colored structures have been erected and all structures to be treated in the field have been treated that the structures are ready for inspection.

Verification: Not later than sixty (60) days prior to ordering any structures that are to be color treated during manufacture, the project owner shall submit its proposed plan to the CPM for review and approval. If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, the project owner shall submit to the CPM a revised plan within thirty (30) days of receiving that notification.

Not less than thirty (30) days prior to first electricity generation, the project owner shall notify the CPM that all structures treated during manufacture and all structures treated in the field are ready for inspection. The project owner shall provide a status report regarding treatment maintenance in the Annual Compliance Report.

VIS-2 All project fencing shall be non-reflective.

a. Prior to ordering the fencing the project owner shall submit to the CPM for review and approval the specifications for the fencing documenting that such fencing will be non-reflective.

b. If the CPM notifies the project owner that specification revisions are needed before the CPM will approve the submittal, the project owner shall submit to the CPM revised specifications.

c. The project owner shall not order any project fencing until the project owner receives approval of the fencing specifications from the CPM.

d. The project owner shall notify the CPM after the fencing has been installed and is ready for inspection.

Verification: At least thirty (30) days prior to ordering any non-reflective fencing, the project owner shall submit the specifications to the CPM for review and approval. If the CPM notifies the project owner that specification revisions are needed, the project owner shall prepare and submit to the CPM revised specifications for CPM review and approval within thirty (30) days of receiving that notification.

The project owner shall notify the CPM, in the next Monthly Compliance Report following installation of the fencing, that the fencing is ready for inspection.

VIS-3 The project owner shall design and install all lighting such that light bulbs and reflectors are not visible from public viewing areas and illumination of the vicinity and the nighttime sky is minimized.

a. Prior to first electricity generation, the project owner shall develop and submit a lighting plan for the project to the CPM for review and approval.

   The lighting plan shall require that:

   - Lighting is designed so that exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized;
   - The design of outdoor lighting shall be such that the luminescence or light source is shielded to prevent light trespass outside the project boundary; and
   - High illumination areas not occupied on a continuous basis such as maintenance platforms or the main entrance are provided with switches or motion detectors to light the area only when occupied.

b. If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the plan, the project owner shall prepare and submit to the CPM a revised plan.

c. Lighting shall not be installed before the plan is approved. The project owner shall notify the CPM when the lighting has been installed and is ready for inspection.

d. A lighting complaint resolution form (following the general format of that in Attachment 1) shall be used by plant operations to record all lighting complaints received and document the resolution of those complaints. All records of lighting complaints shall be kept in the on-site compliance file.

Verification: At least sixty (60) days before ordering the exterior lighting, the project owner shall provide the lighting plan to the CPM for review and approval. If the CPM notifies the project owner that any revisions of the plan are needed, the project owner shall submit to the CPM, for review and approval, a revised plan within thirty (30) days of receiving that notification.

The project owner shall notify the CPM in the next Monthly Compliance Report that the exterior lighting installation is complete and ready for inspection.

Any lighting complaints received, and the outcome of those complaints, shall be described in the next Monthly or Annual Compliance Report, as appropriate.

VIS-4 Prior to the start of commercial operation, the project owner shall implement a landscape plan that meets the requirements of the County Zoning Code and provides a continuous screen of the power plant from sensitive view areas.

a. The project owner shall submit to the CPM for review and approval a specific plan describing its landscaping proposal, stating that it conforms to the County's Zoning Code. The plan shall include, but not be limited to:

   - a detailed landscape plan, at a reasonable scale, which includes a list of proposed tree and shrub species and sizes and a discussion of the suitability of the plants for the site conditions and mitigation objectives;
   - maintenance procedures, including any needed irrigation;
   - a procedure for replacing unsuccessful plantings; and
   - a cost estimate for landscaping.

b. If the CPM notifies the project owner that plan revisions are needed, the project owner shall prepare and submit to the CPM a revised plan for CPM approval.

c. The trees and shrubs shall not be planted before the plan is approved. The project owner shall notify the CPM when the trees and shrubs have been planted and are ready for inspection.

Verification: At least ninety (90) days prior to the start of commercial operation, the project owner shall submit the proposed landscape plan, including a letter or other document from the County, if any, to the CPM for review and approval. The CPM will respond to the project owner within fifteen (15) days of receipt of the landscaping plan.

The project owner shall submit any required revisions within fifteen (15) days of notification by the CPM. The CPM will respond to the project owner within fifteen (15) days of receipt of the revised documents. The project owner shall notify the CPM in the next Monthly Compliance Report following completion of the proposed planting that the planting is ready for inspection.

NOISE

NOISE-1 At least fifteen (15) days prior to the start of rough grading, the project owner shall notify all residents within one mile of the commencement of construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the LPGP. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the LPGP site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one (1) year.

Verification: The project owner shall transmit to the CPM in the first Monthly Construction Report following the start of rough grading a statement, signed by the project manager, attesting that the above notification has been performed and describing the method of that notification. This statement shall also attest that the telephone number has been established and posted at the site.

NOISE-2 Throughout the construction and operation the project owner shall document, investigate, evaluate, and attempt to resolve all project related noise complaints.

The project owner shall:

1. use the Noise Complaint Resolution Form (see below for example), or functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
2. attempt to contact the person(s) making the noise complaint within 24 hours;
3. conduct an investigation to determine the source of noise related to the complaint;
4. if the noise is project related, take all feasible measures to reduce the noise at its source; and
5. submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to complainant's satisfaction.

Verification: Within thirty (30) days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form, or similar instrument approved by the CPM, with the County and with the CPM documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a thirty (30) day period, the project owner shall

submit an updated Noise Complaint Resolution Form when the mitigation is finally implemented.

NOISE COMPLAINT RESOLUTION FORM

_____ Project
(__-AFC-__)

NOISE COMPLAINT LOG NUMBER _____

Complainant's name and address:

Phone number: _____

Date complaint received: _____
Time complaint received: _____

Nature of noise complaint:

Definition of problem after investigation by plant personnel:

Date complainant first contacted: _____

Initial noise levels at 3 feet: _____dBA Date: _____
Initial noise levels at complainant's property: _____dBA Date: _____

Final noise levels at 3 feet: _____dBA Date: _____
Final noise levels at complainant's property: _____dBA Date: _____

Description of corrective measures taken:

Complainant's signature: _____ Date: _____

Approximate installed cost of corrective measures: $ _____
Date installation completed: _____
Date first letter sent to complainant: _____ (copy attached)
Date final letter sent to complainant: _____ (copy attached)

This information is certified to be correct:

Plant Manager's Signature: _____

Attach additional pages and supporting documentation, as required.

NOISE-3 Prior to the start of construction, the project owner shall submit to the CPM for review a noise control program. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA standards.

Verification: At least thirty (30) days prior to the start of rough grading, the project owner shall submit to the CPM the above referenced program. The project owner shall make the program available to OSHA upon request.

NOISE-4 If a traditional, high-pressure steam blow process is employed, the project owner shall equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 110 dBA L_{50} measured at a distance of 100 feet. The project owner shall conduct steam blows only during the hours of 7:00 a.m. to 7:00 p.m. weekdays, and 8:00 a.m. to 6:00 p.m. weekends and holidays. If a modern, low-pressure continuous steam blow process is employed, the project owner shall submit a description of this process, with expected noise levels and projected hours of execution, to the CPM.

Verification: At least fifteen (15) days prior to the first high-pressure steam blow, the project owner shall submit to the CPM drawings or other information describing the temporary steam blow silencer, and a description of the steam blow schedule. At least fifteen (15) days prior to the first low-pressure continuous steam blow, the project owner shall submit to the CPM drawings or other information describing the process, including the noise levels expected and the expected time schedule for execution of the process.

NOISE-5 The project owner shall conduct a public notification program to alert residents within one mile of the site prior to the start of steam blow activities. The notification shall include a description of the purpose and nature of the steam blow(s), the proposed schedule, the expected sound levels, and the explanation that it is a one-time operation and not a part of normal plant operations.

Verification: At least fifteen (15) days prior to the first steam blow(s), the project owner shall notify all residents within one mile of the of the planned steam blow activity, and shall make the notification available to other area residents in an appropriate manner. The notification may be in the form of letters to the area residences, telephone calls, fliers, or other effective means. Within five (5) days of notifying these entities, the project owner shall send a letter to the CPM confirming that the residents have been notified of the planned steam blow activities, including a description of the method(s) of that notification.

NOISE-6 Upon the project first achieving an output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey, utilizing the same monitoring sites employed in the pre-

project ambient noise survey as a minimum. The survey shall also include the octave band pressure levels to ensure that no new pure-tone noise components have been introduced. No single piece of equipment shall be allowed to stand out as a dominant source of noise that draws complaints. Steam relief valves shall be adequately muffled to preclude noise that draws complaints. The noise contributed by the LPGP operations at the nearest residence shall not exceed 40 dBA L_{50} under normal operating conditions. If the results from the survey indicate that power plant noise levels are in excess of 40 dBA L_{50} at the nearest residence, additional mitigation measures shall be implemented to reduce noise to a level of compliance with this limit. The mitigation measures (to be employed as required) include, but are not limited to:

1. provide standard outdoor/weather enclosures for the combustion turbine generator packages;
2. provide air inlet silencers for the combustion turbines;
3. provide standard outdoor/weather enclosure for the steam turbine generator packages; and
4. install silencers for the heat recovery steam generator exhaust stacks.

Protocol: The measurement of power plant noise for purposes of demonstrating compliance with this Condition may alternatively be made at an acceptable location closer to the plant (e.g. 400 to 1,000 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the nearest sensitive receptor. However, not withstanding the use of this alternative method for determining the noise level, the character of plant noise shall be evaluated at the nearest sensitive receptor to determine the presence of pure tones or other dominant sources of plant noise.

Verification: Within thirty (30) days after first achieving an output of 80 percent or greater of rated output, the project owner shall conduct the above described noise survey. Within thirty (30) days after completing the survey, the project owner shall submit a summary report of the survey to the County and the CPM. Included in the report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. Within thirty (30) days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this Condition.

NOISE-7 The project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility. The survey shall be conducted within thirty (30) days after the facility is operating at an output of 80% of rated capacity or greater, and shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of

Regulations, sections 5095-5100 (Article 105) and Title 29, Code of Federal Regulations, Part 1910. The survey results shall be used to determine the magnitude of employee noise exposure. The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within thirty (30) days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA upon request.

NOISE-8 In order to avoid adverse noise effects, any construction activity such as pile driving, excavation and grading (earth movement), concrete pour and steel erection) shall be restricted to the hours of 7 a.m. to 7 p.m. on weekdays and from 8 a.m. to 6 p.m. on weekends and holidays.

Verification: The project owner shall transmit to the CPM in the first Monthly Construction Report a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

TRAFFIC AND TRANSPORTATION

TRANS-1 The project owner shall comply with CALTRANS and County limitations on vehicle sizes and weights. In addition, the project owner or its contractor shall obtain necessary transportation permits from CALTRANS and all relevant jurisdictions for roadway use.

Verification: In the Monthly Compliance Reports, the project owner shall submit copies of any oversize and overweight transportation permits received during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six (6) months after the start of commercial operation.

TRANS-2 The project owner or its contractor shall comply with CALTRANS and County limitations for encroachment into public rights-of-way and shall obtain necessary encroachment permits from CALTRANS and all relevant jurisdictions.

Verification: In Monthly Compliance Reports, the project owner shall submit copies of any encroachment permits received during the reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six (6) months after the start of commercial operation.

TRANS-3 The project owner shall ensure that permits and/or licenses are secured from the California Highway Patrol and CALTRANS for the transport of hazardous materials.

Verification: The project owner shall include in its Monthly Compliance Reports copies of all permits/licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous substances.

TRANS-4 Prior to the start of construction, the project owner shall consult with the County and prepare and submit to the CPM a construction traffic control plan and implementation program which addresses the following issues:

- timing of heavy equipment and building materials deliveries;
- signing, lighting, and traffic control device placement;
- establishing construction work hours outside of peak traffic periods;
- emergency access;
- temporary travel lane closures;
- maintaining access to adjacent residential and commercial property; and
- off street employee parking in construction areas during peak construction.

Verification: At least thirty (30) days prior to start of construction, the project owner shall provide to the CPM for review and approval a copy of its construction traffic control plan and implementation program.

TRANS-5 The project owner or its contractor shall install crossing structures and netting across major thoroughfares as a safety precaution to reduce the potential for damage from falling construction materials or equipment during cable-stringing activities. Prior to start of construction, the project owner shall consult with CALTRANS, and prepare and submit to the CPM a safety plan and implementation program.

Verification: At least thirty (30) days prior to start of construction, the project owner shall provide to the CPM, for review and approval, a copy of its safety plan and implementation program.

TRANS-6 Following construction of the power plant and all related facilities, the project owner shall meet with the CPM and the County to determine the actions necessary and schedule to complete the repair of all roadways to original or as near original condition as possible.

Protocol: Protocol: At least thirty (30) days prior to start of construction, the project owner shall photograph the primary routes to be used by construction traffic. The property owner shall provide the CPM and the County with a copy of these photographs.

Verification: Within thirty (30) days of the completion of project construction, the project owner shall meet with the CPM and the County. The project owner shall provide a copy of the letter from the County acknowledging satisfactory completion of the roadway repairs in the first Annual Compliance Report following start of project operation.

SOIL AND WATER RESOURCES

SOIL&WATER-1: Prior to beginning any clearing, grading, or excavation activities associated with project construction, the project owner will develop and implement a Storm Water Pollution Prevention Plan (SWPPP).

Verification: Two (2) weeks prior to the start of construction, the project owner will submit to the Energy Commission CPM a copy of the Storm Water Pollution Prevention Plan (SWPPP).

SOIL&WATER-2: Prior to the initiation of any earth moving activities, the project owner shall submit an erosion control and revegetation plan for CPM approval. The final plan shall contain all the elements of the draft plan with changes made to address the final design of the project.

Verification: The final erosion control and revegetation plan shall be submitted to the Energy Commission CPM for approval at least thirty (30) days prior to the initiation of any earth moving activities.

SOIL&WATER-3: Prior to the start of commercial operation, the project owner must submit a notice of intent to the State Water Resources Control Board to indicate that the project will operate under provisions of the General Industrial Activity Storm Water Permit. As required by the general permit, the project owner will develop and implement a Storm Water Pollution Prevention Plan (SWPPP).

Verification: Two (2) weeks prior to the start of commercial operation, the project owner will submit to the Energy Commission CPM a copy of the Storm Water Pollution Prevention Plan (SWPPP), and a copy of the Water Quality Control Board authorization to operate under the General Permit.

HAZARDOUS MATERIALS MANAGEMENT

HAZ-1 The project owner shall not use any hazardous material in reportable quantities that is not listed in Attachment A *(NOTE THAT ATTACHMENT A WILL BE UNIQUE TO EACH PROJECT)*, following these Conditions, unless approved by the CPM.

Verification: The project owner shall provide in the Annual Compliance Report a list of hazardous materials used at the facility in reportable quantities.

HAZ-2 The project owner shall submit both the Business Plan and Risk Management Plan to the CPM for review and comment, and shall also submit these plans and/or procedures to the County Fire Department for approval.

Verification: At least sixty (60) days prior to the initial delivery of any hazardous materials in reportable quantities to the facility, the project owner shall submit the Business Plan and Risk Management Plan to the CPM for review and comment. At the same time, the project owner shall submit these plans to the County Fire Department for approval. The project owner shall also submit evidence to the CPM that the County Fire Department approved of these plans, when available.

HAZ-3 The project owner shall provide a detailed Safety Management Plan (SMP) to the CPM for approval and review.

Protocol: The Safety Management Plan shall include the following: 1) a description of how each element of the SMP applies to the proposed facility; 2) an explicit chain of command (by job title on final organization chart) for each specific objective identified in the plan (for example, under "Accountability," list who will be responsible for the preparation of the specific statement of expectations, objectives and goals by senior management, daily shift logs and reports of abnormal conditions); 3) a description of how corporate management will ensure proper implementation of the SMP and ensure that production and safety are properly balanced; 4) methods that will be used to motivate employees to accomplish safety objectives; and 5) detailed procedures to address the hazards associated with human error during storage and transfer of hazardous materials.

Verification: At least sixty (60) days prior to the initial delivery of any hazardous materials in reportable quantities to the facility, the project owner shall provide a detailed Safety Management Plan as described in the Protocol section of this Condition of Certification to the CPM for review and approval.

HAZ-4 Prior to commencement of commercial operation, the project owner shall submit to the CPM for review and approval hazardous materials management plans as described below. These plans may be incorporated into the Facility Closure Plan and the On-site Contingency Plans (which are required under General Conditions of the Compliance Plan section of this Decision).

Protocol: For the event of a planned closure or an unexpected permanent closure of the facility, the On-site Contingency Plan (and the Facility Closure Plan, should one be submitted) shall address how all hazardous materials will be removed from the site in accordance with all applicable LORS.

Verification: For the event of an unexpected temporary closure of the facility, the On-site Contingency Plan shall address how the site and the hazardous materials will be secured and maintained safely for the period of closure. For the event in which the temporary closure is declared permanent by the CPM, the On-site Contingency Plan shall address how all hazardous materials will be removed from the site in accordance with all applicable LORS.

At least sixty (60) days (or other time agreed to by the CPM) prior to commencement of commercial operation, the project owner shall submit the above plans to the CPM for review and approval.

WORKER SAFETY

SAFETY-1 The project owner shall submit to the CPM a Project Construction Safety and Health Program which shall include:

- Construction Injury and Illness Prevention Program
- Construction Fire Protection and Prevention Plan
- Personal Protective Equipment Program

Protocol: The Construction Injury and Illness Prevention Program and the Personal Protective Equipment Program shall be submitted to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) Consultation Service, for review and comment concerning compliance of the program with all applicable Safety Orders.

The Construction Fire Protection and Prevention Plan shall be submitted to the County Fire Department for review and acceptance.

Verification: At least 30 days prior to the start of construction, or a date agreed to by the CPM, the project owner shall submit to the CPM a copy of the Project Construction Safety and Health Program and the Personal Protective Equipment

Program, incorporating Cal/OSHA's Consultation Service comments. The project owner shall provide a letter from the County fire department stating that they have reviewed and accept the Construction Fire Protection and Prevention Plan.

SAFETY- 2 The project owner shall submit to the CPM a Project Operation Safety and Health Program containing the following:

- Operation Injury and Illness Prevention Plan
- Emergency Action Plan
- Operation Fire Protection Plan
- Personal Protective Equipment Program

Protocol: The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) Consultation Service for review and comment concerning compliance of the program with all applicable Safety Orders.

The Operation Fire Protection Plan and the Emergency Action Plan shall be submitted to the County fire department for review and acceptance.

Verification: At least 30 days prior to the start of operation, the project owner shall submit to the CPM a copy of the final version of the Project Operation Safety & Health Program. It shall incorporate Cal/OSHA's Consultation Service comments, stating that they have reviewed and accepted the specified elements of the proposed Operation Safety and Health Plan.

The project owner shall notify the CPM that the Project Operation Safety and Health Program (Injury and Illness Prevention Plan, Fire Protection Plan, the Emergency Action Plan, and Personal Protective Equipment requirements), including all records and files on accidents and incidents, is present on-site and available for inspection.

SAFETY-3 The project owner shall design and install all exterior lighting to meet the requirements contained in the Visual Resources Conditions of Certification and in accordance with the American National Standards Practice for Industrial Lighting, ANSI/IES-RP-7.

Verification: Within 60 days after construction is completed, the project owner shall submit a statement to the CPM that the illuminance contained in ANSI/IES RP-7 were used as a basis for the design and installation of the exterior lighting.

FACILITY DESIGN

GEN-1 The project owner shall design, construct and inspect the project in accordance with the California Building Code (CBC)[1] and all other applicable laws, ordinances, regulations, and standards (LORS) in effect at the time initial design plans are submitted to the Chief Building Official (CBO) for review and approval. The CBC in effect is that edition that has been adopted by the California Building Standards Commission, and published at least 180 days previously.

In the event the LPGP is designed to a successor edition to the 1998 CBC, the 1998 CBC provisions identified herein shall be replaced with the applicable successor provisions.

Where, in any specific case, different sections of the code specify different materials, methods of construction, or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

Verification: Within thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) after receipt of the Certificate of Occupancy, the project owner shall submit to the Compliance Project Manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation and inspection requirements of the applicable LORS and the Commission's Decision have been met for facility design. The project owner shall provide the CPM a copy of the Certificate of Occupancy in the next Monthly Compliance Report after receipt of the permit from the CBO [1998 CBC, Section 109 – Certificate of Occupancy.]

GEN-2 The project owner shall furnish to the CPM and to the CBO a schedule of facility design submittals, a Master Drawing List, and a Master Specifications List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: At least sixty (60) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The project owner shall provide schedule updates in the Monthly Compliance Report.

[1] All the Sections, Chapters, Appendices and Tables in these Conditions, unless otherwise stated, refer to Sections, Chapters, Appendices and Tables of the 1998 California Building Code (CBC).

GEN-3 The project owner shall make payments to the CBO for design review, plan check, and construction inspection equivalent to the fees listed in the 1998 CBC, Chapter 1, Section 107 and Table 1-A – Building Permit Fees; Appendix Chapter 33, Section 3310 and Table A-33-A – Grading Plan Review Fees, and Table A-33-B – Grading Permit Fees. If the County has adjusted the CBC fees for design review, plan check, and construction inspection, the project owner shall pay the adjusted fees.

Verification: The project owner shall make the required payments to the CBO at the time of submittal of the plans, design calculations, specifications, or soil reports. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next Monthly Compliance Report indicating that the applicable fee has been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California registered architect, structural engineer, or civil engineer as a resident engineer (RE) to be in general responsible charge of the project. [Building Standards Administrative Code (Cal. Code of Regs., Tit. 24, § 4-209 – Designation of Responsibilities).]

The RE may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project, respectively. A project may be divided into parts, provided each part is clearly defined as a distinct unit. Separate assignment of general responsible charge may be made for each designated part.

Protocol: The RE shall:

1. monitor construction progress to ensure compliance with LORS;
2. ensure that construction of all the facilities conforms in every material respect to the applicable LORS, approved plans, and specifications;
3. prepare documents to initiate changes in the approved drawings and specifications when directed by the project owner or as required by conditions on the project;
4. be responsible for providing the project inspectors and testing agency(ies) with complete and up-to-date set(s) of stamped drawings, plans, specifications, and any other required documents;
5. be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and

6. be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests as not conforming to the approved plans and specifications.

The RE shall have the authority to halt construction and to require changes or remedial work if the work does not conform to applicable requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval the name, qualifications, and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approval(s) of the RE and other delegated engineer(s) within five (5) days of the approval(s).

If the RE or the delegated engineer(s) are subsequently reassigned or replaced, the project owner has five (5) days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five (5) days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: a) a civil engineer; b) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; c) a design engineer who is either a structural engineer or a civil engineer who is fully competent and proficient in the design of power plant structures and equipment supports; d) a mechanical engineer; and e) an electrical engineer. [California Business and Professions Code, Section 6704 et seq., and sections 6730 and 6736; requires state registration to practice as a civil engineer or structural engineer in California.]

The tasks performed by the civil, mechanical, electrical, or design engineers 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, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit to the CBO for review and approval the names, qualifications, and registration numbers of all engineers assigned to the project. [1998 CBC, section 104.2 – Powers and Duties of Building Official.]

If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Protocol: The following protocols shall apply:

A. The civil engineer shall:

- design (or be responsible for the design), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities. At a minimum, these include: grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems; and
- provide consultation to the RE during the construction phase of the project, and recommend changes in the design of the civil works facilities and changes in the construction procedures.

B. The geotechnical engineer or civil engineer experienced and knowledgeable in the practice of soils engineering shall:

- review all the engineering geology reports, and prepare the final soils grading report;
- prepare the soils engineering reports required by the 1998 CBC, Appendix Chapter 33, Section 3309.5 – Soils Engineering Report, and Section 3309.6 – Engineering Geology Report;
- be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 1998 CBC, Appendix Chapter 33, Section 3317 – Grading Inspections;
- recommend field changes to the civil engineer and RE;
- review the geotechnical report, field exploration report, laboratory tests, and engineering analyses detailing the nature and extent of the site soils that may be susceptible to liquefaction, rapid settlement, or collapse when saturated under load; and
- prepare reports on foundation investigation to comply with the 1998 CBC, Chapter 18, Section 1804 – Foundation Investigations.

This 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. [1998 CBC, Section 104.2.4 – Stop orders.]

C. The design engineer shall:

- be directly responsible for the design of the proposed structures and equipment supports;
- provide consultation to the RE during design and construction of the project;
- monitor construction progress to ensure compliance with LORS;
- evaluate and recommend necessary changes in design; and
- prepare and sign all major building plans, specifications and calculations.

D. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO stating that the proposed final design plans, specifications, and calculations conform with all of the mechanical engineering design requirements set forth in the Commission Decision.

E. The electrical engineer shall:

- be responsible for the electrical design of the project; and
- sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval the names, qualifications, and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approval(s) of the engineers within five (5) days of the approval(s).

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five (5) days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five (5) days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, the project owner shall assign to the project qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 1998 CBC, Chapter 17, Section 1701 – Special Inspections and Section – 1701.5 Type of Work (requiring special inspection), Section 106.3.5 – Inspection and observation program.

Protocol: The Special Inspector shall:

1. be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. observe the work assigned for conformance with the approved design drawings and specifications;
3. furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction then, if uncorrected, to the CBO and the CPM; and,
4. submit a final signed report to the RE, CBO, and CPM stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable provisions of the applicable edition of the CBC.

A certified weld inspector [certified American Welding Society (AWS) and/or American Society of Mechanical Engineers (ASME) as applicable] shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

Protocol: At least fifteen (15) days prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next Monthly Compliance Report.

If the special inspector is subsequently reassigned or replaced, the project owner has five (5) days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five (5) days of the approval.

GEN-7 The project owner shall keep the CBO informed regarding the status of construction. If any discrepancy between design and construction is discovered during construction, the project owner shall prepare and submit a non-conformance report (NCR) describing the nature of the discrepancy to the CBO. The NCRs shall reference this Condition of Certification, and applicable sections of the applicable edition of the CBC.

Verification: The project owner shall submit monthly construction progress reports to the CBO and CPM. The project owner shall transmit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to

the CPM within fifteen (15) days. If disapproved, the project owner shall advise the CPM, within five (5) days, of the reason for disapproval and the revised corrective action to obtain CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. When the work and the "as-built" and "as graded" plans conform to the approved final plans, the project owner shall notify the CPM regarding the CBO's final approval. The marked up "as-built" drawings 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. [1998 CBC, Section 108 – Inspections.]

Verification: Within fifteen (15) days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans.

GEN-9 The project owner shall file a closure/decommissioning plan with the CPM and the County for review and approval at least twelve (12) months (or other mutually agreed to time) prior to commencing the closure activities.

Protocol: The closure plan shall include a discussion of the following:

1. the proposed closure/decommissioning activities for the project and all appurtenant facilities constructed as part of the project;
2. all applicable LORS, all local/regional plans, and a discussion of the conformance of the proposed decommissioning activities to the applicable LORS and local/regional plans;
3. activities necessary to restore the site if the decommissioning plan requires removal of all equipment and appurtenant facilities; and
4. closure/decommissioning alternatives, other than complete restoration of the site.

Verification: At least twelve (12) months prior to closure or decommissioning activities, the project owner shall file a copy of the closure/decommissioning plan with the County and the CPM for review and approval.

GEO-1 Prior to the start of construction, the project owner shall assign to the project an engineering geologist(s), certified by the State of California, to carry out the duties required by the 1998 CBC, Appendix Chapter 33, Section 3309.4. The certified engineering geologist(s) assigned must be approved by the CPM (the functions of the engineering geologist can be performed by the responsible geotechnical engineer, if that person has the appropriate California license).

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction, the project owner shall submit to the CBO for approval the name(s) and license number(s) of the certified engineering geologist(s) assigned to the project. The submittal shall include a statement that CBO approval is needed. The CBO will approve or disapprove of the engineering geologist(s) and will notify the project owner and CPM of its findings within fifteen (15) days of receipt of the submittal.

If the engineering geologist(s) is subsequently replaced, the project owner shall submit for approval the name(s) and license number(s) of the newly assigned individual to the CBO and CPM. The CBO will approve or disapprove of the engineering geologist(s) and will notify the project owner and the CPM of the findings within fifteen (15) days of receipt of the notice of personnel change.

GEO-2 The assigned engineering geologist shall carry out the duties required by the 1998 CBC, Appendix Chapter 33, Section 3309.4 – Engineered Grading Requirement, and Section 3318.1 – Final Reports. Those duties are:

1. Prepare the Engineering Geology Report. This report shall accompany the Plans and Specifications when applying to the CBO for the grading permit.
2. Monitor geologic conditions during construction.
3. Prepare the Final Geologic Report.

Protocol: The Engineering Geology Report required by the 1998 CBC, Appendix Chapter 33, Section 3309.3 Grading Designation, shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and an opinion on the adequacy, for the intended use, of the site as affected by geologic factors.

The Final Geologic Report to be completed after completion of grading, as required by the 1998 CBC, Appendix Chapter 33, Section 3318.1, shall contain a final description of the geology of the site and any new information disclosed during the grading and the effect of same on recommendations incorporated in the approved grading plan. Engineering geologists shall submit a statement that, to the best of their knowledge, the work within their area of responsibility is in accordance with the approved Engineering Geology Report and applicable provisions of this chapter.

Verification: (1) Within fifteen (15) days after submittal of the application(s) for grading permit(s) to the CBO, the project owner shall submit a signed statement to

the CPM stating that the Engineering Geology Report has been submitted to the CBO as a supplement to the plans and specifications and that the recommendations contained in the report are incorporated into the plans and specifications. (2) Within ninety (90) days following completion of the final grading, the project owner shall submit copies of the Final Geologic Report required by the 1998 CBC, Appendix Chapter 33, Section 3318 Completion of Work, to the CPM and the CBO.

CIVIL-1 Prior to the start of site grading, the project owner shall submit to the CBO for review and approval the following:

1. design of the proposed drainage structures and the grading plan;
2. an erosion and sedimentation control plan;
3. related calculations and specifications, signed and stamped by the responsible civil engineer; and
4. soils report as required by the 1998 CBC, Appendix Chapter 33, Section 3309.5 – Soils Engineering Report and Section 3309.6 – Engineering Geology Report.

Verification: At least fifteen (15) days prior to the start of site grading, the project owner shall submit the documents described above to the CBO for review and approval. In the next Monthly Compliance Report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible geotechnical engineer or civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area. [1998 CBC, Section 104.2.4 – Stop orders.]

Verification: The project owner shall notify the CPM, within five (5) days, when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within five (5) days of the CBO's approval, the project owner shall provide to the CPM a copy of the CBO's approval to resume earthwork and construction in the affected areas.

CIVIL-3 The project owner shall perform inspections in accordance with the 1998 CBC, Section 108 – Inspections, Chapter 17, Section 1701.6 – Continuous and periodic special inspection and Appendix Chapter 33,

Section 3317 – Grading inspection. All plant site-grading operations shall be subject to inspection by the CBO and the CPM.

If, in the course of inspection, it is discovered that the work is not being done in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report detailing all discrepancies and non-compliance items, and the proposed corrective action, and send copies to the CBO and the CPM.

Verification: Within five (5) days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a non-conformance report (NCR), and the proposed corrective action. Within five (5) days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs for the reporting month shall also be included in the following Monthly Compliance Report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage facilities, the project owner shall obtain the CBO's approval of the final "as-graded" grading plans and final "as-built" plans for the erosion and sedimentation control facilities. [1998 CBC, Section 109 – Certificate of Occupancy.]

Verification: Within thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) of the completion of the erosion and sedimentation control mitigation and drainage facilities, the project owner shall submit to the CBO the responsible civil engineer's signed statement that the installation of the facilities 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 purposes. The project owner shall submit a copy of this report to the CPM in the next Monthly Compliance Report.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit to the CBO for review and approval the applicable designs, plans, and drawings, and a list of those project structures, components, and major equipment items that will undergo dynamic structural analysis. Designs, plans, and drawings shall be those for:

1. major project structures;
2. major foundations, equipment supports, and anchorages;
3. large field fabricated tanks;
4. turbine/generator pedestals; and
5. switchyard structures.

Protocol: The project owner shall:

1. obtain agreement with the CBO on the list of those structures, components, and major equipment items to undergo dynamic structural analysis;
2. meet the pile design requirements of the 1998 CBC. Specifically, Section 1807 – General Requirements, Section 1808 – Specific Pile Requirements, and Section 1809 – Foundation Construction (in seismic zones 3 and 4);
3. obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (i.e., highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications [1998 CBC, Section 108.4 – Approval Required];
4. submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures at least ninety (90) days prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation [1998 CBC, Section 106.4.2 – Retention of plans and Section 106.3.2 – Submittal documents.]; and
5. ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer. [1998 CBC, Section 106.3.4 – Architect or engineer of record.]

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of any increment of construction, the project owner shall submit to the CBO, with a copy to the CPM, the responsible design engineer's signed statement that the final design plans, specifications, and calculations conform with all of the requirements set forth in the Commission's Decision.

If the CBO discovers non-conformance with the stated requirements, the project owner shall resubmit the corrected plans to the CBO within twenty (20) days of receipt of the nonconforming submittal, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and are in conformance with the requirements set forth in the applicable LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following:

1. 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, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. concrete pour sign-off sheets;
3. bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. 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
5. reports covering other structure activities requiring special inspections shall be in accordance with the 1998 CBC, Chapter 17, Section 1701 – Special Inspections, Section 1701.5 – Type of Work (requiring special inspection), Section 1702 – Structural Observation and Section 1703 – Nondestructive Testing.

Verification: If a discrepancy is discovered in any of the above data the project owner shall, within five (5) days, prepare and submit an NCR describing the nature of the discrepancies to the CBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the Condition(s) of Certification and applicable CBC chapter and section. Within five (5) days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within fifteen (15) days. If disapproved, the project owner shall advise the CPM, within five (5) days, of the reason for disapproval and the revised corrective action necessary to obtain CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 1998 CBC, Chapter 1, Section 106.3.2 – Submittal documents, and Section 106.3.3 – Information on plans and specifications, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give the CBO prior notice of the intended filing.

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required

number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the Monthly Compliance Report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in Chapter 3, Table 3-E of the 1998 California Building Code (CBC) shall, at a minimum, be designed to comply with Occupancy Category 2 of the 1998 CBC. Chapter 16, Table 16–K of the 1998 CBC requires use of the following seismic design criteria: I = 1.25, I_p=1.5 and I_w=1.15.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of installation of the tanks or vessels containing the above specified quantities of highly toxic or explosive substances that would be hazardous to the safety of the general public if released, the project owner shall submit to the CBO for review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-1 Prior to the start of any increment of piping construction, the project owner shall submit, for CBO review and approval, the proposed final design drawings, specifications, and calculations for each plant piping system (exclude: domestic water, refrigeration systems, and small bore piping, i.e., piping and tubing with a diameter equal to or less than two and one-half inches). The submittal shall also include the applicable Quality Assurance/Quality Control (QA/QC) procedures. The project owner shall design and install all piping, other than domestic water, refrigeration, and small bore piping to the applicable edition of the CBC. Upon completion of construction of any piping system, the project owner shall request the CBO's inspection approval of said construction. [1998 CBC, Section 106.3.2 – Submittal documents, Section 108.3 – Inspection Requests.]

Protocol: The responsible mechanical engineer shall submit a signed and stamped statement to the CBO when: 1) the proposed final design plans, specifications, and calculations conform with all of the piping requirements set forth in the Commission Decision; and 2) all of the other piping systems, except domestic water, refrigeration systems, and small bore piping, have been designed, fabricated, and installed in

accordance with all applicable ordinances, regulations, laws and industry standards, including, as applicable

- 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);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code); and
- Specific City/County code.

The CBO may require the project owner, as necessary, to employ special inspectors to report directly to the CBO to monitor shop fabrication or equipment installation. [1998 CBC, Section 104.2.2 – Deputies.]

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of any increment of piping construction, the project owner shall submit to the CBO for approval, with a copy of the transmittal letter to the CPM, 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 project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal-OSHA), prior to operation, the code certification papers and other documents required by the applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of said installation. [1998 CBC, Section 108.3 – Inspection Requests.]

The project owner shall:

1. ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and
2. have the responsible design engineer 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 appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall send copies of the CBO plan check approvals to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's and/or Cal-OSHA inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-3 Prior to the start of construction of any heating, ventilating, air conditioning (HVAC), or refrigeration system, the project owner shall submit to the CBO for review and approval the design plans, specifications, calculations, and quality control procedures for that system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

Verification: The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the applicable edition of the CBC. Upon completion of any increment of construction, the project owner 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 engineer 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 the applicable LORS. [1998 CBC, Section 108.7 Other Inspections; Section 106.3.4 – Architect or engineer of record.]

At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable edition of the CBC, with a copy of the transmittal letter to the CPM.

The project owner shall send copies of CBO comments and approvals to the CPM in the next Monthly Compliance Report. The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-4 Prior to the start of each increment of plumbing construction, the project owner shall submit for the CBO's approval the final design plans, specifications, calculations, and QA/QC 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 local agency. Upon completion of any increment of construction, the project owner shall request the CBO's inspection approval of said construction. [1998 CBC, Section 108.3 – Inspection Requests, Section 108.4 – Approval Required.]

The project owner shall design, fabricate, and install:

1. plumbing, potable water, all drainage systems, and toilet rooms in accordance with Title 24, California Code of Regulations, Division 5, Part 5, and the California Plumbing Code (or other relevant section(s) of the currently adopted California Plumbing Code and Title 24, California Code of Regulations); and
2. building energy conservation systems and temperature control and ventilation systems in accordance with Title 24, California Code of Regulations, Division 5, Chapter 2-53, Part 2.

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 engineer 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: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction of any of the above systems, the project owner shall submit to the CBO the final design plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable edition of the CBC, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the next Monthly Compliance Report following completion of that increment of construction.

ELEC-1 For the 13.8 kV and lower systems, the project owner shall not begin any increment of electrical construction until plans for that increment have been approved 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 project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. [1998 CBC, Section 108.4 – Approval Required, and Section 108.3 – Inspection Requests.]

Protocol: The following activities shall be reported in the Monthly Compliance Report:

1. receipt or delay of major electrical equipment;
2. testing or energization of major electrical equipment; and
3. the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible electrical engineer attesting to compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

ELEC-2 The project owner shall submit to the CBO the required number of copies of items A and B for review and approval and one copy of item C: [CBC 1998, Section 106.3.2 – Submittal documents.]

A. Final plant design plans to include:

1. one-line diagrams for the 13.8 kV, 4.16 kV and 480 V systems;
2. system grounding drawings;
3. general arrangement or conduit drawings; and
4. other plans as required by the CBO.

B. Final plant calculations to establish:

1. short-circuit ratings of plant equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;
5. coordination study calculations for fuses, circuit breakers and protective relay settings for the 13.8 kV, 4.16 kV and 480 V systems;
6. system grounding requirements;

7. lighting energy calculations; and
8. other reasonable calculations as customarily 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.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of electrical equipment installation, the project owner shall submit to the CBO for review and approval the final design plans, specifications, and calculations for the items enumerated above, including a copy of the signed and stamped statement from the responsible electrical engineer certifying compliance with the applicable LORS. The project owner shall send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

TRANSMISSION LINE SAFETY AND NUISANCE

TLSN-1 The project owner shall construct the proposed transmission line according to the requirements of GO-95 and Title 8, California Code of Regulations, sections 2700 et seq..

Verification: At least thirty (30) days before start of transmission line construction, the project owner shall submit to the Commission's Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the transmission line will be constructed according the requirements of GO-95 and Title 8, California Code of Regulations, section 2700 et seq.

TLSN-2 The project owner shall make every reasonable effort to identify and correct, on a case-specific basis, all complaints of interference with radio or television signals from operation of the line and related facilities. In addition to any transmission repairs, the relevant corrective actions shall include, but not be limited to, adjusting or modifying receivers, adjusting or repairing, replacing or adding antennas, antenna signal amplifiers, filters, or lead-in cables.

The project owner shall maintain written records, for a period of five years, of all complaints of radio or television interference attributable to operation together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action or for which there was no resolution shall be noted and explained. The record shall be signed by the project owner and also the complainant, if possible, to indicate concurrence

with the corrective action or agreement with the justification for a lack of action.

Verification: All reports of line-related complaints shall be summarized and included in the Annual Compliance Report to the CPM.

TLSN-3 The project owner shall engage a qualified consultant to measure the strengths of the line's electric and magnetic fields before beginning construction and after the line is energized. Measurements should be made at appropriate points along the route to allow verification of design assumptions relative to field strengths. The areas to be measured should include the facility switchyard and any residences near the right-of-way.

Verification: The project owner shall file a copy of the first set of pre-project measurements with the CPM at least thirty (30) days before the start of construction. The post-project measurements shall be filed within thirty (30) days after the day the line was energized.

TLSN-4 The project owner shall ensure that the transmission line right-of-way is kept free of combustible material as required under the provisions of Public Resources Code, section 4292 and California Code of Regulations, section 1250.

Verification: The project owner shall provide a summary of inspection results and any fire prevention activities along the right-of-way in the annual compliance report.

TLSN-5 The project owner shall send a letter to all owners of property within or adjacent to the right-of-way at least sixty (60) days prior to the first transmission of electricity.

Protocol: The letter shall include the following:

- a discussion of the nature and operation of a transmission line;
- a discussion of the project owner's responsibility for grounding existing fences, gates, and other large permanent chargeable objects within the right-of-way regardless of ownership;
- a discussion of the property owner's responsibility to notify the project whenever the property owner adds or installs a metallic object which would require grounding as noted above; and
- a statement recommending against fueling motor vehicles or other mechanical equipment underneath the line.

Verification: The project owner shall submit the proposed letter to the CPM for review and approval at least thirty (30) days prior to mailing to the property owners,

and shall maintain a record of correspondence (notification and response) related to this requirement in a compliance file.

The project owner shall notify the CPM in the first Monthly Compliance Report that letters have been mailed and that copies are on file.

TLSN-6 The project owner shall ensure the grounding of any ungrounded permanent metallic objects within the right-of-way, regardless of ownership. Such objects shall include fences, gates, and other large objects. These objects shall be grounded according to procedures specified in the National Electrical Safety Code.

In the event of a refusal by the property owner to permit such grounding, the project owner shall so notify the CPM. Such notification shall include, when possible, the owner's written objection. Upon receipt of such notice, the CPM may waive the requirement for grounding the object involved.

At least ten (10) days before the line is energized, the project owner shall transmit to the CPM a letter confirming compliance with this Condition.

TRANSMISSION SYSTEM ENGINEERING

TSE-1 The project owner shall ensure that the design, construction and operation of any proposed transmission facilities conforms to requirements listed below. The substitution of Compliance Project Manager (CPM) approved equivalent equipment and equivalent switchyard configurations is acceptable.

1. The project's 230 kV switchyard shall include a one-on-one, breaker and bus configuration.
2. Breakers and bus shall be sized to comply with a short circuit analysis.
3. The transmission facilities shall meet or exceed the requirements of CPUC General Order 95.
4. Outlet line crossings and line parallels shall be coordinated with the transmission line owner and comply with the owner's standards.
5. The project owner shall provide a Detailed Facilities Study and an executed facility Interconnection Agreement for the transmission interconnection. The Detailed Facilities Study and Interconnection Agreement shall be coordinated with the Cal ISO.
6. The Project shall participate in existing transmission remedial action schemes and in any new remedial action schemes developed by the utility and the Cal ISO to ensure compliance with the Cal ISO's reliability criteria.

Verification: At least sixty (60) days prior to start of construction of transmission facilities, the project owner shall submit for approval to the 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 1 through 6 above. Substitution of equipment and substation configurations shall be identified and justified by the project owner for CPM approval.

TSE-2 The project owner shall inform the CPM of any impending changes which may not conform to the requirements 1a through 1f of **TSE-1**, and have not received CPM approval, 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. Construction involving changed equipment or switchyard configurations shall not begin without prior written approval of the changes by the CPM.

Verification: At least sixty (60) days prior to construction of transmission facilities, the project owner shall inform the CPM of any impending changes which may not conform to requirements of **TSE-1** and request approval to implement such changes.

TSE-3 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM approved changes thereto, to ensure conformance with CPUC GO-95 and CPUC Rule No. 21 and these Conditions. In case of non-conformance, the project owner shall inform the CPM in writing within ten (10) days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within sixty (60) days after synchronization of the project, the project owner shall transmit to the 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-95, CPUC Rule No. 21 and these Conditions shall be concurrently provided.

EFFICIENCY

No General Conditions of Certification.

RELIABILITY

No General Conditions of Certification.

Appendix 5.0

Appendix 5.1-A

INTERCONNECTION DATA SHEET
CALPINE C*POWER
LOS ESTEROS CRITICAL ENERGY FACILITY

Pacific Gas and Electric Company™

WE DELIVER ENERGY.℠

Generator Interconnection Data Sheet

For Wholesale Generators Connected

to the PG&E Electric System

at Voltages 60 kV and Above

Generator Interconnection Data Sheet

Note: Generators who are submitting a Completed Application pursuant to PG&E's Transmission Owners Tariff must completely fill out this Generator Interconnection Data Sheet as an integral part of their application.

1. General Project Information

A.

Project Name	USD-NSJ Peaker Project, North San Jose LM6000 Peaker Project
Street Address	1515 Alviso – Milpitas Road_____
City, State	San Jose, CA
Zip Code	95134
Phone Number	_____
Fax Number	_____
Email Address	_____

B.

Developer Name	Calpine C* Power_____
Street Address	6601 Koll Center Parkway, STE 100___
City, State	Pleasanton, CA
Zip Code	94566
Phone Number	925-249-3700
Fax Number	925-249-8877
Email Address	ngaglia@calpine.com

C.

Site Owner Name	Same As Above_____
Street Address	_____
City, State	_____, _____
Zip Code	_____
Phone Number	_____
Fax Number	_____
Email Address	_____

I. The anticipated operation date:

Phase I (simple cycle of 195 MW):	May 1, 2002
Phase II (Combined – addl 65 MW):	May 1, 2003
Total	260 MW

Potential installation of duct burners (addl 70 MW) May 1, 2003

2. Type of Project (select one)

Cogeneration	_____	Reciprocating. Engine	_____
Biomass	_____	Steam Turbine	_____
Gas Turbine	__X__	Wind	_____
Hydro	_____	Other Describe:_____	_____
Photovoltaic	_____		

3. Maximum generator power delivered to PG&E grid at Point of Interconnection

Generator rated output	+	50,000___	KW x 4= 200,000 kW
Less generator auxiliary load:	-	_1,300___	KW x 4= 5,200 kW
Maximum net power delivered to PG&E Grid:	=	_48,700__	KW x 4= 194,800 kW
Standby load to be served when generator is OFF:	__	____650__	KW x 4= 2,600 kW

4. Generator Information

A.	Manufacturer	__BRUSH_____		
B.	Year Manufactured	__NEW_(2000-2001)_		
C.	Rated Size:	kW:	_60,500_	
		KVA:	_71,176_	
		Terminal Voltage	_13.8 kV_	
		Power Factor (%):	_0.85___	
D.	Type: (select one)	Induction:	_____	
		Synchronous:	___X __	
		D.C. with Inverter:	_____	
E.	Synchronizing			
		Auto	___X __	
		Manual	_____	
		Relay Supervision (y/n)	____Y___	
F.	Voltage:			
		Output	_13.8___	kV
		Interconnection	__115__	kV

G.	Phase: (select one)	1ϕ	_____
		3ϕ	__X___
H.	Connection (select one)	Delta	_____
	Resistance	Grounded WYE	__X___
		Ungrounded	_____
I.	Inertia Constant (if known)	__57,059/unit__	lb-ft^2
J.	Generator Voltage Regulation Range	___+/- 5 %	
K.	Generator Power Factor Regulation Range	0.85 Lag – 0.95 Lead_	

5. Generating Grounding

If the generator output is greater than 40kW (individually or as an aggregate group), ground protection will be required. If grounding will be required, please indicate type of ground detection below:

Wye Grounded/Delta Ground Bank with Overcurrent Relay	_____
Wye Grounded/Broken Delta[1]: Ground Bank with Low Pick-up Overvoltage Relay	_____
Current Transformer with Overcurrent Relay: In Neutral of Dedicated Transformer	__X__
Potential Transformer with Voltage Relay[1]: In Neutral of Dedicated Transformer	_____
Other: _____	_____

[1] This is PG&E's preferred ground detection.

6. Step-Up Transformer Data

A. Rated MVA 40/50/60 MVA

B. Cooling Type ___FOA_____

C. Impedance - Z 8% @ 40 MVA % Impedance

D. Primary Voltage 115 __ kV

Secondary Voltage 13.8 _ kV

E. Available H.V. Taps

__121___	kV	_____	kV
__118___	kV	___14.0__	kV
__115___	kV	___13.8_	kV
__112__	kV	___ 13.5	kV
__109__	kV	_____	kV
_____	kV	_____	kV

Available L.V. Taps

F. Please indicate present tap settings: H.V Tap: _Later_____ kV

L.V Tap: __Later_____ kV

G. Does transformer have tap changing under load? ___NO_____

H. Is transformer a regulating-type transformer? NO

If yes, please indicate regulating voltage range and the number of steps.

____N/A_____ kV to _____N/A_____ kV Number of steps __N/A____

I. Please indicate how the transformer windings are connected:

H.V. Side:	____	Wye	L.V. Side:	____	Wye
	_X	Grounded Wye		____	Grounded Wye
	____	Delta		_X	Delta

J. Transformer Fuse Type: __N/A____ Size _____

K. If the transformer test report is not available, please provide the following impedances using the MVA base given in (10.A) above:

R_T	per unit resistance	_____	pu	Later
X_T	per unit reactance	_____	pu	
B_T	per unit magnetizing susceptance	_____	pu	
G_T	per unit core loss conductance	_____	pu	

L. Other comments regarding the transformer?

_____

_____

M Desired transformer connection:

	Delta	Grounded Wye	Ungrounded Wye
PG&E Side	_____	__X___	_____

Generator Side ___X___ _____ _____

7. Please provide two original prints and one reproducible copy (no larger than 36" x 24") of the following:

A. SITE DRAWING to scale, showing generator location and point of interconnection with PG&E.

B. For generation greater than 1000 kW provide the following:
   1) Substation grounding drawings showing all ground connections.
   2) A list of the amount and location of the shunt capacitor compensation that will be provided (induction generators only).

C. SINGLE LINE DIAGRAM, showing switches/disconnects of the proposed interconnection, including the required protection devices and breakers.

D. THREE LINE DIAGRAM, showing the proposed CTS and PTs as they are connected to the relays and meters.

E. DESCRIPTION of operation and elementary drawings, showing the synchronization (if appropriate), and tripping of breakers by the required relays. (If not provided, they may be requested after approval of the single and three line diagrams.)

F. LIST of relays, switches and revenue meters (if customer provided), disconnects, etc., specified to meet the requirements of PG&E's Interconnection Handbook and include the following information:.
   1) Manufacturer's name and model number, with each device listed.
   2) Range of available settings.
   3) Proposed settings.
   4) Ratio of associated current and potential transformers. If multi-ratio, state the available ratios and which one is proposed.

8. Proposed breaker(s) will be equipped with[2]:

Undervoltage Release _____

D.C. Trip ___X __

9. The following information is required for Induction Generators only.

Do you wish reclose blocking? Yes ___No___

Note: we test automatically. Sufficient capacitance may be on the line now, or in the future, and your generator may self-excite unexpectedly.

[2] Capacitor Trip is not acceptable.

Information contained in Sections 10 through 15 is required only for Synchronous Generators. It is acceptable to provide IEEE block diagrams for the dynamic data specified in Sections 10 through 15.

10. Synchronous Generator – General Data:

A.	Rated Generator speed	3,600	rpm
B.	Number of Poles	2	
C.	Rated Generator Power Factor	0.85 Lag – 0.95 Lead	
D.	Generator Efficiency at Rated Load	_____	%
E.	Moment of Inertia (Turbine plus Generator) ωR^2	57,059/unit	lb-ft^2
F.	Inertia Time Constant (on machine base) H:	2.4	sec or MJ/MVA
G.	SCR (Short-Circuit Ratio - the ratio of the field current required for rated open-circuit voltage to the field current required for rated short-circuit current.	0.48	
H.	Typical Generator Auxiliary Load	_____	MW
I.	Maximum Power Output	_____	MW
J.	Please attach generator reactive capability curves. If these curves are not available, provide the maximum and minimum reactive limits	Q_{MAX}: 37.5	MVAR, lagging
		Q_{MIN}: 22.2	MVAR, leading
K.	Rated Hydrogen Cooling Pressure (Steam Units only)	_____	psig
L.	Please attach a simple one-line diagram that includes the generator step-up transformer bank, plant load, meter, and transmission-level bus.		
M.	Please attach a plot of generator terminal voltage versus field current that shows the air gap line, the open-circuit saturation curve, and the saturation curve at full load and rated power factor.		

11. Synchronous Generator – Impedence:

A.	X_d	direct-axis unsaturated synchronous reactance	2.35	pu
B.	X_q	quadrature-axis unsaturated synchronous reactance	2.15	pu
C.	X'_d	direct-axis unsaturated transient reactance	_____	pu
D.	X'_{ds}	direct-axis saturated transient reactance	0.20	pu
E.	X'_q	quadrature-axis unsaturated transient reactance	_____	pu
F.	X'_{qs}	quadrature-axis saturated transient reactance	0.24	pu
G.	X''_d	direct-axis unsaturated subtransient reactance	_____	pu

H.	X''_{ds}	direct-axis saturated subtransient reactance	0.144	pu
I.	X''_{q}	quadrature-axis unsaturated subtransient reactance	_____	pu
J.	X''_{qs}	quadrature-axis saturated subtransient reactance	0.17	pu
K.	X_L	stator leakage reactance or Potier reactance	_____	pu
L.	R_a	armature resistance	_____	pu
M.	X_2	negative sequence reactance (saturated/unsaturated)	_____/ 0.176	pu
N.	X_0	zero sequence reactance (saturated/unsaturated)	_____/ 0.095	pu

12. Synchronous Generator – Time Constants:

A.	T_{q0}	direct-axis transient open-circuit time constant	9.7	sec
B.	T'_{q0}	quadrature-axis open-circuit time constant	_____	sec
C.	T''_{q0}	direct-axis subtransient open-circuit time constant	0.05	sec
D.	T''_{q0}	quadrature-axis subtransient open-circuit time constant	_____	sec
E.	$T_{A\ GEN}$	armature short-circuit time constant	_____	sec
F.	T'_{D}	direct-axis transient short-circuit time constant	0.65	sec
G.	T'_{Q}	quadrature-axis transient short-circuit time constant	_____	sec
H.	T''_{D}	direct-axis subtransient short-circuit time constant	0.04	sec
I.	T''_{Q}	quadrature-axis subtransient short-circuit time constant	_____	sec

13. Excitation System Information

Please indicate, in the space provided on the left, the excitation system used for your generator.

A. Rotating DC commutator exciter with continuously acting regulator. The regulator power source is independent of the generator terminal voltage and current.

Manufacturer _____, Type _____

B. Rotating DC commentator exciter with continuously acting regulator. The regulator power source is bus fed from the generator terminal voltage.

Manufacturer _____, Type _____

C. Rotating DC commutator exciter with non-continuously acting regulator (i.e., regulator adjustments are made in discrete increments).

Manufacturer _____, Type _____

D. Rotating AC Alternator Exciter with non-controlled (diode) rectifiers. The regulator power source is independent of the generator terminal voltage and current (not bus-fed).

Manufacturer _____, Type _____

E. Rotating AC Alternator Exciter with controlled (thyristor) rectifiers. The regulator power source is fed from the exciter output voltage.

Manufacturer _____, Type _____

F. Rotating AC Alternator Exciter with controlled (thyristor) rectifiers.

Manufacturer _____, Type _____

G. Static Exciter with controlled (thyristor) rectifiers. The regulator power source is bus-fed from the generator terminal voltage.

Manufacturer __BRUSH_____, Type _____ST-1_____

H. Static Exciter with controlled (thyristor) rectifiers. The regulator power source is bus-fed from a combination of generator terminal voltage and current (compound-source controlled rectifiers system.

Manufacturer _____, Type _____

I. Please attach a copy of the instruction manual for your excitation system. Make sure that a block diagram or schematic of the excitation system is included in the manual. The diagram should show the input, output, and all feedback loops of the excitation system.

J. If the manufacturer's data for the excitation system (i.e., time constants, gains, and saturation curves) are available, please attach these also.

K. What is the excitation system response ratio (ASA)?

L. What is the rated exciter output voltage at full load? __186_____ volts

M. What is the maximum exciter output voltage (ceiling voltage)? _____ volts

N. Other comments regarding the excitation system?

_____
_____
_____
_____
_____
_____
_____

14. Power System Stabilizer Information (supplementary excitation system)

(Note: Complete this section only if your machine has PSS control.)

A. Manufacturer: _____BRUSH_____

B. Is your PSS digital or analog? ___Analog_____

C. What is the actuating signal (the input signal) for your PSS?

_____ Bus frequency _____ Shaft slip _XX_ Accelerating power _____Other

If "Other", indicate signal _____.

D. Please attach a copy of the instruction manual for your PSS. The manual should include a block diagram or schematic of the PSS and the correspondence between dial settings and the time constants or PSS gain.

E. Please attach a copy of the test report for your PSS. This report should contain the dial settings or time constants and PSS gain. If this report is not available, write the dial settings below:

1.)	T_1	washout or reset time constant dial setting	_____
2.)	T_2	first lead time constant dial setting	_____
3.)	T_3	first lag time constant dial setting	_____
4.)	T_4	second lead time constant dial setting	_____
5.)	T_5	second lag time constant dial setting	_____
6.)	K	PSS gain dial setting	_____
7.)	V_{max}	maximum PSS output dial setting	_____
8.)	V_{cut}	dial setting for which PSS is set to zero when generator terminal voltage deviation is too large	_____
9.)	Other	_____	_____
10.)	Other	_____	_____

F: Other comments regarding the PSS?

_____

_____

_____

_____

_____

_____

15. Turbine-Governor Information

Please complete Part A for steam, gas or combined-cycle turbines, Part B for hydro turbines, and Part C for both.

A. Steam, gas or combined-cycle turbines:

1.) Steam turbine, Gas turbine, or Combined-cycle Gas Turbine__

2.) If steam or combined-cycle, does the turbine system have

a reheat process (i.e., both high- and low-pressure turbines)? _____

3.) If steam with reheat process, or if combined-cycle, indicate, in the space provided, the percent of full load power produced by each turbine:

by low pressure turbine or gas turbine: _____ %

by high pressure turbine or steam turbine: _____ %

B. Hydro turbines:

1.) What is the turbine efficiency at rated load? _____ %

2.) What is the length of the penstock? _____ ft

3.) What is the average cross-sectional area of the penstock _____ ft^2

4.) What is the typical maximum head (vertical distance from the bottom of the penstock, at the gate, to the water level)? _____ ft

5.) Is the water supply run-of-the-river or reservoir? _____

6.) What is the water flow rate at the typical maximum head? _____ ft^3/sec

7.) What is the average energy rate? _____ kW-hrs/acre-ft

8.) What is the estimated yearly energy production? _____ kW-hrs

C. Complete this section for each machine, independent of the turbine type.

1.) Turbine manufacturer _____GE_____

2.) Maximum turbine power output _____50_____ MW

3.) Minimum turbine power output (while on line) _____50_____ MW

4.) Governor information:

a: Droop setting (speed regulation) _____5 %_____

b: Is the governor mechanical-hydraulic or electro-hydraulic? (Electro-hydraulic governors have an electronic speed sensor and transducer.) Electro-hydraulic__

c: Please provide below any time constants you have from the manufacturer describing the speed response of the governor. Be sure to identify each time constant.

_____ _____ sec

_____ _____ sec

_____ _____ sec

d: Other comments regarding the turbine governor system?

_____

_____

_____

_____

Completed By: B.N. Gaglia_, Date: _June 7, 2001_____

Phone Number: _925/249-3711_, Fax Number: 925/249-8877_, Email address: ngaglia@calpine.com_

Appendix 5.4-A

GENERATOR TRANSMISSION INTERCONNECTION STUDY REPORT
CALPINE C*POWER
LOS ESTEROS CRITICAL ENERGY FACILITY

Executive Order D-26-01

Generator Transmission Interconnection Study

Study Report

Calpine C*Power

North San Jose Energy Center (NSJEC)

Pacific Gas and Electric Company

June 15, 2001

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Introduction

Calpine C*Power (Applicant) has requested that Pacific Gas and Electric Company (PG&E) conduct a Generator Transmission Interconnection Study (GTIS) North San Jose Energy Center (NSJEC) Project pursuant to Executive Order D-26-01. A description of this project is given in the Project Information section of this document. The GTIS provides a review of transmission system impacts caused solely by the addition of the Applicant's Project.
The anticipated on-line date of this project according to the application is May 2002. PG&E cannot guarantee that such interconnection can be completed by May 2002 due to the substantial work required for this interconnection. However, PG&E will work with the developer to achieve that interconnection as quickly as possible.

Project Information

The following is a summary of the Project information.

Project Location	1515 Alviso - Milpitas Road San Jose, CA 95134
PG&E planning region where Project will be located.	Area 7/8: Bay Area
Number of Generators	4
Type of Generator(s)	Gas Turbine
Total Project Delivery (Maximum)	195 MW
Power Factor Range	0.8 (Lag) - 0.95 (Lead)
Description of interconnection configuration	Building two short 115 kV line from Los Esteros Substation 115 kV Bus to the project site
Voltage at which Project is connected to PG&E's Grid	115 kV

The above information was used in the Study Assumptions. Figure 1 provides a vicinity map of North San Jose Energy Center. A single-line diagram for the Project is shown in Figure 2.

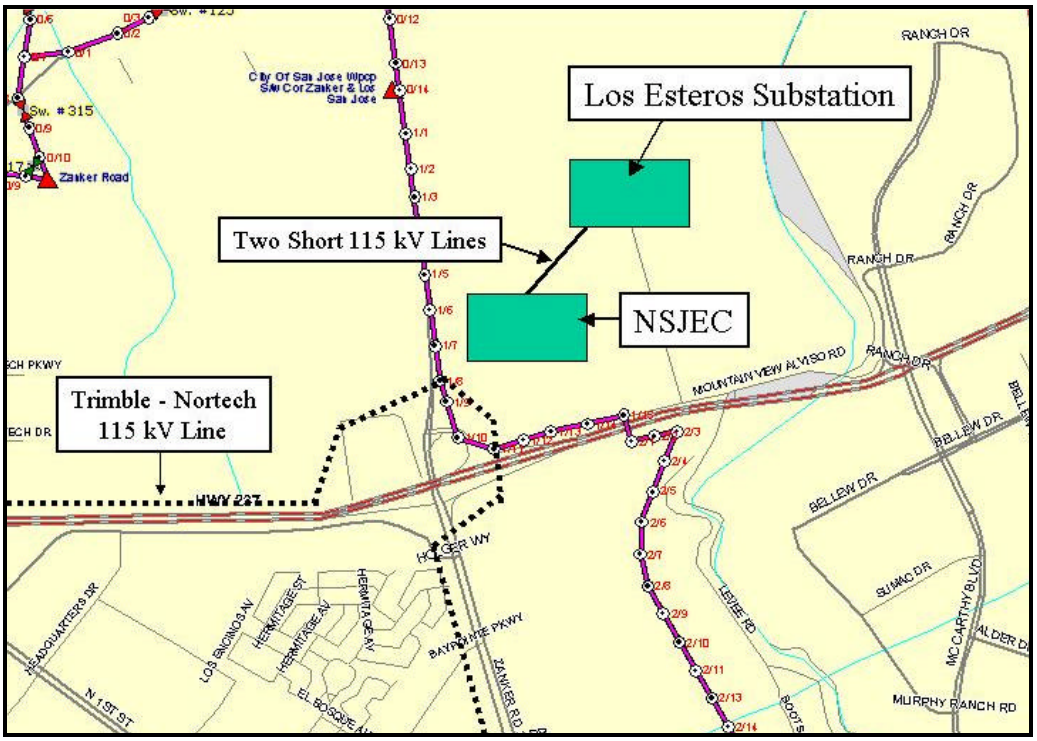

Figure 1: Vicinity map of Project

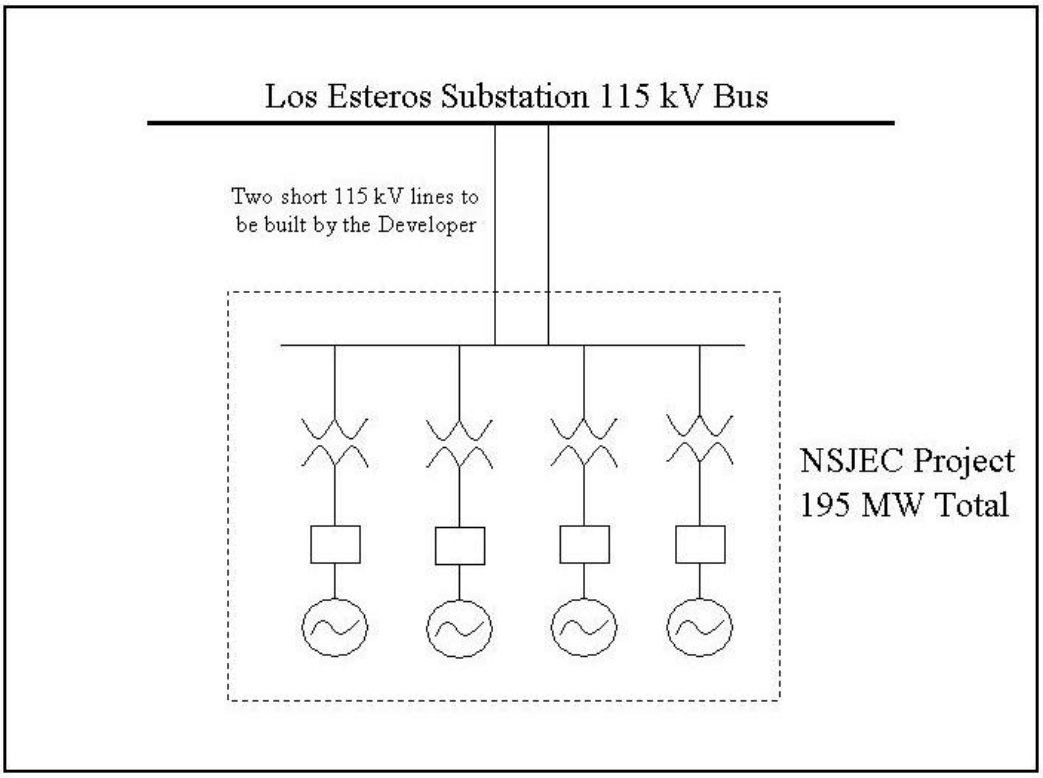

Figure 2: One Line of Project

Study Assumptions

PG&E conducted the GTIS based upon the statements shown in the Project Information section above and the following assumptions:

1) 2002 Summer Peak Base Case[1] for the area in which the Project is located. A modified Santa Clara load at Kifer and Scott of 255 MW each was modeled in the base case to reflect a more realistic load projection.

2) PG&E or the Developer will design, construct and own the transmission lines required to connect the Applicant's step-up substation to PG&E's transmission grid.

Study Scope

The GTIS will study the impact of the Project's added generation on PG&E's transmission system during Summer 2002. The specific studies conducted by the GTIS are outlined in this section.

Steady State Power Flow Analysis

The relevant 2002 Summer Peak Area Base Case was used to simulate the impact of the new facility during the following:

1) Normal operating conditions.

2) Selected N-1 outages in close proximity to the Project. Outages were reported based upon PG&E's knowledge of the area.

3) Selected N-2 outages in close proximity to the Project, if PG&E determines they are required.

System Protection Analysis

Short circuit studies were performed to determine the impact of increased fault duty resulting from the added generation. The study determined the maximum fault currents in the vicinity of the proposed project and identified equipment that would become overstressed as a result of the added generation.

Substation Evaluation

The substation evaluation identified existing equipment that would require upgrades in order to mitigate overloading or overstressing caused solely by the addition of the Project.

Study Summary

This GTIS studied the impact of the Project's on PG&E's transmission system during summer in 2002.

[1] This Base Case was developed as part of the PG&E's 2001 Base Case series.

Power Flow Study

The Power Flow studies indicated no normal overload with the added generation project. However, the project caused an emergency overload of the San Jose "B" - FMC JCT 115 kV line for various Category B outages. Please see Table 2 on page 5. Power Flow Plots are included in Appendix B.

Short Circuit Study

Short circuit studies indicated that the project caused some increases in fault duty at Los Esteros, Newark sect. D, E & F, Agnew, Trimble, Montague, and Nortech Substations. Please see Table 3.

Substation Evaluation

The substation evaluation identified that four breakers (CB 350, 480, 520, and 540) at the Newark Sections E and F 115 kV buses are presently overstressed. This generation project will increase the overstress by 1 - 2 %. Please see Table 4.

Power Flow Study Base Case Assumptions

Power Flow studies were conducted using the 2002 Summer Peak Area 7/8 Base Case that was developed as part of the PG&E's 2001 Base Case series. The Santa Clara loads at Kifer and Scott were modeled at 255 MW each to reflect a more realistic load projection. The power flow program modeled an addition of 195 MW on the transmission system.
For ISO Category "B" outages, outages in the San Jose areas were included in this study. See Appendix A for the Contingency List. No ISO Category "C" outages were simulated in this study.

Steady State Power Flow Results

Normal Overloads

There are no normal overloaded transmission facilities caused by the addition of this project. Please see Table 1.

			Before Project		After Project	
NAME	Voltage Rating	Normal Rating (AMPS)	Loading (AMPS)	P.U. Rating	Loading (AMPS)	P.U. Rating
Metcalf - Moss Landing #1	230	813	793	0.97	762	0.94
Metcalf - Moss Landing #2	230	813	793	0.97	761	0.94

Table 1: Normal Overloads Comparison Before/After the Proposed Project

Emergency Overloads CAISO Category "B" Classifications

Table 2 summarizes the power flow study of the ISO Category B outages for the summer peak condition before and after the proposed project.

Name	Contingency Case	Voltage Rating	Emergency Rating (AMPS)	Before Project Loading (AMPS)	Before Project P.U. Rating	After Project Loading (AMPS)	After Project P.U. Rating
San Jose B - FMC JCT	Los Esteros - Nortech and SVP CCA Gen	115 kV	803	785	0.98	842	**1.05**
	Los Esteros - Nortech and FMC CT	115 kV	803	922	1.15	981	1.22
	Nortech - Kifer and FMC CT	115 kV	803	886	1.10	946	1.18
	Nortech - Kifer and SVP CCA Gen	115 kV	803	747	0.93	807	1.00
FMC JCT - Kifer	Los Esteros - Nortech and SVP CCA Gen	115 kV	803	783	0.97	822	1.02

Table 2: Emergency Overloads Comparison Before/After the Proposed Project

As shown in Table 2, San Jose "B" - FMC JCT 115 kV line will be overloaded by the following contingency cases as a result of the addition of the Project:

- A combined outage of Los Esteros - Nortech 115 kV line and the SVP CCA Generator will cause an emergency overload of 5% on the San Jose B - FMC JCT 115 kV line.
- A combined outage of Los Esteros - Nortech 115 kV line and the FMC Combustion Turbine will cause an increase of 7% to the existing overload on the San Jose B - FMC JCT 115 kV line from 115% to 122%.
- A combined outage of Nortech - Kifer 115 kV line and the FMC Combustion Turbine will cause an increase of 8% to the existing overload on the San Jose B - FMC JCT 115 kV line from 110% to 118%.
- A combined outage of Nortech - Kifer 115 kV line and the SVP CCA Generator will cause an emergency overload of 0% on the San Jose B - FMC JCT 115 kV line.

As shown in Table 2, FMC JCT - Kifer 115 kV line will be overloaded by a combined outage of Los Esteros - Nortech 115 kV line and the SVP CCA Generator. The outage will cause an emergency overload of 2% on the FMC JCT - Kifer 115 kV line.

Mitigation

Mitigation of San Jose "B" - FMC JCT 115 kV Line

The San Jose "B" - FMC JCT 115 kV Line consists of a 20 feet, 715 kcmil AL conductor with 2 feet/second (wind speed) rating from the San Jose "B" sect. "E" bus to the first tower span. This line short section is already overloaded under various Category "B" outage conditions prior to this generation project. This generation project will further increase the overload by 7% to 8%. PG&E is currently preparing a project justification to replace this short line section with 477 SSAC or equivalent. It is expected that this PG&E transmission project will be completed by early 2002.

Mitigation of FMC JCT - Kifer 115 kV Line

The limiting factor for the FMC JCT - Kifer115 kV line is the 5.6 miles, 715 kcmil AL conductor section with 2 feet/second (wind speed) rating. This generation project will cause a marginal 2% overload on this line section under a G-1/L-1 condition.

This marginal overload condition can be mitigated if the Column "C" emergency request is granted. PG&E is currently preparing this column "C" request as part of PG&E overall 5-year work plan. If successful, this re-rate will solve this marginal overload.

Short Circuit Study Results

Fault Duties

Short circuit studies were performed to determine the impact of adding the Project to PG&E's transmission system. The fault duties were calculated before and after the addition of the Project. Table 3 summarizes the results of the short circuit study.

STATION		EXISTING DUTY		NEW DUTY			
Name	Voltage	SLG (A)	3 PHASE (A)	SLG (A)	% Increase	3 PHASE (A)	% Increase
Los Esteros 115 kV	115 kV	35,183	34,299	40,577	15.3%	37,982	10.7%
Newark Sect. D115 kV	115 kV	38,104	36,681	38,231	0.3%	36,889	0.6%
Newark Sect. E &F 115 kV	115 kV	51,973	51,984	52,419	0.8%	52,677	1.3%
Agnew 115kV	115 kV	18,609	21,713	19,595	5.3%	22,962	5.8%
Trimble 115kV	115 kV	30,241	31,957	31,822	5.2%	33,874	6.0%
Montague 115kV	115 kV	21,073	23,357	21,866	3.8%	24,431	4.6%
Nortech 115kV	115 kV	22,532	26,384	23,961	6.3%	28,104	6.5%
NSJEC 115kV	115 kV	PROPOSED	PROPOSED	40,390	NEW	37,865	NEW
NSJEC 13.8 kV	115 kV	PROPOSED	PROPOSED	33,781	NEW	34,193	NEW

Table 3: Short Circuit Fault Duty Results

All circuit breakers at Los Esteros have a minimum interrupting rating of 63,000 Amps. The circuit breakers at Newark Sect. "D" bus have a minimum interrupting rating of 44,000 Amps. All the circuit breakers at the Newark Sect. "E" & "F" 115 kV substation, except for the four shown below in Table 4, have interrupting ratings of 63,000 Amps or will be replaced by 63kA equipment under PG&E's overstressed breaker replacement project. All circuit breakers at Trimble have a minimum interrupting rating of 40,000 Amps. The breakers at Montague have a minimum interrupting rating of 25,000 Amps. All circuit breakers at Nortech have a minimum interrupting rating of 40,000 Amps. Given these interrupting ratings, there are no significant overstressed breakers as a result of this project.

As shown in Table 4, four 115 kV breakers at the Newark Sect "E" & "F" 115 kV substation (CB 350, 480, 520, and 540) are rated with an interrupting ratings of 47,750 Amps. These four 115 kV breakers are already overstressed prior to the project. This generation project will increase the overstress by 1 - 2%.

STATION		EXISTING DUTY (Before the Project)				NEW DUTY (After the Project)			
Circuit Breaker Number	Circuit Breaker Rating (A)	Fault Duty 3 Phase (A)	% Over-stressed	Fault Duty SLG (A)	% Over-stressed	Fault Duty 3 Phase (A)	% Over-stressed	Fault Duty SLG (A)	% Over-stressed
CB 350	47,750	49,401	3.5 %	49,906	4.5 %	50,033	4.8 %	50,321	5.4 %
CB 480	47,750	51,984	8.9 %	51,973	8.8 %	52,677	10.3 %	52,419	9.8 %
CB 520	47,750	50,333	5.4 %	50,540	5.8 %	51,015	6.8 %	50,981	6.8 %
CB 540	47,750	49,597	3.9 %	49,934	4.6 %	50,232	5.2 %	50,348	5.4 %

Table 4: Overstressed Breakers at Newark Sect "E" & "F" 115 kV

The replacement policy of overstressed circuit breakers under the scope of a project is summarized as follows:

- If a breaker is not overstressed and a project results in an overstressed condition of the breaker, the project scope should include the replacement of the breaker in question if the breaker becomes overstressed by 10% or more.
- If a breaker is already overstressed and a project increases the overstress by 10% or more, the project scope should include replacing the overstressed breaker.

Since this project creates less than 10% incremental overstress for these four 115 kV breakers, the Project is not responsible for replacing the breakers.

Power Flow Sensitivity Study Results

Two power flow sensitivity studies were conducted as part of this study.

- Temporary Tapping into the Nortech - Trimble 115 kV line
- High Santa Clara load (704 MW) System Condition

The following are the results of these two power flow sensitivity studies.

Temporary Tapping into the Nortech - Trimble 115 kV Line

As requested by the Developer, a power flow sensitivity study is conducted for temporary tapping into the Nortech - Trimble 115 kV line. The Project plans to come on-line in May 2002, which is before the June 2002 Los Esteros Project.
The relevant 2002 Summer Peak Area Base Case was used to simulate the impact of the new facility tapped into the Nortech - Trimble 115 kV line.

Normal Overloads

The addition of the Project creates no normal overloads.

Emergency Overloads

An outage of the Nortech - Kifer 115 kV line will result in a 13% overload on the line section from Trimble to the NSJEC tap point. Power flow plots are included in Appendix B.

				Before Project		After Project	
Name	Contingency Case	Voltage Rating	Emergency Rating (AMPS)	Loading (AMPS)	P.U. Rating	Loading (AMPS)	P.U. Rating
CREC JCT - Trimble	Nortech - Kifer 115 kV	115 kV	802	78	0.10	906	1.13

Table 5: Normal Overloads Comparison Before/After the Proposed Project

High Santa Clara load (704 MW) System Condition

According to the 2001 series base case annual assessment process, City of Santa Clara submitted their load forecast of 704 MW for year 2002, a 46% increase from the 2001 level. This power flow sensitivity study is provided for this high Santa Clara load "what if" scenario.

Normal Overloads

Table 6 summarizes the power flow study for before and after the proposed project. Normal overloads are those that exceed 100% of normal summer ratings[2].

NAME	Voltage Rating	Normal Rating (AMPS)	Before Project		After Project	
			Loading (AMPS)	P.U. Rating	Loading (AMPS)	P.U. Rating
Metcalf - Moss Landing #1	230	813	825	1.01	794	0.98
Metcalf - Moss Landing #2	230	813	826	1.02	795	0.98
Los Esteros - Nortech	115	1406	1293	0.92	1447	1.03

Table 6: Normal Overloads Comparison Before/After the Proposed Project

Emergency Overloads

Table 7 summarizes the power flow study of the ISO Category B outages for the summer peak condition before and after the proposed project.

[2] Summer normal ratings are calculated using a wind speed of 2 feet/second, an ambient temperature of 37° C for coastal regions and 43° C for interior regions, and a conductor temperature of 75 ° C for AAC and CU conductors. For other standard type conductors such as ACSR and ACSS the conductor temperatures used in the calculations are 80° C and 200° C respectively. A 4-feet/second wind speed is used on an exception basis.

				Before Project		After Project	
Name	Contingency Case	Voltage Rating	Emergency Rating (AMPS)	Loading (AMPS)	P.U. Rating	Loading (AMPS)	P.U. Rating
Los Esteros - Nortech	Kifer - SJ "B" & SVP CCA Gen	115 kV	1607	1572	0.98	1723	1.07
	Kifer - San Jose B "E" 115 kV	115 kV	1607	1528	0.95	1679	1.04
	Los Esteros - Trimble 115 kV	115 kV	1607	< 95%	< 95%	1665	1.04
	Newark - Scott #1 & SVP CCA GEN	115 kV	1607	1530	0.95	1665	1.04
	Trimble - SJ "B" & FMC CT	115 kV	1607	< 95%	< 95%	1669	1.04
	Newark - Scott #1 & FMC CT	115 kV	1607	< 95%	< 95%	1648	1.03
	Newark "D" - Scott 115 kV	115 kV	1607	< 95%	< 95%	1629	1.01
	Trimble - San Jose B "E" 115 kV	115 kV	1607	< 95%	< 95%	1622	1.01
	Newark - Scott #2 & SVP CCA GEN	115 kV	1607	< 95%	< 95%	1626	1.01
	Newark - Scott #1 & SVP Gianera Gen Unit 1	115 kV	1607	< 95%	< 95%	1629	1.01
	Newark - Scott #1 & Agnew CG	115 kV	1607	< 95%	< 95%	1608	1.00
	Newark - Kifer & FMC CT	115 kV	1607	< 95%	< 95%	1608	1.00
	Newark - Scott #2 & FMC CT	115 kV	1607	< 95%	< 95%	1610	1.00
Nortech - Kifer	Kifer - SJ "B" & SVP CCA Gen	115 kV	1541	1493	0.97	1644	1.07
	Kifer - San Jose B "E" 115 kV	115 kV	1541	< 95%	< 95%	1600	1.04
	Los Esteros - Trimble 115 kV	115 kV	1541	< 95%	< 95%	1586	1.03
	Newark - Scott #1 & SVP CCA GEN	115 kV	1541	< 95%	< 95%	1586	1.03
	Trimble - SJ "B" & FMC CT	115 kV	1541	< 95%	< 95%	1591	1.03
	Newark - Scott #1 & FMC CT	115 kV	1541	< 95%	< 95%	1569	1.02
	Newark "D" - Scott 115 kV	115 kV	1541	< 95%	< 95%	1550	1.01
	Newark - Scott #1 & SVP Gianera Gen Unit 1	115 kV	1541	< 95%	< 95%	1550	1.01
	Trimble - San Jose B "E" 115 kV	115 kV	1541	< 95%	< 95%	1543	1.00
	Newark - Scott #2 & SVP CCA GEN	115 kV	1541	< 95%	< 95%	1548	1.00
Trimble - San Jose B "E"	Los Esteros - Nortech & FMC CT	115 kV	924	931	1.01	1104	1.19
	L Esteros - Nortech & Gilroy Energy Co-gen	115 kV	924	927	1.00	1092	1.18
	Nortech - Kifer & FMC CT	115 kV	924	900	0.97	1073	1.16
	Nortech - Kifer & Gilroy Energy Co-gen	115 kV	924	897	0.97	1061	1.15
	L Esteros - Nortech & SVP CCA Gen	115 kV	924	< 95%	< 95%	1035	1.12
	Nortech - Los Esteros 115 kV	115 kV	924	841	0.91	1012	1.10
	L Esteros - Nortech & SVP Gianera Generator Unit 1	115 kV	924	< 95%	< 95%	1012	1.10
	Nortech - Kifer & SVP CCA Gen	115 kV	924	< 95%	< 95%	1003	1.09
	Nortech - Kifer 115 kV	115 kV	924	811	0.89	981	1.06
	Nortech - Kifer & SVP Gianera Generator Unit 1	115 kV	924	< 95%	< 95%	981	1.06
San Jose B "E" - FMC JCT	Los Esteros - Nortech & FMC CT	115 kV	803	1294	1.61	1354	1.69
	Nortech - Kifer & FMC CT	115 kV	803	1257	1.56	1318	1.64
	L Esteros - Nortech & SVP CCA Gen	115 kV	803	1156	1.44	1216	1.51
	Nortech - Kifer & SVP CCA Gen	115 kV	803	1119	1.39	1179	1.47
	Nortech - Los Esteros 115 kV	115 kV	803	1107	1.38	1168	1.45
	L Esteros - Nortech & SVP Gianera Generator Unit 1	115 kV	803	1107	1.38	1168	1.45
	Nortech - Kifer 115 kV	115 kV	803	1071	1.33	1132	1.41

Name	Contingency Case	Voltage Rating	Emergency Rating (AMPS)	Before Project Loading (AMPS)	Before Project P.U. Rating	After Project Loading (AMPS)	After Project P.U. Rating
	Nortech - Kifer & SVP Gianera Generator Unit 1	115 kV	803	1071	1.33	1132	1.41
	L Esteros - Nortech & Gilroy Energy Co-gen	115 kV	803	1074	1.34	1135	1.41
	Nortech - Kifer & Gilroy Energy Co-gen	115 kV	803	1038	1.29	1098	1.37
FMC JCT - Kifer	L Esteros - Nortech & SVP CCA Gen	115 kV	803	1141	1.42	1199	1.49
	Nortech - Kifer & SVP CCA Gen	115 kV	803	1103	1.37	1162	1.45
	Nortech - Los Esteros 115 kV	115 kV	803	1091	1.36	1150	1.43
	L Esteros - Nortech & SVP Gianera Generator Unit 1	115 kV	803	1091	1.36	1150	1.43
	Nortech - Kifer 115 kV	115 kV	803	1054	1.31	1114	1.39
	Nortech - Kifer & SVP Gianera Generator Unit 1	115 kV	803	1054	1.31	1114	1.39
	L Esteros - Nortech & Gilroy Energy Co-gen	115 kV	803	1058	1.32	1117	1.39
	Los Esteros - Nortech & FMC CT	115 kV	803	1025	1.28	1085	1.35
	Nortech - Kifer & Gilroy Energy Co-gen	115 kV	803	1021	1.27	1081	1.35
	Nortech - Kifer & FMC CT	115 kV	803	988	1.23	1048	1.30

Table 7: Emergency Overloads Comparison Before/After the Proposed Project

As shown in Table 7, the high Santa Clara loads system condition will trigger several overloaded lines under various Category "B" outage conditions. This generation project will increase these overloads by about 7 - 8%.

Stand-by Power

This study does not address any requirements for stand-by power that the project may require. The Applicant should contact their local PG&E service office regarding this service.

Next Step

Prior to interconnecting to PG&E's grid, the Applicant must request a Facility Cost Report (FCR). The FCR will be conducted at the Applicant's expense.
The Facility Cost Report will:

1) Determine the work scope and costs associated with Direct Assignment Facilities associated with interconnecting the project to the transmission grid.

2) Determine the work scope and costs of mitigating any system impacts caused by the addition of the project to the transmission grid.

3) Provide a dynamic stability analysis of the project.

4) Provide additional analysis of the system impact of the project, if required.

Appendix A

Contingency List

```
# San Jose Division Category B Contingency List for 2002-2006 (Includes Silicon Valley Power)
  #
  #
  # (1)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
 0
  #
  #
  # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  30705 30730  "1 "    0     # line from  MONTAVIS 230.00  BRKR to BRKR  HICKS    230.00
 0
  #
  #
  # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  30733 30735  "1 "    0     # line from  VASONA   230.00  BRKR to BRKR  METCALF  230.00
 0
  #
  #
  # (4)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  30734 30730  "1 "    0     # line from  CYOTEVLY 230.00  BRKR to BRKR  HICKS    230.00
 0
  #
  #
  # (5)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  30735 30705  "3 "    0     # line from  METCALF  230.00  BRKR to BRKR  MONTAVIS 230.00
 0
  #
  #
  # (6)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  30735 30705  "4 "    0     # line from  METCALF  230.00  BRKR to BRKR  MONTAVIS 230.00
 0
  #
  #
  # (7)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  30735 30731  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  LS ESTRS 230.00
 0
  #
  #
  # (8)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  30735 30734  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  CYOTEVLY 230.00
 0
  #
  #
  # (9)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  30735 30750  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  MOSSLND2 230.00
```

```
0
 #
 #
 # (10)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30755  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  MOSSLND1 230.00
0
 #
 #
 # (11)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (12)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35600  "1 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  DIXON LD 115.00
0
 #
 #
 # (13)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35602  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J2 115.00
1  35602 35604  "1 "    0     # line from  ZNKER J2 115.00   (3) to (2)   ZANKER   115.00
1  35602 36850  "1 "    0     # line from  ZNKER J2 115.00   (3) to BRKR  KIFER    115.00
2  35604 35861  "1 "    0     # TRAN from  ZANKER   115.00   (2) to (1)   SJ-SCL W   9.11
4  35861     0  "1 "    0     # LOAD-DROP    SJ-SCL W   9.11  LOAD==5.50(1.30)
3  35861     0  "1 "    0     # GEN-DROP    SJ-SCL W   9.11  GEN==5.00(0.00)
0
 #
 #
 # (14)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35603  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J1 115.00
1  35603 35605  "1 "    0     # line from  ZNKER J1 115.00   (3) to (1)   AGNEW J  115.00
1  35603 35612  "1 "    0     # line from  ZNKER J1 115.00   (3) to BRKR  TRIMBLE  115.00
0
 #
 #
 # (15)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35624  "1 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  MILPITAS 115.00
0
 #
 #
 # (16)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35624  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  MILPITAS 115.00
0
 #
 #
 # (17)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (18)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35600 35629  "1 "    0     # line from  DIXON LD 115.00  BRKR to (3)   MABURY J 115.00
1  35629 35626  "1 "    0     # line from  MABURY J 115.00   (3) to BRKR  MCKEE    115.00
1  35629 35630  "1 "    0     # line from  MABURY J 115.00   (3) to BRKR  MABURY   115.00
4  35630     0  "2 "    0     # LOAD-DROP    MABURY   115.00  LOAD==22.38(6.87)
0
 #
 #
 # (19)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35612 35610  "1 "    0     # line from  TRIMBLE  115.00  BRKR to BRKR  MONTAGUE 115.00
0
```

```
 #
 #
 # (20)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35612 35616  "1 "    0     # line from  TRIMBLE  115.00  BRKR to BRKR  SJ B   E 115.00
0
 #
 #
 # (21)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35615 35617  "1 "    0     # line from  FMC      115.00   (2) to (3)   FMC JCT  115.00
2  35615 35854  "1 "    0     # TRAN from  FMC      115.00   (2) to (1)   FMC CT    12.00
1  35617 35616  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  SJ B   E 115.00
1  35617 36850  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  KIFER    115.00
4  35615     0  "1 "    0     # LOAD-DROP    FMC      115.00  LOAD==19.85(1.78)
4  35615     0  "3 "    0     # LOAD-DROP    FMC      115.00  LOAD==38.08(0.00)
3  35854     0  "1 "    0     # GEN-DROP    FMC CT    12.00  GEN==50.00(15.00)
0
 #
 #
 # (22)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35618 35619  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  SJ B   F 115.00
0
 #
 #
 # (23)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
0
 #
 #
 # (24)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
0
 #
 #
 # (25)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35620 35621  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   IBM-HR J 115.00
1  35621 35642  "1 "    0     # line from  IBM-HR J 115.00   (2) to BRKR  MTCALF D 115.00
0
 #
 #
 # (26)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35620 35651  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   BAILY J3 115.00
1  35651 35642  "1 "    0     # line from  BAILY J3 115.00   (2) to BRKR  MTCALF D 115.00
0
 #
 #
 # (27)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35622 35643  "1 "    0     # line from  SWIFT    115.00  BRKR to BRKR  MTCALF E 115.00
0
 #
 #
 # (28)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35624 35622  "1 "    0     # line from  MILPITAS 115.00  BRKR to BRKR  SWIFT    115.00
0
 #
```

```
 #
 # (29)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35624 35628  "1 "    0     # line from  MILPITAS 115.00  BRKR to BRKR  WAUKESHA 115.00
4  35628     0  "1 "    0     # LOAD-DROP    WAUKESHA 115.00  LOAD==3.55(2.29)
0
 #
 #
 # (30)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
0
 #
 #
 # (31)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35626 35656  "1 "    0     # line from  MCKEE    115.00  BRKR to BRKR  PIERCY   115.00
0
 #
 #
 # (32)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
0
 #
 #
 # (33)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35637 35649  "1 "    0     # line from  IBM-CTLE 115.00   (1) to (3)   EDNVL J3 115.00
1  35649 35638  "1 "    0     # line from  EDNVL J3 115.00   (3) to BRKR  EDENVALE 115.00
1  35649 35641  "1 "    0     # line from  EDNVL J3 115.00  BRKR to (1)   EDNVL J1 115.00
4  35637     0  "1 "    0     # LOAD-DROP    IBM-CTLE 115.00  LOAD==38.90(31.21)
0
 #
 #
 # (34)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35638 35653  "1 "    0     # line from  EDENVALE 115.00  BRKR to (3)   BAILY J2 115.00
1  35653 35642  "1 "    0     # line from  BAILY J2 115.00   (3) to BRKR  MTCALF D 115.00
1  35653 35652  "1 "    0     # line from  BAILY J2 115.00   (3) to (2)   BAILY J1 115.00
1  35652 35640  "1 "    0     # line from  BAILY J1 115.00   (2) to BRKR  IBM-BALY 115.00
4  35640     0  "1 "    0     # LOAD-DROP    IBM-BALY 115.00  LOAD==6.00(3.24)
0
 #
 #
 # (35)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35639 35641  "1 "    0     # line from  IBM-HRRS 115.00  BRKR to (3)   EDNVL J1 115.00
1  35641 35642  "1 "    0     # line from  EDNVL J1 115.00   (3) to BRKR  MTCALF D 115.00
1  35641 35649  "1 "    0     # line from  EDNVL J1 115.00   (3) to BRKR  EDNVL J3 115.00
4  35639     0  "1 "    0     # LOAD-DROP    IBM-HRRS 115.00  LOAD==4.99(4.00)
 1  35621 35639  "1 "    1     # close IBM Harry to Metcalf-El Patio
 4  35639 0      "**"    1     # restore all loads to IBM HRRS
0
 #
 #
 # (36)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35642 35646  "1 "    0     # line from  MTCALF D 115.00  BRKR to BRKR  MRGN HIL 115.00
0
 #
 #
 # (37)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
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 #
1  35642 35654  "1 "    0     # line from  MTCALF D 115.00  BRKR to (2)   MORGN J1 115.00
1  35654 35655  "1 "    0     # line from  MORGN J1 115.00   (2) to (2)   MORGN J2 115.00
1  35655 35648  "1 "    0     # line from  MORGN J2 115.00   (2) to BRKR  LLAGAS   115.00
0
 #
 #
 # (38)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35643 35644  "1 "    0     # line from  MTCALF E 115.00  BRKR to BRKR  CYTE PMP 115.00
4  35644     0  "1 "    0     # LOAD-DROP    CYTE PMP 115.00  LOAD==11.70(2.67)
0
 #
 #
 # (39)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35646 35648  "1 "    0     # line from  MRGN HIL 115.00  BRKR to BRKR  LLAGAS   115.00
0
 #
 #
 # (40)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35648 35650  "1 "    0     # line from  LLAGAS   115.00  BRKR to (2)   GILROY F 115.00
1  35650 35647  "1 "    0     # line from  GILROY F 115.00   (2) to BRKR  GILROY   115.00
4  35650     0  "1 "    0     # LOAD-DROP    GILROY F 115.00  LOAD==10.40(8.62)
0
 #
 #
 # (41)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35656 35643  "1 "    0     # line from  PIERCY   115.00  BRKR to BRKR  MTCALF E 115.00
0
 #
 #
 # (42)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35658 35606  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  AGNEW    115.00
0
 #
 #
 # (43)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35658 35610  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  MONTAGUE 115.00
0
 #
 #
 # (44)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35658 35612  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  TRIMBLE  115.00
0
 #
 #
 # (45)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
0
 #
 #
 # (46)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
0
 #
 #
 # (47)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35750 35752  "1 "    0     # line from  MABURY    60.00  BRKR to (3)   JENING J  60.00
1  35752 35751  "1 "    0     # line from  JENING J  60.00   (3) to BRKR  JENNINGS  60.00
1  35752 35754  "1 "    0     # line from  JENING J  60.00   (3) to (3)   EVRGRN J  60.00
1  35754 35753  "1 "    0     # line from  EVRGRN J  60.00   (3) to BRKR  EVERGREN  60.00
1  35754 35755  "1 "    0     # line from  EVRGRN J  60.00   (3) to BRKR  SENTER    60.00
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```
4  35750     0  "1 "    0     # LOAD-DROP    MABURY    60.00  LOAD==19.37(7.65)
4  35751     0  "1 "    0     # LOAD-DROP    JENNINGS  60.00  LOAD==1.27(1.22)
4  35755     0  "1 "    0     # LOAD-DROP    SENTER    60.00  LOAD==19.39(3.51)
 1  35755 35756  "1 "    1     # close Senter to Almaden (Evergreen - Mabury 60 kV)
 4  35755 0      "**"    1     # restore all loads to SENTER (Evergreen - Mabury 60 kV)
0
 #
 #
 # (48)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35753 35756  "1 "    0     # line from  EVERGREN  60.00  BRKR to (2)   SENTER J  60.00
1  35756 35757  "1 "    0     # line from  SENTER J  60.00   (2) to BRKR  ALMADEN   60.00
4  35757     0  "1 "    0     # LOAD-DROP    ALMADEN   60.00  LOAD==20.06(2.55)
 1  35757 35460  "1 "    1     # close Almaden to Los Gatos (Evergreen - Los Gatos 60 kV)
 4  35757 0      "**"    1     # restore all loads to ALMADEN (Evergreen - Los Gatos 60 kV)
0
 #
 #
 # (49)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  36850 36852  "1 "    0     # line from  KIFER    115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (50)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30735 30042  "11"    0     # TRAN from  METCALF  230.00  BRKR to BRKR  METCALF  500.00
0
 #
 #
 # (51)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30735 30042  "12"    0     # TRAN from  METCALF  230.00  BRKR to BRKR  METCALF  500.00
0
 #
 #
 # (52)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35658 30731  "1 "    0     # TRAN from  LS ESTRS 115.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (53)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35658 30731  "2 "    0     # TRAN from  LS ESTRS 115.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (54)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35642 30735  "1 "    0     # TRAN from  MTCALF D 115.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (55)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35643 30735  "2 "    0     # TRAN from  MTCALF E 115.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (56)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35643 30735  "3 "    0     # TRAN from  MTCALF E 115.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (57)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35860 35606  "1 "    0     # TRAN from  OLS-AGNE   9.11   (1) to BRKR  AGNEW    115.00
4  35860     0  "1 "    0     # LOAD-DROP    OLS-AGNE   9.11  LOAD==3.00(0.50)
3  35860     0  "1 "    0     # GEN-DROP    OLS-AGNE   9.11  GEN==29.64(9.63)
```

```
0
 #
 #
 # (58)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35863 35632  "1 "    0     # TRAN from  CATALYST   9.11   (1) to BRKR  MARKHAM  115.00
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
0
 #
 #
 # (59)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35753 35633  "1 "    0     # TRAN from  EVERGREN  60.00  BRKR to BRKR  EVRGRN 2 115.00
 1  35756 35757  "1 "    0     # open ALMADEN to SENTER J (Evergreen 115/60 kV Bank)
 1  35757 35460  "1 "    1     # close Almaden to Los Gatos (Evergreen 115/60 kV Bank)
0
 #
 #
 # (60)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35850 35647  "1 "    0     # TRAN from  GLRY COG  13.80   (1) to BRKR  GILROY   115.00
4  35850     0  "1 "    0     # LOAD-DROP    GLRY COG  13.80  LOAD==5.80(1.30)
3  35850     0  "1 "    0     # GEN-DROP    GLRY COG  13.80  GEN==121.97(47.00)
0
 #
 #
 # (61)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  36856 36850  "1 "    0     # TRAN from  CSC_CCA    9.11   (1) to BRKR  KIFER    115.00
4  36856     0  "1 "    0     # LOAD-DROP    CSC_CCA    9.11  LOAD==1.00(0.20)
3  36856     0  "1 "    0     # GEN-DROP    CSC_CCA    9.11  GEN==23.75(13.06)
0
 #
 #
 # (62)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  36854 36852  "1 "    0     # TRAN from  CSC COG.   9.11   (1) to BRKR  SCOTT    115.00
3  36854     0  "1 "    0     # GEN-DROP    CSC COG.   9.11  GEN==5.50(3.50)
0
 #
 #
 # (63)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  36858 36852  "1 "    0     # TRAN from  CSC_GNRA   9.11   (1) to BRKR  SCOTT    115.00
3  36858     0  "1 "    0     # GEN-DROP    CSC_GNRA   9.11  GEN==19.50(6.91)
3  36858     0  "2 "    0     # GEN-DROP    CSC_GNRA   9.11  GEN==19.50(6.91)
0
 #
 #
 # (64)  B1 GENERATOR OUTAGE
 #
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (65)  B1 GENERATOR OUTAGE
 #
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (66)  B1 GENERATOR OUTAGE
 #
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 # (67)  B1 GENERATOR OUTAGE
 #
3  35861     0  "1"     0     # SJ-SCL W   9.11       PGEN=5.00  QGEN=0.00
```

```
0
 #
 #
 # (68)  B1 GENERATOR OUTAGE
 #
3  35863     0  "1"     0     # CATALYST   9.11       PGEN=2.25  QGEN=0.00
0
 #
 #
 # (69)  B1 GENERATOR OUTAGE
 #
3  36854     0  "1"     0     # CSC COG.   9.11       PGEN=5.50  QGEN=3.50
0
 #
 #
 # (70)  B1 GENERATOR OUTAGE
 #
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (71)  B1 GENERATOR OUTAGE
 #
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (72)  B1 GENERATOR OUTAGE
 #
3  36858     0  "2"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (73)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and Agnew Co-gen
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (74)  L-1/G-1 Newark - Scott #1 115 kV and Agnew Co-gen
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (75)  L-1/G-1 El Patio - San Jose A 115 kV and Agnew Co-gen
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (76)  L-1/G-1 Evergreen - San Jose B 115 kV and Agnew Co-gen
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
```

```
 #
 #
 # (77)  L-1/G-1 Metcalf - Evergreen #2 115 kV and Agnew Co-gen
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (78)  L-1/G-1 Metcalf - Evergreen #1 115 kV and Agnew Co-gen
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 # (79)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and SVP CCA Generator
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (80)  L-1/G-1 Newark - Scott #1 115 kV and SVP CCA Generator
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (81)  L-1/G-1 Newark - Scott #2 115 kV and SVP CCA Generator
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (82)  L-1/G-1 Kifer - San Jose B 115 kV and SVP CCA Generator
 #
1  35615 35617  "1 "    0     # line from  FMC      115.00   (2) to (3)   FMC JCT  115.00
2  35615 35854  "1 "    0     # TRAN from  FMC      115.00   (2) to (1)   FMC CT    12.00
1  35617 35616  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  SJ B   E 115.00
1  35617 36850  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  KIFER    115.00
4  35615     0  "1 "    0     # LOAD-DROP    FMC      115.00  LOAD==19.85(1.78)
4  35615     0  "3 "    0     # LOAD-DROP    FMC      115.00  LOAD==38.08(0.00)
3  35854     0  "1 "    0     # GEN-DROP    FMC CT    12.00  GEN==50.00(15.00)
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (83)  L-1/G-1 El Patio - San Jose A 115 kV and SVP CCA Generator
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (84)  L-1/G-1 Evergreen - San Jose B 115 kV and SVP CCA Generator
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
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2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (85)  L-1/G-1 Metcalf - Evergreen #2 115 kV and SVP CCA Generator
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (86)  L-1/G-1 Metcalf - Evergreen #1 115 kV and SVP CCA Generator
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (87)  L-1/G-1 Los Esteros - Nortech 115 kV and SVP CCA Generator
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (88)  L-1/G-1 Nortech - Kifer 115 kV and SVP CCA Generator
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (89)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and FMC Combustion Turbine
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (90)  L-1/G-1 Los Esteros - Metcalf 230 kV and FMC Combustion Turbine
 #
1  30735 30731  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  LS ESTRS 230.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (91)  L-1/G-1 Newark - Scott #1 115 kV and FMC Combustion Turbine
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (92)  L-1/G-1 Newark - Kifer 115 kV and FMC Combustion Turbine
 #
1  35122 35602  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J2 115.00
1  35602 35604  "1 "    0     # line from  ZNKER J2 115.00   (3) to (2)   ZANKER   115.00
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1  35602 36850  "1 "    0     # line from  ZNKER J2 115.00   (3) to BRKR  KIFER    115.00
2  35604 35861  "1 "    0     # TRAN from  ZANKER   115.00   (2) to (1)   SJ-SCL W   9.11
4  35861     0  "1 "    0     # LOAD-DROP    SJ-SCL W   9.11  LOAD==5.50(1.30)
3  35861     0  "1 "    0     # GEN-DROP    SJ-SCL W   9.11  GEN==5.00(0.00)
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (93)  L-1/G-1 Newark - Scott #2 115 kV and FMC Combustion Turbine
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (94)  L-1/G-1 Trimble - San Jose B 115 kV and FMC Combustion Turbine
 #
1  35612 35616  "1 "    0     # line from  TRIMBLE  115.00  BRKR to BRKR  SJ B   E 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (95)  L-1/G-1 El Patio - San Jose A 115 kV and FMC Combustion Turbine
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (96)  L-1/G-1 Evergreen - San Jose B 115 kV and FMC Combustion Turbine
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (97)  L-1/G-1 Metcalf - El Patio #1 115 kV and FMC Combustion Turbine
 #
1  35620 35621  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   IBM-HR J 115.00
1  35621 35642  "1 "    0     # line from  IBM-HR J 115.00   (2) to BRKR  MTCALF D 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (98)  L-1/G-1 Metcalf - El Patio #2 115 kV and FMC Combustion Turbine
 #
1  35620 35651  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   BAILY J3 115.00
1  35651 35642  "1 "    0     # line from  BAILY J3 115.00   (2) to BRKR  MTCALF D 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (99)  L-1/G-1 Metcalf - Evergreen #2 115 kV and FMC Combustion Turbine
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
```

```
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (100)  L-1/G-1 Metcalf - Evergreen #1 115 kV and FMC Combustion Turbine
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (101)  L-1/G-1 Los Esteros - Montague 115 kV and FMC Combustion Turbine
 #
1  35658 35610  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  MONTAGUE 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (102)  L-1/G-1 Los Esteros - Nortech 115 kV and FMC Combustion Turbine
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (103)  L-1/G-1 Nortech - Kifer 115 kV and FMC Combustion Turbine
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (104)  L-1/G-1 Los Esteros - Metcalf 230 kV and SVP Gianera Generator Unit 1
 #
1  30735 30731  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  LS ESTRS 230.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (105)  L-1/G-1 Newark - Scott #1 115 kV and SVP Gianera Generator Unit 1
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (106)  L-1/G-1 Newark - Scott #2 115 kV and SVP Gianera Generator Unit 1
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (107)  L-1/G-1 El Patio - San Jose A 115 kV and SVP Gianera Generator Unit 1
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (108)  L-1/G-1 Evergreen - San Jose B 115 kV and SVP Gianera Generator Unit 1
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
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```
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (109)  L-1/G-1 Swift - Metcalf 115 kV and SVP Gianera Generator Unit 1
 #
1  35622 35643  "1 "    0     # line from  SWIFT    115.00  BRKR to BRKR  MTCALF E 115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (110)  L-1/G-1 Metcalf - Evergreen #2 115 kV and SVP Gianera Generator Unit 1
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (111)  L-1/G-1 Metcalf - Evergreen #1 115 kV and SVP Gianera Generator Unit 1
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (112)  L-1/G-1 Los Esteros - Agnew 115 kV and SVP Gianera Generator Unit 1
 #
1  35658 35606  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  AGNEW    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (113)  L-1/G-1 Los Esteros - Nortech 115 kV and SVP Gianera Generator Unit 1
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (114)  L-1/G-1 Nortech - Kifer 115 kV and SVP Gianera Generator Unit 1
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (115)  L-1/G-1 Scott - Kifer 115 kV and SVP Gianera Generator Unit 1
 #
1  36850 36852  "1 "    0     # line from  KIFER    115.00  BRKR to BRKR  SCOTT    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (116)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and Gilroy Energy Co-gen
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (117)  L-1/G-1 Metcalf - Morgan Hill 115 kV and Gilroy Energy Co-gen
 #
1  35642 35646  "1 "    0     # line from  MTCALF D 115.00  BRKR to BRKR  MRGN HIL 115.00
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3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (118)  L-1/G-1 Metcalf - Llagas 115 kV and Gilroy Energy Co-gen
 #
1  35642 35654  "1 "    0     # line from  MTCALF D 115.00  BRKR to (2)   MORGN J1 115.00
1  35654 35655  "1 "    0     # line from  MORGN J1 115.00   (2) to (2)   MORGN J2 115.00
1  35655 35648  "1 "    0     # line from  MORGN J2 115.00   (2) to BRKR  LLAGAS   115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (119)  L-1/G-1 Morgan Hill - Llagas 115 kV and Gilroy Energy Co-gen
 #
1  35646 35648  "1 "    0     # line from  MRGN HIL 115.00  BRKR to BRKR  LLAGAS   115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (120)  L-1/G-1 Los Esteros - Nortech 115 kV and Gilroy Energy Co-gen
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (121)  L-1/G-1 Nortech - Kifer 115 kV and Gilroy Energy Co-gen
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
-1
 # EOF
```

Appendix B

Power Flow Plots

Plot	Description
Plot 1	Vicinity 115 kV system MW/MVAR flows without the project.
Plot 2	Same as Plot 1. Flows shown in Amp and % of applicable rating.
Plot 3	Vicinity 115 kV system MW/MVAR flows with Los Esteros Critical Energy Facility Project
Plot 4	Same as Plot 3. Flows shown in Amp and % of applicable rating.
Plot 5	Vicinity MW/MVAR flows without project; Los Esteros - Nortech 115 kV and SVP CCA Generator Unit out.
Plot 6	Same as Plot 5. Flows shown in Amp and % of applicable rating.
Plot 7	Vicinity MW/MVAR flows with NSJEC Project; Los Esteros - Nortech 115 kV and SVP CCA Generator Unit out.
Plot 8	Same as Plot 7. Flows shown in Amp and % of applicable rating.
Plot 9	Vicinity MW/MVAR flows without project; Los Esteros-Nortech 115 kV and FMC Combustion Turbine out.
Plot 10	Same as Plot 9. Flows shown in Amp and % of applicable rating.
Plot 11	Vicinity MW/MVAR flows with NSJEC Project; Los Esteros-Nortech 115 kV and FMC Combustion Turbine out.
Plot 12	Same as Plot 11. Flows shown in Amp and % of applicable rating.
Plot 13	Vicinity MW/MVAR flows without project; Nortech-Kifer 115 kV and FMC Combustion Turbine out.
Plot 14	Same as Plot 13. Flows shown in Amp and % of applicable rating.
Plot 15	Vicinity MW/MVAR flows with NSJEC Project; Nortech-Kifer 115 kV and FMC Combustion Turbine out.
Plot 16	Same as Plot 15. Flows shown in Amp and % of applicable rating.
Plot 17	Tapping Sensitivity - Vicinity 115 kV system MW/MVAR flows without the project.

Plot 18 Same as Plot 17. Flows shown in Amp and % of applicable rating.

Plot 19 Tapping Sensitivity - Vicinity 115 kV system MW/MVAR flows with Los Esteros Critical Energy Facility Project

Plot 20 Same as Plot 19. Flows shown in Amp and % of applicable rating.

Plot 21 Tapping Sensitivity - Vicinity MW/MVAR flows without project; Nortech - Kifer 115 kV out.

Plot 22 Same as Plot 21. Flows shown in Amp and % of applicable rating.

Plot 23 Tapping Sensitivity - Vicinity MW/MVAR flows with NSJEC Project; Nortech - Kifer 115 kV out.

Plot 24 Same as Plot 23. Flows shown in Amp and % of applicable rating.

Appendix 5.5-A

EMF AND POWER LINE CONCEPTS
CALPINE C*POWER
LOS ESTEROS CRITICAL ENERGY FACILITY

EMF CHARACTERISTICS

The power system frequency in the United States is 60 cycles per second or 60 hertz (Hz). At 60 Hz the electromagnetic field is calculated as two separate fields: an electric field and a magnetic field. These fields are a naturally occurring phenomenon associated with electricity. The electric and magnetic fields have the same frequency as the electricity that creates them. Thus, the fields that are the subject of this report are 60 Hz fields. Electric field concepts are presented below, followed by a discussion of magnetic fields.

Electric Fields

The quantity of electricity is defined in terms of electric charge. "Electric charge, like mass, length, and time, is accepted as a fundamentally assumed concept, required by the existence of forces measurable experimentally: other definitions of electromagnetic quantities are developed on the bases of these four concepts."[1]

The potential energy stored in an electric charge is measured in volts. Voltage on a wire is often described as analogous to water pressure in a pipe.

An electric field exists wherever there is an electric charge. The electric field is an invisible force that exists in space between positive and negative electric charges. An electric field has a direction associated with it, from positive charge to negative charge. It is measured in units of kilovolts per meter (kV/m). An electric field is present wherever there is electrical energy, including home wiring, appliances, and power lines. Electric fields have the following characteristics:

1. The strength of the electric field is proportional to the voltage of the electric system causing it. Thus, a high-voltage power line would have a higher electric field than low-voltage house wiring.

2. The strength of the electric field decreases as the distance from the source increases. Thus, moving farther from a power line will reduce the field.

3. An electric field is stopped by ground and can be shielded by enclosing it within a grounded metallic object. Trees, bushes, houses, etc., will also significantly attenuate electric fields.

4. Two electric fields may tend to add together or cancel each other depending upon whether they are in the same or opposite directions.

5. Electric fields will induce a charge on ungrounded metallic objects within the field. Thus, electric utilities take precautions to ground fences and metal buildings that are very close to transmission lines.

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[1] IEEE Standard Dictionary of Electrical and Electronics Terms

6. People are able to detect the presence of some electric fields by sensation of small body hairs. This detection depends upon the strength of the field and the sensitivity of the person.

Magnetic Fields

A magnetic field is produced whenever electric current flows. Current is the movement of electric charges and is measured in amperes (also called amps). The magnetic field is an invisible force that exists in space around the current source. The unit used to measure magnetic field is milliGauss (mG).

The characteristics of magnetic fields are listed below. In many ways, magnetic fields differ from electric fields described above.

1. The strength of a magnetic field is proportional to current. The relevance of this will be discussed in more detail in the section on power lines.

2. The strength of a magnetic field decreases as the distance from the source increases. Thus, moving farther from a power line will reduce the magnetic field, similar to the electric field.

3. A magnetic field is not stopped by ground and is not significantly attenuated by buildings, trees, etc. It is attenuated only if the current source is enclosed by a magnetic material.

4. Two magnetic fields may tend to add together or cancel each other depending upon whether they are in the same or opposite direction.

5. A magnetic field will induce current in a conducting metallic loop. This is a concern to electric utilities where pipelines or railroads are close to and parallel to power lines. Precautions are taken to prevent the induced currents from causing interference to the corrosion protection system on pipelines or to communication systems on railroads.

6. People are not able to sense the presence of a magnetic field.

A magnetic field will be found near household appliances and home wiring, as well as power lines.

To review the terminology, voltage is a measure of the potential energy of the electrical charge, analogous to the potential energy of water pressure inside a pipe. An electric field is associated with voltage. Current is the movement of electrical charge in a wire, analogous to the flow of water in a pipe. A lamp plugged into the household wall outlet will have voltage to the switch, but current will flow only when the switch is turned on. A magnetic field is associated with current.

Measurement and Calculation of EMF

The measurement of the strength of electric and magnetic fields is made with readily available meters. A different meter is needed to measure each. The Institute of Electrical and Electronic Engineers (IEEE) develops and publishes guidelines and standards for instrumentation and measurement procedures. Near power lines, the standards state that the fields are to be measured at 1 meter (3.28 feet) above ground. The field strengths given in this report are calculated at 1 meter above ground.

The electric and magnetic fields associated with a power line have a special orientation with regard to the power line. The electric field (near the power line) at 1 meter above ground is essentially vertical along the route of the power line. Magnetic fields, on the other hand, may have vertical and horizontal components. It is important, especially when making measurements, that orientation of the field be taken into consideration.

In this report, calculation of magnetic field strengths refers to the maximum field rather than a horizontal or vertical component.

POWER TRANSMISSION CONCEPTS

Power Line Voltages and Currents

The electric and magnetic fields are calculated for typical transmission line configurations. Transmission lines are almost always three-phase (three conductors servicing a particular load or customer). For the calculations in this report we have assumed the three phases to be balanced in voltage and current.

Electric utilities operate power lines at nearly constant voltage; normal operation is typically within 5 percent of the nominal voltage. Similarly, the voltage maintained within a house is nearly constant at 120 volts. The current over a power line, however, will vary considerably as power requirements change. This same situation occurs within a house. The electrical outlets in the home will all supply power at nearly 120 volts, but if no appliance is turned on, then no current flows. However, as refrigerators, lamps, and various appliances are turned on, more and more current flows to provide power. Thus, the current varies considerably depending upon the amount of power being used.

The electric field, which is proportional to voltage, will be nearly constant under a transmission line since the line is held at nearly constant voltage. On the other hand, the magnetic field, which is proportional to current, will vary greatly during the day as the power requirements on the transmission line vary. In discussing the magnetic field near a transmission line it is, therefore, important to distinguish the current that was used to determine the magnetic field level. In this report, discussion of magnetic fields will include reference to the associated current level.

Appendix 5.5-B

ELECTRIC FIELD DATA SHEETS
CROSS SECTIONS A, B, C, AND D
CALPINE C*POWER
LOS ESTEROS CRITICAL ENERGY FACILITY

Los Esteros Critical Energy Facility
Electric Field Strengths

Lateral Distance (ft)	Cross Section A (kV/m)	B (kV/m)	C (kV/m)	D (kV/m)	Lateral Distance (ft)	Cross Section A (kV/m)	B (kV/m)	C (kV/m)	D (kV/m)
-235	0.009				5	1.282	1.018	1.352	1.018
-230	0.010				10	1.181	0.711	1.418	0.711
-225	0.010	0.016	0.011	0.016	15	0.878	0.452	1.270	0.452
-220	0.011	0.016	0.011	0.016	20	0.663	0.261	0.991	0.261
-215	0.011	0.017	0.012	0.017	25	0.695	0.133	0.704	0.133
-210	0.012	0.018	0.012	0.018	30	0.668	0.054	0.471	0.054
-205	0.013	0.019	0.013	0.019	35	0.554	0.036	0.303	0.036
-200	0.013	0.020	0.013	0.020	40	0.416	0.056	0.193	0.056
-195	0.014	0.021	0.014	0.021	45	0.297	0.070	0.126	0.070
-190	0.015	0.022	0.015	0.022	50	0.208	0.078	0.091	0.078
-185	0.016	0.023	0.015	0.023	55	0.147	0.080	0.076	0.080
-180	0.017	0.024	0.016	0.024	60	0.106	0.080	0.071	0.080
-175	0.018	0.025	0.017	0.025	65	0.081	0.078	0.068	0.078
-170	0.019	0.027	0.018	0.027	70	0.065	0.074	0.065	0.074
-165	0.020	0.028	0.019	0.028	75	0.055	0.071	0.062	0.071
-160	0.021	0.030	0.020	0.030	80	0.048	0.067	0.059	0.067
-155	0.023	0.031	0.022	0.031	85	0.043	0.063	0.055	0.063
-150	0.024	0.033	0.023	0.033	90	0.039	0.059	0.052	0.059
-145	0.026	0.035	0.024	0.035	95	0.035	0.055	0.048	0.055
-140	0.028	0.038	0.026	0.038	100	0.032	0.051	0.045	0.051
-135	0.030	0.040	0.028	0.040	105	0.030	0.048	0.042	0.048
-130	0.032	0.043	0.030	0.043	110	0.028	0.045	0.039	0.045
-125	0.035	0.045	0.032	0.045	115	0.026	0.042	0.036	0.042
-120	0.037	0.048	0.034	0.048	120	0.024	0.040	0.034	0.040
-115	0.040	0.052	0.036	0.052	125	0.022	0.037	0.032	0.037
-110	0.043	0.055	0.039	0.055	130	0.021	0.035	0.030	0.035
-105	0.046	0.059	0.042	0.059	135	0.020	0.033	0.028	0.033
-100	0.050	0.063	0.045	0.063	140	0.018	0.031	0.026	0.031
-95	0.054	0.067	0.048	0.067	145	0.017	0.029	0.024	0.029
-90	0.057	0.071	0.052	0.071	150	0.016	0.028	0.023	0.028
-85	0.061	0.076	0.055	0.076	155	0.015	0.026	0.022	0.026
-80	0.066	0.079	0.059	0.079	160	0.014	0.025	0.020	0.025
-75	0.072	0.083	0.062	0.083	165	0.014	0.024	0.019	0.024
-70	0.082	0.084	0.065	0.084	170	0.013	0.022	0.018	0.022
-65	0.102	0.084	0.068	0.084	175	0.012	0.021	0.017	0.021
-60	0.140	0.080	0.071	0.080	180	0.012	0.020	0.016	0.020
-55	0.208	0.070	0.076	0.070	185	0.011	0.019	0.015	0.019
-50	0.316	0.052	0.091	0.052	190	0.010	0.019	0.015	0.019
-45	0.479	0.033	0.126	0.033	195	0.010	0.018	0.014	0.018
-40	0.703	0.077	0.193	0.077	200	0.010	0.017	0.013	0.017
-35	0.974	0.174	0.303	0.174	205	0.009	0.016	0.013	0.016

Lateral	Cross Section				Lateral	Cross Section			
Distance (ft)	**A** (kV/m)	**B** (kV/m)	**C** (kV/m)	**D** (kV/m)	**Distance** (ft)	**A** (kV/m)	**B** (kV/m)	**C** (kV/m)	**D** (kV/m)
-20	1.150	0.829	0.991	0.829	220	0.008	0.014	0.011	0.014
-15	0.850	1.140	1.270	1.140	225	0.008	0.014	0.011	0.014
-10	0.906	1.386	1.418	1.386	230	0.007			
-5	1.087	1.453	1.352	1.453	235	0.007			
0	1.205	1.304	1.241	1.304					

Appendix 5.5-C

AUDIBLE NOISE DATA SHEETS
CROSS SECTIONS A, B, C AND D
CALPINE C*POWER
LOS ESTEROS CRITICAL ENERGY FACILITY

Los Esteros Critical Energy Facility
Audible Noise Levels - L5 Rain

Lateral Distance (ft)	Cross Section A (dB(A))	B (dB(A))	C (dB(A))	D (dB(A))	Lateral Distance (ft)	Cross Section A (dB(A))	B (dB(A))	C (dB(A))	D (dB(A))
-235	22.4				5	32.9	30.4	19.9	30.4
-230	22.5				10	33.3	30.1	19.7	30.1
-225	22.6	20.4	9.4	20.4	15	33.5	29.6	19.4	29.6
-220	22.7	20.5	9.6	20.5	20	33.6	29.2	19.0	29.2
-215	22.8	20.6	9.7	20.6	25	33.6	28.7	18.5	28.7
-210	23.0	20.7	9.8	20.7	30	33.3	28.3	18.1	28.3
-205	23.1	20.9	10.0	20.9	35	32.9	27.9	17.7	27.9
-200	23.2	21.0	10.1	21.0	40	32.5	27.5	17.2	27.5
-195	23.3	21.2	10.2	21.2	45	32.1	27.2	16.9	27.2
-190	23.5	21.3	10.4	21.3	50	31.6	26.8	16.5	26.8
-185	23.6	21.5	10.5	21.5	55	31.2	26.5	16.1	26.5
-180	23.7	21.6	10.7	21.6	60	30.8	26.2	15.8	26.2
-175	23.9	21.8	10.8	21.8	65	30.4	25.9	15.5	25.9
-170	24.0	21.9	11.0	21.9	70	30.0	25.6	15.2	25.6
-165	24.2	22.1	11.1	22.1	75	29.7	25.3	14.9	25.3
-160	24.3	22.2	11.3	22.2	80	29.4	25.0	14.6	25.0
-155	24.5	22.4	11.4	22.4	85	29.0	24.8	14.3	24.8
-150	24.6	22.6	11.6	22.6	90	28.7	24.5	14.1	24.5
-145	24.8	22.8	11.8	22.8	95	28.5	24.3	13.8	24.3
-140	24.9	22.9	12.0	22.9	100	28.2	24.1	13.6	24.1
-135	25.1	23.1	12.1	23.1	105	27.9	23.9	13.4	23.9
-130	25.3	23.3	12.3	23.3	110	27.7	23.6	13.1	23.6
-125	25.5	23.5	12.5	23.5	115	27.4	23.4	12.9	23.4
-120	25.6	23.7	12.7	23.7	120	27.2	23.2	12.7	23.2
-115	25.8	23.9	12.9	23.9	125	27.0	23.1	12.5	23.1
-110	26.0	24.2	13.1	24.2	130	26.7	22.9	12.3	22.9
-105	26.2	24.4	13.4	24.4	135	26.5	22.7	12.1	22.7
-100	26.4	24.6	13.6	24.6	140	26.3	22.5	12.0	22.5
-95	26.6	24.9	13.8	24.9	145	26.1	22.3	11.8	22.3
-90	26.8	25.1	14.1	25.1	150	25.9	22.2	11.6	22.2
-85	27.0	25.4	14.3	25.4	155	25.7	22.0	11.4	22.0
-80	27.3	25.7	14.6	25.7	160	25.6	21.8	11.3	21.8
-75	27.5	26.0	14.9	26.0	165	25.4	21.7	11.1	21.7
-70	27.8	26.3	15.2	26.3	170	25.2	21.5	11.0	21.5
-65	28.0	26.6	15.5	26.6	175	25.1	21.4	10.8	21.4
-60	28.3	26.9	15.8	26.9	180	24.9	21.2	10.7	21.2
-55	28.6	27.3	16.1	27.3	185	24.7	21.1	10.5	21.1
-50	28.9	27.7	16.5	27.7	190	24.6	21.0	10.4	21.0
-45	29.2	28.1	16.9	28.1	195	24.4	20.8	10.2	20.8
-40	29.5	28.5	17.2	28.5	200	24.3	20.7	10.1	20.7
-35	29.8	28.9	17.7	28.9	205	24.1	20.6	10.0	20.6

Lateral Distance (ft)	Cross Section A (dB(A))	B (dB(A))	C (dB(A))	D (dB(A))	Lateral Distance (ft)	Cross Section A (dB(A))	B (dB(A))	C (dB(A))	D (dB(A))
-30	30.2	29.4	18.1	29.4	210	24.0	20.4	9.8	20.4
-25	30.6	29.8	18.5	29.8	215	23.8	20.3	9.7	20.3
-20	30.9	30.2	19.0	30.2	220	23.7	20.2	9.6	20.2
-15	31.3	30.6	19.4	30.6	225	23.6	20.1	9.4	20.1
-10	31.7	30.8	19.7	30.8	230	23.4			
-5	32.1	30.8	19.9	30.8	235	23.3			
0	32.5	30.7	20.0	30.7					

Appendix 5.5-D

MAGNETIC FIELD DATA SHEETS
CROSS SECTIONS A, B, C AND D
CALPINE C*POWER
LOS ESTEROS CRITICAL ENERGY FACILITY

Los Esteros Critical Energy Facility
Magnetic Field Strengths

Without LECEF Generation

Lateral Distance (ft)	Cross Section A (mG)	B (mG)	C (mG)	D (mG)	Lateral Distance (ft)	Cross Section A (mG)	B (mG)	C (mG)	D (mG)
-235	0.962				5	100.330	136.990	75.161	24.726
-230	1.009				10	90.136	117.660	63.088	21.237
-225	1.060	2.571	0.526	0.464	15	77.089	99.046	49.724	17.878
-220	1.114	2.690	0.553	0.486	20	62.096	82.795	37.666	14.944
-215	1.173	2.818	0.582	0.509	25	47.696	69.252	27.989	12.500
-210	1.237	2.954	0.614	0.533	30	35.927	58.197	20.691	10.505
-205	1.307	3.101	0.649	0.560	35	27.284	49.238	15.344	8.888
-200	1.382	3.260	0.686	0.588	40	21.209	41.978	11.468	7.577
-195	1.465	3.430	0.726	0.619	45	16.926	36.069	8.660	6.511
-190	1.555	3.614	0.771	0.652	50	13.829	31.232	6.616	5.637
-185	1.653	3.813	0.819	0.688	55	11.522	27.244	5.116	4.918
-180	1.761	4.029	0.872	0.727	60	9.753	23.930	4.008	4.319
-175	1.881	4.264	0.930	0.770	65	8.365	21.157	3.181	3.819
-170	2.012	4.520	0.993	0.816	70	7.254	18.817	2.559	3.397
-165	2.159	4.799	1.063	0.866	75	6.351	16.831	2.088	3.038
-160	2.321	5.104	1.141	0.921	80	5.607	15.132	1.728	2.731
-155	2.503	5.439	1.227	0.982	85	4.986	13.670	1.451	2.467
-150	2.706	5.808	1.323	1.048	90	4.464	12.404	1.237	2.239
-145	2.935	6.215	1.431	1.122	95	4.019	11.301	1.069	2.040
-140	3.194	6.665	1.551	1.203	100	3.639	10.336	0.938	1.866
-135	3.488	7.166	1.686	1.293	105	3.310	9.487	0.834	1.712
-130	3.824	7.723	1.839	1.394	110	3.025	8.736	0.750	1.577
-125	4.209	8.348	2.013	1.507	115	2.776	8.070	0.682	1.457
-120	4.654	9.049	2.211	1.633	120	2.557	7.475	0.627	1.349
-115	5.170	9.839	2.438	1.776	125	2.363	6.943	0.580	1.253
-110	5.774	10.735	2.700	1.938	130	2.191	6.465	0.541	1.167
-105	6.484	11.756	3.003	2.122	135	2.038	6.034	0.507	1.089
-100	7.328	12.924	3.357	2.333	140	1.901	5.645	0.478	1.019
-95	8.336	14.268	3.773	2.575	145	1.777	5.291	0.453	0.955
-90	9.552	15.823	4.264	2.856	150	1.666	4.969	0.430	0.897
-85	11.032	17.635	4.848	3.183	155	1.565	4.676	0.409	0.844
-80	12.852	19.759	5.550	3.567	160	1.473	4.407	0.391	0.796
-75	15.112	22.266	6.400	4.019	165	1.389	4.161	0.373	0.751
-70	17.949	25.248	7.438	4.557	170	1.313	3.935	0.358	0.710
-65	21.550	28.819	8.717	5.202	175	1.243	3.727	0.343	0.673
-60	26.165	33.130	10.310	5.980	180	1.179	3.534	0.330	0.638
-55	32.138	38.373	12.313	6.926	185	1.119	3.356	0.317	0.606
-50	39.917	44.791	14.855	8.085	190	1.065	3.191	0.305	0.576
-45	50.052	52.692	18.110	9.511	195	1.014	3.038	0.294	0.548
-40	63.105	62.445	22.307	11.271	200	0.967	2.896	0.284	0.523
-35	79.334	74.456	27.734	13.439	205	0.924	2.763	0.274	0.499

Lateral Distance (ft)	Cross Section A (mG)	B (mG)	C (mG)	D (mG)	Lateral Distance (ft)	Cross Section A (mG)	B (mG)	C (mG)	D (mG)
-30	97.959	89.077	34.719	16.078	210	0.883	2.639	0.265	0.476
-25	116.170	106.360	43.541	19.198	215	0.845	2.524	0.256	0.456
-20	129.230	125.550	54.197	22.661	220	0.810	2.416	0.247	0.436
-15	133.240	144.230	65.914	26.034	225	0.777	2.314	0.239	0.418
-10	128.460	157.880	76.589	28.496	230	0.746			
-5	119.040	161.440	83.009	29.140	235	0.717			
0	109.300	153.330	82.580	27.675					

Los Esteros Critical Energy Facility
Magnetic Field Strengths

With LECEF Generation

Lateral Distance (ft)	Cross Section A (mG)	B (mG)	C (mG)	D (mG)	Lateral Distance (ft)	Cross Section A (mG)	B (mG)	C (mG)	D (mG)
-235	1.129				5	121.010	163.260	90.044	24.726
-230	1.184				10	108.750	140.220	74.912	21.237
-225	1.243	3.064	0.709	0.464	15	93.248	118.040	58.536	17.878
-220	1.306	3.206	0.745	0.486	20	75.591	98.673	43.981	14.944
-215	1.374	3.358	0.784	0.509	25	58.699	82.533	32.433	12.500
-210	1.449	3.521	0.827	0.533	30	44.854	69.358	23.806	10.505
-205	1.529	3.696	0.872	0.560	35	34.576	58.681	17.540	8.888
-200	1.616	3.885	0.922	0.588	40	27.224	50.028	13.036	7.577
-195	1.712	4.088	0.975	0.619	45	21.936	42.987	9.802	6.511
-190	1.816	4.307	1.034	0.652	50	18.038	37.222	7.469	5.637
-185	1.930	4.545	1.097	0.688	55	15.086	32.469	5.777	4.918
-180	2.055	4.802	1.167	0.727	60	12.795	28.520	4.539	4.319
-175	2.193	5.082	1.243	0.770	65	10.981	25.214	3.629	3.819
-170	2.346	5.387	1.327	0.816	70	9.521	22.426	2.953	3.397
-165	2.515	5.719	1.419	0.866	75	8.329	20.059	2.448	3.038
-160	2.703	6.083	1.521	0.921	80	7.344	18.034	2.068	2.731
-155	2.913	6.482	1.634	0.982	85	6.522	16.291	1.779	2.467
-150	3.148	6.922	1.759	1.048	90	5.828	14.782	1.557	2.239
-145	3.413	7.407	1.899	1.122	95	5.239	13.469	1.383	2.040
-140	3.713	7.944	2.056	1.203	100	4.735	12.318	1.246	1.866
-135	4.053	8.540	2.232	1.293	105	4.300	11.306	1.136	1.712
-130	4.442	9.205	2.431	1.394	110	3.922	10.412	1.045	1.577
-125	4.888	9.948	2.656	1.507	115	3.592	9.617	0.970	1.457
-120	5.404	10.784	2.913	1.633	120	3.303	8.909	0.905	1.349
-115	6.003	11.726	3.207	1.776	125	3.048	8.275	0.850	1.253
-110	6.703	12.794	3.545	1.938	130	2.821	7.705	0.801	1.167
-105	7.529	14.010	3.935	2.122	135	2.619	7.192	0.758	1.089
-100	8.509	15.402	4.390	2.333	140	2.439	6.727	0.719	1.019
-95	9.682	17.004	4.923	2.575	145	2.277	6.306	0.684	0.955
-90	11.099	18.858	5.551	2.856	150	2.131	5.922	0.651	0.897
-85	12.826	21.017	6.298	3.183	155	1.999	5.573	0.622	0.844
-80	14.952	23.549	7.192	3.567	160	1.879	5.253	0.594	0.796
-75	17.598	26.537	8.272	4.019	165	1.770	4.959	0.569	0.751
-70	20.925	30.090	9.587	4.557	170	1.671	4.690	0.545	0.710
-65	25.156	34.346	11.204	5.202	175	1.580	4.441	0.523	0.673
-60	30.594	39.484	13.211	5.980	180	1.496	4.212	0.502	0.638
-55	37.651	45.732	15.727	6.926	185	1.420	4.000	0.483	0.606
-50	46.868	53.381	18.910	8.085	190	1.349	3.803	0.464	0.576
-45	58.919	62.797	22.971	9.511	195	1.283	3.621	0.447	0.548
-40	74.500	74.421	28.188	11.271	200	1.223	3.451	0.430	0.523
-35	93.959	88.735	34.904	13.439	205	1.166	3.293	0.415	0.499

Lateral Distance (ft)	Cross Section A (mG)	B (mG)	C (mG)	D (mG)	Lateral Distance (ft)	Cross Section A (mG)	B (mG)	C (mG)	D (mG)
-30	116.410	106.160	43.507	16.078	210	1.114	3.146	0.400	0.476
-25	138.550	126.760	54.313	19.198	215	1.065	3.008	0.386	0.456
-20	154.660	149.630	67.270	22.661	220	1.020	2.879	0.373	0.436
-15	159.980	171.890	81.366	26.034	225	0.978	2.758	0.361	0.418
-10	154.670	188.150	93.963	28.496	230	0.938			
-5	143.570	192.400	101.120	29.140	235	0.901			
0	131.880	182.730	99.796	27.675					

June 18, 2001

Mr. Bruce N. Gaglia
Project Director
Calpine c*Power
6601 Koll Center Parkway
Suite 100
Pleasanton, CA 94566

Subject: Generator Transmission Interconnection Study (GTIS) Study Report for Calpine c*Power's North San Jose Energy Center LM6000 Peaker Project

Dear Mr. Gaglia:

At the request of Calpine c*Power, Pacific Gas and Electric Company (PG&E) prepared the attached the Generator Transmission Interconnection Study (GTIS) Study Report for the North San Jose Energy Center LM6000 Peaker Project (Project) dated June 15, 2001. Please note that he Study Repot includes two power flow sensitivity studies.

If you would like to continue the process for this Project, please request a Facility Cost Report (FCR by June 22, 2001 so that we may tender a Facility Cost Report Plan and Facility Cost Report Agreement (FCRA). The FCR will determine the work scope, costs associated with facilities required to interconnect to the transmission grid, any costs associated with system impact mitigation and provide a dynamic stability analysis of the project.

If you have any questions, please call me at (415) 973-6924.

Sincerely,

Art McAuley
Senior Project Manager
PG&E Interconnection Services

Attachments

cc: CAISO (Jeff Miller by email to jmiller@caiso.com)
CAISO (Peter Mackin by email to pmacklin@caiso.com)
WRMS Engineering, Tim Estes
Duncan Brown

Executive Order D-26-01

Generator Transmission Interconnection Study

Study Report

Calpine C*Power

North San Jose Energy Center (NSJEC)

Pacific Gas and Electric Company

June 15, 2001

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Appendix A – Contingency List

Appendix B – Power Flow Plots

Introduction

Calpine C*Power (Applicant) has requested that Pacific Gas and Electric Company (PG&E) conduct a Generator Transmission Interconnection Study (GTIS) North San Jose Energy Center (NSJEC) Project pursuant to Executive Order D-26-01. A description of this project is given in the Project Information section of this document. The GTIS provides a review of transmission system impacts caused solely by the addition of the Applicant's Project.

The anticipated on-line date of this project according to the application is May 2002. PG&E cannot guarantee that such interconnection can be completed by May 2002 due to the substantial work required for this interconnection. However, PG&E will work with the developer to achieve that interconnection as quickly as possible.

Project Information

The following is a summary of the Project information.

Project Location	1515 Alviso - Milpitas Road San Jose, CA 95134
PG&E planning region where Project will be located.	Area 7/8: Bay Area
Number of Generators	4
Type of Generator(s)	Gas Turbine
Total Project Delivery (Maximum)	195 MW
Power Factor Range	0.8 (Lag) - 0.95 (Lead)
Description of interconnection configuration	Building two short 115 kV line from Los Esteros Substation 115 kV Bus to the project site
Voltage at which Project is connected to PG&E's Grid	115 kV

The above information was used in the Study Assumptions. Figure 1 provides a vicinity map of North San Jose Energy Center. A single-line diagram for the Project is shown in Figure 2.

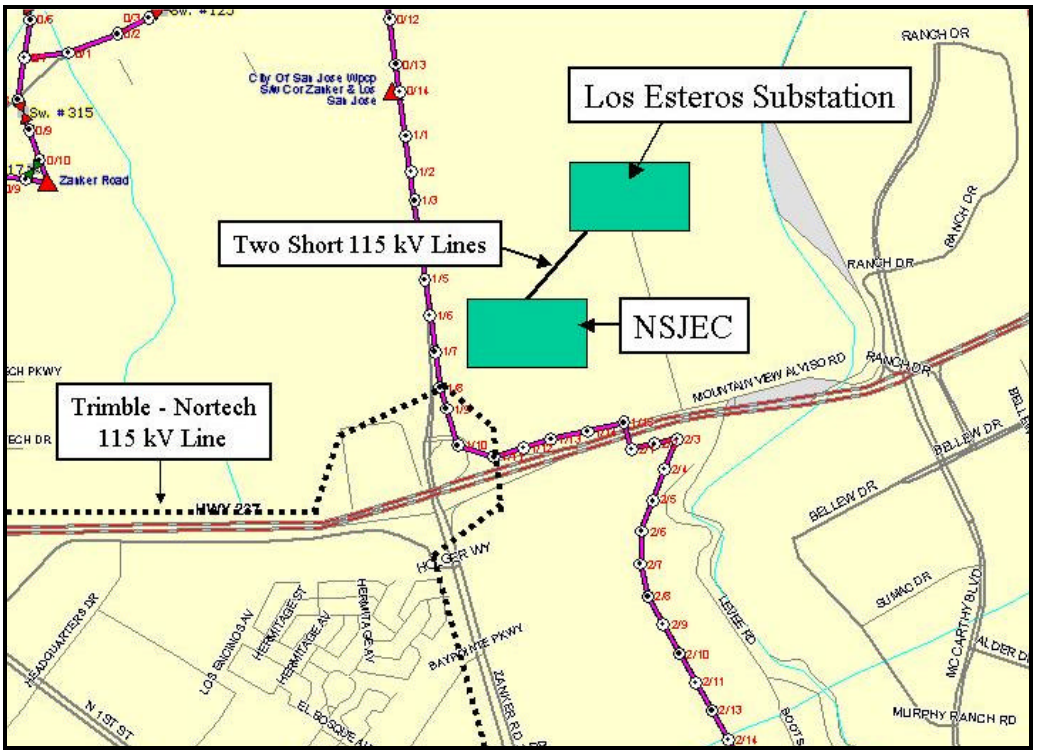

Figure 1: Vicinity map of Project

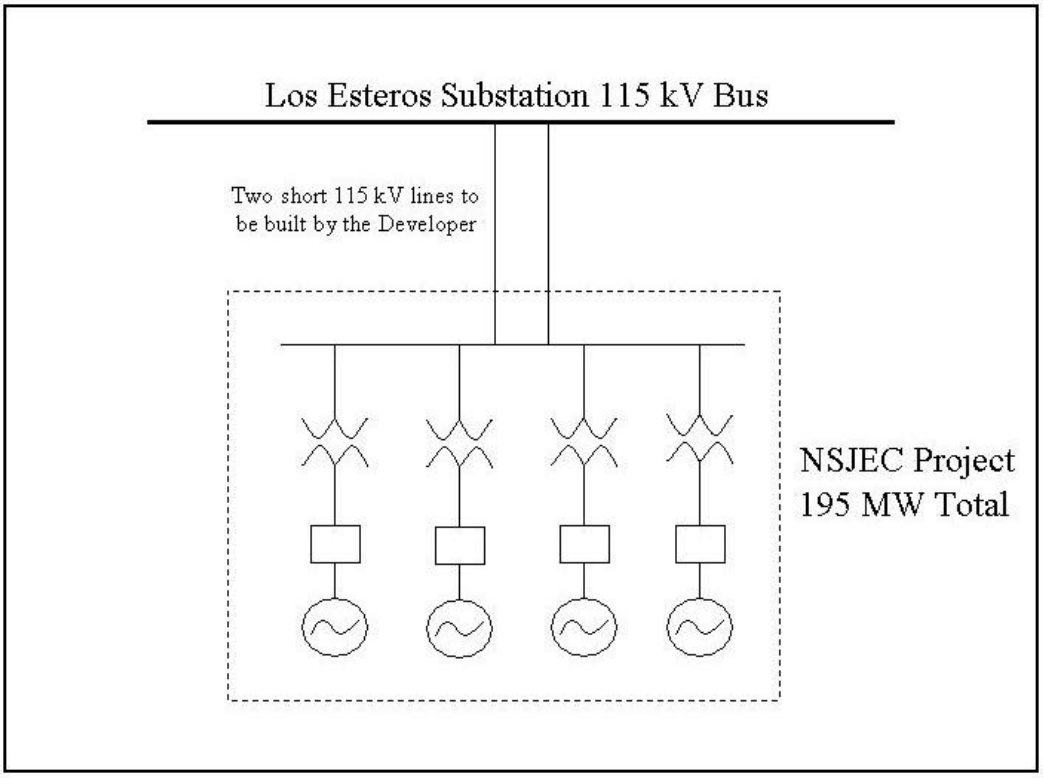

Figure 2: One Line of Project

Study Assumptions

PG&E conducted the GTIS based upon the statements shown in the Project Information section above and the following assumptions:

1) 2002 Summer Peak Base Case[1] for the area in which the Project is located. A modified Santa Clara load at Kifer and Scott of 255 MW each was modeled in the base case to reflect a more realistic load projection.

2) PG&E or the Developer will design, construct and own the transmission lines required to connect the Applicant's step-up substation to PG&E's transmission grid.

Study Scope

The GTIS will study the impact of the Project's added generation on PG&E's transmission system during Summer 2002. The specific studies conducted by the GTIS are outlined in this section.

Steady State Power Flow Analysis

The relevant 2002 Summer Peak Area Base Case was used to simulate the impact of the new facility during the following:

1) Normal operating conditions.

2) Selected N-1 outages in close proximity to the Project. Outages were reported based upon PG&E's knowledge of the area.

3) Selected N-2 outages in close proximity to the Project, if PG&E determines they are required.

System Protection Analysis

Short circuit studies were performed to determine the impact of increased fault duty resulting from the added generation. The study determined the maximum fault currents in the vicinity of the proposed project and identified equipment that would become overstressed as a result of the added generation.

Substation Evaluation

The substation evaluation identified existing equipment that would require upgrades in order to mitigate overloading or overstressing caused solely by the addition of the Project.

[1] This Base Case was developed as part of the PG&E's 2001 Base Case series.

Study Summary

This GTIS studied the impact of the Project's on PG&E's transmission system during summer in 2002.

Power Flow Study

The Power Flow studies indicated no normal overload with the added generation project. However, the project caused an emergency overload of the San Jose "B" - FMC JCT 115 kV line for various Category B outages. Please see Table 2 on page 5. Power Flow Plots are included in Appendix B.

Short Circuit Study

Short circuit studies indicated that the project caused some increases in fault duty at Los Esteros, Newark sect. D, E & F, Agnew, Trimble, Montague, and Nortech Substations. Please see Table 3.

Substation Evaluation

The substation evaluation identified that four breakers (CB 350, 480, 520, and 540) at the Newark Sections E and F 115 kV buses are presently overstressed. This generation project will increase the overstress by 1 - 2 %. Please see Table 4.

Power Flow Study Base Case Assumptions

Power Flow studies were conducted using the 2002 Summer Peak Area 7/8 Base Case that was developed as part of the PG&E's 2001 Base Case series. The Santa Clara loads at Kifer and Scott were modeled at 255 MW each to reflect a more realistic load projection. The power flow program modeled an addition of 195 MW on the transmission system.

For ISO Category "B" outages, outages in the San Jose areas were included in this study. See Appendix A for the Contingency List. No ISO Category "C" outages were simulated in this study.

Steady State Power Flow Results

Normal Overloads

There are no normal overloaded transmission facilities caused by the addition of this project. Please see Table 1.

NAME	Voltage Rating	Normal Rating (AMPS)	Before Project Loading (AMPS)	Before Project P.U. Rating	After Project Loading (AMPS)	After Project P.U. Rating
Metcalf - Moss Landing #1	230	813	793	0.97	762	0.94
Metcalf - Moss Landing #2	230	813	793	0.97	761	0.94

Table 1: Normal Overloads Comparison Before/After the Proposed Project

Emergency Overloads CAISO Category "B" Classifications

Table 2 summarizes the power flow study of the ISO Category B outages for the summer peak condition before and after the proposed project.

Name	Contingency Case	Voltage Rating	Emergency Rating (AMPS)	Before Project Loading (AMPS)	Before Project P.U. Rating	After Project Loading (AMPS)	After Project P.U. Rating
San Jose B - FMC JCT	Los Esteros - Nortech and SVP CCA Gen	115 kV	803	785	0.98	842	**1.05**
	Los Esteros - Nortech and FMC CT	115 kV	803	922	1.15	981	1.22
	Nortech - Kifer and FMC CT	115 kV	803	886	1.10	946	1.18
	Nortech - Kifer and SVP CCA Gen	115 kV	803	747	0.93	807	1.00
FMC JCT - Kifer	Los Esteros - Nortech and SVP CCA Gen	115 kV	803	783	0.97	822	1.02

Table 2: Emergency Overloads Comparison Before/After the Proposed Project

As shown in Table 2, San Jose "B" - FMC JCT 115 kV line will be overloaded by the following contingency cases as a result of the addition of the Project:

- A combined outage of Los Esteros - Nortech 115 kV line and the SVP CCA Generator will cause an emergency overload of 5% on the San Jose B - FMC JCT 115 kV line.
- A combined outage of Los Esteros - Nortech 115 kV line and the FMC Combustion Turbine will cause an increase of 7% to the existing overload on the San Jose B - FMC JCT 115 kV line from 115% to 122%.
- A combined outage of Nortech - Kifer 115 kV line and the FMC Combustion Turbine will cause an increase of 8% to the existing overload on the San Jose B - FMC JCT 115 kV line from 110% to 118%.
- A combined outage of Nortech - Kifer 115 kV line and the SVP CCA Generator will cause an emergency overload of 0% on the San Jose B - FMC JCT 115 kV line.

As shown in Table 2, FMC JCT - Kifer 115 kV line will be overloaded by a combined outage of Los Esteros - Nortech 115 kV line and the SVP CCA Generator. The outage will cause an emergency overload of 2% on the FMC JCT - Kifer 115 kV line.

Mitigation

Mitigation of San Jose "B" - FMC JCT 115 kV Line

The San Jose "B" - FMC JCT 115 kV Line consists of a 20 feet, 715 kcmil AL conductor with 2 feet/second (wind speed) rating from the San Jose "B" sect. "E" bus to the first tower span. This line short section is already overloaded under various Category "B" outage conditions prior to this generation project. This generation project will further increase the overload by 7% to 8%.

PG&E is currently preparing a project justification to replace this short line section with 477 SSAC or equivalent. It is expected that this PG&E transmission project will be completed by early 2002.

Mitigation of FMC JCT - Kifer 115 kV Line

The limiting factor for the FMC JCT - Kifer115 kV line is the 5.6 miles, 715 kcmil AL conductor section with 2 feet/second (wind speed) rating. This generation project will cause a marginal 2% overload on this line section under a G-1/L-1 condition.

This marginal overload condition can be mitigated if the Column "C" emergency request is granted. PG&E is currently preparing this column "C" request as part of PG&E overall 5-year work plan. If successful, this re-rate will solve this marginal overload.

Short Circuit Study Results

Fault Duties

Short circuit studies were performed to determine the impact of adding the Project to PG&E's transmission system. The fault duties were calculated before and after the addition of the Project. Table 3 summarizes the results of the short circuit study.

STATION		EXISTING DUTY		NEW DUTY			
Name	Voltage	SLG (A)	3 PHASE (A)	SLG (A)	% Increase	3 PHASE (A)	% Increase
Los Esteros 115 kV	115 kV	35,183	34,299	40,577	15.3%	37,982	10.7%
Newark Sect. D115 kV	115 kV	38,104	36,681	38,231	0.3%	36,889	0.6%
Newark Sect. E &F 115 kV	115 kV	51,973	51,984	52,419	0.8%	52,677	1.3%
Agnew 115kV	115 kV	18,609	21,713	19,595	5.3%	22,962	5.8%
Trimble 115kV	115 kV	30,241	31,957	31,822	5.2%	33,874	6.0%
Montague 115kV	115 kV	21,073	23,357	21,866	3.8%	24,431	4.6%
Nortech 115kV	115 kV	22,532	26,384	23,961	6.3%	28,104	6.5%
NSJEC 115kV	115 kV	PROPOSED	PROPOSED	40,390	NEW	37,865	NEW
NSJEC 13.8 kV	115 kV	PROPOSED	PROPOSED	33,781	NEW	34,193	NEW

Table 3: Short Circuit Fault Duty Results

All circuit breakers at Los Esteros have a minimum interrupting rating of 63,000 Amps. The circuit breakers at Newark Sect. "D" bus have a minimum interrupting rating of 44,000 Amps. All the circuit breakers at the Newark Sect. "E" & "F" 115 kV substation, except for the four shown below in Table 4, have interrupting ratings of 63,000 Amps or will be replaced by 63kA

equipment under PG&E's overstressed breaker replacement project. All circuit breakers at Trimble have a minimum interrupting rating of 40,000 Amps. The breakers at Montague have a minimum interrupting rating of 25,000 Amps. All circuit breakers at Nortech have a minimum interrupting rating of 40,000 Amps. Given these interrupting ratings, there are no significant overstressed breakers as a result of this project.

As shown in Table 4, four 115 kV breakers at the Newark Sect "E" & "F" 115 kV substation (CB 350, 480, 520, and 540) are rated with an interrupting ratings of 47,750 Amps. These four 115 kV breakers are already overstressed prior to the project. This generation project will increase the overstress by 1 - 2%.

STATION		EXISTING DUTY (Before the Project)				NEW DUTY (After the Project)			
Circuit Breaker Number	Circuit Breaker Rating (A)	Fault Duty 3 Phase (A)	% Over-stressed	Fault Duty SLG (A)	% Over-stressed	Fault Duty 3 Phase (A)	% Over-stressed	Fault Duty SLG (A)	% Over-stressed
CB 350	47,750	49,401	3.5 %	49,906	4.5 %	50,033	4.8 %	50,321	5.4 %
CB 480	47,750	51,984	8.9 %	51,973	8.8 %	52,677	10.3 %	52,419	9.8 %
CB 520	47,750	50,333	5.4 %	50,540	5.8 %	51,015	6.8 %	50,981	6.8 %
CB 540	47,750	49,597	3.9 %	49,934	4.6 %	50,232	5.2 %	50,348	5.4 %

Table 4: Overstressed Breakers at Newark Sect "E" & "F" 115 kV

The replacement policy of overstressed circuit breakers under the scope of a project is summarized as follows:

- If a breaker is not overstressed and a project results in an overstressed condition of the breaker, the project scope should include the replacement of the breaker in question if the breaker becomes overstressed by 10% or more.

- If a breaker is already overstressed and a project increases the overstress by 10% or more, the project scope should include replacing the overstressed breaker.

Since this project creates less than 10% incremental overstress for these four 115 kV breakers, the Project is not responsible for replacing the breakers.

Power Flow Sensitivity Study Results

Two power flow sensitivity studies were conducted as part of this study.

- Temporary Tapping into the Nortech - Trimble 115 kV line
- High Santa Clara load (704 MW) System Condition

The following are the results of these two power flow sensitivity studies.

Temporary Tapping into the Nortech - Trimble 115 kV Line

As requested by the Developer, a power flow sensitivity study is conducted for temporary tapping into the Nortech - Trimble 115 kV line. The Project plans to come on-line in May 2002, which is before the June 2002 Los Esteros Project.

The relevant 2002 Summer Peak Area Base Case was used to simulate the impact of the new facility tapped into the Nortech - Trimble 115 kV line.

Normal Overloads

The addition of the Project creates no normal overloads.

Emergency Overloads

An outage of the Nortech - Kifer 115 kV line will result in a 13% overload on the line section from Trimble to the NSJEC tap point. Power flow plots are included in Appendix B.

				Before Project		After Project	
Name	Contingency Case	Voltage Rating	Emergency Rating (AMPS)	Loading (AMPS)	P.U. Rating	Loading (AMPS)	P.U. Rating
CREC JCT - Trimble	Nortech - Kifer 115 kV	115 kV	802	78	0.10	906	1.13

Table 5: Normal Overloads Comparison Before/After the Proposed Project

High Santa Clara load (704 MW) System Condition

According to the 2001 series base case annual assessment process, City of Santa Clara submitted their load forecast of 704 MW for year 2002, a 46% increase from the 2001 level. This power flow sensitivity study is provided for this high Santa Clara load "what if" scenario.

Normal Overloads

Table 6 summarizes the power flow study for before and after the proposed project. Normal overloads are those that exceed 100% of normal summer ratings[2].

NAME	Voltage Rating	Normal Rating (AMPS)	Before Project Loading (AMPS)	Before Project P.U. Rating	After Project Loading (AMPS)	After Project P.U. Rating
Metcalf - Moss Landing #1	230	813	825	1.01	794	0.98
Metcalf - Moss Landing #2	230	813	826	1.02	795	0.98
Los Esteros - Nortech	115	1406	1293	0.92	1447	1.03

Table 6: Normal Overloads Comparison Before/After the Proposed Project

Emergency Overloads

Table 7 summarizes the power flow study of the ISO Category B outages for the summer peak condition before and after the proposed project.

[2] Summer normal ratings are calculated using a wind speed of 2 feet/second, an ambient temperature of 37° C for coastal regions and 43° C for interior regions, and a conductor temperature of 75 ° C for AAC and CU conductors. For other standard type conductors such as ACSR and ACSS the conductor temperatures used in the calculations are 80° C and 200° C respectively. A 4-feet/second wind speed is used on an exception basis.

Name	Contingency Case	Voltage Rating	Emergency Rating (AMPS)	Before Project Loading (AMPS)	Before Project P.U. Rating	After Project Loading (AMPS)	After Project P.U. Rating
Los Esteros - Nortech	Kifer - SJ "B" & SVP CCA Gen	115 kV	1607	1572	0.98	1723	1.07
	Kifer - San Jose B "E" 115 kV	115 kV	1607	1528	0.95	1679	1.04
	Los Esteros - Trimble 115 kV	115 kV	1607	< 95%	< 95%	1665	1.04
	Newark - Scott #1 & SVP CCA GEN	115 kV	1607	1530	0.95	1665	1.04
	Trimble - SJ "B" & FMC CT	115 kV	1607	< 95%	< 95%	1669	1.04
	Newark - Scott #1 & FMC CT	115 kV	1607	< 95%	< 95%	1648	1.03
	Newark "D" - Scott 115 kV	115 kV	1607	< 95%	< 95%	1629	1.01
	Trimble - San Jose B "E" 115 kV	115 kV	1607	< 95%	< 95%	1622	1.01
	Newark - Scott #2 & SVP CCA GEN	115 kV	1607	< 95%	< 95%	1626	1.01
	Newark - Scott #1 & SVP Gianera Gen Unit	115 kV	1607	< 95%	< 95%	1629	1.01
	Newark - Scott #1 & Agnew CG	115 kV	1607	< 95%	< 95%	1608	1.00
	Newark - Kifer & FMC CT	115 kV	1607	< 95%	< 95%	1608	1.00
	Newark - Scott #2 & FMC CT	115 kV	1607	< 95%	< 95%	1610	1.00
Nortech - Kifer	Kifer - SJ "B" & SVP CCA Gen	115 kV	1541	1493	0.97	1644	1.07
	Kifer - San Jose B "E" 115 kV	115 kV	1541	< 95%	< 95%	1600	1.04
	Los Esteros - Trimble 115 kV	115 kV	1541	< 95%	< 95%	1586	1.03
	Newark - Scott #1 & SVP CCA GEN	115 kV	1541	< 95%	< 95%	1586	1.03
	Trimble - SJ "B" & FMC CT	115 kV	1541	< 95%	< 95%	1591	1.03
	Newark - Scott #1 & FMC CT	115 kV	1541	< 95%	< 95%	1569	1.02
	Newark "D" - Scott 115 kV	115 kV	1541	< 95%	< 95%	1550	1.01
	Newark - Scott #1 & SVP Gianera Gen Unit	115 kV	1541	< 95%	< 95%	1550	1.01
	Trimble - San Jose B "E" 115 kV	115 kV	1541	< 95%	< 95%	1543	1.00
	Newark - Scott #2 & SVP CCA GEN	115 kV	1541	< 95%	< 95%	1548	1.00
Trimble - San Jose B "E"	Los Esteros - Nortech & FMC CT	115 kV	924	931	1.01	1104	1.19
	L Esteros - Nortech & Gilroy Energy Co-	115 kV	924	927	1.00	1092	1.18
	Nortech - Kifer & FMC CT	115 kV	924	900	0.97	1073	1.16
	Nortech - Kifer & Gilroy Energy Co-gen	115 kV	924	897	0.97	1061	1.15
	L Esteros - Nortech & SVP CCA Gen	115 kV	924	< 95%	< 95%	1035	1.12
	Nortech - Los Esteros 115 kV	115 kV	924	841	0.91	1012	1.10
	L Esteros - Nortech & SVP Gianera	115 kV	924	< 95%	< 95%	1012	1.10
	Nortech - Kifer & SVP CCA Gen	115 kV	924	< 95%	< 95%	1003	1.09
	Nortech - Kifer 115 kV	115 kV	924	811	0.89	981	1.06
	Nortech - Kifer & SVP Gianera Generator	115 kV	924	< 95%	< 95%	981	1.06
San Jose B "E" - FMC	Los Esteros - Nortech & FMC CT	115 kV	803	1294	1.61	1354	1.69
	Nortech - Kifer & FMC CT	115 kV	803	1257	1.56	1318	1.64
	L Esteros - Nortech & SVP CCA Gen	115 kV	803	1156	1.44	1216	1.51
	Nortech - Kifer & SVP CCA Gen	115 kV	803	1119	1.39	1179	1.47
	Nortech - Los Esteros 115 kV	115 kV	803	1107	1.38	1168	1.45
	L Esteros - Nortech & SVP Gianera	115 kV	803	1107	1.38	1168	1.45

Name	Contingency Case	Voltage Rating	Emergency Rating (AMPS)	Before Project Loading (AMPS)	Before Project P.U. Rating	After Project Loading (AMPS)	After Project P.U. Rating
	Nortech - Kifer 115 kV	115 kV	803	1071	1.33	1132	1.41
	Nortech - Kifer & SVP Gianera Generator	115 kV	803	1071	1.33	1132	1.41
	L Esteros - Nortech & Gilroy Energy Co-	115 kV	803	1074	1.34	1135	1.41
	Nortech - Kifer & Gilroy Energy Co-gen	115 kV	803	1038	1.29	1098	1.37
FMC JCT - Kifer	L Esteros - Nortech & SVP CCA Gen	115 kV	803	1141	1.42	1199	1.49
	Nortech - Kifer & SVP CCA Gen	115 kV	803	1103	1.37	1162	1.45
	Nortech - Los Esteros 115 kV	115 kV	803	1091	1.36	1150	1.43
	L Esteros - Nortech & SVP Gianera	115 kV	803	1091	1.36	1150	1.43
	Nortech - Kifer 115 kV	115 kV	803	1054	1.31	1114	1.39
	Nortech - Kifer & SVP Gianera Generator	115 kV	803	1054	1.31	1114	1.39
	L Esteros - Nortech & Gilroy Energy Co-	115 kV	803	1058	1.32	1117	1.39
	Los Esteros - Nortech & FMC CT	115 kV	803	1025	1.28	1085	1.35
	Nortech - Kifer & Gilroy Energy Co-gen	115 kV	803	1021	1.27	1081	1.35
	Nortech - Kifer & FMC CT	115 kV	803	988	1.23	1048	1.30

Table 7: Emergency Overloads Comparison Before/After the Proposed Project

As shown in Table 7, the high Santa Clara loads system condition will trigger several overloaded lines under various Category "B" outage conditions. This generation project will increase these overloads by about 7 - 8%.

Stand-by Power

This study does not address any requirements for stand-by power that the project may require. The Applicant should contact their local PG&E service office regarding this service.

Next Step

Prior to interconnecting to PG&E's grid, the Applicant must request a Facility Cost Report (FCR). The FCR will be conducted at the Applicant's expense.

The Facility Cost Report will:

1) Determine the work scope and costs associated with Direct Assignment Facilities associated with interconnecting the project to the transmission grid.

2) Determine the work scope and costs of mitigating any system impacts caused by the addition of the project to the transmission grid.

3) Provide a dynamic stability analysis of the project.

4) Provide additional analysis of the system impact of the project, if required.

Appendix A

Contingency List

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# San Jose Division Category B Contingency List for 2002-2006 (Includes Silicon Valley Power)
 #
 #
 # (1)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30705 30730  "1 "    0     # line from  MONTAVIS 230.00  BRKR to BRKR  HICKS    230.00
0
 #
 #
 # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30733 30735  "1 "    0     # line from  VASONA   230.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (4)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30734 30730  "1 "    0     # line from  CYOTEVLY 230.00  BRKR to BRKR  HICKS    230.00
0
 #
 #
 # (5)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30705  "3 "    0     # line from  METCALF  230.00  BRKR to BRKR  MONTAVIS 230.00
0
 #
 #
 # (6)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30705  "4 "    0     # line from  METCALF  230.00  BRKR to BRKR  MONTAVIS 230.00
0
 #
 #
 # (7)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30731  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (8)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30734  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  CYOTEVLY 230.00
0
 #
```

```
 #
 # (9)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30750  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  MOSSLND2 230.00
0
 #
 #
 # (10)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30755  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  MOSSLND1 230.00
0
 #
 #
 # (11)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (12)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35600  "1 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  DIXON LD 115.00
0
 #
 #
 # (13)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35602  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J2 115.00
1  35602 35604  "1 "    0     # line from  ZNKER J2 115.00   (3) to (2)   ZANKER   115.00
1  35602 36850  "1 "    0     # line from  ZNKER J2 115.00   (3) to BRKR  KIFER    115.00
2  35604 35861  "1 "    0     # TRAN from  ZANKER   115.00   (2) to (1)   SJ-SCL W   9.11
4  35861     0  "1 "    0     # LOAD-DROP    SJ-SCL W   9.11  LOAD==5.50(1.30)
3  35861     0  "1 "    0     # GEN-DROP    SJ-SCL W   9.11  GEN==5.00(0.00)
0
 #
 #
 # (14)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35603  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J1 115.00
1  35603 35605  "1 "    0     # line from  ZNKER J1 115.00   (3) to (1)   AGNEW J  115.00
1  35603 35612  "1 "    0     # line from  ZNKER J1 115.00   (3) to BRKR  TRIMBLE  115.00
0
 #
 #
 # (15)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35624  "1 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  MILPITAS 115.00
0
 #
 #
 # (16)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35624  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  MILPITAS 115.00
0
 #
 #
 # (17)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (18)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35600 35629  "1 "    0     # line from  DIXON LD 115.00  BRKR to (3)   MABURY J 115.00
1  35629 35626  "1 "    0     # line from  MABURY J 115.00   (3) to BRKR  MCKEE    115.00
1  35629 35630  "1 "    0     # line from  MABURY J 115.00   (3) to BRKR  MABURY   115.00
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4  35630     0  "2 "    0     # LOAD-DROP    MABURY   115.00  LOAD==22.38(6.87)
0
 #
 #
 # (19)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35612 35610  "1 "    0     # line from  TRIMBLE  115.00  BRKR to BRKR  MONTAGUE 115.00
0
 #
 #
 # (20)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35612 35616  "1 "    0     # line from  TRIMBLE  115.00  BRKR to BRKR  SJ B   E 115.00
0
 #
 #
 # (21)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35615 35617  "1 "    0     # line from  FMC      115.00   (2) to (3)   FMC JCT  115.00
2  35615 35854  "1 "    0     # TRAN from  FMC      115.00   (2) to (1)   FMC CT    12.00
1  35617 35616  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  SJ B   E 115.00
1  35617 36850  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  KIFER    115.00
4  35615     0  "1 "    0     # LOAD-DROP    FMC      115.00  LOAD==19.85(1.78)
4  35615     0  "3 "    0     # LOAD-DROP    FMC      115.00  LOAD==38.08(0.00)
3  35854     0  "1 "    0     # GEN-DROP    FMC CT    12.00  GEN==50.00(15.00)
0
 #
 #
 # (22)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35618 35619  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  SJ B   F 115.00
0
 #
 #
 # (23)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
0
 #
 #
 # (24)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
0
 #
 #
 # (25)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35620 35621  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   IBM-HR J 115.00
1  35621 35642  "1 "    0     # line from  IBM-HR J 115.00   (2) to BRKR  MTCALF D 115.00
0
 #
 #
 # (26)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35620 35651  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   BAILY J3 115.00
1  35651 35642  "1 "    0     # line from  BAILY J3 115.00   (2) to BRKR  MTCALF D 115.00
0
 #
```

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 #
 # (27)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35622 35643  "1 "    0     # line from  SWIFT    115.00  BRKR to BRKR  MTCALF E 115.00
0
 #
 #
 # (28)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35624 35622  "1 "    0     # line from  MILPITAS 115.00  BRKR to BRKR  SWIFT    115.00
0
 #
 #
 # (29)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35624 35628  "1 "    0     # line from  MILPITAS 115.00  BRKR to BRKR  WAUKESHA 115.00
4  35628     0  "1 "    0     # LOAD-DROP    WAUKESHA 115.00  LOAD==3.55(2.29)
0
 #
 #
 # (30)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
0
 #
 #
 # (31)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35626 35656  "1 "    0     # line from  MCKEE    115.00  BRKR to BRKR  PIERCY   115.00
0
 #
 #
 # (32)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
0
 #
 #
 # (33)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35637 35649  "1 "    0     # line from  IBM-CTLE 115.00   (1) to (3)   EDNVL J3 115.00
1  35649 35638  "1 "    0     # line from  EDNVL J3 115.00   (3) to BRKR  EDENVALE 115.00
1  35649 35641  "1 "    0     # line from  EDNVL J3 115.00  BRKR to (1)   EDNVL J1 115.00
4  35637     0  "1 "    0     # LOAD-DROP    IBM-CTLE 115.00  LOAD==38.90(31.21)
0
 #
 #
 # (34)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35638 35653  "1 "    0     # line from  EDENVALE 115.00  BRKR to (3)   BAILY J2 115.00
1  35653 35642  "1 "    0     # line from  BAILY J2 115.00   (3) to BRKR  MTCALF D 115.00
1  35653 35652  "1 "    0     # line from  BAILY J2 115.00   (3) to (2)   BAILY J1 115.00
1  35652 35640  "1 "    0     # line from  BAILY J1 115.00   (2) to BRKR  IBM-BALY 115.00
4  35640     0  "1 "    0     # LOAD-DROP    IBM-BALY 115.00  LOAD==6.00(3.24)
0
 #
 #
 # (35)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
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```
1  35639 35641  "1 "    0     # line from  IBM-HRRS 115.00  BRKR to (3)   EDNVL J1 115.00
1  35641 35642  "1 "    0     # line from  EDNVL J1 115.00   (3) to BRKR  MTCALF D 115.00
1  35641 35649  "1 "    0     # line from  EDNVL J1 115.00   (3) to BRKR  EDNVL J3 115.00
4  35639     0  "1 "    0     # LOAD-DROP    IBM-HRRS 115.00  LOAD==4.99(4.00)
 1  35621 35639  "1 "    1     # close IBM Harry to Metcalf-El Patio
 4  35639 0      "**"    1     # restore all loads to IBM HRRS
0
 #
 #
 # (36)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35642 35646  "1 "    0     # line from  MTCALF D 115.00  BRKR to BRKR  MRGN HIL 115.00
0
 #
 #
 # (37)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35642 35654  "1 "    0     # line from  MTCALF D 115.00  BRKR to (2)   MORGN J1 115.00
1  35654 35655  "1 "    0     # line from  MORGN J1 115.00   (2) to (2)   MORGN J2 115.00
1  35655 35648  "1 "    0     # line from  MORGN J2 115.00   (2) to BRKR  LLAGAS   115.00
0
 #
 #
 # (38)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35643 35644  "1 "    0     # line from  MTCALF E 115.00  BRKR to BRKR  CYTE PMP 115.00
4  35644     0  "1 "    0     # LOAD-DROP    CYTE PMP 115.00  LOAD==11.70(2.67)
0
 #
 #
 # (39)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35646 35648  "1 "    0     # line from  MRGN HIL 115.00  BRKR to BRKR  LLAGAS   115.00
0
 #
 #
 # (40)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35648 35650  "1 "    0     # line from  LLAGAS   115.00  BRKR to (2)   GILROY F 115.00
1  35650 35647  "1 "    0     # line from  GILROY F 115.00   (2) to BRKR  GILROY   115.00
4  35650     0  "1 "    0     # LOAD-DROP    GILROY F 115.00  LOAD==10.40(8.62)
0
 #
 #
 # (41)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35656 35643  "1 "    0     # line from  PIERCY   115.00  BRKR to BRKR  MTCALF E 115.00
0
 #
 #
 # (42)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35658 35606  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  AGNEW    115.00
0
 #
 #
 # (43)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35658 35610  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  MONTAGUE 115.00
0
 #
 #
 # (44)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35658 35612  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  TRIMBLE  115.00
0
 #
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```
 #
 # (45)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
0
 #
 #
 # (46)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
0
 #
 #
 # (47)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35750 35752  "1 "    0     # line from  MABURY    60.00  BRKR to (3)   JENING J  60.00
1  35752 35751  "1 "    0     # line from  JENING J  60.00   (3) to BRKR  JENNINGS  60.00
1  35752 35754  "1 "    0     # line from  JENING J  60.00   (3) to (3)   EVRGRN J  60.00
1  35754 35753  "1 "    0     # line from  EVRGRN J  60.00   (3) to BRKR  EVERGREN  60.00
1  35754 35755  "1 "    0     # line from  EVRGRN J  60.00   (3) to BRKR  SENTER    60.00
4  35750     0  "1 "    0     # LOAD-DROP    MABURY    60.00  LOAD==19.37(7.65)
4  35751     0  "1 "    0     # LOAD-DROP    JENNINGS  60.00  LOAD==1.27(1.22)
4  35755     0  "1 "    0     # LOAD-DROP    SENTER    60.00  LOAD==19.39(3.51)
 1  35755 35756  "1 "    1     # close Senter to Almaden (Evergreen - Mabury 60 kV)
 4  35755 0      "**"    1     # restore all loads to SENTER (Evergreen - Mabury 60 kV)
0
 #
 #
 # (48)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35753 35756  "1 "    0     # line from  EVERGREN  60.00  BRKR to (2)   SENTER J  60.00
1  35756 35757  "1 "    0     # line from  SENTER J  60.00   (2) to BRKR  ALMADEN   60.00
4  35757     0  "1 "    0     # LOAD-DROP    ALMADEN   60.00  LOAD==20.06(2.55)
 1  35757 35460  "1 "    1     # close Almaden to Los Gatos (Evergreen - Los Gatos 60 kV)
 4  35757 0      "**"    1     # restore all loads to ALMADEN (Evergreen - Los Gatos 60 kV)
0
 #
 #
 # (49)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  36850 36852  "1 "    0     # line from  KIFER    115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (50)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30735 30042  "11"    0     # TRAN from  METCALF  230.00  BRKR to BRKR  METCALF  500.00
0
 #
 #
 # (51)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30735 30042  "12"    0     # TRAN from  METCALF  230.00  BRKR to BRKR  METCALF  500.00
0
 #
 #
 # (52)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35658 30731  "1 "    0     # TRAN from  LS ESTRS 115.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (53)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35658 30731  "2 "    0     # TRAN from  LS ESTRS 115.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
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 #
 # (54)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35642 30735  "1 "    0     # TRAN from  MTCALF D 115.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (55)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35643 30735  "2 "    0     # TRAN from  MTCALF E 115.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (56)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35643 30735  "3 "    0     # TRAN from  MTCALF E 115.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (57)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35860 35606  "1 "    0     # TRAN from  OLS-AGNE   9.11   (1) to BRKR  AGNEW    115.00
4  35860     0  "1 "    0     # LOAD-DROP    OLS-AGNE   9.11  LOAD==3.00(0.50)
3  35860     0  "1 "    0     # GEN-DROP    OLS-AGNE   9.11  GEN==29.64(9.63)
0
 #
 #
 # (58)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35863 35632  "1 "    0     # TRAN from  CATALYST   9.11   (1) to BRKR  MARKHAM  115.00
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
0
 #
 #
 # (59)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35753 35633  "1 "    0     # TRAN from  EVERGREN  60.00  BRKR to BRKR  EVRGRN 2 115.00
 1  35756 35757  "1 "    0     # open ALMADEN to SENTER J (Evergreen 115/60 kV Bank)
 1  35757 35460  "1 "    1     # close Almaden to Los Gatos (Evergreen 115/60 kV Bank)
0
 #
 #
 # (60)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35850 35647  "1 "    0     # TRAN from  GLRY COG  13.80   (1) to BRKR  GILROY   115.00
4  35850     0  "1 "    0     # LOAD-DROP    GLRY COG  13.80  LOAD==5.80(1.30)
3  35850     0  "1 "    0     # GEN-DROP    GLRY COG  13.80  GEN==121.97(47.00)
0
 #
 #
 # (61)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  36856 36850  "1 "    0     # TRAN from  CSC_CCA    9.11   (1) to BRKR  KIFER    115.00
4  36856     0  "1 "    0     # LOAD-DROP    CSC_CCA    9.11  LOAD==1.00(0.20)
3  36856     0  "1 "    0     # GEN-DROP    CSC_CCA    9.11  GEN==23.75(13.06)
0
 #
 #
 # (62)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  36854 36852  "1 "    0     # TRAN from  CSC COG.   9.11   (1) to BRKR  SCOTT    115.00
3  36854     0  "1 "    0     # GEN-DROP    CSC COG.   9.11  GEN==5.50(3.50)
0
 #
 #
 # (63)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
```

```
 #
2  36858 36852  "1 "    0     # TRAN from  CSC_GNRA   9.11   (1) to BRKR  SCOTT    115.00
3  36858     0  "1 "    0     # GEN-DROP    CSC_GNRA   9.11  GEN==19.50(6.91)
3  36858     0  "2 "    0     # GEN-DROP    CSC_GNRA   9.11  GEN==19.50(6.91)
0
 #
 #
 # (64)  B1 GENERATOR OUTAGE
 #
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (65)  B1 GENERATOR OUTAGE
 #
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (66)  B1 GENERATOR OUTAGE
 #
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 # (67)  B1 GENERATOR OUTAGE
 #
3  35861     0  "1"     0     # SJ-SCL W   9.11       PGEN=5.00  QGEN=0.00
0
 #
 #
 # (68)  B1 GENERATOR OUTAGE
 #
3  35863     0  "1"     0     # CATALYST   9.11       PGEN=2.25  QGEN=0.00
0
 #
 #
 # (69)  B1 GENERATOR OUTAGE
 #
3  36854     0  "1"     0     # CSC COG.   9.11       PGEN=5.50  QGEN=3.50
0
 #
 #
 # (70)  B1 GENERATOR OUTAGE
 #
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (71)  B1 GENERATOR OUTAGE
 #
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (72)  B1 GENERATOR OUTAGE
 #
3  36858     0  "2"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (73)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and Agnew Co-gen
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
```

```
 #
 #
 # (74)  L-1/G-1 Newark - Scott #1 115 kV and Agnew Co-gen
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (75)  L-1/G-1 El Patio - San Jose A 115 kV and Agnew Co-gen
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (76)  L-1/G-1 Evergreen - San Jose B 115 kV and Agnew Co-gen
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (77)  L-1/G-1 Metcalf - Evergreen #2 115 kV and Agnew Co-gen
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (78)  L-1/G-1 Metcalf - Evergreen #1 115 kV and Agnew Co-gen
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 # (79)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and SVP CCA Generator
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (80)  L-1/G-1 Newark - Scott #1 115 kV and SVP CCA Generator
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
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3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (81)  L-1/G-1 Newark - Scott #2 115 kV and SVP CCA Generator
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (82)  L-1/G-1 Kifer - San Jose B 115 kV and SVP CCA Generator
 #
1  35615 35617  "1 "    0     # line from  FMC      115.00   (2) to (3)   FMC JCT  115.00
2  35615 35854  "1 "    0     # TRAN from  FMC      115.00   (2) to (1)   FMC CT    12.00
1  35617 35616  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  SJ B   E 115.00
1  35617 36850  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  KIFER    115.00
4  35615     0  "1 "    0     # LOAD-DROP    FMC      115.00  LOAD==19.85(1.78)
4  35615     0  "3 "    0     # LOAD-DROP    FMC      115.00  LOAD==38.08(0.00)
3  35854     0  "1 "    0     # GEN-DROP    FMC CT    12.00  GEN==50.00(15.00)
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (83)  L-1/G-1 El Patio - San Jose A 115 kV and SVP CCA Generator
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (84)  L-1/G-1 Evergreen - San Jose B 115 kV and SVP CCA Generator
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (85)  L-1/G-1 Metcalf - Evergreen #2 115 kV and SVP CCA Generator
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (86)  L-1/G-1 Metcalf - Evergreen #1 115 kV and SVP CCA Generator
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
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 #
 # (87)  L-1/G-1 Los Esteros - Nortech 115 kV and SVP CCA Generator
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (88)  L-1/G-1 Nortech - Kifer 115 kV and SVP CCA Generator
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (89)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and FMC Combustion Turbine
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (90)  L-1/G-1 Los Esteros - Metcalf 230 kV and FMC Combustion Turbine
 #
1  30735 30731  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  LS ESTRS 230.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (91)  L-1/G-1 Newark - Scott #1 115 kV and FMC Combustion Turbine
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (92)  L-1/G-1 Newark - Kifer 115 kV and FMC Combustion Turbine
 #
1  35122 35602  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J2 115.00
1  35602 35604  "1 "    0     # line from  ZNKER J2 115.00   (3) to (2)   ZANKER   115.00
1  35602 36850  "1 "    0     # line from  ZNKER J2 115.00   (3) to BRKR  KIFER    115.00
2  35604 35861  "1 "    0     # TRAN from  ZANKER   115.00   (2) to (1)   SJ-SCL W   9.11
4  35861     0  "1 "    0     # LOAD-DROP    SJ-SCL W   9.11  LOAD==5.50(1.30)
3  35861     0  "1 "    0     # GEN-DROP    SJ-SCL W   9.11  GEN==5.00(0.00)
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (93)  L-1/G-1 Newark - Scott #2 115 kV and FMC Combustion Turbine
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (94)  L-1/G-1 Trimble - San Jose B 115 kV and FMC Combustion Turbine
 #
1  35612 35616  "1 "    0     # line from  TRIMBLE  115.00  BRKR to BRKR  SJ B   E 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (95)  L-1/G-1 El Patio - San Jose A 115 kV and FMC Combustion Turbine
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
```

```
 #
 #
 # (96)  L-1/G-1 Evergreen - San Jose B 115 kV and FMC Combustion Turbine
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (97)  L-1/G-1 Metcalf - El Patio #1 115 kV and FMC Combustion Turbine
 #
1  35620 35621  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   IBM-HR J 115.00
1  35621 35642  "1 "    0     # line from  IBM-HR J 115.00   (2) to BRKR  MTCALF D 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (98)  L-1/G-1 Metcalf - El Patio #2 115 kV and FMC Combustion Turbine
 #
1  35620 35651  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   BAILY J3 115.00
1  35651 35642  "1 "    0     # line from  BAILY J3 115.00   (2) to BRKR  MTCALF D 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (99)  L-1/G-1 Metcalf - Evergreen #2 115 kV and FMC Combustion Turbine
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (100)  L-1/G-1 Metcalf - Evergreen #1 115 kV and FMC Combustion Turbine
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (101)  L-1/G-1 Los Esteros - Montague 115 kV and FMC Combustion Turbine
 #
1  35658 35610  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  MONTAGUE 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (102)  L-1/G-1 Los Esteros - Nortech 115 kV and FMC Combustion Turbine
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
```

```
 #
 #
 # (103)  L-1/G-1 Nortech - Kifer 115 kV and FMC Combustion Turbine
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (104)  L-1/G-1 Los Esteros - Metcalf 230 kV and SVP Gianera Generator Unit 1
 #
1  30735 30731  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  LS ESTRS 230.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (105)  L-1/G-1 Newark - Scott #1 115 kV and SVP Gianera Generator Unit 1
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (106)  L-1/G-1 Newark - Scott #2 115 kV and SVP Gianera Generator Unit 1
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (107)  L-1/G-1 El Patio - San Jose A 115 kV and SVP Gianera Generator Unit 1
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (108)  L-1/G-1 Evergreen - San Jose B 115 kV and SVP Gianera Generator Unit 1
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "**"    1     # restore all loads to CATALYST
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (109)  L-1/G-1 Swift - Metcalf 115 kV and SVP Gianera Generator Unit 1
 #
1  35622 35643  "1 "    0     # line from  SWIFT    115.00  BRKR to BRKR  MTCALF E 115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (110)  L-1/G-1 Metcalf - Evergreen #2 115 kV and SVP Gianera Generator Unit 1
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
```

```
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (111)  L-1/G-1 Metcalf - Evergreen #1 115 kV and SVP Gianera Generator Unit 1
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (112)  L-1/G-1 Los Esteros - Agnew 115 kV and SVP Gianera Generator Unit 1
 #
1  35658 35606  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  AGNEW    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (113)  L-1/G-1 Los Esteros - Nortech 115 kV and SVP Gianera Generator Unit 1
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (114)  L-1/G-1 Nortech - Kifer 115 kV and SVP Gianera Generator Unit 1
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (115)  L-1/G-1 Scott - Kifer 115 kV and SVP Gianera Generator Unit 1
 #
1  36850 36852  "1 "    0     # line from  KIFER    115.00  BRKR to BRKR  SCOTT    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (116)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and Gilroy Energy Co-gen
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (117)  L-1/G-1 Metcalf - Morgan Hill 115 kV and Gilroy Energy Co-gen
 #
1  35642 35646  "1 "    0     # line from  MTCALF D 115.00  BRKR to BRKR  MRGN HIL 115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (118)  L-1/G-1 Metcalf - Llagas 115 kV and Gilroy Energy Co-gen
 #
1  35642 35654  "1 "    0     # line from  MTCALF D 115.00  BRKR to (2)   MORGN J1 115.00
1  35654 35655  "1 "    0     # line from  MORGN J1 115.00   (2) to (2)   MORGN J2 115.00
1  35655 35648  "1 "    0     # line from  MORGN J2 115.00   (2) to BRKR  LLAGAS   115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (119)  L-1/G-1 Morgan Hill - Llagas 115 kV and Gilroy Energy Co-gen
 #
```

```
1  35646 35648  "1 "    0     # line from  MRGN HIL 115.00  BRKR to BRKR  LLAGAS   115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (120)  L-1/G-1 Los Esteros - Nortech 115 kV and Gilroy Energy Co-gen
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (121)  L-1/G-1 Nortech - Kifer 115 kV and Gilroy Energy Co-gen
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
-1
 # EOF
```

Appendix B

Power Flow Plots

Plot	Description
Plot 1	Vicinity 115 kV system MW/MVAR flows without the project.
Plot 2	Same as Plot 1. Flows shown in Amp and % of applicable rating.
Plot 3	Vicinity 115 kV system MW/MVAR flows with North San Jose Energy Center Project
Plot 4	Same as Plot 3. Flows shown in Amp and % of applicable rating.
Plot 5	Vicinity MW/MVAR flows without project; Los Esteros - Nortech 115 kV and SVP CCA Generator Unit out.
Plot 6	Same as Plot 5. Flows shown in Amp and % of applicable rating.
Plot 7	Vicinity MW/MVAR flows with NSJEC Project; Los Esteros - Nortech 115 kV and SVP CCA Generator Unit out.
Plot 8	Same as Plot 7. Flows shown in Amp and % of applicable rating.
Plot 9	Vicinity MW/MVAR flows without project; Los Esteros-Nortech 115 kV and FMC Combustion Turbine out.
Plot 10	Same as Plot 9. Flows shown in Amp and % of applicable rating.
Plot 11	Vicinity MW/MVAR flows with NSJEC Project; Los Esteros-Nortech 115 kV and FMC Combustion Turbine out.
Plot 12	Same as Plot 11. Flows shown in Amp and % of applicable rating.
Plot 13	Vicinity MW/MVAR flows without project; Nortech-Kifer 115 kV and FMC Combustion Turbine out.
Plot 14	Same as Plot 13. Flows shown in Amp and % of applicable rating.
Plot 15	Vicinity MW/MVAR flows with NSJEC Project; Nortech-Kifer 115 kV and

FMC Combustion Turbine out.

Plot 16 Same as Plot 15. Flows shown in Amp and % of applicable rating.

Plot 17 Tapping Sensitivity - Vicinity 115 kV system MW/MVAR flows without the project.

Plot 18 Same as Plot 17. Flows shown in Amp and % of applicable rating.

Plot 19 Tapping Sensitivity - Vicinity 115 kV system MW/MVAR flows with North San Jose Energy Center Project

Plot 20 Same as Plot 19. Flows shown in Amp and % of applicable rating.

Plot 21 Tapping Sensitivity - Vicinity MW/MVAR flows without project; Nortech - Kifer 115 kV out.

Plot 22 Same as Plot 21. Flows shown in Amp and % of applicable rating.

Plot 23 Tapping Sensitivity - Vicinity MW/MVAR flows with NSJEC Project; Nortech - Kifer 115 kV out.

Plot 24 Same as Plot 23. Flows shown in Amp and % of applicable rating.

Appendix 6.0

Nick
file
Todd

FAX COVER SHEET

To:	**Bruce Gaglia**
Dept./Company:	**Calpine c* Power**
Phone:	**(925) 249-3700**
Fax:	**(925) 249-8877**
From:	**Mike O'Brien**
Dept./Company:	**Gas System Operations**
Phone:	**(415) 973-5652**
Fax:	**(415) 973-6112**
Date:	**06/06/01**
Pages including this cover page:	**8**

Comments:

Pacific Gas and Electric Company

77 Beale Street
San Francisco, CA 94105

Mailing Address
Mail Code B16A
P.O. Box 770000
San Francisco, CA 94177
415/973-7000

Via Mail and Fax

June 6, 2001

Mr. Bruce N. Gaglia
Director Project Development
Calpine c*Power
6601 Koll Center Parkway
Pleasanton, CA 94566

Re: Preliminary Request for Gas Service – USD NSJ Peaker Project Power Plant

Dear Mr. Gaglia:

Pacific Gas and Electric Company (PG&E) has received a Preliminary Request for Gas Service from Calpine c*Power (Applicant) for a gas service connection to Applicant's proposed USD NSJ Peaker Power Project (Facility), located at 1515 Alviso-Milpitas Road, Milpitas, California. PG&E is proceeding to respond to the request for service under its gas tariffs currently on file with the California Public Utilities Commission (CPUC).

PG&E has completed a System Impact Study (SIS) and Preliminary Facility Study (PFS). For the purposes of this response to Applicant's request for Preliminary Gas Service, it is assumed that the proposed Facility will require year-round natural gas service for 1,880 MMbtu/hr at 675 psig and, that gas will be required by September 1, 2001. Pursuant to Applicant's request, PG&E provides information only on a gas service connection to PG&E's Line 101/109.

Any future changes to the service requirements for the project or PG&E's system prior to commencement of service to the proposed project may impact these results.

The Standard Facility Design would require:

- Tap into PG&E's Line 101/109;
- 1,300 feet of 6-inch steel pipeline from local transmission Line 101/109 to the proposed Facility; and
- A 10-inch ultrasonic flow meter.

PG&E estimates that the Standard Facilities Design will likely be able to provide prevailing pressure service to the proposed Facility at an unregulated pressure upstream of the meter set of 175 to 315 psig.

PG&E also provides two Special Facility Designs at elevated delivery pressures:

Alternative 1:

- Tap into PG&E's Line 101/109;
- Install 1,300 feet of 8-inch steel pipeline from local transmission Line 101/109 to the proposed Facility;. and
- A 10-inch ultrasonic flow meter.

PG&E estimates that this Special Facilities Design will likely be able to provide prevailing pressure service to the proposed Facility at an unregulated pressure upstream of the meter set of 235 to 350 psig.

Alternative 2:

- Tap into PG&E's Line 101/109;
- Install 1,300 feet of 10-inch steel pipeline from local transmission Line 101/109 to the proposed Facility; and
- A 10-inch ultrasonic flow meter.

PG&E estimates that this Special Facilities Design will likely be able to provide prevailing pressure service to the proposed Facility at an unregulated pressure upstream of the meter set of 245 to 355 psig.

For any of the three options above, PG&E would provide at Applicant's request, a tap into both Lines 101 and 109, and bridle valves. The incremental cost for the additional tap and bridle valve would be done under Special Facilities under PG&E's Rule 2.

Should Applicant decide to proceed with any of the elevated pressure options, or tapping into both Lines 101 and 109, the Applicant would be responsible for the incremental costs under PG&E's Rule 2.

Route Description:

PG&E's preferred gas service pipeline route will be from where PG&E taps into PG&E's Line 101 or Line 109, at the point nearest the pipeline and the access road to the Facility. PG&E's gas pipeline will parallel the access road to the meter set location, as selected by the Applicant. (Refer to attached map).

Costs:

The following table outlines order-of-magnitude costs for PG&E's Standard Facility Design. These costs may be subject to refund under PG&E Gas Rules 15 and 16.

Applicant Costs - Rules 15 and 16 Standard Facilities at prevailing service delivery pressure	**+/- 50% Cost**
1. Tap into PG&E's Line 101/109.	$45,000
2. 1,300 feet of 6-inch steel pipeline from local transmission Line 101/109 to the proposed Facility.	$183,000
3. 10-inch ultrasonic flow meter.	$400,000
4. ITCC (35% of 1., 2., and 3.)	$220,000
Total Standard Facilities Design	$848,000

The following table outlines order-of-magnitude costs for PG&E's Special Facility Design for elevated service delivery pressure. These costs are determined under PG&E Gas Rule 2.

Alternative 1. Applicant Costs - Rule 2 Special Facilities at elevated service delivery pressure	**+/- 50% Cost**
1. 1,300 feet of 8-inch steel pipeline (incremental)	$26,000
2. ITCC (35% of 1.)	$9,000
3. Cost of ownership – one time payment option	$17,000
Total Special Facilities Design	$52,000
Total Applicant Cost: Standard Facilities Design plus Special Facilities Design:	$900,000

Alternative 2. Applicant Costs - Rule 2 Special Facilities at elevated service delivery pressure	**+/- 50% Cost**
1. 1,300 feet of 10-inch steel pipeline (incremental)	$56,000
2. ITCC (35% of 1.)	$20,000
3. Cost of ownership – one time payment option	$37,000
Total Special Facilities Design	$113,000
Total Applicant Cost: Standard Facilities Design plus Special Facilities Design:	$961,000

Installing additional tap into Line 101 or Line 109, and bridle valves	+/- 50% Cost
1. Install additional tap into Line 101 or Line 109 (incremental)	$100,000
2. ITCC (35% of 1.)	$35,000
3. Cost of ownership – one time payment option	$66,000
Total Special Facilities Design	$201,000

Next Steps:

PG&E now provides Applicant with requirements necessary in order for PG&E to proceed with this project. Applicant should submit to PG&E a Formal Application for Gas Service, which would include the following:

- An updated Cogen/Power Plant Interconnection Information Sheet, or confirmation that the previous information is correct;
- A site map of the proposed meterset location;
- A cash advance of $75,000 for detailed engineering and material procurement;
- The estimated annual gas usage of the proposed Facility;
- The gas service delivery alternative Applicant has selected (Standard or Special Facility); and
- If applicant requests an additional tap and bridle valve.

This cash advance is to finalize the engineering required to develop the project to a point where PG&E can proceed with construction, and to order long lead-time materials. This advance does not include ordering the ultrasonic gas meter. The final costs and work schedule for this phase will be determined as PG&E proceeds with detailed engineering and land work.

The work that is required prior to construction is to:

- Survey and develop the selected route;
- Develop construction drawings;
- Negotiate easements and rights-of-way;
- Finalize pipeline route;
- Develop detailed job estimate, including meter set design;
- Obtain final job approval; and
- Identify and order long lead-time materials.

Please forward the cash advance made out to PG&E to:

Pacific Gas and Electric Company
Attn: Rod Boschee
Mail Code: B16A
P.O. Box 770000
San Francisco, CA 94177

Please be advised that PG&E will need copies of the lease agreements prior to construction.

If you have any questions about this information, please call me at 415-973-2908 or Mike O'Brien at 415-973-5652.

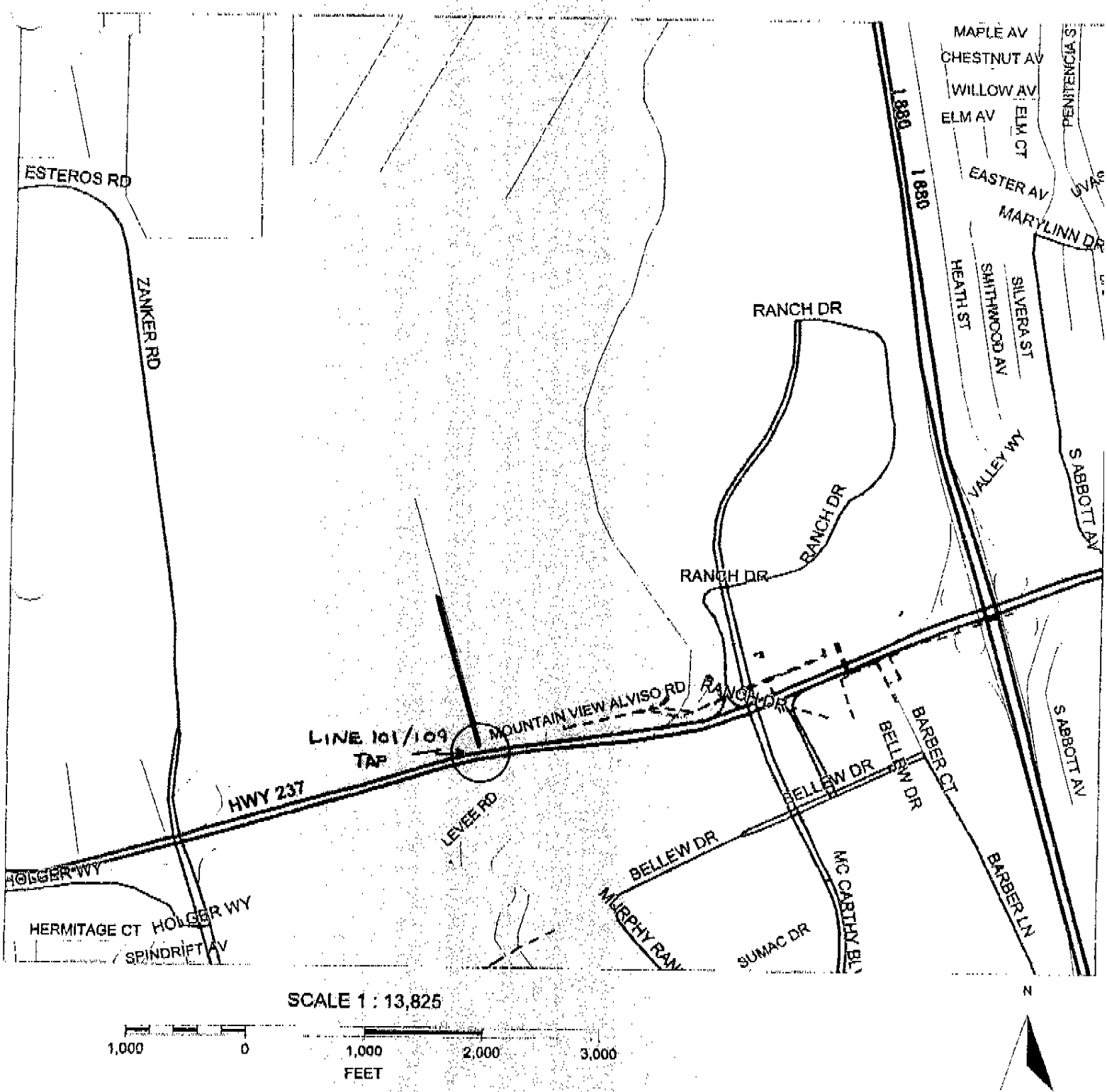
PG&E suggests that we meet to review these costs to ensure there is clarity. Once you have had an opportunity to review this letter, please contact me at 415.973.2908, or Mike O'Brien at 415.973.5652 to set a meeting time and date.

Sincerely,

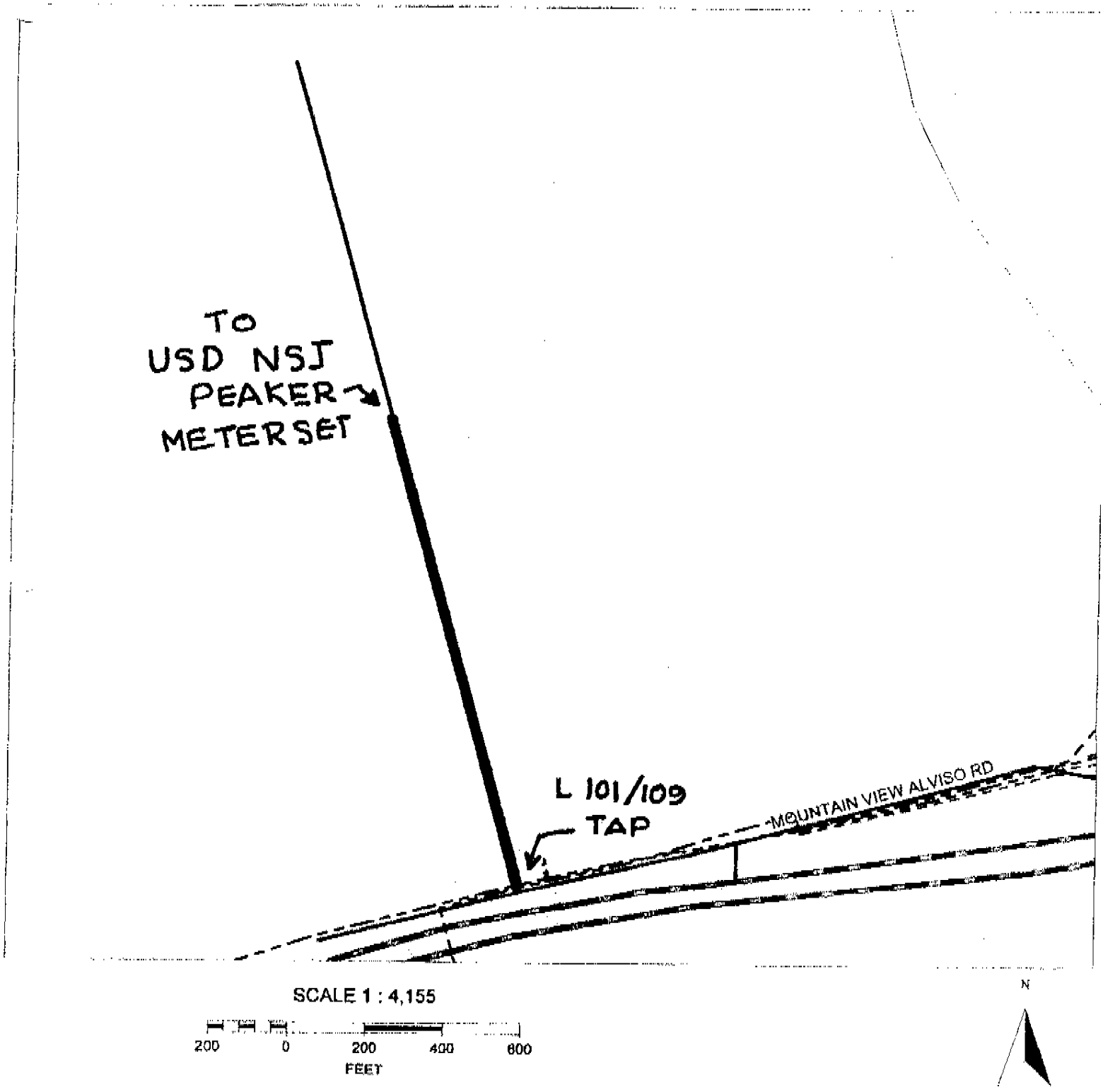
Rod Boschee / MJO

Rodney A. Boschee
Manager, Contract Development and Management

PG&E Confidential Data - Calpine USD NSJ Peaker



PG&E Confidential Data - Calpine USD NSJ Peaker



Appendix 7.0

CITY OF
SAN JOSE
CAPITAL OF SILICON VALLEY

Environmental Services Department
MUNICIPAL WATER SYSTEM DIVISION

July 6, 2001

Todd Stewart
Project Development Manager
Calpine c*Power
6601 Koll Center Parkway, Suite 100
Pleasanton, CA 94566

Subject: Water Supply for "Los Esteros Critical Energy Facility" formerly "North San Jose Energy Center"

Dear Mr. Stewart,

This is a response to your letter dated June 19, 2001 and follow-up e-mail dated July 2, 2001, requesting information on water service to the project site at 1515 Alviso-Milpitas Road. The site is within the Municipal Water System's North San Jose service area and as such is eligible to receive City water service upon construction of appropriate water facilities and payment of applicable fees.

There are no potable water facilities in the vicinity of the proposed project. The closest point of connection to the Municipal Water System is on Zanker Road south of State Highway 237. Connection to the recycled water pipeline would also be required to provide sufficient flow to meet the make-up water demand.

Current policy would require the applicant to fund/construct the improvements necessary to reliably serve the site. Once the necessary water facilities are constructed, the Municipal Water System will be able to supply the water service you require for Phase I.

If you have any further questions or require additional information please feel free to contact me at (408) 277-3288.

Sincerely,

ROBERT C. WILSON, P.E.
Senior Civil Engineer
San Jose Municipal Water System

7025 Tower Road San Jose CA 95121 tel Administration (408) 277-4218, Engineering (408) 277-3671

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

FAX Communication

ENVIRONMENTAL SERVICES DEPARTMENT

- Urgent ☑
- Reply ASAP ☐
- For Your Review ☐
- Please Comment ☐

DATE: 7/6/01

TO: Todd Stewart

FAX: (925) 933-5167

FROM: Bob Wilson

PHONE: (408) 277-3288

TOTAL PAGES: (Including this page) 2

COMMENTS:

Original will be mailed out today.

Bob

Municipal Water System, 3025 Tuers Road, San Jose, CA 95121 tel (408) 277-3671 fax (408) 277-4954 www.ci.san-jose.ca.us

Appendix 8.1

Table 8.1-A1
Emissions and Operating Parameters for New Turbines
Los Esteros Critical Energy Facility

	Case 1	Case 2	Case 3	Case 4
	29 deg no chilling	59 deg chilling	95 deg no chilling	95 deg chilling
Ambient Temp, F	29	59	95	95
GT Load, %	100	100	100	100
GT heat input, MMBtu/hr (HHV)	472.6	460.8	371.8	460.4
Stack flow, lb/hr	1,094,318	1,042,892	889,160	1,044,126
Stack flow, dscfm	222,029	210,081	178,916	209,790
Stack flow, acfm	600,630	594,390	514,876	595,929
Stack temp, F	805	849	868	849
Stack exhaust, vol %				
O2 (dry)	14.65	14.46	14.80	14.45
CO2 (dry)	3.59	3.70	3.51	3.70
H2O	10.07	11.03	11.26	11.38
Emissions				
NOx, ppmvd @ 15% O2	5.00	5.00	5.00	5.00
NOx, lb/hr	8.55	8.34	6.72	8.33
NOx, lb/MMBtu	0.0181	0.0181	0.0181	0.0181
SO2, ppmvd @ 15% O2	0.15	0.15	0.14	0.150
SO2, lb/hr	0.33	0.32	0.26	0.32
SO2, lb/MMBtu	0.0007	0.0007	0.0007	0.0007
CO, ppmvd @ 15% O2	6.00	6.00	6.00	6.00
CO, lb/hr	6.24	6.09	4.91	6.08
CO, lb/MMBtu	0.0132	0.0132	0.0132	0.0132
VOC, ppmvd @ 15% O2	2.00	2.00	2.00	2.00
VOC, lb/hr	1.19	1.16	0.94	1.16
VOC, lb/MMBtu	0.0025	0.0025	0.0025	0.0025
PM10, lb/hr	2.5	2.5	2.5	2.5
PM10, lb/MMBtu	0.0053	0.0054	0.0067	0.0054
PM10, gr/dscf	0.00213	0.00199	0.00282	0.00251
NH3, ppmvd@15% O2	10.0	10.0	10.0	10.0
NH3, lb/hr	6.33	6.17	4.98	6.16

Table 8.1-A2
Calculation of Cooling Tower Emissions
Los Esteros Critical Energy Facility

Cooling Tower Design Parameters	
Water Flow Rate, 10E6 lbm/hr	8.00
Water Flow Rate, gal/min	16,000.0
Drift Rate, %	0.0005
Drift, lbm water/hr	39.98
PM10 Emissions based on TDS Level	
TDS level, ppm	2299
PM10, lb/hr	0.09
PM10, tpy	0.40

Table 8.1A-3
Emissions and Modeling Characteristics for Emergency Generator
Los Esteros Critical Energy Facility

Mfr	Caterpillar
Model	G3512 90 LE
Output (kW)	600
Output (Bhp)	804
Fuel cons, Btu-hp/hr (HHV)	8005
Fuel cons, MMBtu/hr (HHV)	6.44

	NOx	SO2 (1)	CO	POC	PM10 (2)
Emissions					
g/bhp-hr (3)	1.00	n/a	1.7	0.80	3.53E-04
lb/hr	1.773	4.508E-03	3.015	1.419	0.284
g/s	0.223	5.680E-04	0.380		3.578E-02
tpy (4)	0.18	4.51E-04	0.30	0.14	2.84E-02

Exhaust temp	709	deg F
	649.11	deg K
Stack diam.	9	in
	0.2286	m
Exh flow	4,210	cfm
	1.99	m3/s
Exh velocity	48.41	m/s

Notes:
1. Stoichiometric calculation based on 4 ppmv sulfur in natural gas.
2. Particulate emission factor for emergency generator taken from AP-42 Table 3.2-2 (total, front and back halves); units are lb/hp-hr.
3. Emissions data from manufacturer's performance data.
4. Based on 200 hours per year of operation.

Table 8.1-A4
Fire Pump Engine Emissions
Los Esteros Critical Energy Facility

Mfr	Detroit Diesel-Allison
Model	DDFP-06FA
Output (Bhp)	368
Fuel cons, gal/hr	20
Fuel cons, MMBtu/hr	2.80

		NOx	SO2 (1)	CO	POC	PM10
Emissions						
	g/bhp-hr	9.13	0.156	2.16	0.220	0.120
	lb/hr (3)	5.56	0.095	1.31	0.134	0.073
	tpy (3)	0.370	0.006	0.088	0.009	0.005

Exhaust temp	830	deg F
	716.33	deg K
Stack diam.	8	in
	0.2032	m
Exh flow	2,594	cfm
	1.22	m3/s
Exh velocity	37.75	m/s

Notes:
1. Calculated from fuel consumption rate and fuel sulfur content of 0.05% by weight.
2. Emissions data from manufacturer's performance data.
3. Based on 45 minutes of testing in any hour and maximum of 100 hours per year of operation.

dations for Maximum Hourly, Daily and Annual Criteria Pollutant Emissions
ritical Energy Facility

	Base Load			Startup		NOx			SO2	CO			POC		PM10
	max. hour	hrs/day	hrs/yr	hrs/day	hrs/yr	Maximum lb/hr	Ann. Avg lb/hr	Startup lb/hr	lb/hr	Maximum lb/hr	Ann. Avg lb/hr	Startup lb/hr	Maximum lb/hr	Startup lb/hr	lb/hr
	1	24	8760	0	0	8.55	4.275	8.55	0.33	6.24	5.72	6.24	1.19	1.19	2.5

	NOx			SO2			CO			POC			PM10		
	Max lb/hr	Max lb/day	Total tpy	Max lb/hr	Max lb/day	Total tpy	Max lb/hr	Max lb/day	Total tpy	Max lb/hr	Max lb/day	Total tpy	Max lb/hr	Max lb/day	Total tpy
	8.55	205.2	18.7	0.33	7.9	1.4	6.24	149.8	25.1	1.19	28.6	5.2	2.5	60.0	11.0
s	34.2	820.8	74.9	1.32	31.7	5.8	24.96	599.04	98.0	4.76	114.24	20.8	10	240	43.8
	--	--	--	--	--	--	--	--	--	--	--	--	0.1	2.2	0.4
erator	1.8	1.8	0.2	4.5E-03	4.5E-03	4.5E-04	3.0	3.0	0.3	1.4	1.4	0.1	0.3	0.3	2.8E-02
se	5.6	5.6	0.3	0.1	0.1	4.7E-03	1.3	1.3	0.1	0.1	0.1	6.7E-03	0.1	0.1	3.7E-03
	41.5	828.1	75.4	1.4	31.8	5.8	29.3	603.4	98.4	6.3	115.8	21.0	10.4	242.6	44.2

Table 8.1A-6
Calculation of Noncriteria Pollutant Emissions from Gas Turbines
Los Esteros Critical Energy Facility

Compound	Emission Factor, lb/MMscf (2)	Maximum Hourly Emissions, lb/hr Each turbine (3)	Total, four turbines	Total Annual Emissions, 4 turbines lb/yr	tpy
Ammonia	(5)	6.33	25.32	332,704.8	166.4
Propylene	7.71E-01	0.36	1.43	12,492.8	6.2
Hazardous Air Pollutants					
Acetaldehyde	4.08E-02	0.02	0.08	661.1	0.33
Acrolein	3.69E-03	0.00	0.01	59.8	0.03
Benzene	3.33E-03	0.00	0.01	54.0	0.03
1,3-Butadiene	4.39E-04	2.03E-04	8.120E-04	7.1	3.6E-03
Ethylbenzene	3.26E-02	0.02	0.06	528.2	0.26
Formaldehyde	3.67E-01	0.17	0.68	5,946.7	2.97
Hexane	2.59E-01	0.12	0.48	4,196.7	2.10
Naphthalene	1.66E-03	7.68E-04	3.071E-03	26.9	1.34E-02
PAHs (listed individually below)		--	--	--	--
Anthracene	3.38E-05	1.56E-05	6.252E-05	0.5	2.74E-04
Benzo(a)anthracene	2.26E-05	1.05E-05	4.180E-05	0.4	1.83E-04
Benzo(a)pyrene	1.39E-05	6.43E-06	2.571E-05	0.2	1.13E-04
Benzo(b)fluoranthrene	1.13E-05	5.23E-06	2.090E-05	0.2	9.15E-05
Benzo(k)fluoranthrene	1.10E-05	5.09E-06	2.035E-05	0.2	8.91E-05
Chrysene	2.52E-05	1.17E-05	4.661E-05	0.4	2.04E-04
Dibenz(a,h)anthracene	2.35E-05	1.09E-05	4.347E-05	0.4	1.90E-04
Indeno(1,2,3-cd)pyrene	2.35E-05	1.09E-05	4.347E-05	0.4	1.90E-04
Propylene oxide	2.69E-02	0.01	0.05	435.9	0.22
Toluene	1.33E-01	0.06	0.25	2,155.1	1.08
Xylene	6.53E-02	0.03	0.12	1,058.1	0.53
Total HAPs			1.73	15,132.1	7.57

Notes:

(1) All factors except PAHs, hexane and propylene from AP-42, Table 3.4-1. Acrolein, benzene and formaldehyde reflect oxidation catalyst. Individual PAHs, hexane and propylene are CATEF mean results as AP-42 does not include factors for these compounds.

(2) Based on maximum hourly turbine fuel use of 472.6 MMBtu/hr and fuel HHV of 1022 Btu/scf. 0.46 MMscf/hr

(3) Based on annual fuel use of 4,139,976 MMBtu/yr per turbine and fuel HHV of 1022 Btu/scf. 16,203 MMscf/yr

(4) Based on 10 ppm ammonia slip from SCR system.

Table 8.1A-7
Calculation of Noncriteria Pollutant Emissions from Cooling Tower (1)
Los Esteros Critical Energy Facility

Constituent	Concentration in Cooling Tower Return Water	Emissions, lb/hr	Emissions, lb/day	Emissions, ton/yr	BAAQMD TAC Trigger Level, lb/yr
Ammonia	3 ppb	1.20E-07	2.88E-06	1.05E-03	1.93E+04
Arsenic	1.4 ppb	5.60E-08	1.34E-06	4.90E-04	2.40E-02
Cadmium	2.9 ppb	1.16E-07	2.78E-06	1.02E-03	4.60E-02
Chromium (III)	2.4 ppb	9.60E-08	2.30E-06	8.41E-04	n/a
Copper	12.3 ppb	4.92E-07	1.18E-05	4.31E-03	4.63E+02
Lead	3.2 ppb	1.28E-07	3.07E-06	1.12E-03	2.90E+01
Mercury	0.26 ppb	1.04E-08	2.50E-07	9.11E-05	5.79E+01
Nickel	22.6 ppb	9.04E-07	2.17E-05	7.92E-03	7.30E-01
Silver	1 ppb	4.00E-08	9.60E-07	3.50E-04	n/a
Zinc	144 ppb	5.76E-06	1.38E-04	5.04E-02	6.76E+03

Notes: (1) Emissions calculated from maximum drift rate of 39.98 lb/hr

Figure 8.1B-1
Building Layout for GEP Analysis

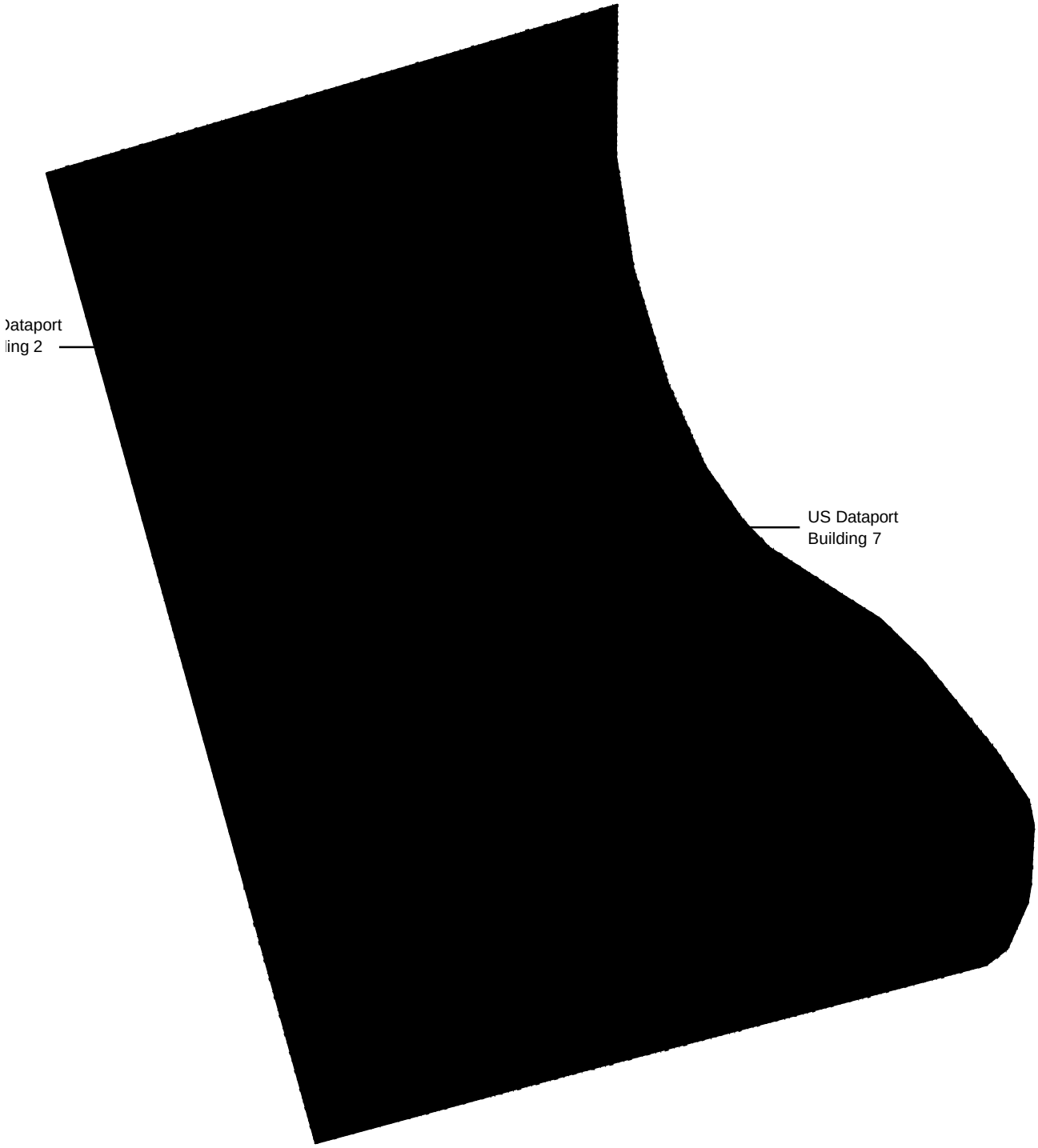


Table 8.1B-1 Building Dimensions Used in GEP Analysis

Building/Structure	Height, meters	Length, meters	Width, meters
US Dataport Building	22.9	75	56
US Dataport Building	22.9	97	61.5
US Dataport Buildings (2 total)	22.9	53	194
US Dataport Building	22.9	202	141
US Dataport Buildings (2 total)	22.9	220	123
US Dataport Buildings (4 total)	22.9	220	141
Cooling Tower Fan Deck (2 total)	12.5	110.7	14.5
Cooling Tower Fan Shroud (16 total)	14.33	9.754	9.754
Service Building	9.75	25.6	29.2
Switchyard Building	9.1	24.4	31.8
Switchgear Building	6.1	45.0	15.2
Turbines (4 total)	10.7	17.2	4.0
HRSG (4 total)	19.8	4.4	2.4
HRSG Duct (4 total)	11.6	11.2	2.4
Steam Generator (2 total)	10.7	15.6	8.8
Water Storage Tank (2 total)	15.24	34.75	34.75
Fire Water Tank	14.33	12.0	12.0
Treated Water Tank (2 total)	9.94	8.23	8.23

Stack Parameters for Screening Modeling
tical Energy Facility

						Emission Rates, g/s			
nbient Temp	Ambient Temp (deg K)	Stack Diam (m)	Stack Height (m)	Exhaust Temp (deg K)	Exhaust Velocity (m/s)	NOx	SO2	CO	PM10
29	271.33	3.353	27.432	702.444	32.107	1.077	0.042	0.786	0.315
59	288.00	3.353	27.432	726.889	31.773	1.051	0.040	0.767	0.315
95	308.00	3.353	27.432	737.444	27.523	0.847	0.033	0.619	0.315
95	308.00	3.353	27.432	726.889	31.855	1.050	0.040	0.766	0.315

meters are for each turbine.

Table 8.1B-3
Results of the Turbine Screening Analysis
Los Esteros Critical Energy Facility

Turbine Case	Max. Impact, ug/m3 per 4.0 g/s				
	1-hr	3-hr	8-hr	24-hr	annual
	1995 Met Data				
1	12.410	7.937	5.941	2.131	0.119
2	12.381	7.918	5.931	2.122	0.119
3	12.773	8.099	6.021	2.198	0.124
4	12.375	7.914	5.929	2.120	0.119
	1996 Met Data				
1	12.412	9.368	4.253	1.605	0.114
2	12.383	9.342	4.240	1.600	0.114
3	12.773	9.623	4.378	1.655	0.118
4	12.376	9.337	4.237	1.599	0.114
	1997 Met Data				
1	12.417	11.998	4.499	1.766	0.101
2	12.389	11.968	4.488	1.761	0.101
3	12.785	12.170	4.564	1.821	0.106
4	12.383	11.962	4.486	1.760	0.101
	1998 Met Data				
1	12.422	9.214	5.018	2.018	0.110
2	12.395	9.182	5.001	2.010	0.109
3	12.797	9.495	5.284	2.096	0.113
4	12.388	9.176	4.998	2.008	0.109
	1999 Met Data				
1	12.422	11.990	4.861	1.573	0.115
2	12.314	11.963	4.846	1.570	0.114
3	12.796	12.429	4.987	1.606	0.119
4	12.388	11.957	4.843	1.569	0.114

Emission Rates for Screening Modeling (lb/hr)										
Turbine Case	NOx		SO2				CO		PM10	
	1-hr	annual avg	1-hr	3-hr	24-hr	annual avg	1-hr	8-hr	24-hr	annual avg
1	8.55	8.55	0.33	0.33	0.33	0.33	6.24	6.24	2.50	2.50
2	8.34	8.34	0.32	0.32	0.32	0.32	6.09	6.11	2.50	2.50
3	6.72	6.72	0.2602	0.2602	0.2602	0.26	4.91	5.08	2.50	2.50
4	8.33	8.33	0.32	0.32	0.32	0.32	6.08	6.10	2.50	2.50

Turbine Emission Rates for Screening Modeling (g/s)										
Turbine Case	NOx		SO2				CO		PM10	
	1-hr	annual avg	1-hr	3-hr	24-hr	annual avg	1-hr	8-hr	24-hr	annual avg
1	1.077	1.077	0.042	0.042	0.042	0.042	0.786	0.786	0.315	0.315
2	1.051	1.051	0.040	0.040	0.040	0.040	0.767	0.770	0.315	0.315
3	0.847	0.847	0.033	0.033	0.033	0.033	0.619	0.640	0.315	0.315
4	1.050	1.050	0.040	0.040	0.040	0.040	0.766	0.769	0.315	0.315

Turbine Case	Load/ Ambient Temp	Modeled Impacts, ug/m3, by Pollutant and Averaging Period									
		NOx		SO2				CO		PM10	
		1-hr	Annual	1-hr	3-hr	24-hr	Annual	1-hr	8-hr	24-hr	Annual
1	29 deg no chilling	**13.38**	**0.129**	**0.517**	**0.499**	**0.089**	**0.0050**	**9.77**	**4.67**	0.67	0.038

Table 8.1B-4
Emission Rates and Stack Parameters for Refined Modeling
Los Esteros Critical Energy Facility

	Stack Diam, m	Stack Height, m	Exh Temp, Deg K	Exhaust Flow, m3/s	Exhaust Velocity, m/s	Emission Rate, g/s NOx	SO2	CO	PM10
Averaging Period: 1 hour									
Each Turbine	3.353	27.432	702.44	283.47	32.107	1.077	0.042	0.786	n/a
Fire Pump Engine	0.203	3.048	716.33	1.224	37.751	0.700	0.012	0.166	n/a
Averaging Period: 3 hours									
Each Turbine	3.353	27.432	702.44	283.47	32.107	n/a	0.042	n/a	n/a
Fire Pump Engine	0.203	3.048	716.33	1.224	37.751	n/a	0.004	n/a	n/a
Averaging Period: 8 hours									
Each Turbine	3.353	27.432	702.44	283.47	32.107	n/a	n/a	0.786	n/a
Emergency Generator	0.229	3.048	649.11	1.987	48.410	n/a	n/a	0.047	n/a
Averaging Period: 24 hours, SO2									
Each Turbine	3.353	27.432	702.44	283.47	32.107	n/a	0.042	n/a	n/a
Fire Pump Engine	0.203	3.048	716.33	1.224	37.751	n/a	4.983E-04	n/a	n/a
Averaging Period: 24 hours, PM10									
Each Turbine	3.353	27.432	737.44	242.99	27.523	n/a	n/a	n/a	3.15E-01
Emergency Generator	0.229	3.048	649.11	1.987	48.410	n/a	n/a	n/a	1.49E-03
Cooling Tower (each cell)	9.754	14.326	294.11	454.44	6.082	n/a	n/a	n/a	5.79E-03
Averaging Period: Annual, NOx and SOx									
Each Turbine	3.353	27.432	702.44	283.47	32.107	0.539	0.042	n/a	n/a
Emergency Generator	0.229	3.048	649.11	1.987	48.410	5.102E-03	1.297E-05	n/a	n/a
Fire Pump Engine	0.203	3.048	716.33	1.224	37.751	7.990E-03	1.365E-04	n/a	n/a
Cooling Tower (each cell)	9.754	14.326	294.11	454.44	6.082	n/a	n/a	n/a	n/a
Averaging Period: Annual, PM10									
Each Turbine	3.353	27.432	737.4	242.99	27.523	n/a	n/a	n/a	3.15E-01
Emergency Generator	0.229	3.048	649.1	1.987	48.410	n/a	n/a	n/a	8.17E-04
Fire Pump Engine	0.203	3.048	716.3	1.224	37.751	n/a	n/a	n/a	1.05E-04
Cooling Tower (each cell)	9.754	14.326	294.1	454.44	6.082	n/a	n/a	n/a	5.79E-03

Table 8.1-2.5
Calculation of Fumigation Impacts
Los Esteros Critical Energy Facility

Emission Rates (g/s)

	NOx - 1 HR	SO2	CO	PM10
Turbines (each)				
CASE 1	1.077	0.042	0.786	0.315
CASE 2	1.051	0.040	0.767	0.315
CASE 3	0.847	0.033	0.619	0.315
CASE 4	1.050	0.040	0.766	0.315

SCREEN3 Modeling Results for Inversion Breakup and Shoreline Fumigation

	Unit Impacts (ug/m3 per g/s)			
	Case 1	Case 2	Case 3	Case 4
Inversion Breakup	1.109	0.996	1.077	0.980
Shoreline Fumigation				
TIBL factor =2	0.793	0.775	0.841	0.762
TIBL factor =3	2.441	2.368	2.634	2.318
TIBL factor =4	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =5	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =6	PLUME HEIGHT IS BELOW TIBL HEIGHT			
Black Start Generator				
Inversion Breakup	DIST TO MAX IS < 2000. M. CONC SET = 0.0			
Shoreline Fumigation				
TIBL factor =2	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =3	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =4	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =5	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =6	PLUME HEIGHT IS BELOW TIBL HEIGHT			
Fire Pump				
Inversion Breakup	DIST TO MAX IS < 2000. M. CONC SET = 0.0			
Shoreline Fumigation				
TIBL factor =2	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =3	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =4	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =5	PLUME HEIGHT IS BELOW TIBL HEIGHT			
TIBL factor =6	PLUME HEIGHT IS BELOW TIBL HEIGHT			

	Max. 1-hr Unit Imp. from SCREEN3, ug/m3/g/s	Fumigation max (above) is less than SCREEN3 max for all cases, so inversion breakup fumigation is ignored	Shoreline Fumigation: Appropriate 1-hr unit impacts for longer averaging periods (adjusted for 90 minutes of fumigation)		
			3-hr	8-hr	24-hr
CASE 1	1.911		2.176	2.010	1.944
CASE 2	1.872		2.120	1.965	1.903
CASE 3	2.009		2.322	2.126	2.048
CASE 4	1.845		2.082	1.934	1.875

Shoreline Fumigation Impacts

	NOx	SO2			CO		PM10
(per turbine)	1-hr avg	1-hr avg	3-hr avg	24-hr avg	1-hr avg	8-hr avg	24-hr avg
CASE 1	2.629	0.103	0.082	0.033	1.919	1.106	0.245
CASE 2	2.489	0.095	0.076	0.030	1.816	1.055	0.240
CASE 3	2.231	0.087	0.069	0.027	1.630	0.921	0.258
CASE 4	2.434	0.093	0.075	0.030	1.776	1.037	0.236
Max, 4 turbines	10.52	0.410	0.329	0.131	7.67	4.42	1.03

NOTES TO TABLE 8.1B-5

FUMIGATION IMPACTS ANALYSIS

INVERSION BREAKUP FUMIGATION

Inversion breakup fumigation is generally a short-term phenomenon but was evaluated here as persisting for up to 24 hours. SCREEN3 was used to model one-hour unit impacts from the turbines under 2.5 m/s winds and F stability (for fumigation impacts) and under all meteorological conditions (shown in the table as "Max. 1-hr Unit Impact from SCREEN3"). Since the maximum unit impact from SCREEN3 under all meteorological conditions is greater than the unit impact under fumigation conditions, fumigation impacts will be less than impacts modeled using ISCST3 and inversion breakup fumigation can be ignored.

SHORELINE FUMIGATION

Shoreline fumigation was modeled for the turbines using SCREEN3 TIBL factors ranging from 2 to 6 at a distance to shoreline of 2000 meters. The turbines were found to have the highest impacts with a TIBL factor of 3; at TIBL factors greater than 3, the plume height was found to remain below the TIBL height. The plume heights of the emergency generator and fire pump engine were found to be below the TIBL height for all TIBL factors.

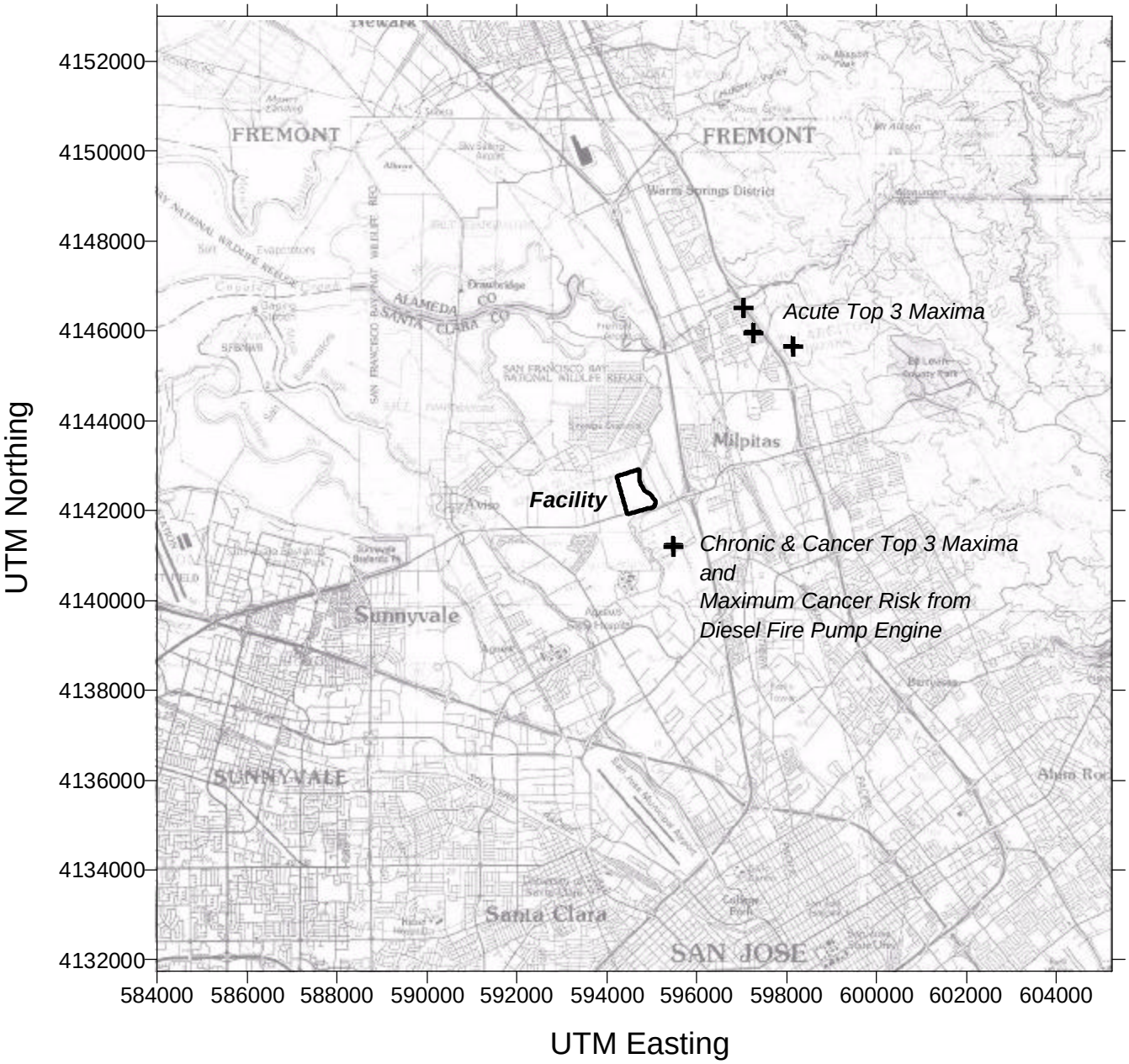
In accordance with EPA guidance, shoreline fumigation conditions were assumed to persist for up to 90 minutes. For longer-term averaging periods, impacts were calculated using the highest modeled impact from SCREEN3 for the corresponding averaging period. A sample calculation for 24-hour average PM_{10} for Case 3 is as follows:

- For a single turbine, TIBL factor = 3, Case 3, 1-hour average unit impact = 2.634 ug/m3 per g/s
- For a single turbine, Case 3, max. 1-hour average unit impact from SCREEN3 = 2.009 ug/m3 per g/s
- For a single turbine, 24-hour unit impact is calculated as 1.5 hours of shoreline fumigation plus 22.5 hours of operation under typical conditions (from SCREEN3): [(1.5 * 2.634 ug/m3 per g/s) + (22.5 * 2.009 ug/m3 per g/s)]) 24 hrs * 0.4 [persistence factor for converting 1-hour average screening impact into 24-hour average concentration] = 0.819 ug/m^3 per g/s
- For four turbines with an emission rate of 0.315 g/s, the total 24-hour average PM_{10} impact under shoreline fumigation conditions is: 0.819 ug/m^3 per g/s * 0.315 g/s per turbine * 4 turbines = 1.03 ug/m^3

Table 8.1B-6
Comparison of Monitored Ozone Levels at San Jose Stations
Los Esteros Critical Energy Facility

	Monitoring Station	
1996	**Piedmont**	**4th Street**
# valid hours	8729	8343
Avg. Concentration (ppm)	0.019	0.015
Max. Concentration (ppm)	0.18	0.11
# hours O3 Concentration is higher than the other station (must have valid concentration at both stations)	5707	2145
1997	**Piedmont**	**4th Street**
# valid hours	7997	8330
Avg. Concentration (ppm)	0.017	0.016
Max. Concentration (ppm)	0.095	0.094
# hours O3 Concentration is higher than the other station (must have valid concentration at both stations)	3626	3450
1998	**Piedmont**	**4th Street**
# valid hours	5819	8173
Avg. Concentration (ppm)	0.021	0.018
Max. Concentration (ppm)	0.129	0.147
# hours O3 Concentration is higher than the other station (must have valid concentration at both stations)	2853	2605

Figure 8.1C-1
Locations of Maximum Acute, Chronic and Cancer Risks



Screening Health Risk Assessment
Los Esteros Critical Energy Facility

Acute Inhalation Hazard Index

Pollutant Name	Max. Modeled 1-hr Conc, ug/m3	Acute REL, ug/m3 (1)	Toxicological Endpoints	Acute Inhalation Hazard Index
Acrolein	2.67E-03	1.90E-01	Eye irritation	1.41E-02
Ammonia	9.91E+00	3.20E+03	Eye and respiratory irritation	3.10E-03
Benzene	2.41E-03	1.30E+03	Reproductive/ Developmental	1.85E-06
Formaldehyde	2.66E-01	9.40E+01	Eye irritation	2.83E-03
Propylene oxide	1.95E-02	3.10E+03	Eye and respiratory irritation	6.28E-06
Toluene	9.63E-02	3.70E+04	CNS (mild); Eye and respiratory irritation	2.60E-06
Xylenes	4.73E-02	2.20E+04	Eye and respiratory irritation	2.15E-06
Total Acute Hazard Index				**0.020**

Screening Health Risk Assessment
Los Esteros Critical Energy Facility

Chronic Inhalation Hazard Index

Pollutant Name	Max. Modeled Annual Avg Conc, ug/m3	Chronic REL, ug/m3 (1)	Toxicological Endpoints	Chronic Inhalation Hazard Index
Ammonia	9.53E-02	2.00E+02	Respiratory irritation	4.77E-04
Acetaldehyde	2.84E-04	9.00E+00	Respiratory system	3.16E-05
Acrolein	2.57E-05	2.00E-02	Respiratory system; eyes	1.28E-03
Benzene	2.32E-05	6.00E+01	Hematopoietic system; development; nervous system	3.86E-07
Ethylbenzene	2.27E-04	2.00E+03	Development; alimentary system (liver); kidney; endocrine system	1.13E-07
Formaldehyde	2.56E-03	3.00E+00	Respiratory system; eyes	8.52E-04
Hexane	1.80E-03	7.00E+03	Nervous system	2.58E-07
Naphthalene	1.16E-05	9.00E+00	Respiratory system	1.28E-06
Propylene	5.37E-03	3.00E+03	Respiratory system	1.79E-06
Propylene oxide	1.87E-04	3.00E+01	Respiratory system	6.24E-06
Toluene	9.26E-04	3.00E+02	Nervous system; respiratory system; development	3.09E-06
Xylene	4.55E-04	7.00E+02	Nervous system; respiratory system	6.49E-07
Total				2.66E-03

Notes:
(1) Resp: respiratory; CV/BL: cardiovascular/blood; CNS: central nervous system; Repro: reproductive system; Kidn: renal system; GI/LV: gastrointestinal/liver; Immun: immunological system

Summary of HRA Modeling Results
Los Esteros Critical Energy Facility

Individual Cancer Risk

	Air	Soil	Skin	Garden	Mmilk	Other
Gas Turbines	1.83E-08	3.33E-10	2.11E-10	0.00E+00	0.00E+00	0.00E+00
TOTAL RISK	**0.02**	**in one million**				

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ACUTE INHALATION EXPOSURE REPORT

Run Made By

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Sierra Research

Project : Los Esteros CEF

Jun. 28, 2001

Pollutant Database Date : Oct. 5, 2000
Database Reference..... : CAPCOA Risk Assessment Guidelines

DILUTION FACTOR FOR POINT UNDER EVALUATION

X/Q (ug/m3)/(g/s) : 1.00E+00

MAX. 1-HR EMISSION RATE INFORMATION

File: ONEHR.M96

Pollutant Name	Emission Rate (g/s)
ACROLEIN	2.671E-03
AMMONIA	9.908E+00
BENZENE	2.410E-03
FORMALDEHYDE	2.660E-01
PROPYLENE OXIDE	1.947E-02
TOLUENE	9.627E-02
XYLENES	4.726E-02

ACUTE INHALATION HAZARD INDEX

Pollutant	Resp	CV/BL	CNS	Eye	Repro	Kidn	GI/LV	Immun
ACROLEIN	0.0141	--	--	0.0141	--	--	--	--
AMMONIA	0.0031	--	--	0.0031	--	--	--	--
BENZENE	--	<.0001	--	--	<.0001	--	--	<.0001
FORMALDEHYDE	0.0028	--	--	0.0028	--	--	--	0.0028
PROPYLENE OXIDE	<.0001	--	--	<.0001	<.0001	--	--	--
TOLUENE	<.0001	--	<.0001	<.0001	<.0001	--	--	--
XYLENES	<.0001	--	--	<.0001	--	--	--	--
Total Acute	0.0200	<.0001	<.0001	0.0200	<.0001	--	--	0.0028

A Zero Background Concentration file was used
to perform this analysis, therefore, there is
no contribution from background pollutants.

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CHRONIC INHALATION EXPOSURE REPORT

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DILUTION FACTOR FOR POINT UNDER EVALUATION

X/Q (ug/m3)/(g/s) : 1.00E+00

ANNUAL AVERAGE EMISSION RATE INFORMATION

File: ANNAVG.E96

Pollutant Name	Emission Rate (g/s)
1,3-BUTADIENE	3.056E-06
ACETALDEHYDE	2.841E-04
ACROLEIN	2.569E-05
AMMONIA	9.530E-02
BENZENE	2.318E-05
ETHYL BENZENE	2.270E-04
FORMALDEHYDE	2.555E-03
N-HEXANE	1.803E-03
NAPHTHALENE	1.202E-03
PAH:BENZ(A)ANTHRACENE	1.573E-07
PAH:BENZO(A)PYRENE	9.677E-08
PAH:BENZO(B)FLUORANTHENE	7.867E-08
PAH:BENZO(K)FLUORANTHENE	7.658E-08
PAH:CHRYSENE	1.764E-07
PAH:DIBENZ(A,H)ANTHRACENE	1.636E-07
PAH:INDENO(1,2,3-C,D)PYRENE	1.636E-07
PROPYLENE (PROPENE)	5.368E-03
PROPYLENE OXIDE	1.873E-04
TOLUENE	9.260E-04
XYLENES	4.546E-04

CHRONIC INHALATION HAZARD INDEX

Pollutant	Resp	CV/BL	CNS	Skin	Repro	Kidn	GI/LV	Immun
ACETALDEHYDE	<.0001	--	--	--	--	--	--	--
ACROLEIN	0.0013	--	--	0.0013	--	--	--	--
AMMONIA	0.0005	--	--	--	--	--	--	--
BENZENE	--	<.0001	<.0001	--	<.0001	--	--	--
ETHYL BENZENE	--	--	--	--	<.0001	<.0001	<.0001	--
FORMALDEHYDE	0.0009	--	--	0.0009	--	--	--	--
N-HEXANE	--	--	<.0001	--	--	--	--	--
NAPHTHALENE	0.0001	--	--	--	--	--	--	--
PROPYLENE (PROP	<.0001	--	--	--	--	--	--	--
PROPYLENE OXIDE	<.0001	--	--	--	--	--	--	--
TOLUENE	<.0001	--	<.0001	--	<.0001	--	--	--
XYLENES	<.0001	--	<.0001	--	--	--	--	--
Total Chronic	0.0028	<.0001	<.0001	0.0021	<.0001	<.0001	<.0001	--

A Zero Background Concentration file was used
to perform this analysis, therefore, there is
no contribution from background pollutants.

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CHRONIC NONINHALATION EXPOSURE REPORT

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DILUTION FACTOR FOR POINT UNDER EVALUATION

X/Q (ug/m3)/(g/s) : 1.00E+00

ANNUAL AVERAGE EMISSION RATE INFORMATION

File: ANNAVG.E96

Pollutant Name	Emission Rate (g/s)
1,3-BUTADIENE	3.056E-06
ACETALDEHYDE	2.841E-04
ACROLEIN	2.569E-05
AMMONIA	9.530E-02
BENZENE	2.318E-05
ETHYL BENZENE	2.270E-04
FORMALDEHYDE	2.555E-03
N-HEXANE	1.803E-03
NAPHTHALENE	1.202E-03
PAH:BENZ(A)ANTHRACENE	1.573E-07
PAH:BENZO(A)PYRENE	9.677E-08
PAH:BENZO(B)FLUORANTHENE	7.867E-08
PAH:BENZO(K)FLUORANTHENE	7.658E-08
PAH:CHRYSENE	1.764E-07
PAH:DIBENZ(A,H)ANTHRACENE	1.636E-07
PAH:INDENO(1,2,3-C,D)PYRENE	1.636E-07
PROPYLENE (PROPENE)	5.368E-03
PROPYLENE OXIDE	1.873E-04
TOLUENE	9.260E-04
XYLENES	4.546E-04

EXPOSURE ROUTE INFORMATION

File: EXPOSURE.I96

Deposition Velocity (m/s) .....: 0.020

Fraction of Homegrown Produce .: 0.000

Dilution Factor for Farm/Ranch X/Q (ug/m3)/(g/s) ....: 0.0000
Fraction of Animals' Diet From Grazing .....: 0.0000
Fraction of Animals' Diet From Impacted Feed .....: 0.0000

Fraction of Animals' Water Impacted by Deposition ...: 0.0000

  Surface Area (m2) ....: 0.000E+00
  Volume (liters) .....: 0.000E+00
  Volume Changes .....: 0.000E+00

Fraction of Meat in Diet Impacted ..: 0.0000

  Beef .....: 0.0000
  Pork .....: 0.0000
  Lamb/Goat .....: 0.0000
  Chicken .....: 0.0000

Fraction of Milk in Diet Impacted ..: 0.0000

  Goat Milk Fraction ..: 0.0000

Fraction of Eggs in Diet Impacted ..: 0.0000

Fraction of Impacted Drinking Water : 0.0000

  X/Q at water source ..: 0.0000
  Surface Area (m2) ....: 0.000E+00
  Volume (liters) .....: 0.000E+00
  Volume changes .....: 0.000E+00

Fraction of Fish from Impacted Water: 0.0000

  X/Q at Fish Source ...: 0.0000
  Surface Area (m2) ....: 0.000E+00
  Volume (liters) .....: 0.000E+00
  Volume changes .....: 0.000E+00

CHRONIC NONINHALATION EXPOSURE

Pollutant	Avg. Dose (mg/kg-d)	REL (mg/kg-d)	Avg Dose/REL
1,3-BUTADIENE	---	---	---
ACETALDEHYDE	---	---	---
ACROLEIN	---	---	---
AMMONIA	---	---	---
BENZENE	---	---	---
ETHYL BENZENE	---	---	---
FORMALDEHYDE	---	---	---
N-HEXANE	---	---	---
NAPHTHALENE	5.14E-07	---	---
PAH:BENZ(A)ANTHRACENE	3.53E-11	---	---
PAH:BENZO(A)PYRENE	2.17E-11	---	---
PAH:BENZO(B)FLUORANTHENE	1.77E-11	---	---
PAH:BENZO(K)FLUORANTHENE	1.72E-11	---	---
PAH:CHRYSENE	3.96E-11	---	---
PAH:DIBENZ(A,H)ANTHRACEN	3.67E-11	---	---
PAH:INDENO(1,2,3-C,D)PYR	3.67E-11	---	---
PROPYLENE (PROPENE)	---	---	---
PROPYLENE OXIDE	---	---	---
TOLUENE	---	---	---
XYLENES	---	---	---

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Sierra Research

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Pollutant Database Date : Oct. 5, 2000
Database Reference..... : CAPCOA Risk Assessment Guidelines

DILUTION FACTOR FOR POINT UNDER EVALUATION

X/Q (ug/m3)/(g/s) : 1.00E+00

ANNUAL AVERAGE EMISSION RATE INFORMATION

File: ANNAVG.E96

Pollutant Name	Emission Rate (g/s)
1,3-BUTADIENE	3.056E-06
ACETALDEHYDE	2.841E-04
ACROLEIN	2.569E-05
AMMONIA	9.530E-02
BENZENE	2.318E-05
ETHYL BENZENE	2.270E-04
FORMALDEHYDE	2.555E-03
N-HEXANE	1.803E-03
NAPHTHALENE	9.260E-06
PAH:BENZ(A)ANTHRACENE	1.573E-07
PAH:BENZO(A)PYRENE	9.677E-08
PAH:BENZO(B)FLUORANTHENE	7.867E-08
PAH:BENZO(K)FLUORANTHENE	7.658E-08
PAH:CHRYSENE	1.764E-07
PAH:DIBENZ(A,H)ANTHRACENE	1.636E-07
PAH:INDENO(1,2,3-C,D)PYRENE	1.636E-07
PROPYLENE (PROPENE)	5.368E-03
PROPYLENE OXIDE	1.873E-04
TOLUENE	9.260E-04
XYLENES	4.546E-04

EXPOSURE ROUTE INFORMATION

File: EXPOSURE.I96

Deposition Velocity (m/s) .....: 0.020

Fraction of Homegrown Produce .: 0.000

Dilution Factor for Farm/Ranch X/Q (ug/m3)/(g/s) ....: 0.0000
Fraction of Animals' Diet From Grazing .....: 0.0000
Fraction of Animals' Diet From Impacted Feed .....: 0.0000

Fraction of Animals' Water Impacted by Deposition ...: 0.0000

  Surface Area (m2) ....: 0.000E+00
  Volume (liters) .....: 0.000E+00
  Volume Changes .....: 0.000E+00

Fraction of Meat in Diet Impacted ..: 0.0000

  Beef .....: 0.0000
  Pork .....: 0.0000
  Lamb/Goat .....: 0.0000
  Chicken .....: 0.0000

Fraction of Milk in Diet Impacted ..: 0.0000

  Goat Milk Fraction ..: 0.0000

Fraction of Eggs in Diet Impacted ..: 0.0000

Fraction of Impacted Drinking Water : 0.0000

  X/Q at water source ..: 0.0000
  Surface Area (m2) ....: 0.000E+00
  Volume (liters) .....: 0.000E+00
  Volume changes .....: 0.000E+00

Fraction of Fish from Impacted Water: 0.0000

  X/Q at Fish Source ...: 0.0000
  Surface Area (m2) ....: 0.000E+00
  Volume (liters) .....: 0.000E+00
  Volume changes .....: 0.000E+00

---

44 YEAR
INDIVIDUAL CANCER RISK BY POLLUTANT AND ROUTE

Pollutant	Air	Soil	Skin	Garden	MMilk	Other
1,3-BUTADIENE	3.27E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ACETALDEHYDE	4.82E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BENZENE	4.23E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FORMALDEHYDE	9.64E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PAH:BENZ(A)ANTH	1.09E-11	1.67E-11	1.06E-11	0.00E+00	4.29E-11	0.00E+00
PAH:BENZO(A)PYR	6.69E-11	1.03E-10	6.54E-11	0.00E+00	2.64E-10	0.00E+00
PAH:BENZO(B)FLU	5.44E-12	8.37E-12	5.32E-12	0.00E+00	2.14E-11	0.00E+00
PAH:BENZO(K)FLU	5.29E-12	8.15E-12	5.17E-12	0.00E+00	2.09E-11	0.00E+00
PAH:CHRYSENE	1.22E-12	1.88E-12	1.19E-12	0.00E+00	4.81E-12	0.00E+00
PAH:DIBENZ(A,H)	1.23E-10	5.95E-11	3.78E-11	0.00E+00	1.52E-10	0.00E+00
PAH:INDENO(1,2,	1.13E-11	1.74E-11	1.11E-11	0.00E+00	4.46E-11	0.00E+00
PROPYLENE OXIDE	4.36E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Route Total	1.15E-08	2.15E-10	1.37E-10	0.00E+00	5.51E-10	0.00E+00

TOTAL RISK: 1.24E-08

70 YEAR
INDIVIDUAL CANCER RISK BY POLLUTANT AND ROUTE

Pollutant	Air	Soil	Skin	Garden	MMilk	Other
1,3-BUTADIENE	5.20E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ACETALDEHYDE	7.67E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BENZENE	6.72E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FORMALDEHYDE	1.53E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PAH:BENZ(A)ANTH	1.73E-11	2.59E-11	1.65E-11	0.00E+00	0.00E+00	0.00E+00
PAH:BENZO(A)PYR	1.06E-10	1.59E-10	1.01E-10	0.00E+00	0.00E+00	0.00E+00
PAH:BENZO(B)FLU	8.65E-12	1.30E-11	8.23E-12	0.00E+00	0.00E+00	0.00E+00
PAH:BENZO(K)FLU	8.42E-12	1.26E-11	8.01E-12	0.00E+00	0.00E+00	0.00E+00
PAH:CHRYSENE	1.94E-12	2.91E-12	1.84E-12	0.00E+00	0.00E+00	0.00E+00
PAH:DIBENZ(A,H)	1.96E-10	9.21E-11	5.85E-11	0.00E+00	0.00E+00	0.00E+00
PAH:INDENO(1,2,	1.80E-11	2.69E-11	1.71E-11	0.00E+00	0.00E+00	0.00E+00
PROPYLENE OXIDE	6.93E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Route Total	1.83E-08	3.33E-10	2.11E-10	0.00E+00	0.00E+00	0.00E+00

TOTAL RISK: 1.89E-08

Appendix 8.1D Construction Emissions and Impact Analysis

8.1D-1 Onsite Construction

Construction of the project is expected to last approximately 12 months, with the construction occurring in the following four main phases:

- Site preparation;
- Foundation work;
- Installation of major equipment; and
- Construction/installation of major structures.

Site preparation includes clearing, grading, excavation of footings and foundations, and backfilling operations. After site preparation is finished, the construction of the foundations and structures is expected to begin. Once the foundations and structures are finished, installation and assembly of the mechanical and electrical equipment are scheduled to commence.

Fugitive dust emissions from the construction of the project will result from:

- Dust entrained during site preparation and grading/excavation at the construction site;
- Dust entrained during onsite travel on paved and unpaved surfaces;
- Dust entrained during aggregate and soil loading and unloading operations; and
- Wind erosion of areas disturbed during construction activities.

Combustion emissions during construction will result from:

- Exhaust from the Diesel construction equipment used for site preparation, grading, excavation, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from Diesel-powered welding machines, electric generators, air compressors, and water pumps;
- Exhaust from pickup trucks and Diesel trucks used to transport workers and materials around the construction site;
- Exhaust from Diesel trucks used to deliver concrete, fuel, and construction supplies to the construction site; and
- Exhaust from automobiles used by workers to commute to the construction site.

To determine the potential worst-case daily construction impacts, exhaust and dust emission rates have been evaluated for each source of emissions. Because of the staggered construction schedule, site preparation and equipment installation may be occurring simultaneously. Therefore, maximum short-term impacts are calculated assuming that all equipment is operating simultaneously with the peak workforce (424 persons) on-site. Annual emissions are based on the average equipment mix during the 12-month construction period.

8.1D-2 Linear Facilities

Offsite construction will include a natural gas pipeline and process water line. Emissions from these construction activities are included in this analysis.

8.1D-3 Available Mitigation Measures

The following mitigation measures are proposed to control exhaust emissions from the Diesel heavy equipment used during construction of the Project:

- Operational measures, such as limiting time spent with the engine idling by shutting down equipment when not in use;
- Regular preventive maintenance to prevent emission increases due to engine problems;
- Use of low sulfur and low aromatic fuel meeting California standards for motor vehicle Diesel fuel; and
- Use of low-emitting Diesel engines meeting federal emissions standards for construction equipment.

The following mitigation measures are proposed to control fugitive dust emissions during construction of the project:

- Use either water application or chemical dust suppressant application to control dust emissions from unpaved road travel and unpaved parking areas;
- Use vacuum sweeping and/or water flushing of paved road surface to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets impacted by construction activities) and paved parking areas;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard;
- Limit traffic speeds on unpaved roads to 15 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to roadways;
- Replant vegetation in disturbed areas as quickly as possible;

- Use wheel washers or wash off tires of all trucks exiting construction site that carry track-out dirt from unpaved roads; and
- Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant.

8.1D-4 Estimation of Emissions with Mitigation Measures

8.1D-4.1 Onsite Construction

Tables 8.1D-1 and 8.1D-2 show the estimated maximum daily and annual heavy equipment exhaust and fugitive dust emissions with recommended mitigation measures for onsite construction activities. Detailed emission calculations are included as Attachment 8.1-4.1.

Table 8.1D-1 Maximum Daily Emissions During Onsite Construction, Pounds Per Day

	NOx	CO	POC	SOx	PM_{10}
Onsite					
Construction Equipment, Fugitive Dust	108.0	28.9	7.4	3.4	42.2
Offsite					
Worker Travel, Truck Deliveries	168.7	1,125.2	92.3	4.4	4.5
Total Emissions					
Total =	276.7	1,154.1	99.8	7.8	46.7

Table 8.1D-2 Annual Emissions During Construction, Tons Per Year

	NOx	CO	POC	SOx	PM_{10}
Onsite					
Construction Equipment, Fugitive Dust	4.4	0.9	0.3	0.1	5.1
Offsite					
Worker Travel, Truck Deliveries	6.2	40.6	3.4	0.12	0.2
Total Emissions					
Total =	10.6	41.5	3.7	0.25	5.6

8.1D-4.2 Linear Facilities Construction

The estimated maximum daily heavy equipment exhaust and fugitive dust emissions with recommended mitigation measures for the natural gas pipeline and water line construction activities are included in the onsite construction analysis.

8.1D-5 Analysis of Ambient Impacts from Onsite Construction

Ambient air quality impacts from emissions during construction of the project were estimated using an air quality dispersion modeling analysis. The modeling analysis considers the construction site location, the surrounding topography, and the sources of emissions during construction, including vehicle and equipment exhaust emissions and fugitive dust.

8.1D-5.1 Existing Ambient Levels

As with the modeling analysis of project operating impacts (Section 8.1.2), the San Jose and San Francisco monitoring stations were used to establish the ambient background levels for the construction impact modeling analysis. Table 8.1-4.3 shows the maximum concentrations of NOx, SO_2, CO, and PM_{10} recorded for 1997 through 1999 at those monitoring stations.

8.1D-5.2 Dispersion Model

As in the analysis of project operating impacts, the EPA-approved Industrial Source Complex Short Term (ISCST3) model was used to estimate ambient impacts from construction activities. A detailed discussion of the ISCST3 dispersion model is included in Section 8.1.5.3.1.

The emission sources for the construction site were grouped into two categories: exhaust emissions and dust emissions. An effective emission plume height of 8.3 meters was used for all exhaust emissions. This plume height was generated by running SCREEN3 with exhaust parameters for a typical Diesel engine (2 meter stack height) and all meteorological conditions and evaluating plume height at the nearest fenceline. For construction dust emissions, an effective plume height of 0.5 meters was used in the modeling analysis. The exhaust and dust emissions were modeled as a single area source that covered the total area of the construction site. The construction impacts modeling analysis used the same receptor locations as used for the project operating impact analysis. A detailed discussion of the receptor locations is included in Section 8.1.5.3.1.

To determine the construction impacts on short-term ambient standards (24 hours and less), the worst-case daily onsite construction emission levels shown in Table 8.1D-1 were used. For pollutants with annual average ambient standards, the annual onsite emission levels

shown in Table 8.1D-2 were used. As with the project operating impact analysis, the meteorological data set used for the construction emission impacts analysis is the onsite data collected at Alviso STP between 1995 and 1999.

8.1-4.5.3 Modeling Results

Based on the emission rates of NOx, SO_2, CO, and PM_{10} and the meteorological data, the ISCST3 model calculates hourly and annual ambient impacts for each pollutant. As mentioned above, the modeled 1-hour, 3-hour, 8-hour, and 24-hour ambient impacts are based on the worst-case daily emission rates of NOx, SO_2, CO, and PM_{10}. The annual impacts are based on the annual emission rates of these pollutants.

The one-hour and annual average concentrations of NO_2 were computed following the revised EPA guidance for computing these concentrations (August 9, 1995 *Federal Register*, 60 FR 40465). The one-hour average was adjusted using the Ozone Limiting Method. The annual average was calculated using the ambient ratio method (ARM) with the national default value of 0.75 for the annual average NO_2/NOx ratio.

The modeling analysis results are shown in Table 8.1D-3. Also included in the table are the maximum background levels that have occurred in the last 3 years and the resulting total ambient impacts. Construction impacts alone for all modeled pollutants are expected to be below the most stringent state and national standards. The state 24-hour average PM_{10} standard is exceeded in the absence of the construction emissions for the project, and construction impacts could, in theory, to contribute to those existing violations..

The ISCST3 model overpredicts PM_{10} construction emission impacts due to the cold plume (i.e., ambient temperature) effect of dust emissions. Most of the plume dispersion characteristics in the ISCST3 model are derived from observations of hot plumes associated with typical smoke stacks. The ISCST3 model does compensate for plume temperature; however, for ambient temperature plumes the model assumes negligible buoyancy and dispersion. Consequently, the ambient concentrations in cold plumes remain high even at significant distances from a source. The Project construction site impacts are not unusual in comparison to most construction sites; construction sites that use good dust suppression techniques and low-emitting vehicles typically do not cause violations of air quality standards. The input and output modeling files are being provided electronically.

Table 8.1D-3 Modeled Maximum Onsite Construction Impacts

Pollutant	Averaging Time	Maximum Construction Impacts (µg/m^3)	Background (µg/m^3)	Total Impact (µg/m^3)	Standard (µg/m^3)	Federal Standard (µg/m^3)
NO_2[1]	1-hour	228.4	241	467	470	--
	Annual	1.1	49	50	--	100
SO_2	1-hour	7.1	94	101	650	--
	24-hour	0.8	18.4	19	109	365
	Annual	0.04	5.3	5	--	80
CO	1-hour	61.1	12,375	12,436	23,000	40,000
	8-hour	17.7	6,978	6,996	10,000	10,000
PM_{10}	24-hour	13.2	114	127	50	150
	Annual[2]	1.9	25.4	27	30	--
	Annual[3]	1.9	28.7	31	--	50

Notes:
1. Ozone limiting method applied for 1-hour average, using concurrent O_3 data (1997 to 1999). ARM applied for annual average, using national default 0.75 ratio.
2. Annual Geometric Mean.
3. Annual Arithmetic Mean.

8.1D-5.4 Health Risk of Diesel Exhaust

The combustion portion of annual PM_{10} emissions from Table 8.1D-3 above was modeled separately to determine the annual average Diesel PM_{10} exhaust concentration at residential receptors. This was used with the ARB-approved unit risk value of 300 in one million for a 70-year lifetime to determine the potential carcinogenic risk from Diesel exhaust during construction. The exposure was also adjusted by a factor of 1/70, or 0.0143, to correct for the 12-month exposure.

The maximum modeled annual average concentration of Diesel exhaust PM_{10} at any location is 0.073 ug/m^3. Using the unit risk value and adjustment factors described above, the carcinogenic risk due to exposure to Diesel exhaust during construction activities is expected to be approximately 0.3 in one million. This is well below the 10 in one million level considered to be significant.

This analysis is overly conservative for several reasons. First, as discussed above, the modeled PM_{10} concentrations from construction operations are overpredicted by the ISCST3 model. Second, this analysis assumes that all of the combustion PM_{10} is emitted by Diesel engines, when in fact some of the engines will be gasoline-fueled and thus will not produce Diesel particulate.

Attachment 8.1D-1 Detailed Construction Emissions Calculations

ACT ID	DESC	TOTAL	MAY 2001	JUN 2001	JUL 2001	AUG 2001	SEP 2001	OCT 2001	NOV 2001	DEC 2001	JAN 2002	FEB 2002	MAR 2002	APR 2002	MAY 2002	JUN 2002	JUL 2002	AUG 2002
EQUIP001 - Forklift, Cat 930 (h)																		
DN0020	Fiberglass Removal	288					240	48										
TOTAL	**EQUIP001**	**288**					**240**	**48**										
EQUIP002 - Loader, Cat 966D (h)																		
DN0030	Site Clear & Grub	112						112										
DN0040	Offsite Sanitary Sew	120						120										
DN0050	Site Grading	96						96										
DN0060	Process Water Line	80						80										
DN0080	Natural Gas Pipeline	80							64	16								
TOTAL	**EQUIP002**	**488**						**408**	**64**	**16**								
EQUIP003 - Truck, Water, 10-wheeler (h)																		
DN0030	Site Clear & Grub	56						56										
DN0040	Offsite Sanitary Sew	120						120										
DN0050	Site Grading	96						96										
DN0060	Process Water Line	80						80										
DN0080	Natural Gas Pipeline	80							64	16								
TOTAL	**EQUIP003**	**432**						**352**	**64**	**16**								
EQUIP004 - Truck, Dump, High-side (h)																		
DN0030	Site Clear & Grub	560						560										
TOTAL	**EQUIP004**	**560**						**560**										
EQUIP005 - Backhoe, Cat 225 (h)																		
DN0040	Offsite Sanitary Sew	240						240										
DN0060	Process Water Line	80						80										
DN0080	Natural Gas Pipeline	80							64	16								
DN0120	BOP Mechanical	680								113	147	133	140	147				
TOTAL	**EQUIP005**	**1080**						**320**	**64**	**129**	**147**	**133**	**140**	**147**				
EQUIP006 - Scraper, Cat 623 (h)																		
DN0050	Site Grading	96						96										
TOTAL	**EQUIP006**	**96**						**96**										
EQUIP007 - Moto-grader, Cat 12G (h)																		
DN0050	Site Grading	96						96										

ACT ID	DESC	TOTAL	MAY 2001	JUN 2001	JUL 2001	AUG 2001	SEP 2001	OCT 2001	NOV 2001	DEC 2001	JAN 2002	FEB 2002	MAR 2002	APR 2002	MAY 2002	JUN 2002	JUL 2002	AUG 2002
EQUIP007 - Moto-grader, Cat 12G (h)																		
TOTAL	**EQUIP007**	**96**						**96**										
EQUIP008 - Dozer, Cat D6 (h)																		
DN0050	Site Grading	192						192										
TOTAL	**EQUIP008**	**192**						**192**										
EQUIP009 - Backhoe, Ford 555 (h)																		
DN0055	Sewer Pump Station	320						8	160	152								
DN0070	Potable Water Line	40						40										
DN0090	Equipment Foundation	280							64	152	64							
DN0100	Site Drainage	40							40									
DN0130	Switchyard Construct	800							56	152	176	160	168	88				
TOTAL	**EQUIP009**	**1480**						**48**	**320**	**456**	**240**	**160**	**168**	**88**				
EQUIP010 - Crane, Rough Terrain, 15-ton (h)																		
DN0055	Sewer Pump Station	320						8	160	152								
DN0090	Equipment Foundation	280							64	152	64							
DN0120	BOP Mechanical	680								113	147	133	140	147				
TOTAL	**EQUIP010**	**1280**						**8**	**224**	**417**	**211**	**133**	**140**	**147**				
EQUIP011 - Welder, Lincoln (h)																		
DN0080	Natural Gas Pipeline	160							128	32								
TOTAL	**EQUIP011**	**160**							**128**	**32**								
EQUIP012 - Loader, Skip, Ford 550 (h)																		
DN0090	Equipment Foundation	280							64	152	64							
DN0120	BOP Mechanical	680								113	147	133	140	147				
DN0130	Switchyard Construct	800							56	152	176	160	168	88				
DN0140	BOP Electrical	504								84	109	99	104	109				
TOTAL	**EQUIP012**	**2264**							**120**	**501**	**495**	**392**	**412**	**343**				
EQUIP013 - Truck, Flatbed (h)																		
DN0090	Equipment Foundation	280							64	152	64							
DN0120	BOP Mechanical																	
DN0140	BOP Electrical	504								84	109	99	104	109				
TOTAL	**EQUIP013**	**784**							**64**	**236**	**173**	**99**	**104**	**109**				

ACT ID	DESC	TOTAL	MAY 2001	JUN 2001	JUL 2001	AUG 2001	SEP 2001	OCT 2001	NOV 2001	DEC 2001	JAN 2002	FEB 2002	MAR 2002	APR 2002	MAY 2002	JUN 2002	JUL 2002	AUG 2002
EQUIP014 - Generator, High-Cycle (h)																		
DN0090	Equipment Foundation	840							192	456	192							
TOTAL	**EQUIP014**	**840**							**192**	**456**	**192**							
EQUIP015 - Crane, Truck (h)																		
DN0130	Switchyard Construct	800							56	152	176	160	168	88				
TOTAL	**EQUIP015**	**800**							**56**	**152**	**176**	**160**	**168**	**88**				
EQUIP017 - Loader, Cat 950 (h)																		
DN0120	BOP Mechanical	680								113	147	133	140	147				
TOTAL	**EQUIP017**	**680**								**113**	**147**	**133**	**140**	**147**				
EQUIP018 - Truck, Boom (h)																		
DN0120	BOP Mechanical	680								113	147	133	140	147				
DN0140	BOP Electrical	504								84	109	99	104	109				
TOTAL	**EQUIP018**	**1184**								**197**	**255**	**232**	**244**	**255**				
	REPORT TOTAL	**12704**					**240**	**2128**	**1296**	**2723**	**2035**	**1443**	**1515**	**1323**				

Construction Equipment Daily Exhaust Emissions (October 2001)
Los Esteros Critical Energy Facility

Equipment	Number of Units	Hrs/Day Per Unit	Gals/Hr Per Unit	Total Fuel Use (Gals/day)	Emission Factors (lbs/1000 gals)(1) NOx	CO	POC	SOx	PM10	Daily Emissions (lbs/day) NOx	CO	POC	SOx	PM10
Cranes -Mobile 45 ton	0	8.0	4.00	0.00	251.11	39.13	15.65	7.10	11.74	0.00	0.00	0.00	0.00	0.00
Cranes - Mobile 15 ton	1	8.0	4.00	32.00	251.11	39.13	15.65	7.10	11.74	8.04	1.25	0.50	0.23	0.38
Bulldozer	1	8.0	5.50	44.00	251.11	39.13	15.65	7.10	11.74	11.05	1.72	0.69	0.31	0.52
Excavator- Earth Scraper	1	8.0	9.00	72.00	251.11	39.13	15.65	7.10	11.74	18.08	2.82	1.13	0.51	0.85
Excavator-Motor Grader	1	8.0	5.00	40.00	251.11	39.13	15.65	7.10	11.74	10.04	1.57	0.63	0.28	0.47
Excavator- Backhoe	3	8.0	2.50	60.00	251.11	39.13	15.65	7.10	11.74	15.07	2.35	0.94	0.43	0.70
Excavator - loader	3	8.0	2.50	60.00	251.11	39.13	15.65	7.10	11.74	15.07	2.35	0.94	0.43	0.70
Truck- Water	2	8.0	3.13	50.08	170.68	106.79	15.33	7.10	9.59	8.55	5.35	0.77	0.36	0.48
Forklift	1	8.0	2.50	20.00	251.11	39.13	15.65	7.10	11.74	5.02	0.78	0.31	0.14	0.23
Dump Truck	4	8.0	3.13	100.16	170.68	106.79	15.33	7.10	9.59	17.10	10.70	1.54	0.71	0.96
Diesel Powered Welder	0	8.0	1.27	0.00	313.05	195.66	46.96	7.10	29.35	0.00	0.00	0.00	0.00	0.00
Portable Power Generators	0	8.0	1.27	0.00	313.05	195.66	46.96	7.10	29.35	0.00	0.00	0.00	0.00	0.00
Total =										109.01	28.88	7.44	3.40	5.29

Notes:
(1) See notes for combustion emissions.

Construction Equipment Annual Exhaust Emissions
Los Esteros Critical Energy Facility

Equipment	Hours of Operation per Year	Gals/Hr Per Unit	Total Fuel Use (Gals/yr)	Emission Factors (lbs/1000 gals)(2) NOx	CO	POC	SOx	PM10	Annual Emissions (tons/yr) NOx	CO	POC	SOx	PM10
Cranes -Mobile 45 ton	800.00	4.00	3,200	251.11	39.13	15.65	7.10	11.74	0.40	0.06	0.03	0.01	0.02
Cranes - Mobile 35 ton	2464.00	4.00	9,856	251.11	39.13	15.65	7.10	11.74	1.24	0.19	0.08	0.03	0.06
Bulldozer	192.00	5.50	1,056	251.11	39.13	15.65	7.10	11.74	0.13	0.02	0.01	0.00	0.01
Excavator- Earth Scraper	96.00	9.00	864	251.11	39.13	15.65	7.10	11.74	0.11	0.02	0.01	0.00	0.01
Excavator-Motor Grader	96.00	5.00	480	251.11	39.13	15.65	7.10	11.74	0.06	0.01	0.00	0.00	0.00
Excavator- Backhoe	2560.00	2.50	6,400	251.11	39.13	15.65	7.10	11.74	0.80	0.13	0.05	0.02	0.04
Excavator - Loader	3432.00	2.50	8,580	251.11	39.13	15.65	7.10	11.74	1.08	0.17	0.07	0.03	0.05
Truck- Water	432.00	3.13	1,352	170.68	106.79	15.33	7.10	9.59	0.12	0.07	0.01	0.00	0.01
Forklift	288.00	2.50	720	251.11	39.13	15.65	7.10	11.74	0.09	0.01	0.01	0.00	0.00
Dump Truck	560.00	3.13	1,753	170.68	106.79	15.33	7.10	9.59	0.15	0.09	0.01	0.01	0.01
Trucks- 3 ton	784.00	1.56	1,223	74.40	59.47	5.57	7.10	4.83	0.05	0.04	0.00	0.00	0.00
Diesel Powered Welder	160.00	1.27	203	291.14	195.66	46.96	7.10	29.35	0.03	0.02	0.00	0.00	0.00
Portable Power Generators	840.00	1.27	1,067	291.14	195.66	46.96	7.10	29.35	0.16	0.10	0.03	0.00	0.02
Total =									4.41	0.94	0.30	0.13	0.22

Notes:
(1) Based on average number of units operating over 12-month construction period.
(2) See notes on combustion emissions.

Delivery Truck Daily Emissions (October 2001) Los Esteros Critical Energy Facility												
Number of Deliveries Per Day(1)	Average Round Trip Haul Distance (miles)	Vehicle Miles Traveled Per Day	Emission Factors (lbs/vmt)(2)					Daily Emissions (lbs/day)				
			NOx	CO	POC	SOx	PM10	NOx	CO	POC	SOx	PM10
10	88	880	0.0280	0.0175	0.0025	0.0012	0.0016	24.66	15.43	2.21	1.02	1.39

Notes:
(1) Based on average number of truck deliveries during this month and a scaling factor of 5 to account for the maximum number of deliveries expected on a single da
(2) See notes for combustion emissions.

Delivery Truck Annual Emissions Los Esteros Critical Energy Facility												
Average Number of Deliveries Per Year(1)	Average Round Trip Haul Distance (miles)	Vehicle Miles Traveled Per Year	Emission Factors (lbs/vmt)(2)					Annual Emissions (tons/yr)				
			NOx	CO	POC	SOx	PM10	NOx	CO	POC	SOx	PM10
2400	88	211200.00	0.0280	0.0175	0.0025	0.0012	0.0016	2.96	1.85	0.27	0.12	0.17

Notes:
(1) Based on total of 2400 truck deliveries over the 12-month construction period.
(2) See notes for combustion emissions.

Rail Delivery Daily Emissions (December 2001)
Los Esteros Critical Energy Facility

Inbound						Outbound					
Number of Railcars per day	Loaded Weight of Railcar (tons)	Total Gross Weight of Railcars (tons)	One-Way Haul Distance(1) (miles)	Unit Fuel Use Factor(2) (gal/KGTM)	Fuel Use (gals)	Number of Railcars per day	Tare Weight of Railcar (tons)	Total Gross Weight of Railcars (tons)	One-Way Haul Distance(1) (miles)	Unit Fuel Use Factor(2) (gal/KGTM)	Fuel Use (gals)
4	221.5	886	62	1.37	75	4	34	136	62	1.37	12

Total Fuel Use (gals)	Emission Factors (lbs/1000 gals)(3)					Daily Emissions (lbs/day)				
	NOx	CO	POC	SOx	PM10	NOx	CO	POC	SOx	PM10
87	594.71	58.59	22.03	38.00	14.76	51.63	5.09	1.91	3.30	1.28

Notes:
(1) Distance within BAAQMD for Union Pacific Railroad line through Altamont.
(2) Based on Union Pacific Railroad system wide average fuel use factor.
(3) See notes for combustion emissions.

Rail Delivery Annual Emissions
Metcalf Energy Center

Average Number of Rail Deliveries per Year(1)	Emissions per Delivery (lbs/rail delivery)					Annual Emissions (tons/yr)				
	NOx	CO	POC	SOx	PM10	NOx	CO	POC	SOx	PM10
2.5	12.91	0.02	0.00	0.05	0.94	0.02	0.00	0.00	0.00	0.00

Notes:
(1) Based on total of 30 rail deliveries over the 12-month construction period.

Worker Travel Daily Emissions (December 2001)
Los Esteros Critical Energy Facility

Number of Workers Per Day(1)	Average Vehicle Occupancy (person/veh.)	Number of Round Trips Per Day	Average Round Trip Haul Distance (Miles)	Vehicle Miles Traveled Per Day (Miles)	Emission Factors (lbs/vmt)(2)					Daily Emissions (lbs/day)				
					NOx	CO	POC	SOx	PM10	NOx	CO	POC	SOx	PM10
424	1.16	366	88	32166	0.0029	0.0343	0.0027	0.0000	0.0001	92.41	1104.70	88.22	0.06	1.88

Notes:
(1) Based expected number of construction workers during this phase of construction.
(2) See notes for combustion emissions.

Worker Travel Annual Emissions
Los Esteros Critical Energy Facility

Average Number of Workers Per Day(1)	Average Vehicle Occupancy (person/veh.)	Number of Round Trips Per Day	Average Round Trip Haul Distance (Miles)	Days per Year	Vehicle Miles Traveled Per Year	Emission Factors (lbs/vmt)(2)					Annual Emissions (tons/yr)				
						NOx	CO	POC	SOx	PM10	NOx	CO	POC	SOx	PM10
119	1.16	103	88	250	2,256,897	0.0029	0.0343	0.0027	0.0000	0.0001	3.24	38.76	3.09	0.00	0.07

Notes:
(1) Based on total of 1428 workers over the 12-month construction period.
(2) See notes for combustion emissions.

Daily Fugitive Dust Emissions (October 2001)
Los Esteros Critical Energy Facility

Equipment	Number of Units	Daily Process Rate Per Unit	Total Process Rate	Units	PM10 Emission Factor(1) (lbs/unit)	Control Factor(1) (%)	PM10 Emissions (lbs/day)
	1	8.0	8.0	hours	0.7528		6.02
arth Scraper Excavation	1	8.0	8.0	hours	0.7528		6.02
arth Scraper Unpaved Road Travel	1	32.6	32.6	vmt	0.2656	66%	2.92
tor Grader	1	24.0	24.0	vmt	0.2754		6.61
ackhoe Excavation	3	398.4	1,195.2	cu. yds.	0.0018		2.18
oader Excavation	3	2,743.0	8,229.0	tons	0.0002		1.99
oader Unpaved Road Travel	3	21.2	63.7	vmt	0.1148	66%	2.47
Jnpaved Road Travel	2	20.0	40.0	vmt	0.1522	66%	2.05
ed Road Travel	1	16.0	16.0	vmt	0.0970	66%	0.52
Jnpaved Road Travel	4	5.0	20.1	vmt	0.1589	66%	1.08
Jnloading	4	685.8	2,743.0	tons	0.0002		0.66
npaved Road Travel	0	7.7	0.0	vmt	0.0803	66%	0.00
ust (active construction area)	N/A	321,180.0	321,180.0	sq.ft.	0.0000	66%	2.74
d Road Travel	424	0.5	208.8	vmt	0.0005		0.10
ved Road Travel	424	0.2	65.4	vmt	0.0599	66%	1.32
k Paved Road Travel	10	0.5	4.9	vmt	0.0185		0.09
k Unpaved Road Travel	10	0.2	1.5	vmt	0.1589	66%	0.08
							36.87

Annual Fugitive Dust Emissions
Los Esteros Critical Energy Facility

Activity	Average Daily PM10 Emissions (lbs/day)	Days per Year	Annual PM10 Emissions (tons/yr)
Construction Activities	36.87	250	4.61
Windblown Dust	2.74	365	0.50
Total =			5.11

Daily Construction Emissions (October 2001) Los Esteros Critical Energy Facility					
Daily Emissions (lbs/day)					
	NOx	CO	POC	SOx	PM10
Onsite					
Construction Equipment	108.01	28.88	7.44	3.40	5.29
Fugitive Dust					36.87
Subtotal =	108.01	28.88	7.44	3.40	42.16
Offsite					
Worker Travel	92.41	1104.70	88.22	0.06	1.88
Truck Deliveries	24.66	15.43	2.21	1.02	1.39
Rail Deliveries	51.63	5.09	1.91	3.30	1.28
Subtotal =	168.69	1125.21	92.34	4.38	4.54
Total =	276.69	1154.09	99.78	7.77	46.70

Annual Construction Emissions Los Esteros Critical Energy Facility Annual Emissions (tons/yr)					
	NOx	CO	POC	SOx	PM10
Onsite					
Construction Equipment	4.41	0.94	0.30	0.13	0.22
Fugitive Dust					5.11
Subtotal =	4.41	0.94	0.30	0.13	5.33
Offsite					
Worker Travel	3.24	38.76	3.09	0.00	0.07
Truck Deliveries	2.96	1.85	0.27	0.12	0.17
Rail Deliveries	0.02	0.00	0.00	0.00	0.00
Subtotal =	6.22	40.61	3.36	0.12	0.23
Total =	10.62	41.54	3.66	0.25	5.56

alculations

n equipment, emission factors based on equipment meeting EPA 1996 off-road Diesel standards and use of CARB low-sulfur fuel.
e of truck, emissions factors based on MVE17G version 1.0c for heavy-heavy duty or medium duty Diesel trucks, fleet average for calendar year 2000, San Francisco Air Basin
ission factors based on EPA's "Non-road Engine and Vehicle Emission Study Report", 11/91, Table 2-07, for generator sets, welders, pumps, and air compressors less than 50

, heavy-heavy duty Diesel trucks, fleet average for calendar year 2000, San Francisco Air Basin.

, average of light duty automobiles and light duty trucks, fleet average for calendar year 2000, San Francisco Air Basin.

emission factors from EPA's "Technical Highlights - Emissions Factors for Locomotives", December 1997.
booz-Allen & Hamilton "Locomotive Emission Study", prepared for CARB, January 1991.

ssion Calculations

vel emission factors for delivery trucks and worker automobiles are based on AP-42, Section 13.2.1, 10/97.
ult road silt loading shown in AP-42, page 13.2.1-5, 10/97, limited access roads.)
mission factor for active construction area is based on "Improvement of Specific Emission Factors (BACM Project No. 1),
prepared for South Coast AQMD by Midwest Research Institute, March 1996.
emission factor is based on AP-42, Table 11.9-1, 7/98.
vation emission factor is based AP-42, Table 11.9-1, 7/98.
ult soil silt and moisture contents shown in AP-42, Table 11.9-3, 7/98, overburden.)
ing emission factors are based on AP-42, p. 13.2.4-3, 1/95.
age annual wind speed recorded onsite and default soil moisture content shown in AP-42, Table 11.9-3, 7/98, overburden.)
d surface travel emission factor is based on AP-42, Section 13.2.2, 1/95.
ult soil silt and moisture contents shown in AP-42, Table 11.9-3, 7/98, overburden.)
ssion factor is based on AP-42, Table 11.9-2 (dragline operations), 1/95.
ult soil moisture content shown in AP-42, Table 11.9-3, 7/98, overburden.)
e travel emission factors for water trucks, fuel trucks, service trucks, dump trucks, forklifts, pickup trucks, delivery trucks,
ucks are based on AP-42, Section 13.2.2, 9/98.
ult soil silt and moisture contents shown in AP-42, Table 11.9-3, 7/98, overburden.)
ficiency for unpaved road travel and active excavation area is based on "Control of Open Fugitive Dust Sources", U.S. EPA, 9/88.
ult evaporation rate shown in EPA document, Figure 3-2, 9/88, and typical water application rate shown in EPA document, page 3-23, 9/88.)

Appendix 8.1E Evaluation Of Best Available Control Technology

To evaluate BACT for the proposed turbines, the guideline for large gas turbines (heat input rating greater than 50 MMBtu/hr) in BAAQMD BACT/TBACT Workbook was reviewed. The relevant BACT determinations for this analysis are shown in Table 8.1E-1.

Table 8.1E-1 BAAQMD BACT Guideline For Large Gas Turbines

Pollutant	BACT	Typical Technology
Nitrogen Oxides	1. <5 ppm dry @ 15% O2	1. SCR + Combustion Modifications
	2. 5 ppm dry @ 15% O2	2. SCR + Combustion Modifications
Sulfur Dioxide	1. Natural gas fuel	1. Fuel selection
	2. Natural gas fuel	2. Fuel selection
Carbon Monoxide	1. Not determined.	1. n/a
	2. 10 ppm dry @ 15% O2	2. Catalytic combustor
VOC	1. Not determined	1. n/a
	2. 2 ppm dry @ 15% O2	2. Catalytic combustor
PM_{10}	1. Natural gas fuel	1. Fuel selection
	2. Natural gas fuel	2. Fuel selection

Notes: (1) Technologically feasible and cost effective
(2) Achieved in practice

The EPA RACT-BACT-LAER Clearinghouse (RBLC) was also consulted to review recent EPA BACT decisions for gas-fired gas turbines. These recent BACT decisions are summarized in Table 8.1E-2 below. NOx levels shown in these BACT determinations are very high, although EPA has recently stated that the SCONOx technology has demonstrated that 2.5 ppm is achievable in practice. CO levels in this listing are also relatively high, and do not indicate that oxidation catalysts have been considered BACT for CO or VOCs.

Los Esteros Critical Energy Facility proposes to use dry low-NOx combustors with selective catalytic reduction and oxidation catalysts that will achieve NOx exhaust concentrations of 5 ppmv or less, CO exhaust concentrations of 6 ppmv or less, and VOC concentrations of 2.0 ppmv or less. The turbines will be fueled with natural gas to minimize SO_2 and PM_{10} emissions. These pollutant levels will achieve emission reductions consistent with the BAAQMD BACT guideline.

Table 8.1E-2 Gas Turbine BACT Determinations For EPA RBLC Clearinghouse

Facility/Location	Date Permit Issued	Equipment/Rating	NOx Limit/Control Technology	CO Limit/Control Technology
Black Hills Power & Light Gillette, WY	3/01/00	40 MW simple cycle gas-fired CTGs	25 ppm(dry low-NOx technology)	
Colorado Springs Utilities: Nixon Power Plant Colorado Springs, CO	6/30/98	simple cycle turbine, natural gas	25 ppm (dry low-NOx technology)	80% control effectiveness (oxidation catalyst)
Lincoln Electric System Lincoln, NE	11/22/99	simple cycle gas-fired CTG	42 ppm (dry low-NOx technology)	n/a
Lordsburg L.P. Lordsburg, NM	6/18/97	100 MW combustion turbine	15 ppm (dry low-NOx technology)	50 ppm (dry low-NOx technology)
Northern California Power Agency Lodi, CA	10/02/97	GE Frame 5 gas turbine	25 ppm	n/a
Southwestern Public Service Hobbs, NM	2/15/97	gas turbine	15 ppm w/o power augmentation 25 ppm w/ augmentation	good combustion practices
Tenuska Georgia Partners, L.P. Franklin, GA	12/18/98	168 MW simple cycle combustion turbine	15 ppm	15 ppm

BACT is defined in BAAQMD Rule 2-2-206 as:

the more stringent of:

> *206.1 The most effective emission control device or technique which has been successfully utilized for the type of equipment comprising such a source; or*
>
> *206.2 The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or*
>
> *206.3 Any emission control device or technique determined to be technologically feasible and cost-effective by the APCO; or*
>
> *206.4 The most effective emission control limitation for the type of equipment comprising such a source which the EPA states, prior to or during the public comment period, is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitations are not achievable. Under no circumstances shall the emission control required be less stringent than the emission control required by any applicable provision of federal, state or District laws, rules or regulations.*
>
> *The APCO shall publish and periodically update a BACT/TBACT Workbook specifying the requirements for commonly permitted sources. BACT will be determined for a source by using the workbook as a guidance document or, on a case-by-case basis, using the most stringent definition of this Section 2-2-206.*

Of these four "prongs" of the BACT definition, the first three are generally controlling. In the BAAQMD's BACT guidance document, these three prongs are reduced to two criteria: (1) technologically feasible and cost-effective, and (2) achieved in practice.

This analysis will follow EPA's guidance for the preparation of "top down" BACT analyses focusing specifically on identifying emission limitations or control techniques that are achieved in practice and technically feasible.

A "top-down" analysis format, consistent with guidance provided in EPA's October 1990 Draft New Source Review Workshop Manual, has been used for the BACT analysis. That guidance lays out five steps for a top-down BACT analysis, as follows:

1. Identify all control technologies
2. Eliminate technically infeasible options
3. Rank remaining control technologies by control effectiveness
4. Evaluate most effective controls and document results
5. Select BACT

This procedure is followed for each of the pollutants evaluated in this analysis.

8.1E-1 Control of Nitrogen Oxides

8.1E-1.1 Identify All Control Technologies

The baseline NOx emission rate for this analysis is considered to be 75 ppmvd @ 15% O_2, based on the governing new source performance standard (40 CFR 60 Subpart GG). This emission rate provides the frame of reference for the evaluation of control effectiveness and feasibility. The maximum degree of control, resulting in the minimum emission rate, is a combination of dry low-NOx combustors and either selective catalytic reduction or SCONOx to achieve a long-term NOx limit of approximately 1 ppmvd. Several intermediate levels of control are also evaluated.

There are three basic means of controlling NOx emissions from combustion turbines: wet combustion controls, dry combustion controls, and post-combustion controls. Wet and dry combustion controls act to reduce the formation of NOx during the combustion process, while post-combustion controls remove NOx from the exhaust stream. Potential NOx control technologies for combustion gas turbines include the following:

<u>Wet combustion controls</u>

- Water injection
- Steam injection

<u>Dry combustion controls</u>

- Dry low-NOx combustor design
- Catalytic combustors (e.g., XONON)
- Other combustion modifications

<u>Post-combustion controls</u>

- Selective non-catalytic reduction (SNCR)
- Non-selective catalytic reduction (NSCR)
- Selective catalytic reduction (SCR)
- SCONOx

8.1E-1.2 Eliminate Technically Infeasible Options

The performance and technical feasibility of available NOx control technologies are discussed in more detail below.

Combustion Modifications

Wet Combustion Controls Steam or water injection directly into the turbine combustor is one of the most common NOx control techniques for combustion turbines. These wet injection techniques lower the flame temperature in the combustor and thereby reduce thermal NOx formation. The water or steam-to-fuel injection ratio is the most significant factor affecting the performance of wet controls. Steam injection techniques can reduce NOx emissions in gas-fired turbines to between 15 and 25 ppmv at 15% O_2; the practical limit of water injection has been demonstrated at approximately 25-42 ppmv @ 15% O_2 before combustor damage becomes significant. Higher diluent:fuel ratios (especially with steam) not only result in greater NOx reductions, but also increase emissions of CO and hydrocarbons, reduce turbine efficiency, and may increase turbine maintenance requirements. The principal NOx control mechanisms are identical for water and steam injection. Water or steam is injected into the primary combustion chamber to act as a heat sink, lowering the peak flame temperature of combustion and thus lowering the quantity of thermal NOx formed. The injected water or steam exits the turbine as part of the exhaust.

Since steam has a higher temperature/enthalpy than water, more steam is required to achieve the same quenching effect. Typical steam injection ratios are 0.5 to 2.0 pounds steam per pound fuel; water injection ratios are generally below 1.0 pound water per pound fuel. Because water has a higher heat absorbing capacity than steam (due to the temperature and to the latent heat of vaporization associated with water), it takes more steam than water to achieve an equivalent level of NOx control.

Although the lower peak flame temperature has a beneficial effect on NOx emissions, it can also reduce combustion efficiency and prevent complete combustion. As a result, CO and VOC emissions increase as water/steam-to-fuel ratios increase. Thus, the higher steam-to-fuel ratio required for NOx control will tend to cause higher CO and VOC emissions from steam-injected turbines than from water-injected turbines, due to the kinetic effect of the water molecules interfering with the combustion process. However, steam injection can reduce the heat rate of the turbine so that equivalent power output can be achieved with reduced fuel consumption and reduced SO_2 emission rates.

Water and steam injection have been in use on both oil- and gas-fired turbines in all size ranges for many years, so these NOx control technologies are clearly technologically feasible and widely available.

Dry Combustion Controls Combustion modifications that lower NOx emissions without wet injection include lean combustion, reduced combustor residence time, lean premixed combustion, and two-stage rich/lean combustion. Lean combustion uses excess air (greater than stoichiometric air-to-fuel ratio) in the combustor primary combustion zone to cool the flame, thereby reducing the rate of thermal NOx formation. Reduced combustor residence times are achieved by introducing dilution air between the combustor and the turbine sooner than with standard combustors. The combustion gases are at high temperatures for a shorter time, which also has the effect of reducing the rate of thermal NOx formation.

The most advanced combination of combustion controls for NOx is referred to as dry low-NOx (DLN) combustors. DLN technology uses lean, premixed combustion to keep peak combustion temperatures low, thus reducing the formation of thermal NOx. This technology is effective in achieving NOx emission levels comparable to levels achieved using wet injection without the need for large volumes of purified

water and without the increases in CO and VOC emissions that result from wet injection. Several turbine vendors have developed this technology for their engines, including the engine proposed for this project. This control technique is technically feasible.

Catalytic combustors use a catalytic reactor bed mounted within the combustor to burn a very lean fuel-air mixture. This technology has been commercially demonstrated under the trade name XONON in a 1.5 MW natural gas-fired turbine in Santa Clara, California, and commercial availability of the technology for a 200 MW GE Frame 7 natural gas-fired turbine was recently announced for one project. (The technology has also been announced as commercially available for some models of small gas turbines, generally 10 MW in size and less.) The combustor used in the Santa Clara demonstration engine is generally comparable in size to that used in GE Frame 7F engines; however, the technology has not been announced commercially for the engines proposed for the Gilroy Energy Center. Based on discussions with the technology's supplier, Catalytica Corporation, a commercial quotation for the use of XONON in this project is not commercially available for MEC. No turbine vendor, other than General Electric, has indicated the commercial availability of catalytic combustion systems at the present time; therefore, catalytic combustion controls are not available for this specific application and are not discussed further.

Post-Combustion Controls SCR is a post-combustion technique that controls both thermal and fuel NOx emissions by reducing NOx with a reagent (generally ammonia or urea) in the presence of a catalyst to form water and nitrogen. NOx conversion is sensitive to exhaust gas temperature, and performance can be limited by contaminants in the exhaust gas that may mask the catalyst (sulfur compounds, particulates, heavy metals, and silica). SCR is used in numerous gas turbine installations throughout the United States, almost exclusively in conjunction with other wet or dry NOx combustion controls. SCR requires the consumption of a reagent (ammonia or urea) and requires periodic catalyst replacement. Estimated levels of NOx control are in excess of 90%.

Selective non-catalytic reduction (SNCR) involves injection of ammonia or urea with proprietary conditioners into the exhaust gas stream without a catalyst. SNCR technology requires gas temperatures in the range of 1200° to 2000° F and is most commonly used in boilers. The exhaust temperature for the proposed gas turbine ranges from 1087° to 1200° F, which is well below the minimum SNCR operating temperature. Some method of exhaust gas reheat, such as additional fuel combustion, would be required to achieve exhaust temperatures compatible with SNCR operations, and this requirement makes SNCR technologically infeasible for this application. Even when technically feasible, SNCR is unlikely to achieve NOx reductions in excess of 80%-85%.

Nonselective catalytic reduction (NSCR) uses a catalyst without injected reagents to reduce NOx emissions in an exhaust gas stream. NSCR is typically used in automobile exhaust and rich-burn stationary IC engines, and employs a platinum/rhodium catalyst. NSCR is effective only in a stoichiometric or fuel-rich environment where the combustion gas is nearly depleted of oxygen, and this condition does not occur in turbine exhaust where the oxygen concentrations are typically between 14 and 16%. For this reason, NSCR is not technologically feasible for this application.

SCONOx is a proprietary catalytic oxidation and adsorption technology that uses a single catalyst for the control of NOx, CO, and VOC emissions. The catalyst is a monolithic design, made from a ceramic

substrate with both a proprietary platinum-based oxidation catalyst and a potassium carbonate adsorption coating. The catalyst simultaneously oxidizes NO to NO_2, CO to CO_2, and VOCs to CO_2 and water, while NO_2 is adsorbed onto the catalyst surface where it is chemically converted to and stored as potassium nitrates and nitrites. The SCONOx potassium carbonate layer has a limited adsorption capability and requires regeneration approximately every 12-15 minutes in normal service.[1] Each regeneration cycle requires approximately 3-5 minutes. At any point in time, approximately 20% of the compartments in a SCONOx system would be in regeneration mode, and the remaining 80% of the compartments would be in oxidation/absorption mode.[2]

Regeneration of the adsorption layer requires exposure of the catalyst to hydrogen gas. In practice, this is accomplished by reforming natural gas with high-pressure steam to produce a gas mixture consisting of methane, carbon dioxide, and hydrogen that is passed over the catalyst beds.[3] Initial attempts by the developer of the process to create regeneration gases from natural gas and steam within the SCONOx catalyst bed (internal autothermal regeneration) failed to produce consistent results; this approach was abandoned in favor of the current offering, which uses an external steam-heated reformer that partially reforms the natural gas to produce the gas mixture that is introduced into the catalyst bed.[4] The reformation reaction continues to some extent within the catalyst bed due to the presence of steam and the temperature of the catalyst surface, but some methane and VOCs from the natural gas remain.

Because the active regenerant gas is hydrogen, the regeneration process must be performed in an atmosphere of low oxygen to prevent dilution of the hydrogen. In practice, the oxygen present in the exhaust gas of combustion turbines is excluded from the catalyst bed by dividing the catalyst bed into a number of individual cells or compartments that are equipped with front and rear dampers that are closed at the beginning of each regeneration cycle. Proper regeneration of the SCONOx catalyst system depends upon the proper functioning and sealing of these sets of dampers approximately 4 times per hour so that an adequate concentration of hydrogen can be maintained in each module to accomplish complete regeneration of the catalyst before the dampers are opened and the compartment is placed back in service.

Because the SCONOx catalyst can be “poisoned” or rendered inactive by even the very small amounts of sulfur compounds present in natural gas, a SCOSOx catalyst bed (or “guard bed”) that is intended to remove trace quantities of sulfur-bearing compounds from the exhaust gas stream is installed upstream of the SCONOx catalyst bed. Like the SCONOx catalyst, the SCOSOx catalyst must be regenerated. Regeneration of the two catalyst types occurs at the same time, with the same regeneration gas supply provided to both; however, the sulfur-bearing regeneration gases for the SCOSOx catalyst exit the SCONOx modules separately from the SCONOx regeneration gases to avoid contaminating the SCONOx catalyst beds. Both regeneration gas streams are returned to the gas turbine exhaust stream downstream of the SCONOx module.[5]

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[1] Personal communication, ABB Environmental, 1/18/00.

[2] Stone & Webster, “Independent Technical Review – SCONOx Technology and Design Review”, February 2000.

[3] Stone & Webster, op cit

[4] ABB Environmental, op cit

[5] ABB Environmental, op cit

Because the proposed turbines are simple cycle units, there is not an adequate steam supply available to produce the high-pressure steam that is integral to the SCONOx process. Therefore, this technology is not feasible for this application.

Based on the discussions above, the following NOx control technologies are available and potentially technologically feasible for the proposed project:

- Water injection
- Steam injection
- Dry Low-NOx Combustors
- Selective Catalytic Reduction

8.1E-1.3 Rank Remaining Control Technologies by Control Effectiveness

The remaining technically feasible control technologies are ranked by NOx control effectiveness in Table 8.1E-3.

Table 8.1E-3 NOx Control Alternatives

NOx Control Alternative	Available?	Technically Feasible?	NOx Emissions (@ 15% O_2)	Environmental Impact	Energy Impacts
Water Injection	Yes	Yes	25-42 ppm	Increased CO/VOC	Decreased Efficiency
Steam Injection	Yes	Yes	15 – 25 ppm	Increased CO/VOC	Increased Efficiency
Dry Low-NOx Combustors	Yes	Yes	9-25 ppm	Reduced CO/VOC	Increased Efficiency
Selective Catalytic Reduction	Yes	Yes	5 ppm	Ammonia slip	Decreased Efficiency
SCONOx	Yes[1]	No[2]	n/a	n/a	n/a

Notes:

1. There are no standard, commercial guarantees for utility-scale projects for this technology available in the public domain.
2. This technology requires large quantities of high-pressure steam for catalyst regeneration and thus is not considered available for a simple-cycle turbine project where no HRSG is available to produce the required steam.

8.1E-1.4 Evaluate Most Effective Controls and Document Results

Water and steam injection are control technologies that, for large gas turbines, have been largely superseded by dry low-NOx combustors, due to the superior emission control performance, additional CO and VOC benefits, and increased efficiency of this technology. Since the Gilroy project proposes to use dry low-NOx combustors or water injection, no further discussion of water injection, steam injection, or dry low-NOx combustors is necessary.

High-temperature SCR technology has demonstrated the ability to reduce NOx emissions to 5 ppm.

8.1E-1.5 Select BACT

Based on the above analysis, SCR is generally considered to be technologically capable of achieving NOx levels of 5 ppm, given appropriate consideration to turbine outlet NOx levels, catalyst volume (space velocity), and control system design. However, particular attention to CEMS design will be necessary to ensure that low permit limits can be monitored on a continuous and accurate basis.

Based on this information, BACT for NOx is considered to be the use of high-temperature SCR systems to achieve NOx levels not higher than 5 ppm on a 1-hour average basis. The LECEF proposes to use SCR technology to meet a NOx level of 5 ppm on a 1-hour average basis. Consequently, LECEF's proposal is consistent with BACT requirements for NOx.

B A A Q M D Emission Bank Status
Emission Reduction Credits Available, (tons/year)

May 21, 2001

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
11	Hewlett-Packard Co; Printed Circuit Divsn						159.5	
16	Hunt-Wesson Foods; Inc	1.0		21.0		1.8		
17	Allied Corporation				182.9			
18	National Can Corporation		31.1					
28	Carnation Company	3.7						
29	Stauffer Chemical Company	0.2		1.2		0.2		
36	United Airlines; Maintenance Operations Ctr						1.8	
37	Morton International Inc			0.4		0.4		
38	FMC Corporation						53.7	
39	FMC Corporation		5.8					
40	Stauffer Chemical Co; San Jose	0.7	0.7	28.5		9.1	0.4	
47	United Airlines; Maintenance Operations Ctr		6.4					
49	Owens Corning			22.3				
51	Continental Can Company		71.0					
53	A O Smith Corporation		10.8					
57	Tosco Refining Company	3.6				4.9		
59	Continental Can Company		4.5					
68	FMC Corporation		0.4					
69	FMC Corporation		1.0					
70	Chevron Products Company		29.3					
96	U.S. Navy		1.018					

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
110	Myers Container Corporation		20.03				7.39	
112	Owens Corning	1.3	14.4	0.22		0.15		0.7
117	Chevron Products Company	0.5	20.7	10.6	0.1	2.1		
131	Tosco Refining Company		0.38					
132	U.S. Navy			0.39		0.34		
135	Gallagher & Burk; Inc							6.23
141	Tosco Refining Company		0.373					
142	Tosco Refining Company		0.34					
149	Varian Oncology Systems						12.25	
151	Lawrence Livermore National Laboratory						1.66	
155	U.S. Navy		0.065	1.878	10.66	0.939		0.375
160	National Semiconductor Corporation		1.747					
168	Martinez Refining Company		11.62					
172	Chevron Products Company							0.384
173	Varian Oncology Systems		0.235				4.469	
177	Gilroy Foods; Inc		0.338					
180	United Technologies Corporation		0.076				4.397	
181	Advanced Micro Devices Inc		10.88					
182	Chevron Research and Technology Co	0.07	0.039	0.7	0.008	0.003		
183	Chevron Research and Technology Co		0.31					
194	RMC Lonestar	0.73						0.44
195	RMC Lonestar	0.4						0.24
205	U.S. Navy						6.034	
207	Owens Corning	17.9	23.3	9.5		3.9		
215	Monsanto Company							0.067
218	New United Motor Manufacturing; Inc		78.83					

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
223	Chevron Products Company		60.122	20.674	1.047	9.129		5.37
227	HMT Technology Corporation		0.2				2.24	
232	American Lithographers Inc.		6.164	0.095		0.1		
239	IBM Corporation						24.37	
241	Dexter Hysol Aerospace; Inc		4.7					
243	United Can Company		0.002					
248	Chevron Products Company		3.56					
251	Triangle Wire & Cable; Inc			0.594				
252	General Electric Co		0.003					
259	Burke Industries; Inc		3.026				24.85	
262	Lawrence Livermore National Laboratory						1.05	
265	Solectron Corporation		3.71				3.35	
266	Santa Rosa Memorial Hospital			0.97				0.3
270	Stanford University			17.3				
280	California Canners & Growers	0.8				6.0		
287	Philips Semiconductor		2.61					
288	Philips Semiconductor		9.039				0.32	
302	Chevron Products Company		7.948					
310	Trumbull Asphalt Company		8.9	0.4	25.9	24.2		4.2
312	North American Refractories Co		0.017	1.026				
315	Chevron Research and Technology Co		0.747					
316	United Airlines; Maintenance Operations Ctr		0.5					
325	New United Motor Manufacturing; Inc		20.79					
328	Crockett Cogeneration; A Cal Ltd Partnership		11.05	0.84		0.2		
329	Advanced Micro Devices Inc		9.615					
332	Rexam Beverage Can Company		15.55					

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
333	U.S. Navy		13.49					
337	American Lithographers Inc.		4.23					
341	Pacific Lithograph Company		5.862	1.3				
344	Chevron Products Company		8.992					
345	Chevron Products Company		94.6					
350	Hewlett-Packard Company		3.29					
351	U.S. Navy		22.786				54.6	
353	Chevron Products Company		8.55					
360	Gallagher & Burk; Inc		0.2	0.17	0.17	0.53		0.18
366	Amdahl Corporation		0.046				7.528	
367	Amdahl Corporation		0.977				5.12	
368	Amdahl Corporation		0.143				2.26	
370	Pacific Refining Company			1.0				
371	Zanker Road Resource Management;Ltd		0.65	10.7	0.77			
372	Pacific Refining Company		0.44	0.224				
381	Laidlaw Environmental Services (San Jose); Inc		1.4				1.46	
382	California Oils Corporation		0.195					
385	Quantum Corporation						3.2	
387	Martinez Refining Company		0.096					
392	Richard Mariani	0.6				3.3		
393	Anacomp Inc		7.13					
408	Rexam Beverage Can Company		36.526					
410	IBM Corporation						13.98	
412	Amdahl Corporation		0.13				2.03	
414	Intel Corporation		13.92				2.14	
415	Martinez Refining Company				15.1			8.92

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
419	Phoenix Iron Works							1.197
423	Ciba Corning Diagnostics Corp		0.53					
424	Chevron Products Company		1.608					
425	Beckman Coulter						3.11	
428	Martinez Refining Company		6.288					
434	Genentech; Inc		0.384	6.646		7.798		2.66
443	Lawrence Livermore National Laboratory						0.121	
445	Stanford University		3.79	14.84				
446	Red Wing Co /California Div	0.07	0.052	0.419	0.002	0.083		0.091
452	Solectron Corporation		2.674					
462	Intel Corporation			30.0				
465	Ball Metal Beverage Container Corporation			0.275				
471	Container Management Service-LLC		10.787	0.559		0.11	4.85	0.028
475	U.S. Navy		0.3	0.13		0.42		0.3
477	U.S. Navy		7.911					
478	Central Contra Costa Sanitary District		0.581	2.243		30.937		
483	The Glidden Company		4.7					
486	U.S. Navy		3.44	1.21	1.2	2.71		0.98
487	Chevron Chemical Company	3.504		3.028				5.254
489	Chevron Products Company			71.4				
491	U.S. Navy		1.62	5.762	0.46	1.241	1.03	0.405
495	Tosco Refining Company	0.4	0.527		2.15	42.7		
500	San Francisco Energy Company		102.6					
501	U.S. Navy		0.315	8.432	0.135	9.001		0.563
503	U.S. Navy		0.354	4.342	0.347	0.935		0.305
504	Chevron Products Company		1.995	1.027	0.06	0.537		0.312

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
505	New United Motor Manufacturing; Inc		18.47					
510	U.S. Navy		3.49	2.43	0.21	0.58	0.22	0.59
512	IBM Corporation			0.059				
514	Owens Corning		6.457					
520	New United Motor Manufacturing; Inc		112.76					
521	UCSF/Parnassus			0.5		0.13		
525	Central Contra Costa Sanitary District		0.153	1.12		8.158		
529	U.S. Navy		2.88	14.75	1.43	11.47		3.71
531	Crown Cork & Seal Company		20.249	4.595		0.965		0.345
532	Martinez Cogen Limited Partnership			50.2				
538	New United Motor Manufacturing; Inc		131.9					
540	New United Motor Manufacturing; Inc		0.218					
541	Chevron Chemical Company		0.047				1.6	
543	Hanson Permanente Cement							25.074
545	U.S. Navy		2.495					
546	Alameda Reuse & Redevelopment Authority		29.97					
547	Cirrus Logic		1.34	0.34				
550	Chevron Products Company		43.402	36.225	133.81	485.47		31.134
554	Lawrence Livermore National Laboratory			0.051			2.4	
555	U.S. Navy			1.05	0.02	0.89		0.11
557	U.S. Navy		0.65	9.09	0.14	8.16		0.7
559	U.S. Navy		0.34	2.11				
560	Criterion Catalysts Company LP		0.34					
561	Pechiney Plastic Packaging; Inc		1.249					
562	United Technologies Corporation		2.432	0.623				
563	Owens Corning		1.245					

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
566	Shell Martinez Catalyst Plant		11.62					
570	Quebecor World San Jose Inc		6.11	1.81				
571	Huntway Refining Company		0.657					
573	LSI Logic Corporation		15.856					
578	Chevron Chemical Company		0.212	1.802	0.046	0.357		0.57
580	Tosco Refining Company		1.29	21.23	4.19	16.14		6.45
581	Tosco Refining Company		3.17	6.88	0.01	5.78		0.2
583	WinCup Holdings;L P		0.426					
584	Chevron Products Company		1.265					
588	Chevron Chemical Company			31.771		2.069		
593	Dow Chemical Company		15.34					
598	USS-POSCO Industries				0.14	0.79		0.7
600	U.S. Navy		0.55	3.21	0.06	8.43		0.76
602	Calpine Corporation	0.2	40.97	2.143		0.357		
603	Port of Oakland			2.45				
605	Owens-Brockway Glass Container Inc	11.2	0.4			0.74		
609	Martinez Refining Company				50.61			
613	Martinez Refining Company			89.783				
617	Chevron Products Company		68.898	8.79	0.473	7.449		1.514
619	Raisch Products					0.84		
622	Huntway Refining Company		0.898					
623	Huntway Refining Company		1.526					
625	Quebecor World San Jose Inc		356.0					
628	Owens Brockway Glass Containers		10.78			10.78		
630	USS-POSCO Industries			14.821	0.09	2.51		0.36
633	Crown Cork & Seal Co.		0.086	1.564	0.009	1.308	0.036	0.119

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
635	Calpine Corp. & Bechtel Enterprises Hold		0.1	1.31				7.7
637	Huntway Refining Company		0.174					
640	New United Motor Manufacturing; Inc		27.94					13.63
643	Homestake Mining Company	87.53				86.97		
644	USS-POSCO Industries	3.0	1.1	3.8	0.2	2.4		
645	Calpine Corporation			107.9				
648	Emerald Packaging Inc						40.0	
652	Shore Terminals - Selby		10.802	11.352				
656	Duke Energy Oakland LLC		324.81					
658	Calpine Corporation		10.0	32.9		14.38		
659	Calpine Construction Finance Co.;L.P.				30.4			
660	Calpine Corporation			39.55	5.92			
661	Calpine Corporation		31.75					
662	Calpine Corporation			73.62	46.3			
665	Calpine Corp. & Bechtel Enterprises Hold		22.778					
666	Calpine Corp. & Bechtel Enterprises Hold		15.518					
671	Calpine Corp. & Bechtel Enterprises Hold		2.7	468.0	90.0	33.0		28.0
674	Calpine Corp. & Bechtel Enterprises Hold					9.797	0.669	
675	Calpine Corp. & Bechtel Enterprises Hold				18.285			
679	Calpine Corp. & Bechtel Enterprises Hold		45.8					
680	Calpine Corp. & Bechtel Enterprises Hold		4.4					
682	Valero Refining Company - California		14.769					
684	Stapleton - Spence		0.028	0.312	0.006	0.008	0.03	0.14
685	Calpine Corp. & Bechtel Enterprises Hold	0.21	0.91	6.42	0.03	1.65		7.64
686	Calpine Corp. & Bechtel Enterprises Hold			6.5				12.33
687	Calpine Corp. & Bechtel Enterprises Hold		43.819	0.581				

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
688	Calpine Corp. & Bechtel Enterprises Hold		52.27					
689	SFPP; LP		2.358					
691	Burns Philip Food Inc.		0.001					
692	Chevron Products Company		1.608					
693	Southern Energy California		125.88	437.56	321.9	450.6		209.9
694	Southern Energy California		5.3	299.0	158.2	114.0		25.0
695	Southern Energy California	4.2	0.39	1.173	0.179	14.602		6.443
697	Calpine Corp. & Bechtel Enterprises Hold		85.863					
698	Chevron Products Company		0.319					
699	Calpine Corporation			20.9				
703	Valero Refining Company - California			31.418				
704	Enron North America Corp.		5.868					
705	Enron North America Corp.		7.08					
706	Martinez Refining Company		35.51	13.8	0.1			
707	Chevron Products Company		2.426					
708	Exar Corporation						4.689	
709	Enron North America Corp.		17.367					
710	Midway P ower; LLC		5.14					
711	Tosco Distribution Company		119.25					
712	Enron North America Corp.		8.816					
713	Enron North America Corp.		6.153					
714	Enron North America Corp.		1.0					
715	Louis Roesch Company		0.716					
716	Calpine Corporation		0.2	11.66	0.04	1.13		0.67
717	Calpine Corporation		0.46	32.24	0.09	2.61		1.54

No.	Certificate Owner	PM	POC	NOx	SO2	CO	NPOC	PM_{10}
718	Midway Power; LLC		44.995					
719	Midway Power; LLC		4.9					
720	Midway Power; LLC			48.962				
721	C & H Sugar Company; Inc		2.353			37.282		0.094
722	Catalytica Combustion Systems Inc		0.011					
723	Catalytica Combustion Systems Inc			0.015		1.632		
724	Calpine Corporation			7.1				
725	United Airlines; Maintenance Operations Ctr		49.601					
726	New United Motor Manufacturing; Inc			0.343				
727	Calpine Corp. & Bechtel Enterprises Hold			142.21	436.47	54.34		
728	Calpine Corp. & Bechtel Enterprises Hold		88.03	56.764	1.03	33.32		9.965
729	Valero Refining Company - California		28.326					
730	Del Monte Foods		0.176	2.194	0.038	1.562		0.887
731	Kaiser Aluminum & Chemical Corp.		0.144	1.472	0.015	1.682		0.186
732	Calpine Corporation		45.0					
734	Catalytica Combustion Systems Inc					10.424		
736	Huntway Refining Company		5.403					
737	Chevron Products Company		7.63	5.04	0.05	1.0		0.25
	Total Emission Reduction Credits Available	**142**	**3122**	**2476**	**1542**	**1610**	**459**	**436**

APPENDIX 8.1G

CUMULATIVE IMPACTS ANALYSIS

Potential cumulative air quality impacts that might be expected to occur resulting from Gilroy Energy Center and other reasonably foreseeable projects are both regional and localized in nature. These cumulative impacts were evaluated as follows.

Cumulative impacts from LECEF could result from emissions of carbon monoxide, oxides of nitrogen, sulfur oxides, and directly emitted PM_{10}. To ensure that other projects that might have significant cumulative impacts in conjunction with LECEF are identified, a search area with a radius of 6 miles was used for the cumulative impacts analysis.

Within this search area, three categories of projects with combustion sources were used as criteria for identification:

- Projects that are existing and have been in operation since at least 1999.
- Projects for which air pollution permits to construct have been issued and that began operation after 1999.
- Projects for which air pollution permits to construct have not been issued, but that are reasonably foreseeable.

Projects that are existing and have been in operation since at least 1999 are reflected in the ambient air quality data that has been used to represent background concentrations; consequently, no further analysis of the emissions from this category of facilities was performed. The cumulative impacts analysis added the modeled impacts of selected facilities to the maximum measured background air quality levels, thus ensuring that these existing projects were taken into account.

Projects for which air pollution permits to construct have been issued but that were not operational by 1999 were identified through a request of permit records from the Bay Area AQMD. The search was requested at two levels. Projects that had a permit to construct issued after January 1, 1998, were included in the cumulative air quality impacts analysis. The January 1, 1998 date was selected based on the typical length of time a permit to construct is valid and typical project construction times, to ensure that projects that are not reflected in the 1999 ambient air quality data are included in the analysis. Projects for which the emissions change was smaller than 5 tons per year were assumed to be *de minimis*, and were included in the dispersion modeling analysis. A list of projects within the area for which air pollution permits to construct have not yet been issued, but that are reasonably foreseeable, was also requested from the BAAQMD staff.

As discussed in Section 8.1.7, there are 6 sources within 6 miles of the proposed project that have had significant (that is, greater than 5 tpy) increases in emissions since 1998. These sources were modeled

with the proposed new equipment at LECEF in the cumulative impacts analysis. Because no information was available regarding the stack characteristics of sources. Therefore, the analysis used extremely conservative stack temperatures and velocities to eliminate plume rise and conservatively overestimate maximum impacts from these sources. The stack parameters and emission rates used in modeling the sources included in the cumulative impacts analysis are shown in Table 8.1G-1.

Table 8.1G-1
Modeling Parameters for Cumulative Impacts Analysis
Los Esteros Critical Energy Facility

Source	Plant No.	Location	UTME	UTMN	Stack Height, m	Stack Diam, m	Exit Vel., m/s	Exhaust Temp, deg K	Emissions, g/s			
									NOx	SO2	CO	PM10
Intel Corporation	632	Santa Clara	591.782	4137.72	10	0.01	0.01	0	0	0	0.1784	0
SFPP, LP	4020	San Jose	596.415	4138.69	10	0.01	0.01	0	0.2675	0	1.0644	0.0086
Linear Technology Corp	12417	Milpitas	597.977	4143.24	10	0.01	0.01	0	0.0460	0	0.1899	0
Worldcom	12740	Milpitas	595.628	4140.489	10	0.01	0.01	0	0.3596	0.0086	0.0345	0.0086
Worldcom	12763	San Jose	596.520	4132.904	10	0.01	0.01	0	0.1784	0.0029	0.0173	0
Verio Hosting Exchange	12859	San Jose	598.175	4140.35	10	0.01	0.01	0	0.3740	0.0086	0.0230	0

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

ALAMEDA COUNTY
Roberta Cooper
Scott Haggerty
(Vice-Chairperson)
Nate Miley
Shelia Young

CONTRA COSTA COUNTY
Mark DeSaulnier
Mark Ross
Gayle Uilkema

MARIN COUNTY
Harold C. Brown, Jr.

NAPA COUNTY
Brad Wagenknecht

SAN FRANCISCO COUNTY
Chris Daly
Tony Hall
Leland Yee

SAN MATEO COUNTY
Jerry Hill
Marland Townsend
(Secretary)

SANTA CLARA COUNTY
Randy Attaway
(Chairperson)
Liz Kniss
Julia Miller
Dena Mossar

SOLANO COUNTY
William Carroll

SONOMA COUNTY
Tim Smith
Pamela Torliatt

Ellen Garvey
Executive Officer/
Air Pollution Control Officer

June 22, 2001

Sierra Research
1801 J Street
Sacramento, California 95814

Attention: Ms. Nancy Matthews

Subject: US DataPort Inc. San Jose Project Request for Source Emission Inventory

Dear Ms. Matthews:

Enclosed is a printout of criteria emission from stationary sources located within a six mile radius of the proposed power generation facility (UTM km 594.530E, 4142.220E). The printout contains the criteria emissions of thirty-three facilities that have an Authority to Construct, but have not commenced operation. These emissions are potential to emit and may not reflect the future actual operating emissions. Individual stack parameters are not available for these facilities.

If you have any questions on this matter please call me at **(415) 749-4683.**

Very truly yours,

Gene Willner
Air Quality Engineer II

:esw
Enclosure (1)

The following facilities with an active Authority to Construct are located within 6.00 miles from the point specified (UTM 594.530E, 4142.220N).

Date Printed: JUN 22, 2001

Plant No.: 41 [3.59 miles from the point spec] 592.852E 4136.684N

Owens Corning
960 Central Expressway
Santa Clara, CA 95050

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.4	.0

****

Plant No.: 49 [4.99 miles from the point spec] 599.172E 4135.666N

Chevron Products Company
1020 Berryessa Street
San Jose, CA 95133

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	2.6	.0	.0	.0

****

Plant No.: 55 [5.35 miles from the point spec] 586.137E 4140.260N

Lockheed Martin Corporation
1111 Lockheed Martin Wy
Sunnyvale, CA 94089

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.4	.3	1.2	.0	1.8

****

Plant No.: 632 [3.27 miles from the point spec] 591.782E 4137.720N

Intel Corporation
2150 Mission College Blvd
Santa Clara, CA 95054

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	6.2

****

Plant No.: 778 [1.34 miles from the point spec] 594.485E 4144.376N

San Jose/Santa Clara Water Pollution Control
700 Los Esteros Road
San Jose, CA 95134

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	.0

****

Plant No.: 2253 [4.74 miles from the point spec] 587.010E 4140.916N

City of Sunnyvale Solid Waste Program
Borregas St & Caribbean St
Sunnyvale, CA 94088

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	.0

****

Plant No.: 3024 [3.27 miles from the point spec] 595.698E 4147.347N

Isola Laminate Systems, Corp
401 Whitney Place
Fremont, CA 94539

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	.0

****

Plant No.: 3418 [1.13 miles from the point spec] 593.100E 4141.093N

SDL,Incorporated
80 Rose Orchard Way
San Jose, CA 95134

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.1	.1	2.6	.0	10.5

****

Plant No.: 4020 [2.49 miles from the point spec] 596.415E 4138.690N

SFPP, LP
2150 Kruse Drive
San Jose, CA 95131

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.3	.3	9.3	.0	37.0

****

Plant No.: 4288 [2.83 miles from the point spec] 597.702E 4138.960N

SCI Manufacturing
2000 Ringwood Avenue
San Jose, CA 95131

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.2	.0	.0	.0

****

Plant No.: 6984 [2.17 miles from the point spec] 597.994E 4141.791N

LifeScan, Inc
1000 Gibraltar Drive
Milpitas, CA 95035

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.4	.0	.0	.0

****

Plant No.: 9013 [2.18 miles from the point spec] 595.218E 4145.662N

International Disposal Corporation of Calif
1601 Dixon Landing Rd
San Jose, CA 95133

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	.0

****

Plant No.: 10513 [4.69 miles from the point spec] 587.549E 4139.324N

Analog Devices Inc
610 E Weddell Drive
Sunnyvale, CA 94089

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.1	.0	.6	.0	.1

****

Plant No.: 10751 [2.63 miles from the point spec] 597.878E 4139.632N

Micrel Semiconductor Inc
1849 Fortune Drive
San Jose, CA 95131

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	.0

****

Plant No.: 10978 [1.96 miles from the point spec] 597.657E 4142.615N

Seagate Technology
311 Turquoise Street
Milpitas, CA 95035

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	1.0	.0	.0	.0

****

Plant No.: 11021 [3.75 miles from the point spec] 591.124E 4137.230N

Micrel Synergy Semiconductor
3250 Scott Boulevard
Santa Clara, CA 95054

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	.0

****

Plant No.: 11670 [2.07 miles from the point spec] 595.193E 4145.490N

Gas Recovery Systems, Inc
1804 Dixon Landing Rd
San Jose, CA 95134

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	1.6	.0	.0	.0

****

Plant No.: 11751 [4.98 miles from the point spec] 586.579E 4141.212N

Network Device Inc
1230 Bordeaux Drive
Sunnyvale, CA 94089

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	.0

****

Plant No.: 12164 [3.89 miles from the point spec] 597.635E 4136.778N

AB Cremation Services
1516 Berger Drive
San Jose, CA 95112

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.5	.1	1.1	.1	.5

****

Plant No.: 12246 [2.45 miles from the point spec] 597.922E 4140.210N

Pick Your Part Auto Wrecking
595 Trade Zone Blvd
Milpitas, CA 95035

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.1	.0	.0	.0

****

Plant No.: 12417 [2.23 miles from the point spec] 597.977E 4143.241N

Linear Technology Corp
275 So Hillview Dr
Milpitas, CA 95035

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	12.4	1.6	.0	6.6

****

Plant No.: 12524 [4.49 miles from the point spec] 598.606E 4136.257N

Mass Precision Sheetmetal Inc
1010 Commercial St
San Jose, CA 95112

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	1.9	.0	.0	.0

****

Plant No.: 12539 [2.49 miles from the point spec] 596.415E 4138.690N

Secor International Inc
2150 Kruse Dr
San Jose, CA

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	1.5	.0	.0	.0

****

Plant No.: 12625 [2.82 miles from the point spec] 592.298E 4138.273N

J & B Enterprises
1650 Russell Avenue
Santa Clara, CA 95054

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	.0

****

Plant No.: 12638 [3.22 miles from the point spec] 592.856E 4137.319N

Qwest Santa Clara
870 Duane Avenue
Santa Clara, CA 95054

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.0	.0	.0	.0

****

Plant No.: 12740 [1.27 miles from the point spec] 595.628E 4140.489N

WorldCom
1656 McCarthy Blvd
Milpitas, CA 95035

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.3	.3	12.5	.3	1.2

****

Plant No.: 12763 [5.92 miles from the point spec] 596.520E 4132.904N

Worldcom
500 Stockton Avenue
San Jose, CA 95126

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.2	6.2	.1	.6

****

Plant No.: 12854 [1.79 miles from the point spec] 597.308E 4142.963N

Flex ICs Inc
165 Topaz Street
Milpitas, CA 95035

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	1.9	.0	.0	.0

****

Plant No.: 12859 [2.54 miles from the point spec] 598.175E 4140.350N

Verio Hosting Exchange
2334 Lundy Place
San Jose, CA 95131

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.2	13.0	.3	.8

****

Plant No.: 12986 [3.13 miles from the point spec] 599.536E 4141.630N

Chevron Service Station
1490 So Park Victoria Dr
Milpitas, CA 95035

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.1	.0	.0	.0

****

Plant No.: 13023 [1.98 miles from the point spec] 597.096E 4140.326N

Shell Branded Service Station
1780 So Main Street
Milpitas, CA 95035

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.2	.0	.0	.0

****

Plant No.: 13046 [4.70 miles from the point spec] 596.867E 4135.025N

Shell Branded Service Station
1120 N 1st Street
San Jose, CA 95112

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.1	.0	.0	.0

****

Plant No.: 13093 [2.78 miles from the point spec] 595.751E 4146.531N

Bradley Nameplate Corporation
48881 Kato Boulevard
Fremont, CA 94538

	PART	ORG	NOX	SOX	CO
EMISSION TOTALS TONS/YEAR	.0	.3	.0	.0	.0

****

Total Number of Facilties Found 33

APPENDIX 8.1-8

NITRATE DEPOSITION

To determine the potential for ammonia emissions from LECEF to contribute to particulate formation in the area, we have investigated the ambient monitoring data from San Jose to establish whether the area can be characterized as ammonia-rich. Available monitoring data suggest that the project area is mostly ammonia-rich, suggesting that ammonia emissions will not contribute significantly to particulate nitrate formation or deposition in the area.

Adding more ammonia to the ambient air will result in the immediate formation of ammonium nitrate particulate only if the area is ammonia-limited: that is, if there are excess acidic nitrates and sulfates available for reaction, the addition of ammonia to the atmosphere will result in the formation of ammonium nitrate and sulfate compounds. However, if the area is ammonia-rich, adding more ammonia to the air will not automatically result in more ammonium nitrate formation because the area is NOx and SOx limited. In the PDOC for Gilroy Energy Center Phase I project, the BAAQMD staff states: "... it is the opinion of the Research and Modeling section of the District Planning Division, that the formation of ammonium nitrate in the Bay Area air basin is limited by the formation of nitric acid and not driven by the amount of ammonia in the atmosphere. Therefore, ammonia emissions from the proposed SCR system are not expected to contribute significantly to the formation of secondary particulate matter."

While we believe that ammonium nitrate formation as a result of ammonia slip from the turbines will not be significant, an analysis of nitrate deposition potential was performed assuming that all of the NOx and ammonia emitted from the turbines is converted to ammonium nitrate. This analysis is included in the AFC at Section 8.2.*.

Appendix 8.2

E. J. Koford
Senior Biologist/ Project Manager

Education

M.S., Ecology, University of California, Davis, 1987
B.A., Zoology, University of California, Berkeley, 1977

Professional Registrations

Certified Wildlife Biologist, The Wildlife Society, 1990
Certification for Hazardous Waste Operations, 1989--1999
Certification for Hazardous Waste Site Managers, 1989
Habitat Evaluation Procedures (HEP)
Wetland Delineation Training 1999

Distinguishing Qualifications

- Prepared technical analysis for many EIRs, EIS and environmental permits for hydroelectric facilities, cogeneration plants, gas pipelines, general plans, master plans, military bases, and landfills.
- Project manager for complex Master EIR dealing with biosolids applications.
- Performed threatened and endangered species survey for 12 species in 18 states and countries.
- Demonstrated experience assessing and responding to concerns of local communities and federal agencies regarding hazardous waste and water quality issues.
- Experienced negotiating Section 7, Section 10, 404 and 401 permits with USFWS, CDFG and RWQCB
- Experienced with stakeholder involvement and negotiations with USFWS, CDFG, ACOE, NMFS, CEC, FERC, BLM, SWRCB, RWQCB, and Navy, Army and Air Force military installations.

Relevant Experience

Mr. Koford has more than 18 years of experience in preparing environmental permitting documents, wildlife and fisheries investigations, threatened and endangered species surveys, EIS/EIRs, water quality evaluations, and environmental regulatory compliance with requirements of CEC, FERC, SMARA, CERCLA, RCRA, NEPA and CEQA. He has performed field surveys in 18 states and countries. He has consistently assisted clients in developing creative solutions to potential environmental problems affecting wildlife and water quality.

E. J. Koford

Representative Projects

Application for Certification for East Altamont Energy Center, Tracy California. Deputy project manager to prepare AFC for 1,100 MW natural-gas powered electricity center to be located near Tracy, California. Task leader for wildlife and water quality as well as team coordination, budget-tracking, and quality control.

Application for Certification for 3 Natural Gas-fired Energy Facilities, to be co-located with PG&E substations in San Mateo, Santa Clara, and San Francisco. Deputy project manager responsible for preparing water, biology, soil and agricultural resources sections of 3 AFCs on expedited schedule. Special legislation required preparation of 3 major documents in 15 days. As deputy PM was responsible for proposal, costing, scheduling, team management and direction, as well as project execution within the required time.

Feasibility Analysis, including NEPA Compliance, Water Supply and Biological Constraints for Potential Cogeneration Sites: Clark County and Washoe County, Nevada Calpine Corp. Project Manager to identify necessary permits under NEPA, UEPA, county, local and tribal jurisdictions, potential water supply issues, and constraints conferred by presence of state or federal endangered species. Project involved review and advice on modifications and strategic approach to permitting proposed power plants.

EIR/EIS for Teayawa Energy Center, Riverside County, California. Prepared biological analysis, including field surveys, agency consultations, and wetland determinations for proposed 600 MW power plant proposed for Coachella Valley, Ca. Plant also required approximately 40 miles of alternative linears analysis for gas, water and transmission lines.

EA for Apex Energy Center, Clark County, NV. Southern Energy. Project manager responsible for negotiations with lead agency (BLM) and developing project description, schedule, budget, permitting and biological information for proposed energy facility.

Biological Constraints Analysis and Strategic Permitting Support for Three Potential Central Valley Power Plant Sites (Tracy, Lathrop, Lodi). Calpine Corp. Prepared biological constraints analysis, field surveys and permitting advice for potential cogeneration facilities in Central Valley. Included wetlands, endangered species, water quality, water supply and compliance issues.

Storm Water Pollution Prevention Plan (SWPPP) for DEC Power Plant Construction, Pittsburg, California, Calpine Inc. Prepared SWPPP for project construction and project linears (gas, water, and transmission lines) for proposed Delta Energy Center cogeneration plant.

Application for Certification (AFC) of Metcalf Energy Center Cogeneration Project; San Jose, California. Calpine Inc. Prepared responses to additional comments from intervenors and CEC with respect to biological and water quality issues. Prepared supplemental environmental analyses for West End Access Road and Project Linears, Water Supply, erosion control and drainage plans. Provided strategic advice and assistance on mitigation measures for Bay

Checkerspot butterfly and serpentine habitat. Application prepared for submission to California Energy Commission.

Devil's Nose/Cross County Water-Power Project, FERC License Application, County Water Resources Agency, Amador County, California. Spotted owl and bald eagle surveys for impact analysis of proposed hydroelectric development. Location, mapping, and habitat quality verification for spotted owl habitat to replace that inundated by reservoir. Habitat verification consisted of review of aerial photographs, vegetation, and use maps and ground truthing.

FERC Relicensing Studies for Umpqua Hydroelectric Project, Pacific Corps, Roseburg, Oregon. Served as biologist performing field surveys for sensitive, threatened, and endangered amphibians and birds, including tailed frog, cascade frog, clouded salamander, Olympic salamander and others near Roseburg, Oregon.

Regulatory Support Program, Federal Energy Regulatory Commission. Prepared environmental impact statements and environmental assessments and conducted agency consultation to ensure compliance with federal and state regulations in western United States in support of FERC staff.

Shelley Hydroelectric EIS; Federal Energy Regulatory Commission, Shelley, Idaho. Assessed impacts to water quality, wildlife and fisheries habitat of proposed hydroelectric project.

Rush, Lee Vining and Leggett Hydroelectric Project Permit Application; FERC, Lee Vining, California. Evaluated project impacts to water quality and wildlife for three proposed hydroelectric power plants in Mono County, California.

Stockton Cogeneration Plant and Supplementary EIR, Air Products Corporation, Stockton, California. Wildlife assessment and survey and project review for potential impacts to public health, water quality, fish and wildlife resources of cogeneration facility discharges. Primary author of SEIR. Analyzed fish, wildlife and threatened and endangered species impact of cooling tower discharges for supplemental EIR. Involved field surveys, literature research, documentation and toxics analysis.

Threatened and Endangered Species Surveys for New Transmission and Gas Line Corridors, Sacramento Municipal Utility District, Sacramento County, California. Performed threatened and endangered species surveys of 80 miles of alternative new utility corridors in Sacramento and Yolo Counties. Located occurrences of state protected species including giant garter snake, Swainson hawk, tri-colored blackbird, and vernal pool invertebrates (i.e. *Branchinecta*, *Linderiella*, and *Lepidurus*).

Half Moon Cogeneration Project Health Risk Assessment, Inter-Power of New York. Researched toxicological impact of power plant emissions on wildlife, livestock, and vegetation.

Bay Area Recycling and Recovery Facility, Power Plant Site Certification Program, California Energy Commission Siting and Environmental Division. Researched and wrote toxicity profiles of chemicals and compounds likely to impact fish, wildlife and human health for CEC staff technical support.

Periphyton Studies on North Fork Stanislaus River, Northern California Power Agency. As water quality and field leader, performed water quality analyses using field spectrophotometer, and acted as field leader for distribution and collection of artificial substrates. Study objectives were to investigate causes of increased growth of noxious periphyton *Didymosphenia geminata* affecting North Fork Project operations.

Wildlife and HEP Evaluations for Ramsey-French Meadow Hydroelectric Project, Upper Stanislaus River, Tuolumne County, California, Northern California Power Agency. Performed wildlife and threatened and endangered species evaluations of proposed diversions, tunnel, storage reservoirs and transmission lines for hydroelectric project. Prepared Initial Consultation Package, performed spotted owl, goshawk, and deer surveys and facilitated HEP team agency meetings.

California-Oregon Transmission Project, Transmission Agency of Northern California. Performed threatened and endangered species evaluations for EIS/EIR for portions of 300-mile, 500 kV transmission line between southern Oregon and central California. Reviewed proposed transmission line routes for impacts on wildlife and threatened and endangered species (spotted owls, bald eagles, deer winter range) and sensitive habitats (vernal pools, wetlands).

Environmental Assessment for the Sacramento Area Office of the Western Area Power Administration 1994 Power Marketing Plan, Central Valley Project, California. Evaluated impacts to biological and water resources of proposed marketing plan for power generated primarily from Central Valley Project reservoirs. Involved analysis of Shasta, Keswick, Clair Engle, Folsom, Natoma, and New Melones reservoirs, as well as review of D-1485 and contractual obligations for water delivery in the Sacramento-San Joaquin Delta. Responsible for coordination and assembly from other technical discipline areas including air quality, socioeconomic impacts and alternative power modeling.

Small Alder Dam/White Rock Diversion Environmental Analyses. SOFAR Management Authority/El Dorado Irrigation District, California. Wildlife and threatened and endangered species evaluations of alternative water supply facilities, involving dam and power tunnels on the South Fork American River.

Tonner Canyon Biological Surveys and Permitting Support, Southern California Edison. Responsible for field surveys for oil pipeline across Ontario and eastern Los Angeles and Orange Counties. Least bell's vireo, western pond turtle, willow flycatcher, native walnut forest, wetlands and riparian crossings were significant issues.

NPDES Permit Preparation, Campbells Soup Cogeneration Facility, Sacramento Municipal Utility District, Sacramento, California. Prepared threatened and endangered species surveys for new transmission and gas line corridors.

Muck Valley Hydroelectric EA, US Bureau of Reclamation, California. Evaluated environmental impacts to endangered species and wildlife of proposed power project in Pit River Basin, in northern Sierra Nevada.

Application for Certification (AFC) of Sutter Ethanol Cogeneration Project, Ark Energy Group, Rio Linda, California. Performed threatened and endangered species surveys and wildlife impact evaluations for proposed ethanol production plant. Wrote mitigation plan for burrowing owl and Swainson's hawk. Researched and evaluated problems of groundwater supply and quality, stormwater drainage, wastewater treatment and disposal (evaluated irrigation, surface water disposal and deep well injection), and FEMA and county requirements for construction in the 100-year floodplain. Evaluated multiple sites for preferred siting. Application prepared for submission to California Energy Commission.

Application for Small Power Plant Exemption (SPPE) for Ice Plant-Cogeneration Facility, Sacramento Regional Wastewater Treatment Plant, Carson Energy Group, Sacramento, California. Performed threatened and endangered species surveys and wildlife impact evaluations for proposed plant. Wrote burrowing owl and Swainson's hawk mitigation plans. Researched and evaluated problems of municipal and groundwater supply and quality, storm water drainage, sewer use permit and FEMA and county requirements for construction in the 100-year floodplain. Application prepared for submission to California Energy Commission.

Cogeneration/Desalination Project, Mission Energy Company, Glenwood Springs, Colorado. Responsible for assessing biological impacts, including T&E species, wildlife, non-game species, critical habitat avoidance and mitigation for cogeneration/desalination project that included transmission line routing and environmental assessment. Included extensive agency consultations/coordination and field surveys.

Power Plant Site Certification Program; California Energy Commission, Siting and Environmental Division. Reviewed data adequacy and prepared data requests regarding wildlife and fisheries, threatened and endangered species impacts of the cogeneration facility proposed in Chevron's Richmond Small Power Plant Exemption (SPPE). Reviewed data adequacy and prepared additional data requests regarding toxicology and ecological risk assessment for the Bay Area Resource Recovery Facility (BARRF) Application for Certification.

Christine KOHL-ZAUGG

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Belmont, CA 94002-3306

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E-mail: christinekzaugg@gmx.net

CAREER OBJECTIVE

To pursue my professional career in the field of EMS auditing and consulting, in a challenging, international company with the opportunity to bring in my strong interdisciplinary-, teamwork- and language skills.

PROFESSIONAL EXPERIENCE

Volunteer at PIBA, BEN and Cal/EPA's EMS Pilot Project Program: ***May 2000 to Present***

- Member of PIBA's Planning Committee for the 7th Annual Silicon Valley Conference (Febr. 2001): Partnering in Pursuit of Best Practices: Setting the Course for the New Economy.
- Member of the judges team for the 2001 Business Environmental Awards (BEN-BEA), category "Pollution Prevention / Resource Conservation".
- Determining the content of -, conceiving the layout of -, and writing articles for "Eco-Opportunities", the BEN newsletter.
- Working with Cal/EPA on its EMS Pilot Project (e.g. conducting environmental audits, creating templates, like an environmental aspects-impacts matrix for wineries, etc.)

Project Manager, RisCare AG (Swiss environmental engineering company): ***Aug. 1998 to Jan. 2000***

- Developed and implemented environmental management systems (EMS) for various companies and industry sectors – including a pilot project with Ittigen, the first Swiss county to implement an EMS.

  This encompassed: *Analysis of the legal compliance, and outlining of recommendations in detailed reports to avoid noncompliance; Performance of audits and environmental analysis; Settlement of conflicting aims among companies, neighborhoods and governmental authorities and agencies; Development of EMS based on current standards (ISO 14'001, EMAS) and support by the elaboration of the accompanying handbooks; Environmental training and coaching for company staff (incl. development of industry- sector specific tailored tools)*

- Developed a concept and a plan of actions for determining the efficiency of the newly introduced VOC release tax. Project for the Swiss Federal Agency for the Environment, Forests and Landscape (SAEFL).
- Evaluated and tested various life cycle analysis (LCA) software packages and then completed LCAs focusing on the evaluation of ecological impacts of products, processes, and business activities.
- Co-authored short reports on risk and safety management.
- Prepared an environmental argumentarium (biology, landscape, aesthetics) for a proposed landfill site.
- Carried out a statistical analysis and co-authored a study on sludge waste evolution and treatment in the Swiss and German galvanic industry as part of the Federal Task Force for galvanic sludge treatment.
- Co-author and co-developer of an innovative method which allows to assess what specific kind of wastes can be used as alternative fuels within the cement industry sector.
- Conducted certification audits on environmentally sound treatment of electro- and electronic waste (e.g. computers, oven, transistors, etc.). Part of a team, which set up the audit criteria to be considered during environmental audits. This team was acting as an independent controlling body, whose role was to assess the environmental performance of scrap merchants and to report it to the Swiss Association of Scrap Merchants.

Research scientist, Swiss Federal Institute of Environmental Science and Technology (EAWAG): **Apr. 1997 to February 1998**

- Performed an impact assessment study analyzing the influence of a hydroelectric dam on fish fauna in Geneva.

- Led the coordination and communication of this project between local government agencies, the university and the private sector.
- Managed the project independently from its conception to its realization.

Teaching Assistant, Geobotanical Institute of the Swiss Federal Institute of Technology, Zurich (ETHZ): **Summer 1994 to 1996**

- Taught courses in forest ecology and protection of natural endangered sites.
- Participated in the creation of the framework and contents of the course.
- Organized and conducted excursions and field experiments with undergraduate students.

Internship, Swiss National Park: **July to October 1994**

- Completed a study on the habitat and behavior of alpine marmots.
- Involved in the development of a geographic information system (GIS) for the Swiss National Park (Oekosonde Project).
- Guided scientific tours into the Park.

Consultant, Locher, Brauchbar & Partner AG (Swiss environmental consulting firm): **April to September 1992**

- Worked as a member of the organizational team for an exposition dealing with the causes and effects of atmospheric pollution, primarily ozone depletion and the greenhouse effect.
- Researched and compiled pertinent scientific documentation.
- Designed and conducted different types of guided tours (for special interest groups, journalists, students and members of the public).
- Instructed other employees involved in the exposition. Supervised coordination and communication between employees and head office.

EDUCATION

- ***Swiss Federal Institute of Technology (ETH), Zurich:*** ***Sept. 1990 to march 1997***
  Master of Science degree in Environmental Science,
  Specialization in aquatic systems and biology.
  (Rough equivalent: BS, MS; 6 years + 4 months diploma research project).
  Thesis: Evaluation of the influence of a hydroelectric dam on fish fauna in Geneva, Switzerland.
  Case study (Summer 1995): Environment and urbanism; Ecological zone reallocation of a previously industrialized district.
- ***School of Law, University of Geneva*** ***Sept. 1989 to 1990***

SPECIAL SKILLS & INTERESTS

Languages: Bilingual in French and German; Fluent in English; Basic knowledge of Spanish.

GIS: Working knowledge.

Teaching: Passed exams successfully and received Federal Teaching Certificate in biology (roughly high school level).

PIBA: Co-chair of PIBA's Sustainable Business Practices committee (former EH&S Product Strategies); Co-chair of PIBA's 8th Annual Silicon Valley Conference (Febr. 2002)

REFERENCES

Available upon request.

Jaque Forrest
Program Manager

Education

B.S., Biology, California State University, 1986

Professional Registrations

Registered Environmental Assesor: California

Distinguishing Qualifications

- 15 years of experience in environmental documentation for CEQA, RCRA, CERCLA and NPDES
- Expert in hazardous waste management and compliance
- Proven and able project manager for large multiple disciplinary projects

Relevant Experience

Ms. Forrest is an environmental scientist with 15years of professional experience in environmental documentation, remediation and compliance projects, primarily in California. Ms. Forrest is an accomplished project manager and provides innovative environmental solutions to industrial, municipal and federal clients. She has direct experience negotiating permit and violation issues with regulatory agencies such as the U.S. Environmental Protection Agency (U.S. EPA); the California Environmental Protection Agency, Department of Toxic substances Control (DTSC) and the State Water Resources Control Board (SWRCB). Ms. Forrest has specific regulatory expertise in the California Environmental Quality Act (CEQA); the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); the Resource Conservation and Recovery Act (RCRA); and the Clean Water Act's National Pollution Discharge Elimination System (NPDES); California Titles 22 and 26; and other local regulatory requirements. Ms. Forrest was appointed to and participated on several committees in California and Arizona that developed environmental policy for water quality in the western United States.

Representative Projects

Energy/Energy-related Projects

City of Antioch, Antioch, California. Project Manager/Consultant. Managed and supported the City of Antioch's technical review of Mirant Energy's Application for Certification (AFC) to the California Energy Commission (CEC) for the construction and operation of an additional natural gas-fired turbine unit at the existing Contra Costa Power Plant. Provided technical support and evaluation of impacts related to air quality, public health, biological resources, soil and water resources, and aesthetics. The work included preparation and submittal of written comments and providing oral testimony at CEC workshops and hearings.

Mountain View Power Plant, Riverside, California. Permitting Specialist. Provided support for the development of construction and operational related best management practices (BMPs) for compliance with NPDES permit requirements. The support was provided to the Southern Energy (now Mirant) as part of the response to data requests from the CEC regarding their AFC.

NPDES Permitting, Compliance, and Policy

Santa Monica Bay Restoration Project, Santa Monica, California. Project Manager. The Santa Monica Bay Restoration Project received $25 million of funds from the passage of Propositions 12 and 13 in March 2000. The funds are designated for urban and storm water pollution prevention programs, habitat restoration and other priority actions outlined in the Santa Monica Bay Restoration Plan. Ms. Forrest developed a Watershed Protection Implementation Strategy for the Project. The strategy included the identification of existing and proposed projects in the Santa Monica Bay Watershed; the development of a prioritization process; and an evaluation process for new projects.

GWF Power Systems, Wilbur Avenue Power Plant, Antioch, California. Project Manager. Consulted with GWF Power Systems to develop a strategy for public and Central Valley Regional Water Quality Control Board approval of a change to the facilities NPDES Permitted Waste Discharge Requirements (WDRs). The strategy consisted of public outreach to stakeholders regarding the nature and extent of the change, meetings with various stakeholder groups, and review and comment on the tentative permit. Worked with GWF to develop appropriate information for presentation to stakeholders and the regulators.

Black Mesa Pipeline, Inc., Arizona. Permitting Specialist. Consulted with Black Mesa Pipeline regarding permit requirements for maintenance discharges from a coal-slurry pipeline in Arizona. Reviewed analytical data from discharge monitoring and compared the results to the Arizona Department of Environmental Quality's Water Quality Standards. Reviewed Black Mesa Pipelines Best Management Practices (BMPs) for the maintenance discharges and prepared a report to Black Mesa Pipeline summarizing the comparison and review including recommendations for continued monitoring for the discharge.

Los Angeles County Department of Public Works, Los Angeles, California. Senior Scientist. Participated in the negotiation and development of the Los Angeles County Municipal Storm Water Permit with the Los Angeles County Regional Water Quality Control Board (RWQCB), Los Angeles County and 85 cities. Assisted the RWQCB and the County with the development and implementation of storm water pollution prevention model programs. Consulted with individual cities within Los Angeles County regarding compliance with the countywide permit.

City of Los Angeles, Los Angeles, California. Project Manager. Facilitated the strategic planning efforts for the City's Storm Water Program. Planning included a program review for compliance; a SWOT analysis; and financial and facility plans. Worked with the City to evaluate effluent discharge limits for the Glendale and Tillman wastewater treatment plants.

Policy, Sacramento, California. Senior Scientist. Helped develop federal and state water quality policy through the following agency appointments: USEPA—Urban Wet Weather Task Force,

Arid West Water Quality Regulatory Working Group; and Cal-EPA — Inland Surface Waters Plan Task Force, Bay Protection and Toxics Cleanup Program Technical Advisory Committee.

Soil and Groundwater Remediation/Project Management

Lockheed Martin Corporation, Palo Alto, California. Project Manager. Managed a $2 million, 10-year groundwater remediation project in Palo Alto. The site is part of the Hillview-Porter regional plume and the primary contaminants are volatile organic compounds. As part of a guaranteed closure program, current pump and treat technologies will be replaced with innovative, in-situ technologies. The goal is regulatory closure of the site within 5 years.

Romic Environmental Technologies, Inc., East Palo Alto, California. Permitting Specialist. Provided strategic consultation and support to Romic for exceeding NPDES Waste Discharge Requirements during operation of their on-site groundwater extraction treatment system. NPDES compliance strategies and an evaluation of treatment alternatives were part of a larger project to implement innovative, in-situ remediation technologies. Also, strategized with the U.S. EPA Region IX regarding alternatives to extracting groundwater.

Base Closure Project, USARC, Rio Vista, California. Project Manager/Permitting Specialist. Managed a $3 million, 2-year base closure project for the former U.S. Army Reserve Center located on the Sacramento River in Rio Vista, California. The base closure is part of a pilot program to evaluate the effectiveness of guaranteed closure contracts on federal sites. As such, one major objective of the project was to streamline the CERCLA process for site remediation. Therefore, the project included early identification and delineation of contamination and implementation of interim removal actions to accomplish closure based on acceptable risk, instead of numeric specific clean-up criteria. The goal is regulatory closure of the site by December 31, 2001.

RCRA Permitting and Compliance

Agilent Technologies, Inc. (formerly Hewlett-Packard Company), San Jose, California. Project Manager/Principal Scientist. Assisted Agilent with California permit issues for an onsite hazardous wastewater treatment system. The issue involved the divergence of Agilent Technologies from Hewlett-Packard and the formation of a joint venture between Agilent Technologies and Philips Lighting (Netherlands). Both new companies operate from the same facility in San Jose, California,and share common piping and appurtenant systems associated with the treatment of process wastewater. Provided recommendations for meeting with the agencies (Santa Clara County Department of Environmental Health and the California Department of Toxic Substances Control) and negotiating an implementation plan for separating and permitting the wastewater treatment system.

Chem-Tech Systems, Inc., Vernon, California. Project Manager. Managed hazardous waste treatment/transfer facility, including the review of all operations and procedures for compliance with state and federal regulations, the preparation of all permit modification requests, and the review of incoming waste streams for compliance conditions. Acted as the primary contact for

interface and negotiation with all regulatory agencies including the EPA, the DTSC, the Los Angeles County Sanitation Districts, and the SCAQMD.

United Technologies Chemical Systems Division, San Jose, California. Permitting Specialist. Acted as the permitting specialist for the preparation of a RCRA Part B permit application for this solid rocket motor manufacturing facility. Coordinated a three-person team to collect data for the Part B application, prepared the application in a report format consistent with DTSC guidelines, provided quality assurance/quality control, and prepared the waste analysis and land disposal plans. Also prepared UTC's site-wide SPCC plan as required by the Clean Water Act.

NEPA/CEQA Projects

City of Benicia, Benicia, California. Project Manager. Managed the environmental evaluation and Initial Study preparation of the Exxon Refinery proposed MTBE Production Plant in Benicia, California. The evaluation included the analysis and preparation of three background study reports on air quality, risk of upset, and health risk assessment. Also, coordinated the preparation of an Administrative Draft Environmental Impact Report for a proposed cogeneration power plant on the Exxon Benicia Refinery. The project was canceled, and a baseline data report was issued. The evaluation included the analysis of biological impacts of the proposed project to existing vegetation and wildlife on less disturbed areas of the refinery.

Lawrence Livermore National Laboratory, Livermore, California. Project Manager. Provided technical support for the evaluation and impact analysis of ongoing activities at the LLNL site, Sandia National Laboratory, and Site 300. The project required an understanding of the DOE guidelines for NEPA compliance at federal facilities.

UNOCAL San Francisco Refinery, Richmond, California. Project Specialist. Participated in the preparation of a land use permit application required for the construction of UNOCAL's Reformulated Gasoline Project. The project included identification of information required for the application, collection, and compilation of the information into the land use application format required by Contra Costa County.

Bureau of Land Management, Nevada. Project Biologist. Participated as staff biologist on an EIS project evaluating vegetation impacts for a proposed mine expansion in Nevada. The analysis included vegetation mapping and a description of mitigation measures.

Hazardous Waste Management/Compliance

United Airlines, Inc., Los Angeles International Airport, Los Angeles, California. Project Manager. Managed general compliance for the Los Angeles International Airport station including permitting air emission sources with the South Coast Air Quality Management District (SCAQMD); preparing and maintaining NO_x Emissions Plan for Rule 1102; annual air emissions inventory; AB-2588; hazardous waste management including structural and non-structural compliance issues; and compliance with NPDES storm water regulations.

Lawrence Berkeley Laboratory, Berkeley, California. Project Manager. Managed the preparation of permit by rule applications for five fixed treatment units at LBL. The scope of work included the determination of the applicability of the regulation, preparation of the required plans and documents, and oversight of the tank system certification work. Waste analysis plans, contingency plans, closure plans, and closure cost estimates were prepared for each unit. The tank system certification work included the evaluation of the tank systems and secondary containments, recommendations for corrective actions, and third party oversight of system modifications.

Chevron U.S.A., Inc. Products Company, Lubricants Division, Richmond, California. Project Manager. Managed the preparation of the Lubricants Division SPCC plan at the Richmond refinery site as required by the Clean Water Act. Also, assisted in the revision of eight specific MOPs developed for the Chevron marketing terminals, including a regulatory review to identify applicable California regulations.

United Airlines, Inc., Maintenance Facility Siting Study, San Francisco, California. Permitting Specialist and Assistant Project Manager. Evaluated pertinent environmental regulations related to painting and stripping technologies for the design and specification of a major maintenance facility. Coordinated and performed evaluations of environmental regulations related to siting a new maintenance facility at client-specified locations throughout the United States.

Due Diligence/Compliance Auditing Projects

Divco West Properties, San Jose, California. Program Manager. Managed and coordinated Phase I and Phase II Environmental Site Assessments for Divco West. Properties were primarily located in California. Work also included Phase II investigations and site remediation.

Confidential Airline Client, Nationwide. Auditor/Senior Peer Review. Performed regulatory compliance audits of all airport stations nationwide. The audits covered all media including health and safety. Specifically audited operations and maintenance at San Francisco International Airport and Los Angeles International Airport. Provided senior peer review on all audit reports. Subsequent audits were regulation-specific (de-icing procedures for compliance with NPDES requirements), and occurred at all operating stations. Also provided senior review on all audit reports for the western United States and Alaska. Finally, performed due diligence for potential acquisition of another airline at stations nationwide.

Bell Helicopter Textron, Stockton, California. Project Manager. Managed and performed a Phase I Environmental Site Assessment (ESA) and Limited Compliance Audit of a rotor blade maintenance facility in Stockton, California. The ESA and limited audit were part of a nationwide acquisition of similar properties by Bell Helicopter.

Philips Lighting (Netherlands)/Agilent Technologies, San Jose, California. Project Manager. Managed and performed a Phase I Environmental Site Assessment and Limited Compliance Audit for an Agilent Technologies (formerly Hewlett-Packard) facility in San Jose, California. The facility manufactures silicon-based semiconductors, fiber optic communications components

and light-emitting diodes. The ESA and limited audit were performed to satisfy due diligence for the formation of a joint venture between Agilent Technologies and Philips Lighting.

Texas Instruments, San Jose, California. Project Manager. Managed and performed several Phase I Environmental Site Assessments and Limited Compliance Audits of facilities being acquired by Texas Instruments and located in San Jose, California.

LKQ Corporation, Various Sites in California. Project Manager. Managed Phase I and Phase II Environmental Site Assessments for LKQ's acquisition of four automotive dismantling facilities in the western United States. Phase II site assessments including borehole installation and soil and groundwater sampling.

Bayer Corporation, Berkeley, California. Project Manaber. Managed a Phase I and Phase II Environmental Site Assessment for Bayer Corporation in Berkeley, California. The Phase I ESA involved site reconnaissance of an 11-acre property adjacent to Bayer's existing facility. Since a portion of the site was being remediated for fuel oil and diesel contamination, the Phase I ESA also included an extensive review of files and reports regarding the source and extent of contamination. The Phase II assessment was performed to confirm the limitations of existing contamination and that any previous contamination was remediated.

ITEL Containers International, Various Locations, California and Tennessee. Project Manager. Managed environmental services under a master agreement with ITEL, including multi-media compliance audits for air emission, wastewater discharges and hazardous waste management in California and Tennessee; property transfer assessments; and general consulting for sites throughout the United States. The project included identification of the applicable regulations in California and Texas, development of an audit protocol, development of audit checklists, physical site inspections and report preparation.

Levi Strauss & Co., San Francisco, California. Project Manager. Managed multi-media compliance audits for air emissions, wastewater discharges, hazardous waste management, worker health and safety, and SARA for six manufacturing facilities in the western United States, including site audit inspections. The project included identification of the applicable regulations in California and Texas, development of an audit protocol, development of audit checklists, physical site inspections and report preparation.

Membership in Professional Organizations

Water Environment Federation, since 1991

California Department of Fish and Game
Natural Diversity Data Base

Location Summary Report
LEFEC CNDDB REPORT

AMBYSTOMA CALIFORNIENSE
CALIFORNIA TIGER SALAMANDER — Element Code: AAAAA01147

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2G3	CDFG Status: SC
State: None	State: S2S3	

Occurrence No. 41 — Map Index: 37885
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Quad Summary: SAN JOSE WEST (3712138/427C)*, SAN JOSE EAST (3712137/427D), CALAVERAS RESERVOIR (3712147/427A), MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: SAN JOSE.
Lat/Long: 37°20'17" / 121°53'25"
UTM: Zone-10 N4132737 E598306
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 5 mile
Dates Last Seen — Element: 1895-01-09 — Site: 1895-01-09
Township: 07S
Range: 01E
Section: 08 Qtr XX
Meridian: M
Elevation: 85 ft

Occurrence No. 390 — Map Index: 34781
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: USFWS-SAN FRANCISCO BAY NWR
Location: WSW OF FREMONT, IN SALT EVAPORATORS; 2.1 KM SOUTHEAST OF ALBRAE.
Lat/Long: 37°29'05" / 121°58'01"
UTM: Zone-10 N4148946 E591325
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 21.6 ac
Dates Last Seen — Element: 1994-02-07 — Site: 1994-02-07
Township: 05S
Range: 01W
Section: 21 Qtr XX
Meridian: M
Elevation: 7 ft

Occurrence No. 391 — Map Index: 34780
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: USFWS-SAN FRANCISCO BAY NWR
Location: WSW OF FREMONT IN THE SALT EVAPORATORS; 1.5 KM SOUTHEAST OF ALBRAE.
Lat/Long: 37°29'18" / 121°58'22"
UTM: Zone-10 N4149346 E590820
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 11.6 ac
Dates Last Seen — Element: 1995-03-23 — Site: 1995-03-23
Township: 05S
Range: 01W
Section: 21 Qtr XX
Meridian: M
Elevation: 7 ft

AMBYSTOMA CALIFORNIENSE (cont.)
CALIFORNIA TIGER SALAMANDER — Element Code: AAAAA01147

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2G3	CDFG Status: SC
State: None	State: S2S3	

Occurrence No. 397 — Map Index: 36109
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)*, NILES (3712158/446C)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: PVT
Location: SOUTH OF DURHAM ROAD (AUTO MALL PARKWAY), FREMONT.
Lat/Long: 37°29'46" / 121°57'53"
UTM: Zone-10 N4150215 E591506
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 598.1 ac
Dates Last Seen — Element: 1997-03-26 — Site: 1997-03-26
Township: 05S
Range: 01W
Section: 15 Qtr XX
Meridian: M
Elevation: 15 ft

Occurrence No. 446 — Map Index: 40554
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: CITY OF FREMONT
Location: 1.75 MILES EAST OF LEITCH SCHOOL, 1.8 MILES NNE OF SCOTT CREEK ROAD AND I-680 JUNCTION, FREMONT.
Lat/Long: 37°29'24" / 121°53'23"
UTM: Zone-10 N4149620 E598146
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters
Dates Last Seen — Element: 1998-05-09 — Site: 1998-05-09
Township: 05S
Range: 01E
Section: 20 Qtr XX
Meridian: M
Elevation: 1280 ft

Occurrence No. 447 — Map Index: 40555
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: PVT
Location: ALONG TOROGES CREEK, 1 MILE NORTH OF THE I-680/SCOTT CREEK ROAD JUNCTION, FREMONT.
Lat/Long: 37°28'55" / 121°54'00"
UTM: Zone-10 N4148712 E597236
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters
Dates Last Seen — Element: 1998-05-03 — Site: 1998-05-03
Township: 05S
Range: 01E
Section: 19 Qtr XX
Meridian: M
Elevation: 440 ft

Location Summary Report
LEFEC CNDDB REPORT

RANA AURORA DRAYTONII
CALIFORNIA RED-LEGGED FROG — Element Code: AAABH01022

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G4T2T3	CDFG Status: SC
State: None	State: S2S3	

Occurrence No. 210 — Map Index: 36040

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)*, NILES (3712158/446C)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: UNKNOWN
Location: AGUA CALIENTE CREEK, JUST NE OF THE INTERSECTION OF I-680 AND MISSION BLVD, FREMONT.
Lat/Long: 37°29'54" / 121°55'03"
UTM: Zone-10 N4150491 E595688
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 29.6 ac

—Dates Last Seen—
Element: 1996-07-30
Site: 1996-07-30

Township: 05S
Range: 01W
Section: 13 Qtr XX
Meridian: M
Elevation: 180 ft

Location Summary Report
LEFEC CNDDB REPORT

ELANUS LEUCURUS (NESTING)
WHITE-TAILED KITE — Element Code: ABNKC06010

Status		NDDB Element Ranks		Other Lists	
Federal:	None	Global:	G5	CDFG Status:	
State:	None	State:	S3		

Occurrence No. 1 — Map Index: 24672

Occ Rank:	Unknown	Dates Last Seen — Element:	1971-05-06
Origin:	Natural/Native occurrence	Site:	1971-05-06
Presence:	Presumed Extant		
Trend:	Unknown		
Quad Summary:	MILPITAS (3712148/427B)		
County Summary:	SANTA CLARA		
SNA Summary:			
Owner/Manager:	UNKNOWN		
Location:	NORTH OF HWY 237, 1 MILE EAST OF ALVISO, IN THE SOUTH SAN FRANCISCO BAY AREA.		
Lat/Long:	37°25'34" / 121°56'57"	Township:	06S
UTM:	Zone-10 N4142455 E592969	Range:	01W
Mapping Precision:	NON-SPECIFIC	Section:	XX Qtr XX
Symbol Type:	POINT	Meridian:	M
Radius:	2/5 mile	Elevation:	5 ft

Location Summary Report
LEFEC CNDDB REPORT

RALLUS LONGIROSTRIS OBSOLETUS
CALIFORNIA CLAPPER RAIL — Element Code: ABNME05016

Status		NDDB Element Ranks		Other Lists	
Federal:	Endangered	Global:	G5T1	CDFG Status:	
State:	Endangered	State:	S1		

Occurrence No. 20 — Map Index: 36915 — Dates Last Seen
Occ Rank: Unknown — Element: 1975-XX-XX
Origin: Natural/Native occurrence — Site: 1975-XX-XX
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MOUNTAIN VIEW (3712241/428A)*, MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary: Dumbarton Point
Owner/Manager: UNKNOWN
Location: LARGER FRINGING MARSHES OF ALVISO SLOUGH.
Lat/Long: 37°26'45" / 122°00'45" — Township: 06S
UTM: Zone-10 N4144588 E587335 — Range: 01W
Mapping Precision: NON-SPECIFIC — Section: 06 Qtr XX
Symbol Type: POLYGON — Meridian: M
Area: 167.4 ac — Elevation:

Occurrence No. 35 — Map Index: 09815 — Dates Last Seen
Occ Rank: Unknown — Element: 1975-XX-XX
Origin: Natural/Native occurrence — Site: 1975-XX-XX
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)*, MOUNTAIN VIEW (3712241/428A)
County Summary: ALAMEDA, SANTA CLARA
SNA Summary: Dumbarton Point
Owner/Manager: UNKNOWN
Location: MARSHES FRINGING MUD SLOUGH.
Lat/Long: 37°27'59" / 121°59'51" — Township: 05S
UTM: Zone-10 N4146879 E588653 — Range: 01W
Mapping Precision: NON-SPECIFIC — Section: XX Qtr XX
Symbol Type: POINT — Meridian: M
Radius: 1 mile — Elevation:

Location Summary Report
LEFEC CNDDB REPORT

CHARADRIUS ALEXANDRINUS NIVOSUS (NESTING)
WESTERN SNOWY PLOVER — Element Code: ABNNB03031

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G4T2	CDFG Status: SC
State: None	State: S2	

Occurrence No. 3 — Map Index: 09896
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: ALVISO.
Lat/Long: 37°25'34" / 121°58'20"
UTM: Zone-10 N4142435 E590938
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/5 mile

—Dates Last Seen—
Element: 1971-07-16
Site: 1971-07-16

Township: 06S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 10 ft

Occurrence No. 127 — Map Index: 44374
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: PVT
Location: SALT EVAPORATOR POND, BETWEEN ALVISO SLOUGH AND GUADALUPE SLOUGH, JUST WEST OF ALVISO.
Lat/Long: 37°25'23" / 121°59'17"
UTM: Zone-10 N4142090 E589533
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 382.6 ac

—Dates Last Seen—
Element: 1999-11-05
Site: 1999-11-05

Township: 06S
Range: 01W
Section: 08 Qtr XX
Meridian: M
Elevation: 0

Location Summary Report
LEFEC CNDDB REPORT

ATHENE CUNICULARIA (BURROW SITES)
BURROWING OWL — Element Code: ABNSB10010

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4T2	CDFG Status: SC
State: None	State: S2	

Occurrence No. 24 — Map Index: 09797 — Dates Last Seen: Element: XXXX-XX-XX; Site: XXXX-XX-XX
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Quad Summary: MOUNTAIN VIEW (3712241/428A)*, MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: PVT
Location: SOUTHEAST OF JUNCTION OF COYOTE CREEK AND ALVISO SLOUGH, NORTH OF SUNNYVALE.
Lat/Long: 37°27'11" / 122°00'29" — Township: 05S
UTM: Zone-10 N4145415 E587727 — Range: 01W
Mapping Precision: NON-SPECIFIC — Section: 31 Qtr XX
Symbol Type: POINT — Meridian: M
Radius: 3/5 mile — Elevation:

Occurrence No. 132 — Map Index: 21008 — Dates Last Seen: Element: 1992-04-01; Site: 1992-04-01
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: SAN JOSE WEST (3712138/427C)*, MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: PVT
Location: NW OF THE JUNCTION OF KARINA COURT AND NORTH FIRST STREET, SAN JOSE.
Lat/Long: 37°22'29" / 121°55'08" — Township: 06S
UTM: Zone-10 N4136787 E595723 — Range: 01W
Mapping Precision: NON-SPECIFIC — Section: 25 Qtr S
Symbol Type: POINT — Meridian: M
Radius: 1/5 mile — Elevation: 40 ft

Occurrence No. 176 — Map Index: 24086 — Dates Last Seen: Element: 1993-08-04; Site: 1993-08-04
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: AT THE END OF NORTECH PARKWAY, WITHIN THE SAN JOSE CITY LIMITS, 1 MILE EAST OF ALVISO.
Lat/Long: 37°25'24" / 121°57'14" — Township: 06S
UTM: Zone-10 N4142144 E592566 — Range: 01W
Mapping Precision: NON-SPECIFIC — Section: XX Qtr XX
Symbol Type: POINT — Meridian: M
Radius: 1/5 mile — Elevation: 5 ft

ATHENE CUNICULARIA (BURROW SITES) (cont.)
BURROWING OWL — Element Code: ABNSB10010

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4T2	CDFG Status: SC
State: None	State: S2	

Occurrence No. 212 — Map Index: 30027
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: MISSION COLLEGE
Location: MISSION COLLEGE CAMPUS, SANTA CLARA.
Lat/Long: 37°23'34" / 121°58'48"
UTM: Zone-10 N4138720 E590289
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 2/5 mile
Dates Last Seen — Element: 1993-06-18 — Site: 1993-06-18
Township: 06S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 20 ft

Occurrence No. 340 — Map Index: 42062
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)*, MOUNTAIN VIEW (3712241/428A)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: PVT
Location: TWIN CREEKS BASEBALL FIELD COMPLEX, OFF CARIBEAN DR, ~0.5 MILE NORTH OF JUNCTION LAWRENCE EXPY & HWY 237, SUNNYVALE.
Lat/Long: 37°24'56" / 121°59'57"
UTM: Zone-10 N4141259 E588558
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 12.8 ac
Dates Last Seen — Element: 1999-06-10 — Site: 1999-06-10
Township: 06S
Range: 01W
Section: 17 Qtr XX
Meridian: M
Elevation: 0

Occurrence No. 341 — Map Index: 42084
Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: SAN JOSE WEST (3712138/427C)*, MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: CITY OF SAN JOSE
Location: SAN JOSE INTERNATIONAL AIRPORT, SAN JOSE.
Lat/Long: 37°21'49" / 121°55'43"
UTM: Zone-10 N4135550 E594859
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 868.1 ac
Dates Last Seen — Element: 1999-07-15 — Site: 1999-07-15
Township: 06S
Range: 01W
Section: 36 Qtr NE
Meridian: M
Elevation: 56 ft

ATHENE CUNICULARIA (BURROW SITES) (cont.)
BURROWING OWL — Element Code: ABNSB10010

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4T2	CDFG Status: SC
State: None	State: S2	

Occurrence No. 345 — Map Index: 42263
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: CITY OF SANTA CLARA
Location: SE OF THE JUNCTION OF SAN TOMAS AQUINAS CREEK WITH TASMAN DRIVE, EAST OF GREAT AMERICA AMUSEMENT PARK, SANTA CLARA
Lat/Long: 37°24'12" / 121°58'04"
UTM: Zone-10 N4139936 E591351
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/10 mile
Dates Last Seen — Element: 1999-06-16 — Site: 1999-06-16
Township: 06S
Range: 01W
Section: 16 Qtr XX
Meridian: M
Elevation: 5 ft

Occurrence No. 359 — Map Index: 43164
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: PVT
Location: JUST SOUTH OF CURTIS AVENUE AND 0.3 MILE EAST OF SOUTH MAIN, MILPITAS
Lat/Long: 37°25'11" / 121°53'51"
UTM: Zone-10 N4141811 E597547
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters
Dates Last Seen — Element: 1998-09-15 — Site: 1998-09-15
Township: 06S
Range: 01E
Section: 07 Qtr XX
Meridian: M
Elevation:

Occurrence No. 360 — Map Index: 43165
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: PVT
Location: ALONG BARBER LANE, WEST OF I-880, MILPITAS.
Lat/Long: 37°25'13" / 121°54'59"
UTM: Zone-10 N4141864 E595863
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters
Dates Last Seen — Element: 1999-10-18 — Site: 1999-10-18
Township: 06S
Range: 01W
Section: 12 Qtr XX
Meridian: M
Elevation: 20 ft

ATHENE CUNICULARIA (BURROW SITES) (cont.)
BURROWING OWL — Element Code: ABNSB10010

Status		NDDB Element Ranks		Other Lists	
Federal:	None	Global:	G4T2	CDFG Status:	SC
State:	None	State:	S2		

Occurrence No. 392 — Map Index: 44143

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: PVT-JUBILEE CHURCH
Location: EAST SIDE OF DISK DRIVE, NORTH OF NORTECH PARKWAY, ALVISO
Lat/Long: 37°25'29" / 121°57'35"
UTM: Zone-10 N4142302 E592037
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/10 mile

—Dates Last Seen—
Element: 2000-06-14
Site: 2000-06-14

Township: 06S
Range: 01W
Section: 10 Qtr XX
Meridian: M
Elevation: 20 ft

Location Summary Report
LEFEC CNDDB REPORT

GEOTHLYPIS TRICHAS SINUOSA
SALTMARSH COMMON YELLOWTHROAT — Element Code: ABPBX1201A

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T2	CDFG Status: SC
State: None	State: S2	

Occurrence No. 45 — Map Index: 09857 — Dates Last Seen
Occ Rank: Good — Element: 1999-06-30
Origin: Natural/Native occurrence — Site: 1999-06-30
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)*, MOUNTAIN VIEW (3712241/428A)
County Summary: SANTA CLARA
SNA Summary: Dumbarton Point
Owner/Manager: SANTA CLARA VALLEY WATER DIST
Location: SALT PONDS, GUADALUPE SLOUGH, & CONFLUENCE OF SAN THOMAS AQUINAS & CALABAZAS CREEKS, N OF HIGHWAY 237.
Lat/Long: 37°25'06" / 121°59'43" — Township: 06S
UTM: Zone-10 N4141577 E588905 — Range: 01W
Mapping Precision: NON-SPECIFIC — Section: 08 Qtr XX
Symbol Type: POLYGON — Meridian: M
Area: 397.6 ac — Elevation: 5 ft

Occurrence No. 71 — Map Index: 40300 — Dates Last Seen
Occ Rank: Good — Element: 1998-08-11
Origin: Natural/Native occurrence — Site: 1998-08-11
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA, SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: IRRIGATION CHANNEL "B," AT THE SOUTH END OF BAYSIDE BUSINESS PARK, OFF OF WARREN AVENUE, WEST SIDE OF I-880, FREMONT.
Lat/Long: 37°27'48" / 121°55'49" — Township: 05S
UTM: Zone-10 N4146620 E594580 — Range: 01W
Mapping Precision: SPECIFIC — Section: 25 Qtr XX
Symbol Type: POLYGON — Meridian: M
Area: 29.9 ac — Elevation: 1 ft

Occurrence No. 72 — Map Index: 41564 — Dates Last Seen
Occ Rank: Unknown — Element: 1985-XX-XX
Origin: Natural/Native occurrence — Site: 1985-XX-XX
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: ALVISO SLOUGH AT ALVISO.
Lat/Long: 37°25'23" / 121°58'37" — Township: 06S
UTM: Zone-10 N4142103 E590509 — Range: 01W
Mapping Precision: SPECIFIC — Section: 09 Qtr XX
Symbol Type: POINT — Meridian: M
Radius: 80 meters — Elevation: 5 ft

Location Summary Report
LEFEC CNDDB REPORT

AGELAIUS TRICOLOR (NESTING COLONY)
TRICOLORED BLACKBIRD — Element Code: ABPBXB0020

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CDFG Status: SC
State: None	State: S3	

*** SENSITIVE *** *** SENSITIVE ***

Occurrence No. 26 Map Index: 36914
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager:
Location: *SENSITIVE* Location information suppressed.
Lat/Long: /
UTM:
Mapping Precision:
Symbol Type:
Radius:

—Dates Last Seen—
Element: 1971-05-11
Site: 1971-05-11

Township:
Range:
Section: Qtr
Meridian:
Elevation:

*** SENSITIVE *** *** SENSITIVE ***

Occurrence No. 257 Map Index: 24012
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager:
Location: *SENSITIVE* Location information suppressed.
Lat/Long: /
UTM:
Mapping Precision:
Symbol Type:
Radius:

—Dates Last Seen—
Element: 1985-05-05
Site: 1985-05-05

Township:
Range:
Section: Qtr
Meridian:
Elevation:

*** SENSITIVE *** *** SENSITIVE ***

Occurrence No. 258 Map Index: 24013
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager:
Location: *SENSITIVE* Location information suppressed.
Lat/Long: /
UTM:
Mapping Precision:
Symbol Type:
Radius:

—Dates Last Seen—
Element: 1985-05-05
Site: 1985-05-05

Township:
Range:
Section: Qtr
Meridian:
Elevation:

Location Summary Report
LEFEC CNDDB REPORT

SOREX VAGRANS HALICOETES
SALT-MARSH WANDERING SHREW — Element Code: AMABA01071

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T1	CDFG Status: SC
State: None	State: S1	

Occurrence No. 1 — Map Index: 09894
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary: Dumbarton Point
Owner/Manager: USFWS, PVT-LESLIE SALT CO
Location: NEW CHICAGO MARSH, 1 TO 1.75 MI NE OF ALVISO ON N SIDE OF LOS ESTEROS RD.
Lat/Long: 37°26'05" / 121°57'53"
UTM: Zone-10 N4143402 E591589
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 451.5 ac

—Dates Last Seen—
Element: 1976-XX-XX
Site: 1980-XX-XX

Township: 06S
Range: 01W
Section: 03 Qtr XX
Meridian: M
Elevation: 0

Occurrence No. 10 — Map Index: 09825
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)*, MOUNTAIN VIEW (3712241/428A)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: ONE MILE SSW OF ALVISO.
Lat/Long: 37°24'45" / 121°59'32"
UTM: Zone-10 N4140906 E589184
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

—Dates Last Seen—
Element: 1951-08-05
Site: 1951-08-05

Township: 06S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 5 ft

Location Summary Report
LEFEC CNDDB REPORT

REITHRODONTOMYS RAVIVENTRIS
SALT-MARSH HARVEST MOUSE — Element Code: AMAFF02040

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1G2	CDFG Status:
State: Endangered	State: S1S2	

Occurrence No. 80 — Map Index: 10006
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary: Dumbarton Point
Owner/Manager: UNKNOWN
Location: END OF N-MOST EXTENSION OF MUD SLOUGH CLOSE TO OLD LANDING RD, FREMONT.
Lat/Long: 37°28'47" / 121°56'55"
UTM: Zone-10 N4148406 E592961
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/5 mile
Dates Last Seen — Element: 1985-10-30 — Site: 1985-10-30
Township: 05S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 3 ft

Occurrence No. 81 — Map Index: 09811
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)*, MOUNTAIN VIEW (3712241/428A)
County Summary: ALAMEDA
SNA Summary: Dumbarton Point
Owner/Manager: UNKNOWN
Location: ALBRAE SLOUGH, TRIB TO COYOTE CRK, JUST W OF MUD SLOUGH, FREMONT.
Lat/Long: 37°28'40" / 122°00'14"
UTM: Zone-10 N4148123 E588079
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 130.7 ac
Dates Last Seen — Element: 1984-XX-XX — Site: 1984-XX-XX
Township: 05S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 3 ft

Occurrence No. 91 — Map Index: 09884
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary: Dumbarton Point
Owner/Manager: SAN FRANCISCO BAY NWR
Location: TRIANGLE MARSH, TWO MI N OF ALVISO SW OF WHERE SP RR TRACKS CROSS COYOTE CREEK.
Lat/Long: 37°27'26" / 121°58'42"
UTM: Zone-10 N4145870 E590353
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 79.3 ac
Dates Last Seen — Element: 1990-10-26 — Site: 1990-10-26
Township: 05S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 3 ft

REITHRODONTOMYS RAVIVENTRIS (cont.)
SALT-MARSH HARVEST MOUSE — Element Code: AMAFF02040

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1G2	CDFG Status:
State: Endangered	State: S1S2	

Occurrence No. 116 — Map Index: 10047
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary: Dumbarton Point
Owner/Manager: SANTA CLARA VALLEY WATER DIST
Location: N END OF THE SAN JOSE-SANTA CLARA SEWAGE DISPOSAL PONDS, DIXON ROAD AND HIGHWAY 880 AND COYOTE CREEK, SAN JOSE.
Lat/Long: 37°26'55" / 121°55'35"
UTM: Zone-10 N4144968 E594968
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 134.0 ac
Dates Last Seen — Element: 1990-10-05 — Site: 1990-10-05
Township: 05S
Range: 01W
Section: 36 Qtr XX
Meridian: M
Elevation: 3 ft

Occurrence No. 147 — Map Index: 37655
Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: NEWBY ISLAND MARSH, 2.5 MILES NE OF ALVISO, COYOTE CREEK AREA, SOUTH SAN FRANCISCO BAY.
Lat/Long: 37°27'34" / 121°57'01"
UTM: Zone-10 N4146148 E592828
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 19.8 ac
Dates Last Seen — Element: 1990-06-29 — Site: 1990-06-29
Township: 05S
Range: 01W
Section: 34 Qtr XX
Meridian: M
Elevation: 0

Occurrence No. 159 — Map Index: 38008
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: PVT
Location: AT PG&E UTILITY TOWER ADJACENT TO HIGHWAY 880 AND FLOOD CONTROL CHANNEL B, APPROX 1000 FT NNE OF OLD FREMONT AIRPORT.
Lat/Long: 37°27'52" / 121°55'36"
UTM: Zone-10 N4146732 E594910
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters
Dates Last Seen — Element: 1996-10-29 — Site: 1996-10-29
Township: 05S
Range: 01W
Section: 25 Qtr XX
Meridian: M
Elevation: 5 ft

REITHRODONTOMYS RAVIVENTRIS (cont.)
SALT-MARSH HARVEST MOUSE — Element Code: AMAFF02040

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1G2	CDFG Status:
State: Endangered	State: S1S2	

Occurrence No. 92 — Map Index: 09810
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)*, MOUNTAIN VIEW (3712241/428A)
County Summary: SANTA CLARA
SNA Summary: Dumbarton Point
Owner/Manager: UNKNOWN
Location: COYOTE CREEK MARSH, 2.3 MI NNW OF ALVISO.
Lat/Long: 37°27'45" / 121°59'55"
UTM: Zone-10 N4146443 E588557
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 53.3 ac

Dates Last Seen:
Element: 1986-08-XX
Site: 1986-08-XX

Township: 05S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 3 ft

Occurrence No. 93 — Map Index: 09918
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary: Dumbarton Point
Owner/Manager: UNKNOWN
Location: BOTH SIDES OF MUD SLOUGH JUST E OF DRAWBRIDGE (SPRR TRACKS),2.2 MI N ALVISO.
Lat/Long: 37°28'03" / 121°58'11"
UTM: Zone-10 N4147029 E591109
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/5 mile

Dates Last Seen:
Element: 1981-XX-XX
Site: 1986-08-XX

Township: 05S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 3 ft

Occurrence No. 97 — Map Index: 10051
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA, SANTA CLARA
SNA Summary: Dumbarton Point
Owner/Manager: PVT
Location: WARM SPRINGS SITE, 2 MI S OF FREMONT BTWN COYOTE CREEK AND NIMITZ FWY.
Lat/Long: 37°27'49" / 121°56'04"
UTM: Zone-10 N4146632 E594233
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1/5 mile

Dates Last Seen:
Element: 1985-XX-XX
Site: 1985-XX-XX

Township: 05S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 4 ft

REITHRODONTOMYS RAVIVENTRIS (cont.)
SALT-MARSH HARVEST MOUSE — Element Code: AMAFF02040

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1G2	CDFG Status:
State: Endangered	State: S1S2	

Occurrence No. 98 — Map Index: 10068
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary: Dumbarton Point
Owner/Manager: USFWS, PVT
Location: SAN FRANCISCO BAY NMR, MARSHLAND ADJACENT TO OLD FREMONT AIRPORT RUNWAY, BETWEEN COYOTE CREEK AND NIMITZ (880) FREEWAY.
Lat/Long: 37°27'35" / 121°55'47"
UTM: Zone-10 N4146216 E594661
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 28.7 ac

—Dates Last Seen—
Element: 1998-08-10
Site: 1998-08-10

Township: 05S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation:

Occurrence No. 110 — Map Index: 09902
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary: Dumbarton Point
Owner/Manager: PVT-CARUFF CORP
Location: NEW FREMONT AIRPORT SITE, ALONG SPRR TRACKS JUST N OF MUD SLOUGH, FREMONT.
Lat/Long: 37°28'39" / 121°58'20"
UTM: Zone-10 N4148134 E590875
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 54.5 ac

—Dates Last Seen—
Element: 1985-09-14
Site: 1985-09-14

Township: 05S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 3 ft

Occurrence No. 115 — Map Index: 09894
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary: Dumbarton Point
Owner/Manager: USFWS, PVT
Location: NEW CHICAGO MARSH, JUST N OF ALVISO, SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE AND OWENS CORNING PROPERTY.
Lat/Long: 37°26'05" / 121°57'53"
UTM: Zone-10 N4143402 E591589
Mapping Precision: NON-SPECIFIC
Symbol Type: POLYGON
Area: 451.5 ac

—Dates Last Seen—
Element: 1990-12-16
Site: 1990-12-16

Township: 06S
Range: 01W
Section: 03 Qtr XX
Meridian: M
Elevation: 0

Location Summary Report
LEFEC CNDDB REPORT

REITHRODONTOMYS RAVIVENTRIS (cont.)
SALT-MARSH HARVEST MOUSE — Element Code: AMAFF02040

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1G2	CDFG Status:
State: Endangered	State: S1S2	

Occurrence No. 160 — Map Index: 40303

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Decreasing
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: PVT-MCCARTHY RANCH
Location: WEST END OF DIXON LANDING ROAD, JUST WEST OF HWY 17, MILPITAS.
Lat/Long: 37°27'15" / 121°55'20"
UTM: Zone-10 N4145624 E595325
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters

—Dates Last Seen—
Element: 1998-08-10
Site: 1998-08-10

Township: 05S
Range: 01W
Section: 36 Qtr XX
Meridian: M
Elevation: 5 ft

Location Summary Report
LEFEC CNDDB REPORT

NORTHERN COASTAL SALT MARSH

Element Code: CTT52110CA

Status		NDDB Element Ranks		Other Lists
Federal:	None	Global:	G3	
State:	None	State:	S3.2	

Occurrence No. 15 Map Index: 09495

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MOUNTAIN VIEW (3712241/428A)*, MILPITAS (3712148/427B), PALO ALTO (3712242/428B), REDWOOD POINT (3712252/447C)
County Summary: SANTA CLARA, SAN MATEO
Dumbarton Point
Owner/Manager: UNKNOWN
Location: NE PALO ALTO S SAN FRANCISCO BAY.
Lat/Long: 37°28'02" / 122°07'14"
UTM: Zone-10 N4146865 E577760
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 1,280.8 ac

—Dates Last Seen—
Element: 1977-06-XX
Site: 1987-05-29

Township: 05S
Range: 02W
Section: XX Qtr XX
Meridian: M
Elevation: 10 ft

Occurrence No. 16 Map Index: 09551

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: NEWARK (3712251/447D)*, MILPITAS (3712148/427B), MOUNTAIN VIEW (3712241/428A)
County Summary: ALAMEDA, SANTA CLARA
Dumbarton Point
Owner/Manager: PVT-LESLIE SALT CO
Location: DUMBARTON PT, SE SAN FRANCISCO BAY.
Lat/Long: 37°29'36" / 122°01'21"
UTM: Zone-10 N4149853 E586421
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 4,056.6 ac

—Dates Last Seen—
Element: 1985-10-24
Site: 1985-11-XX

Township: 05S
Range: 02W
Section: XX Qtr XX
Meridian: M
Elevation: 15 ft

Location Summary Report
LEFEC CNDDB REPORT

LEPIDURUS PACKARDI
VERNAL POOL TADPOLE SHRIMP — Element Code: ICBRA10010

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2G3	CDFG Status:
State: None	State: S2S3	

Occurrence No. 60 — Map Index: 34780
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: USFWS-SAN FRANCISCO BAY NWR
Location: WSW OF FREMONT IN THE SALT EVAPORATORS; 1.5 KM SE OF ALBRAE.
Lat/Long: 37°29'18" / 121°58'22"
UTM: Zone-10 N4149346 E590820
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 11.6 ac
Dates Last Seen — Element: 1995-03-23 — Site: 1995-03-23
Township: 05S
Range: 01W
Section: 21 Qtr XX
Meridian: M
Elevation: 7 ft

Occurrence No. 61 — Map Index: 34781
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: USFWS-SAN FRANCISCO BAY NWR
Location: 1.1 MILES WSW OF CUSHING RO AND HIGHWAY 880 FREMONT, JUST NORTH OF SALT EVAPORATORS, 1.3 MILES SE OF ALBRAE, SFBNR.
Lat/Long: 37°29'05" / 121°58'01"
UTM: Zone-10 N4148946 E591325
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 21.6 ac
Dates Last Seen — Element: 1997-03-31 — Site: 1997-03-31
Township: 05S
Range: 01W
Section: 21 Qtr XX
Meridian: M
Elevation: 7 ft

Occurrence No. 73 — Map Index: 34806
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: PVT
Location: WEST OF FREMONT; APPROX. 1.0 KM SOUTHEAST OF ALBRAE.
Lat/Long: 37°29'31" / 121°58'38"
UTM: Zone-10 N4149744 E590415
Mapping Precision: SPECIFIC
Symbol Type: POINT
Radius: 80 meters
Dates Last Seen — Element: 1996-03-22 — Site: 1996-03-22
Township: 05S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation: 9 ft

Location Summary Report
LEFEC CNDDB REPORT

CENTROMADIA PARRYI SSP CONGDONII
CONGDON'S TARPLANT — Element Code: PDAST4R0P1

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T1	CNPS List: 1B
State: None	State: S1.1	R-E-D Code: 3-3-3

Occurrence No. 16 — Map Index: 10086
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Stable
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: UNKNOWN
Location: WARM SPRINGS DISTRICT, WEST OF THE NIMITZ FREEWAY (I-880) AT CUSHING PARKWAY, FREMONT.
Lat/Long: 37°29'22" / 121°56'55"
UTM: Zone-10 N4149505 E592927
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 9.6 ac

—Dates Last Seen—
Element: 1998-10-03
Site: 1998-10-03

Township: 05S
Range: 01W
Section: 23 Qtr NW
Meridian: M
Elevation: 10 ft

Occurrence No. 17 — Map Index: 24671
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: NORTH CITY LIMITS OF MILPITAS.
Lat/Long: 37°25'59" / 121°54'21"
UTM: Zone-10 N4143259 E596800
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

—Dates Last Seen—
Element: 1928-09-28
Site: 1998-10-03

Township: 06S
Range: 01E
Section: XX Qtr XX
Meridian: M
Elevation: 20 ft

Occurrence No. 18 — Map Index: 08777
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Stable
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: CITY OF SUNNYVALE
Location: SUNNYVALE BAYLANDS PARK, NORTHEAST OF JUNCTION OF HIGHWAY 237 AND LAWRENCE EXPRESSWAY (G2), SUNNYVALE.
Lat/Long: 37°24'38" / 121°59'45"
UTM: Zone-10 N4140696 E588861
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 5.6 ac

—Dates Last Seen—
Element: 1998-10-03
Site: 1998-10-03

Township: 06S
Range: 01W
Section: 17 Qtr XX
Meridian: M
Elevation: 5 ft

CENTROMADIA PARRYI SSP CONGDONII (cont.)
CONGDON'S TARPLANT — Element Code: PDAST4R0P1

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T1	CNPS List: 1B
State: None	State: S1.1	R-E-D Code: 3-3-3

Occurrence No. 40 — Map Index: 42346
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown
Quad Summary: SAN JOSE EAST (3712137/427D)*, SANTA TERESA HILLS (3712127/407A), LOS GATOS (3712128/407B), SAN JOSE WEST
SNA Summary: (3712138/427C), CALAVERAS RESERVOIR (3712147/427A), MILPITAS (3712148/427B)
County Summary: SANTA CLARA
Owner/Manager: UNKNOWN
Location: EAST SAN JOSE.
Lat/Long: 37°18'52" / 121°51'39"
UTM: Zone-10 N4130163 E600928
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 5 mile

—Dates Last Seen—
Element: 1908-09-19
Site: 1998-10-04

Township: 07S
Range: 01E
Section: 21 Qtr XX
Meridian: M
Elevation: 100 ft

Occurrence No. 41 — Map Index: 42347
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: PVT
Location: ALVISO, NORTH OF HIGHWAY 237 AND EAST OF NORTH 1ST STREET, WEST OF MILPITAS.
Lat/Long: 37°25'41" / 121°57'44"
UTM: Zone-10 N4142669 E591799
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 40.6 ac

—Dates Last Seen—
Element: 1998-09-01
Site: 1998-09-01

Township: 06S
Range: 01W
Section: 10 Qtr XX
Meridian: M
Elevation: 10 ft

Location Summary Report
LEFEC CNDDB REPORT

LASTHENIA CONJUGENS
CONTRA COSTA GOLDFIELDS — Element Code: PDAST5L040

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1	CNPS List: 1B
State: None	State: S1.1	R-E-D Code: 3-3-3

Occurrence No. 29 — Map Index: 35476
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: PVT-CATELLUS CORP
Location: SKY SAILING AIRPORT, 0.4 MILE WEST OF NIMITZ FWY, ABOUT 0.4-0.8 MILE WNW OF JCT CUSHING ROAD AND LANDING ROAD, FREMONT.
Lat/Long: 37°29'31" / 121°57'23"
UTM: Zone-10 N4149762 E592262
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 27.4 ac

—Dates Last Seen—
Element: 1999-05-04
Site: 1999-05-04

Township: 05S
Range: 01W
Section: 15 Qtr XX
Meridian: M
Elevation: 10 ft

Occurrence No. 30 — Map Index: 36471
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: USFWS-SAN FRANCISCO BAY NWR
Location: FREMONT; DON PEDRO SAN FRANCISCO NWR, 0.15-0.5 MI W OF CUSHING RD.
Lat/Long: 37°29'12" / 121°58'04"
UTM: Zone-10 N4149160 E591257
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 34.5 ac

—Dates Last Seen—
Element: 1997-03-31
Site: 1997-03-31

Township: 05S
Range: 01W
Section: 21 Qtr XX
Meridian: M
Elevation: 5 ft

Location Summary Report
LEFEC CNDDB REPORT

ASTRAGALUS TENER VAR TENER
ALKALI MILK-VETCH — Element Code: PDFAB0F8R1

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1T1	CNPS List: 1B
State: None	State: S1.1	R-E-D Code: 3-2-3

Occurrence No. 6 — Map Index: 24671
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: MILPITAS.
Lat/Long: 37°25'59" / 121°54'21"
UTM: Zone-10 N4143259 E596800
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

—Dates Last Seen—
Element: 1905-04-04
Site: 1905-04-04

Township: 06S
Range: 01E
Section: XX Qtr XX
Meridian: M
Elevation: 20 ft

Occurrence No. 7 — Map Index: 24673
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: ALAMEDA
SNA Summary:
Owner/Manager: UNKNOWN
Location: ALBRAE, ALONG RAILROAD TRACKS ABOUT 1 MILE SOUTHWEST OF FREMONT RACEWAYS, WEST OF FREMONT.
Lat/Long: 37°29'18" / 121°58'45"
UTM: Zone-10 N4149360 E590245
Mapping Precision: SPECIFIC
Symbol Type: POLYGON
Area: 28.7 ac

—Dates Last Seen—
Element: 1999-05-04
Site: 1999-05-04

Township: 05S
Range: 01W
Section: 21 Qtr NW
Meridian: M
Elevation: 10 ft

Location Summary Report
LEFEC CNDDB REPORT

CHORIZANTHE ROBUSTA VAR ROBUSTA
ROBUST SPINEFLOWER — Element Code: PDPGN040Q2

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2T1	CNPS List: 1B
State: None	State: S1.1	R-E-D Code: 3-3-3

Occurrence No. 19 — Map Index: 37885

—Dates Last Seen—
Element: 1882-XX-XX
Site: 1882-XX-XX

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown
Quad Summary: SAN JOSE WEST (3712138/427C)*, SAN JOSE EAST (3712137/427D), CALAVERAS RESERVOIR (3712147/427A), MILPITAS (3712148/427B)
County Summary: SANTA CLARA
Owner/Manager: UNKNOWN
Location: SAN JOSE.
Lat/Long: 37°20'17" / 121°53'25"
UTM: Zone-10 N4132737 E598306
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 5 mile

Township: 07S
Range: 01E
Section: 08 Qtr XX
Meridian: M
Elevation: 85 ft

Location Summary Report
LEFEC CNDDB REPORT

CORDYLANTHUS MARITIMUS SSP PALUSTRIS
POINT REYES BIRD'S-BEAK — Element Code: PDSCR0J0C3

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3T2	CNPS List: 1B
State: None	State: S2.2	R-E-D Code: 2-2-2

Occurrence No. 22 — Map Index: 09936

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: MILPITAS (3712148/427B)
County Summary: SANTA CLARA
SNA Summary:
Owner/Manager: UNKNOWN
Location: NEAR ALVISO.
Lat/Long: 37°26'06" / 121°57'51"
UTM: Zone-10 N4143424 E591629
Mapping Precision: NON-SPECIFIC
Symbol Type: POINT
Radius: 1 mile

—Dates Last Seen—
Element: 1905-05-XX
Site: 1905-05-XX

Township: 06S
Range: 01W
Section: XX Qtr XX
Meridian: M
Elevation:

Appendix 8.2C Draft

Biological Resources Mitigation Implementation and Monitoring Plan

For the Los Esteros Critical Energy Facility, Santa Clara County, California

Prepared for

Calpine Corporation

6700 Koll Center Parkway
Pleasanton, California 95630

July 2001

CH2MHILL
2485 Natomas Park Drive
Sacramento, CA 95833

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Appendix 8.3

Proposed Native American Burial Protection Plan for the Los Esteros Critical Energy Facility Construction Program

Statement of Purpose

The intent of this agreement is to protect Native American burials, isolated human remains, and associated grave objects from destruction during the construction of facilities associated with the Los Esteros Critical Energy Facility (LECEF) in north San Jose.

This agreement applies specifically to the construction of facilities (access roads, pipelines, transmission lines, etc.) associated with the development of the LECEF in the City of San Jose, Santa Clara County, California. Because there are no federal lands associated with this project, any and all discovered Native American burials, isolated human remains, and associated grave objects will be treated in accordance with the provisions of the State of California Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5.

The intent of this agreement is to fulfill the requirements for treatment of human remains that may be specified in any Memorandum of Agreement (MOA) among the California Energy Commission (CEC), the State Historic Preservation Officer (SHPO), the Native American Heritage Commission (NAHC), the City of San Jose (City), Santa Clara County (County), and any other parties concerning this project. Other parties might include state and/or federal agencies that may become involved as a result of project permitting or licensing. The applicant will provide funding for the project and the CEC has been designated as the lead agency for regulatory compliance.

Description of Authority

The coordination of the procedures outlined within this agreement is the responsibility and under the authority of the CEC. As the lead agency for ensuring compliance with CEQA (and possibly the lead agency for compliance with Section 106 of the National Historic Preservation Act if federal agency participation occurs), the CEC is responsible for guaranteeing that the stipulations of this agreement are carried out.

Section 7050.5 of the California Health and Safety Code stipulates:

> (b) In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance to the site or any nearby area reasonably suspected to overlie adjacent remains until the Santa Clara County Coroner in accordance with Chapter 10 (commencing with Section 27460) of part 3 of Division 2 of Title 3 of the Government Code, or any other related provisions of law concerning investigation of the circumstances, manner, and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or his or her authorized representative in the manner provided in Section 5097.98 of the Public Resources Code. The Coroner has

make his/her determination within two working days from the time the person responsible for the excavation or his or her authorized representative, notifies the Coroner of the discovery or recognition of the human remains.
(c) If the Coroner determines that the remains are not subject to his or her authority and if the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission.

To ensure compliance with this State Law, the following procedures will apply.

C. Authority to Halt Construction

1. The construction contract will inform the contractor (and subcontractors) of the possibility of inadvertent discovery of human remains and will require them to avoid damage to such remains by immediately ceasing all disturbing activities at the find location. The Field Superintendent or equivalent will inform the construction crew regarding the procedures for protection of discovered human remains at the start of the project.

2. The construction Field Superintendent or his/her designate shall have the authority and responsibility to temporarily halt construction operations within 25 meters of the discovered remains if the location is not being monitored by the applicant's archaeological consultant or Native American monitor. If the applicant's archaeological consultant or Native American representative is monitoring the location, then the monitor will have the authority to halt construction within 25 meters of the find. The construction contractor or subcontractor, archaeologist or Native American monitor shall maintain a log of each work stoppage caused by the inadvertent discovery of potential or confirmed human remains, including the date and time that operations are halted and the date and time that authorized construction operations begin again.

D. Procedures When Skeletal Remains are Found

These procedures will be followed for all initial finds at known archaeological sites and in each case for isolated finds outside identified archaeological sites.

1. The archaeologist, Native American monitor, or construction crewmember (if the archaeologist or Native American Monitor is not present) shall inform the construction Field Superintendent that a work crew has been requested to stop work due to the discovery of human skeletal remains.

2. The applicant shall offer the assistance of a project archaeologist to the Coroner to provide information about the discovery that will assist the Coroner in determining whether the remains are those of a deceased Native American. If the Coroner has reason to believe that the human remains are those of a deceased Native American, he/she is required by law to contact the State of California Native American Heritage Commission (NAHC) by telephone within 24 hours of their determination.

3. Upon notice that the Coroner has determined that the remains are those of a deceased Native American, the project archaeologist will notify the following persons:

   A.

   B.

   C.

4. The archaeologist will contact the NAHC to verify that they have been contacted by the Santa Clara County Coroner and will arrange to receive recommendations from the Most Likely Descendents (MLDs) identified by the NAHC pursuant to Section 5097.98 (a) of the California Public Resources Code.

E. Protection While Awaiting Recommendations from Most Likely Descendents

Protection of Native American human burials shall be accomplished by: (1) keeping any discovery confidential; and (2) securing the discovery locality to prevent disturbance of remains and associated materials. Only those persons listed above in Section D will be notified of a find once it has been covered in place or moved in accordance with recommendations of the MLD. Methods to protect a find will include fencing, covering the remains with a protective material and culturally sterile soil or plywood, and if vandalism should be considered a threat, establish a 24-hour site security monitor.

F. Treatment as Recommended by Most Likely Descendents

Human remains will be treated in accordance with recommendations of the MLD identified by the NAHC. In general, the recommendations will follow those set forth below.

1. *Leave In Place.* If the gravesite is located in an area not subject to further disturbance, the remains will be left in place and covered with soil. This is the preferred treatment.

2. *Expose and Remove for Reburial*. If protection against disturbance during project construction or future development cannot be reasonably assured, remains may be removed for reburial with the MLD's consent. An archaeologist with osteological expertise will carefully and respectfully excavate the burial to expose in place the skeletal remains and any associated grave objects in the presence of a Native American monitor.

3. *Store Temporarily.* Each human burial with its associated grave objects will be stored together as a burial unit. A burial unit will be stored in a secure locked room at a location approved by the MLD.

4. *Laboratory Analysis.* There will be no viewing, handling, or analysis of stored burial units unless the MLD has recommended specific analyses.

5. *Reburial.* Human burials with their associated grave objects will be reburied at a location within Santa Clara County.

G Reporting

The reburial locality will be formally recorded as an "Archaeological Redeposit" with its confidential location shown on a USGS 7.5-minute map. A Burial Treatment Report will be compiled by the project archaeologist and will consist of a list of locations from which burials were removed, individual burials designations, the Archaeological Redeposit Record(s) documenting the reburial location, dates of excavation and reinternment, and individuals (with affiliation) present during reinternment. The Burial Treatment Report shall be considered a highly sensitive, confidential record and copies will be provided to the MLD and filed with the NAHC, the California Historical Resources Information System, Northwest Information Center, Sonoma State University, the Santa Clara County Coroner's office, and with any involved state or federal agencies. Full reporting of human remains will be contained in the Archaeological Data Recovery Report.

H. Curation of Archaeological Material Not Associated with Human Remains

Materials recovered during survey, evaluation and data recovery efforts will be curated at a facility that meets the criteria set forth in 36 CFR 79 (e.g., San Jose State University). Items considered to be of a sacred and/or ceremonial nature as agreed upon by the MLD will be returned to (*name of tribe*).

CH2M HILL
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Corvallis, OR
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97339-0428
Tel 541.752.4271
Fax 541.752.0276

CH2MHILL

July 13, 2001

164512.TM.PR

Ms. Ella Rodriquez
P.O. Box 1411
Salinas, CA 93902

Dear Ella,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

CH2M HILL is assisting Calpine Corporation apply for certification to the California Energy Commission to install a new peak-power gas-fired electrical generating plant in North San Jose at the intersection of SR 237 and Coyote Creek. Please find attached a USGS map that shows the project area.

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Thank you in advance for your cooperation and assistance. We look forward to hearing from you soon. I can be reached by telephone at (541) 758-0235 (ext. 3662) or by fax (541) 752-0276 or e-mail (***jbard@ch2m.com***).

Sincerely,

CH2M HILL

James C. Bard
Cultural Resource Specialist

Enclosure – Project area map

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CH2MHILL

July 13, 2001

164512.TM.PR

Ms. Jakki Kehl
5461 Beaver Lane
Byron, CA 94514

Dear Ms. Kehl,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

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James C. Bard
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CH2MHILL

July 13, 2001

164512.TM.PR

Ms. Katherine Erolinda Perez
1234 Luna Lane
Stockton, CA 96003

Dear Ms. Perez,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

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Sincerely,

CH2M HILL

James C. Bard
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Enclosure – Project area map

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CH2MHILL

July 13, 2001

164512.TM.PR

Ms. Marjorie Ann Reid
19279 Lexingon Lane
Redding, CA 96003

Dear Ms. Reid,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

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CH2M HILL

James C. Bard
Cultural Resource Specialist

Enclosure – Project area map

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CH2MHILL

July 13, 2001

164512.TM.PR

Ms. Michelle Zimmer
4952 McCoy Avenue
San Jose, CA 95130

Dear Ms. Zimmer,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

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James C. Bard
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CH2MHILL

July 13, 2001

164512.TM.PR

Mr. Tomas P. Soto
P.O. Box 269
Foresthill, CA 95631

Dear Mr. Soto,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

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CH2MHILL

July 13, 2001

164512.TM.PR

Mr. Charles Higuera
Amah San Juan Band
1316 Buena Vista Avenue
Pacific Grove, CA 93950

Dear Mr. Higuera,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

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CH2MHILL

July 13, 2001

164512.TM.PR

Ms. Marion Martinez
Amah San Juan Band
26206 Coleman Avenue
Hayward, CA 94544

Dear Ms. Martinez,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

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CH2MHILL

July 13, 2001

164512.TM.PR

Ms. Irene Zwierlein
Amah/Mutsun Tribal Band
789 Canada Road
Woodside, CA 94062

Dear Ms. Zwierlein.

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

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CH2MHILL

July 13, 2001

164512.TM.PR

Ms. Ann Marie Sayer, Chairperson
Indian Canyon Mutsun Band of Costanoan
P.O. Box 28
Hollister, CA 95024

Dear Ms. Sayer,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

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The Los Esteros Critical Energy Facility (LECEF) will be a nominal 180-megawatt (MW) natural-gas-fired simple cycle peaking power plant. Electrical generation will be at 13.8 kilovolts, which will be stepped up with a 115-kilovolt (kV) switchyard. A underground feeder, approximately 200 feet in length will interconnect with PG&E's new Los Esteros Substation, to be constructed adjacent to the project site on its north side. Natural gas for the facility will be delivered through a new 900-foot long 10" diameter pipeline that will connect to the existing PG&E lines 101/109 located adjacent to State Highway 237, approximately 0.5 miles from the PG&E Milpitas Gas terminal.

Plant process water will be supplied by San Jose/Santa Clara Water Pollution Control Plant (WPCP) via a 900-Foot pipeline from the existing recycled water main. Plant wastewater will be returned to San Jose/Santa Clara WPCP. Sanitary sewage will be gathered and disposed with piping and a lift pump to the City sanitary sewer system.

The site is located in north San Jose, California at 1515 Alviso-Milpitas Road. The site is on the north side of State Highway 237 near Coyote Creek and its adjacent flood control channel which is to the east of the site. West of the site is WPCP buffer lands, north-west of the site is the Water Pollution Control Plant, and north of the site are WPCP sludge drying ponds..

One previously recorded archaeological site, CA-SCL-528, is located in the immediate project vicinity but the project itself will not affect this site – all proposed project facilities are designed to avoid impact to SCL-528.

We would appreciate hearing from you at your earliest possible convenience if you have any concerns about this project in terms of its potential impacts to cultural resources of importance to the *Ohlone* people. Your concerns and recommendations will be forwarded to both Calpine Corporation and to the Commission for consideration. Please also let us know if you wish to be placed on the Commission's mailing list to be apprised of any public meetings or hearings that might be scheduled.

Thank you in advance for your cooperation and assistance. We look forward to hearing from you soon. I can be reached by telephone at (541) 758-0235 (ext. 3662) or by fax (541) 752-0276 or e-mail (***jbard@ch2m.com***).

Sincerely,

CH2M HILL

James C. Bard
Cultural Resource Specialist

Enclosure – Project area map

CH2M HILL
2300 NW Walnut Blvd.
Corvallis, OR
97330-3538
P.O. Box 428
Corvallis, OR
97339-0428
Tel 541.752.4271
Fax 541.752.0276

CH2MHILL

July 13, 2001

164512.TM.PR

Mr. Andrew Galvan
The Ohlone Indian Tribe
P.O. Box 3152
Mission San Jose, CA 94539

Dear Andy,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

CH2M HILL is assisting Calpine Corporation apply for certification to the California Energy Commission to install a new peak-power gas-fired electrical generating plant in North San Jose at the intersection of SR 237 and Coyote Creek. Please find attached a USGS map that shows the project area.

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Sincerely,

CH2M HILL

James C. Bard
Cultural Resource Specialist

Enclosure – Project area map

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2300 NW Walnut Blvd.
Corvallis, OR
97330-3538
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Tel 541.752.4271
Fax 541.752.0276

CH2MHILL

July 13, 2001

164512.TM.PR

Ms. Ramona Garibay, Representative
Trina Marine Ruano Family
37974 Canyon Hts. Drive
Fremont, CA 94536

Dear Ms. Garibay,

Subject: Calpine Los Esteros Critical Energy Facility – North San Jose, California

CH2M HILL is assisting Calpine Corporation apply for certification to the California Energy Commission to install a new peak-power gas-fired electrical generating plant in North San Jose at the intersection of SR 237 and Coyote Creek. Please find attached a USGS map that shows the project area.

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Sincerely,

CH2M HILL

James C. Bard
Cultural Resource Specialist

Enclosure – Project area map

Appendix 8.4

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Andrew Crabtree

Phone No.: 408-277-4576 **Date:** June 21, 2001

Call From: **Time:** 02:10 PM

Message Taken By: Katy Carrasco

Subject: U.S. Dataport Project - Potential Cumulative Land Use Impacts

I spoke with Andrew Crabtree, Senior Planner at the City of San Jose Planning Department. Mr. Crabtree indicated that the site was currently within the County's jurisdiction and had an agricultural zoning designation. The site will be annexed and the City of San Jose does not have an agricultural zoning designation, therefore would otherwise be changed to an appropriate reserved designation. He indicated that the area south and southwest of the site is mostly developed.

The following projects have been approved or are undergoing construction within approximately 1 mile of the project site:

Approved 1.2 million square foot office building campus for the Palm Corporation, approximately 1 mile due west of the site. Not likely to be built under current tenant due to financial difficulties.

Approved 2.5 million square foot campus for Sysco Systems, approximately 1 mile west of the site.

Approved 2400 unit apartment complex, built by the Irvine Company, approximately 1 mile south.

A General Plan amendment has been applied for a site approximately two miles northwest of the site to change the zoning to residential, but it will not be approved.

Mr. Crabtree indicated that the City would not want other than industrial and low-intensity uses (not residential) to occur in the vicinity of the treatment plant, and therefore the power plant was an acceptable use. He indicated that if the zoning and land use had not been approved for the power plant, the only other preferable use would have been warehouses or some other use which would not require increased worker or residential populations in the vicinity of the water treatment plant.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Ruben Dalaison

Phone No.: 408.994.4047 **Date:** May 31, 2001

Call From: Robyn Smith **Time:** 11:07 AM

Subject: San Jose Police Services

Ruben Dalaison, Crime Prevention Officer with the San Jose Police Department, told me that the police department is separated into 16 districts and has law enforcement responsibility wtihin the city limits. The plant site is in the Department's "R" District, which covers the north end of the city. This district is split into five beats, each of which has at least one officer patrolling it at any given time. Between 9:00 PM and 1:00 AM, up to 10 officers patrol the district. The Department generally has a response time from 90 seconds to 4.5 minutes, depending on other incidents in the area.

In the event of an emergency, officers from outside the "R" district would be called upon. The City of San Jose Police Department has the support of 114 patrolling officers from 6:00 AM to 4:00 PM, 131 patrolling officers from 3:00 PM to 1:00 AM, and 86 officers from 9:00 PM to 7:00 AM. The Department's "Fourth Watch" has 22 officers who patrol from 5:00 PM to 3:00 AM. In addition to the on-duty patrollers, the department employs 22 officers in its Special Operations division.

Mr. Dalaison also told me that the proposed project site lies just a few hundred feet from the police district of the City of Milpitas. Officers from this district would be additional support in terms of day-to-day roving and emergency support.

In addition, the Santa Clara County Sheriff's Department patrols areas in San Jose, because pockets of land fall under their jurisdiction. This Department, too, would provide support in the event of an emergency.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Lynn Nashlund

Phone No.: 408.299.2541 x153 **Date:** May 30, 2001

Call From: Robyn Smith **Time:** 02:33 PM

Subject: Distribution of Property Tax Revenues in Santa Clara County

Lynn Nashlund, Senior Accountant with Santa Clara County's Tax Collector's Office, told me that property taxes go first to the state, where they are reallocated back to the cities, counties, and special districts. In Santa Clara County, 59.90 percent of the tax revenues are paid to schools, 11.66 percent are paid into the county general fund, 13.98 percent to local redevelopment agencies, 8.75 to cities, and 5.7 to special districts. These numbers are accurrate for FY 00-01 ending in June.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Steve Burkey

Phone No.: 408-586-3275 **Date:** June 21, 2001

Call From: **Time:** 02:10 PM

Message Taken By: Katy Carrasco

Subject: U.S. Dataport Project - Potential Cumulative Land Use Impacts

I spoke with Steve Burkey, a Principal Planner at the City of Milipitas. He characterized the general area with regard to development as follows. The area near the 880 & 237 in Milipitas is in general either existing, planned/zoned business parks. In particular, the area has a concentration of R&D type facilities. The area south of 237 is generally developed, with approximately 22 acres of vacant land remaining within the city limits. The area north of the 237 is generally vacant. Projects in construction or applied for in the vicinity of the project include the following:

Veritas Software Campus. 990,000 square feet (approximately 65 acres) of business park uses. Phase I of construction has started and it has not been determined when construction will be completed. The campus is located north of 237, southwest of McCarthy Boulevard

Irvine Company Business Park. 1 million square foot business park. Some construction has begun, but it has not been determined when it will be completed. This is the area where Sysco formerly wanted to lease. It is located north of 237, northeast of McCarthy Boulevard

South of the 237 and east of the 880, greater than 1 mile from the project site, 1 office park (400,000 square feet, near Tasman and Alder) is undergoing construction, and 1 office park (240,000 square feet, near 237 and Tasman) has been applied for.

Additionally, new high to medium density residences are being proposed southeast of 237 and east of 880. Mr. Burkey noted that several hotels and some shopping centers exist within the area near the proposed project, but indicated that no residential uses are planned within a mile of the site.

Mr. Burkey indicated that given the tight housing market in the Bay area, it would be reasonable to compare whether or not the proposed project is displacing residential land uses. He indicated that it is not likely that within the vicinity of the project new residential uses would be approved because of the proximity of the wastewater treatment plant and general industrial nature of the area. Therefore, the project would not displace residential uses.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Rene Delgado

Phone No.: 800.400.7115 **Date:** June 13, 2001

Call From: Robyn Smith **Time:** 1:39 PM

Subject: Distribution of Sales Tax Revenues in Santa Clara County

Rene Delgado, Senior Tax Auditor with the State Board of Equalization, told me that the sales tax rate in Santa Clara County is 8.00 percent. Of this, 5.75 goes to the state; 0.25 percent is allotted to the county; 1 percent goes to the city; the remaining 1 percent is split between the Santa Clara County Traffic Authority and the Santa Clara County Transit District.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Steve Burkey

Phone No.: 408-586-3275 **Date:** June 21, 2001

Call From: **Time:** 02:10 PM

Message Taken By: Katy Carrasco

Subject: U.S. Dataport Project - Potential Cumulative Land Use Impacts

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CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Wayne Hooper

Phone No.: 408.423.2026 **Date:** June 13, 2001

Call From: Robyn Smith **Time:** 03:39 PM

Subject: School District Development Fee

Wayne Hooper, Assistant Superintendent of Business Services for the Santa Clara County Unified School District, told me that commercial and industrial developments are charged a $0.33 per square foot development fee based on building space. The fee is assessed based on square footage of the new building.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Santa Clara County Unions

Phone No.: See list below **Date:** May 30, 2001

Call From: Robyn Smith **Time:** 12:30 PM

Subject: Labor Force Availability in Santa Clara County

I spoke with the following Unions about the availability of skilled labor in Santa Clara County. An abundance of appropriate laborers reside in the county:

Name	No. of available workers	Contact	Phone
Cement Masons Union Local 400	16+	Hector Cartez	408.266.9160
IBEW Local No. 332	250+	Julie McCarthy	408.194.4906
Millwrights Local Union 102	35+	Ed Gable	510.635.0323
Operating Engineers Union Local No. 3	150+	Joe Morrison	408.295.8788

+ denotes the Union stated it has more than enough workers to meet demand and has the ability to recruit more if needed.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Don Jackson

Phone No.: 916.323.6940 **Date:** May 30, 2001

Call From: Robyn Smith **Time:** 11:03 AM

Subject: Valuation of a Power Generating Facility

Don Jackson, Senior Property Auditor Appraiser, confirmed that the valuation of a power generating facility for property tax purposes is typically based on one of two approaches: 1) the cost approach (i.e., the cost to build the LECEF until the point at which it is operational; includes tangible and soft costs); or 2) the revenue approach (i.e., the LECEF's anticipated revenue generating capability over time). Generally, the cost approach is used if projected revenues are difficult to establish. The decision of which approach to use is decided by the jurisdiction that is charged with assessing the property. Power generation was deregulated with the CPUC. As of that time, jurisdiction of all power generation was transferred to the county level assessment.

Appendix 8.5

TABLE NO-1
Hourly Data – Position M1

Hour Ending	Leq	L10	L90
1:02 PM	65	68	61
2:02 PM	64	66	60
3:02 PM	63	66	59
4:02 PM	64	66	59
5:02 PM	63	65	59
6:02 PM	63	65	58
7:02 PM	63	65	59
8:02 PM	63	65	57
9:02 PM	62	64	57
10:02 PM	62	64	57
11:02 PM	62	63	56
12:02 AM	60	62	53
1:02 AM	58	61	48
2:02 AM	56	58	43
3:02 AM	55	58	41
4:02 AM	58	61	45
5:02 AM	63	66	57
6:02 AM	67	69	64
7:02 AM	63	65	59
8:02 AM	61	64	58
9:02 AM	60	63	57
10:02 AM	61	63	56
11:02 AM	67	69	62
12:02 PM	66	68	61

TABLE NO-2

10-minute Measurements - Position M1

Hour Ending	Leq	L10	L90
11:02	65.7	68.0	62.0
11:12	66.4	68.5	61.5
11:22	64.9	67.5	61.5
11:32	65.6	68.5	61.5
11:42	65.1	67.5	61.5
11:52	64.9	67.0	61.0
12:02	65.5	68.0	61.0
12:12	64.6	67.0	60.5
12:22	65.8	68.0	61.0
12:32	65.1	68.0	61.0
12:42	65.3	67.5	61.5
12:52	64.2	66.0	61.5
13:02	66.2	68.5	61.5
13:12	64.7	67.0	61.0
13:22	64.1	66.0	60.0
13:32	65.1	67.5	61.0
13:42	63.9	66.0	60.5
13:52	63.9	66.0	60.0
14:02	63.4	65.5	59.5
14:12	63.3	65.5	59.5
14:22	63.3	65.5	59.0
14:32	64.7	67.0	59.5
14:42	62.7	64.5	59.0
14:52	63.9	66.0	59.0
15:02	62.4	64.5	57.5
15:12	62.9	65.5	58.5
15:22	63.4	65.5	59.0
15:32	64.2	66.5	59.5
15:42	64.2	67.0	59.0
15:52	63.2	65.5	58.5
16:02	63.7	66.5	59.0
16:12	63.5	65.0	60.0

TABLE NO-2
10-minute Measurements - Position M1

Hour Ending	Leq	L10	L90
16:22	63.0	65.0	59.0
16:32	62.6	65.0	57.0
16:42	63.4	66.0	59.5
16:52	62.5	64.0	59.0
17:02	62.7	64.5	59.0
17:12	64.8	66.5	59.0
17:22	62.0	64.0	57.0
17:32	63.2	65.5	58.5
17:42	62.6	64.5	58.5
17:52	62.9	65.0	59.0
18:02	63.2	65.0	57.5
18:12	63.0	64.5	60.0
18:22	63.9	65.0	58.5
18:32	61.9	64.0	58.0
18:42	62.5	65.0	58.5
18:52	62.2	64.0	59.0
19:02	65.4	64.5	58.5
19:12	61.3	63.5	57.0
19:22	64.9	67.0	58.0
19:32	63.8	66.0	57.0
19:42	61.8	63.5	57.0
19:52	63.9	67.0	57.0
20:02	61.7	64.0	57.0
20:12	63.1	64.5	57.0
20:22	61.6	63.5	57.0
20:32	62.0	63.5	57.5
20:42	63.2	65.0	57.0
20:52	60.6	63.0	56.0
21:02	61.5	63.5	56.5
21:12	61.9	64.0	57.5
21:22	61.9	64.0	57.5

TABLE NO-2
10-minute Measurements - Position M1

Hour Ending	Leq	L10	L90
21:32	61.8	64.5	56.5
21:42	62.4	65.0	58.0
21:52	60.9	62.5	56.5
22:02	61.4	64.0	56.5
22:12	60.1	62.5	55.5
22:22	66.2	64.0	56.5
22:32	61.5	64.5	56.0
22:42	61.0	63.0	56.0
22:52	60.8	63.0	55.5
23:02	60.4	63.0	55.0
23:12	60.8	63.0	55.5
23:22	60.5	63.0	54.0
23:32	60.6	63.5	53.5
23:42	58.0	60.5	50.0
23:52	58.5	60.5	48.5
0:02	57.5	60.0	50.5
0:12	57.5	60.5	49.5
0:22	59.4	63.0	48.0
0:32	58.7	61.0	48.5
0:42	57.6	60.0	47.0
0:52	58.4	61.0	44.5
1:02	56.8	58.5	46.5
1:12	57.0	58.5	45.0
1:22	52.2	56.0	43.5
1:32	55.6	57.5	40.5
1:42	55.6	58.5	43.0
1:52	56.6	59.0	41.5
2:02	56.8	59.5	44.5
2:12	54.3	57.0	37.5
2:22	55.4	57.5	40.5
2:32	55.6	58.5	44.0

TABLE NO-2
10-minute Measurements - Position M1

Hour Ending	Leq	L10	L90
2:42	56.7	59.5	43.0
2:52	55.1	59.0	40.0
3:02	54.8	58.0	41.0
3:12	55.7	58.5	39.5
3:22	57.9	61.5	41.5
3:32	59.7	62.5	46.5
3:42	58.6	61.5	44.5
3:52	57.8	61.0	46.5
4:02	59.2	62.0	46.5
4:12	60.7	63.0	49.5
4:22	60.4	63.5	51.5
4:32	62.0	64.5	55.5
4:42	63.8	66.5	59.0
4:52	64.5	66.5	59.5
5:02	65.5	68.0	60.0
5:12	66.2	68.5	61.5
5:22	66.5	68.5	63.5
5:32	67.4	69.0	64.5
5:42	66.9	68.5	64.5
5:52	67.7	69.5	65.0
6:02	67.2	69.0	64.5
6:12	65.4	67.5	59.5
6:22	62.4	64.5	59.0
6:32	61.8	63.5	58.5
6:42	61.0	62.5	58.0
6:52	62.1	64.0	58.5
7:02	61.4	63.5	58.0
7:12	61.6	64.0	58.0
7:22	61.1	63.5	57.0
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7:42	61.7	64.0	58.0

TABLE NO-2
10-minute Measurements - Position M1

Hour Ending	Leq	L10	L90
7:52	61.5	64.0	58.0
8:02	61.0	62.5	57.0
8:12	61.6	64.0	57.0
8:22	60.3	62.5	57.0
8:32	59.9	61.5	55.5
8:42	58.6	60.5	56.0
8:52	61.6	64.0	57.5
9:02	59.6	61.5	56.0
9:12	60.9	63.5	56.5
9:22	61.1	63.0	56.0
9:32	61.1	62.5	54.5
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10:12	69.5	67.0	59.0
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10:52	66.8	69.5	61.5
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11:12	65.8	68.0	62.5
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12:22	65.9	68.5	60.5
12:32	65.5	67.5	60.5
12:42	64.6	66.5	61.5

TABLE NO-2
10-minute Measurements - Position M1

Hour Ending	Leq	L10	L90

TABLE NO-3
Hourly Data – Position M2

Hour Ending	Leq	L10	L90
1:02 PM	54	59	40
2:02 PM	54	56	43
3:02 PM	55	53	45
4:02 PM	59	59	48
5:02 PM	57	59	47
6:02 PM	59	60	47
7:02 PM	58	58	46
8:02 PM	60	62	47
9:02 PM	56	55	45
10:02 PM	52	53	44
11:02 PM	59	50	40
12:02 AM	49	47	39
1:02 AM	40	42	38
2:02 AM	39	41	36
3:02 AM	39	41	36
4:02 AM	40	41	37
5:02 AM	44	45	42
6:02 AM	47	48	45
7:02 AM	47	49	45
8:02 AM	47	48	44
9:02 AM	45	47	42
10:02 AM	55	57	42
11:02 AM	63	61	43

TABLE NO-3
Hourly Data – Position M2

Hour Ending	Leq	L10	L90
12:02 PM	59	55	40
1:02 PM	58	61	41

TABLE NO-4
10-minute Measurements – Position M2

Period Ending	Leq	L10	L90
11:32	43.6	45.5	41.5
11:42	43.0	44.5	40.5
11:52	45.3	47.5	41.5
12:02	43.9	45.0	41.0
12:12	42.2	44.0	40.0
12:22	42.2	43.5	40.0
12:32	42.5	45.0	39.5
12:42	40.8	42.5	38.5
12:52	44.3	47.0	39.0
13:02	61.8	67.0	43.0
13:12	57.4	57.5	40.0
13:22	53.9	56.5	40.5
13:32	56.4	60.5	41.0
13:42	52.8	53.5	44.0
13:52	49.2	50.0	44.5
14:02	47.2	48.0	45.5
14:12	46.6	48.0	44.5
14:22	52.7	53.5	46.0
14:32	60.5	54.0	45.5
14:42	52.6	55.0	44.5
14:52	48.8	51.5	44.5

TABLE NO-4
10-minute Measurements – Position M2

Period Ending	Leq	L10	L90
15:02	49.9	52.5	44.0
15:12	54.8	57.5	46.5
15:22	54.0	56.0	47.5
15:32	60.2	60.0	48.0
15:42	63.5	60.0	47.5
15:52	56.2	60.0	48.0
16:02	57.4	58.0	47.5
16:12	57.0	60.0	47.0
16:22	58.8	61.5	47.0
16:32	56.2	57.5	47.5
16:42	59.6	62.0	47.5
16:52	50.4	52.0	46.5
17:02	55.8	57.5	46.5
17:12	60.6	64.0	47.5
17:22	49.0	50.5	45.5
17:32	58.3	58.5	45.5
17:42	55.5	57.5	46.0
17:52	58.3	63.5	48.5
18:02	63.3	56.0	45.0
18:12	51.7	54.5	46.5
18:22	59.8	61.5	45.0
18:32	49.9	51.0	45.0
18:42	49.3	48.0	45.0
18:52	50.5	54.0	45.0
19:02	63.6	62.5	47.0
19:12	50.8	50.0	46.0
19:22	66.0	67.5	48.0
19:32	58.7	62.0	47.5
19:42	52.8	55.5	46.5
19:52	56.8	57.5	47.0
20:02	57.2	54.5	46.0

TABLE NO-4
10-minute Measurements – Position M2

Period Ending	Leq	L10	L90
20:12	57.9	55.5	45.0
20:22	52.0	50.5	44.5
20:32	55.6	53.5	44.5
20:42	59.5	60.5	45.5
20:52	50.9	52.5	45.5
21:02	49.0	50.0	45.0
21:12	56.3	54.0	45.0
21:22	48.3	52.0	44.0
21:32	53.5	55.0	44.0
21:42	53.0	55.0	44.0
21:52	50.6	54.0	42.5
22:02	45.0	46.0	41.5
22:12	51.1	50.0	41.0
22:22	66.9	52.0	41.0
22:32	46.6	45.5	41.0
22:42	52.9	54.0	39.5
22:52	41.4	41.5	39.5
23:02	44.4	47.5	39.0
23:12	53.7	48.0	41.0
23:22	52.8	53.0	40.5
23:32	41.0	41.0	38.5
23:42	39.5	40.5	38.0
23:52	41.6	40.0	38.0
0:02	40.2	41.5	38.0
0:12	39.7	41.0	38.0
0:22	40.7	42.0	38.5
0:32	41.1	43.0	39.0
0:42	40.8	42.5	38.5
0:52	40.9	41.5	37.5
1:02	38.2	39.5	36.5
1:12	38.5	40.5	36.0

TABLE NO-4
10-minute Measurements – Position M2

Period Ending	Leq	L10	L90
1:22	37.8	39.0	36.0
1:32	38.4	39.5	36.5
1:42	38.6	40.0	36.5
1:52	39.1	41.0	36.0
2:02	42.4	43.0	37.0
2:12	39.9	41.5	36.0
2:22	39.1	41.5	36.0
2:32	37.9	39.5	35.5
2:42	38.3	39.5	35.0
2:52	38.2	39.5	36.5
3:02	40.3	42.0	36.0
3:12	36.8	38.5	34.5
3:22	40.0	42.5	34.0
3:32	37.8	38.5	36.0
3:42	39.5	40.5	38.0
3:52	41.1	42.5	39.0
4:02	41.3	42.5	39.5
4:12	42.5	44.0	40.5
4:22	42.3	43.5	40.5
4:32	44.5	46.0	41.5
4:42	43.3	44.0	42.0
4:52	43.8	45.0	42.0
5:02	44.6	46.0	42.5
5:12	45.9	46.5	44.5
5:22	46.2	47.5	44.5
5:32	45.9	46.5	44.5
5:42	46.8	48.0	45.5
5:52	47.4	48.0	45.5
6:02	47.6	48.5	46.0
6:12	47.7	49.5	45.0
6:22	48.9	50.0	45.0

TABLE NO-4
10-minute Measurements – Position M2

Period Ending	Leq	L10	L90
6:32	46.5	47.5	44.5
6:42	47.0	48.5	45.0
6:52	47.2	48.5	44.5
7:02	45.3	46.0	44.0
7:12	47.6	48.5	44.5
7:22	46.4	47.5	45.0
7:32	46.9	48.0	44.5
7:42	47.6	50.5	44.0
7:52	46.1	47.0	43.5
8:02	44.9	46.0	43.0
8:12	44.2	45.0	41.5
8:22	44.6	47.0	41.5
8:32	45.6	47.5	42.5
8:42	44.0	45.5	41.5
8:52	44.7	47.5	42.0
9:02	45.4	47.0	42.5
9:12	50.4	53.5	42.5
9:22	55.9	58.5	42.0
9:32	52.7	54.5	42.5
9:42	59.1	59.5	43.0
9:52	56.3	59.5	43.0
10:02	48.8	46.5	41.5
10:12	69.4	66.0	43.0
10:22	59.9	61.0	44.0
10:32	46.6	49.0	42.0
10:42	50.4	52.0	42.5
10:52	58.5	61.0	43.5
11:02	51.7	46.0	41.5
11:12	44.8	47.5	40.5
11:22	44.1	45.5	39.5
11:32	66.7	59.0	39.5

TABLE NO-4
10-minute Measurements – Position M2

Period Ending	Leq	L10	L90
11:42	46.2	50.0	40.0
11:52	46.1	46.5	39.5
12:02	55.0	58.5	40.0
12:12	60.3	64.0	42.0
12:22	56.5	57.5	39.5
12:32	60.6	64.0	40.0
12:42	51.4	54.5	39.5
12:52	58.3	58.5	40.0
13:02	55.0	59.0	43.5

TABLE NO-5
Hourly Results – Position M3

Time	Leq (hr)	L10 (hr)	L90 (hr)
3:03 PM	56	57	47
4:03 PM	59	62	52
5:03 PM	59	59	53
6:03 PM	59	60	52
7:03 PM	57	59	49
8:03 PM	60	62	45
9:03 PM	53	55	42
10:03 PM	49	52	40
11:03 PM	56	49	38
12:03 AM	38	40	37
1:03 AM	37	38	36
2:03 AM	43	43	37
3:03 AM	42	44	38
4:03 AM	42	44	38

TABLE NO-5
Hourly Results – Position M3

Time	Leq (hr)	L10 (hr)	L90 (hr)
5:03 AM	48	49	45
6:03 AM	52	54	50
7:03 AM	52	54	50
8:03 AM	50	51	47
9:03 AM	52	54	49
10:03 AM	51	53	48
11:03 AM	47	49	43
12:03 PM	45	46	41
1:03 PM	54	57	43
2:03 PM	55	58	48
3:03 PM	57	57	48
4:03 PM	61	59	50
5:03 PM	59	61	52
6:03 PM	59	61	51

TABLE NO-6
10-minute Measurements – Position M3

Period Ending	Leq	L10	L90
14:43	59.0	61.0	47.0
14:53	54.1	58.5	46.5
15:03	51.6	53.5	47.5
15:13	56.7	59.0	49.5
15:23	61.9	64.0	53.0
15:33	56.6	58.0	52.5
15:43	55.3	57.5	51.5
15:53	60.6	61.5	53.5
16:03	61.1	65.0	52.5

TABLE NO-6
10-minute Measurements – Position M3

Period Ending	Leq	L10	L90
16:13	55.2	57.0	52.5
16:23	57.4	61.0	52.5
16:33	55.3	57.0	52.5
16:43	55.8	57.5	52.5
16:53	60.3	60.5	54.0
17:03	63.4	61.0	53.5
17:13	60.3	64.0	52.5
17:23	58.6	60.5	53.0
17:33	56.6	58.0	52.0
17:43	61.1	60.5	52.5
17:53	58.8	59.0	52.0
18:03	53.0	54.0	51.0
18:13	61.5	64.5	52.0
18:23	54.0	55.5	49.5
18:33	52.0	53.5	48.5
18:43	51.0	52.5	47.0
18:53	53.7	57.5	47.0
19:03	59.1	58.0	46.0
19:13	64.8	64.5	46.0
19:23	60.8	64.5	46.5
19:33	60.4	63.5	45.0
19:43	51.3	54.5	45.5
19:53	55.2	57.5	44.0
20:03	51.5	51.0	43.5
20:13	54.4	57.5	42.0
20:23	51.3	54.5	42.5
20:33	57.7	58.0	42.5
20:43	43.4	44.0	41.5
20:53	47.8	51.0	41.0
21:03	50.7	55.0	40.5
21:13	49.6	52.5	40.5

TABLE NO-6
10-minute Measurements – Position M3

Period Ending	Leq	L10	L90
21:23	46.4	48.0	40.5
21:33	49.3	50.0	40.5
21:43	52.7	56.0	41.5
21:53	49.8	49.0	39.5
22:03	43.9	45.0	39.5
22:13	63.9	54.0	39.0
22:23	39.7	40.0	38.5
22:33	48.5	49.0	38.5
22:43	46.4	48.5	38.0
22:53	41.4	45.5	37.5
23:03	41.5	44.0	38.5
23:13	38.4	39.0	37.5
23:23	39.4	42.0	37.5
23:33	38.6	40.5	37.0
23:43	37.5	38.0	36.5
23:53	38.1	39.0	37.0
0:03	37.6	38.0	36.5
0:13	37.6	38.5	36.5
0:23	36.8	38.0	35.5
0:33	36.6	37.0	35.5
0:43	36.0	36.5	35.0
0:53	37.6	38.5	35.5
1:03	38.1	40.0	36.0
1:13	37.9	39.5	35.5
1:23	48.1	45.5	36.5
1:33	42.0	45.5	37.0
1:43	40.9	42.5	38.0
1:53	38.5	39.5	37.0
2:03	38.7	39.5	37.5
2:13	39.1	40.5	37.0
2:23	41.3	45.0	37.5

TABLE NO-6
10-minute Measurements – Position M3

Period Ending	Leq	L10	L90
2:33	45.3	47.5	39.5
2:43	42.2	44.0	39.5
2:53	42.4	44.5	38.5
3:03	39.8	41.0	38.0
3:13	40.1	42.5	37.0
3:23	39.9	41.5	37.5
3:33	46.1	48.0	40.0
3:43	41.1	42.5	38.5
3:53	40.2	42.0	38.0
4:03	41.7	43.5	39.0
4:13	41.2	42.5	39.0
4:23	44.8	46.5	41.0
4:33	48.7	50.0	45.5
4:43	47.2	48.0	45.5
4:53	47.9	49.0	45.5
5:03	50.3	52.5	46.5
5:13	52.2	54.0	50.0
5:23	51.6	53.0	48.5
5:33	53.7	55.0	51.5
5:43	52.7	54.0	50.0
5:53	51.1	52.0	49.0
6:03	52.0	53.5	50.0
6:13	52.5	54.0	50.5
6:23	53.3	55.0	51.0
6:33	53.2	54.5	50.0
6:43	52.0	53.5	49.0
6:53	52.0	53.5	49.5
7:03	51.7	53.5	48.5
7:13	51.5	53.5	48.5
7:23	51.1	52.0	49.0
7:33	49.5	51.5	46.5

TABLE NO-6
10-minute Measurements – Position M3

Period Ending	Leq	L10	L90
7:43	48.4	49.5	46.5
7:53	48.6	50.0	46.0
8:03	48.5	50.0	46.0
8:13	51.1	52.5	48.5
8:23	52.3	54.0	49.5
8:33	50.9	53.5	47.5
8:43	52.1	54.5	49.5
8:53	51.4	53.5	48.5
9:03	53.1	55.0	49.5
9:13	53.2	54.5	51.0
9:23	52.0	54.0	48.5
9:33	51.6	54.0	46.5
9:43	49.8	52.0	46.5
9:53	49.6	52.0	46.0
10:03	48.8	51.5	46.0
10:13	47.6	49.5	43.5
10:23	47.6	50.0	44.5
10:33	46.4	48.5	44.0
10:43	48.0	50.0	42.5
10:53	45.1	47.0	42.5
11:03	46.0	48.5	42.5
11:13	43.0	44.5	41.5
11:23	43.4	45.5	41.0
11:33	47.2	48.5	42.0
11:43	45.5	47.5	42.0
11:53	44.0	46.0	41.5
12:03	43.8	45.5	40.5
12:13	49.3	52.0	41.0
12:23	45.4	48.0	42.0
12:33	46.2	48.5	42.5
12:43	59.4	62.0	43.0

TABLE NO-6
10-minute Measurements – Position M3

Period Ending	Leq	L10	L90
12:53	53.4	57.5	43.5
13:03	54.9	59.0	46.0
13:13	54.1	55.5	46.5
13:23	55.4	59.0	47.0
13:33	58.0	60.5	48.0
13:43	54.4	56.0	50.5
13:53	54.8	57.0	49.0
14:03	52.5	54.5	47.5
14:13	60.0	56.0	46.5
14:23	50.0	53.0	44.5
14:33	56.8	61.0	47.5
14:43	60.1	55.0	47.5
14:53	53.5	56.0	47.5
15:03	57.1	59.0	50.0
15:13	58.7	56.5	50.0
15:23	56.8	58.0	49.5
15:33	54.1	55.5	50.0
15:43	54.4	55.0	49.0
15:53	66.0	62.0	50.5
16:03	61.3	61.0	50.0
16:13	60.2	61.5	51.0
16:23	61.7	65.0	52.0
16:33	60.0	60.5	53.0
16:43	55.5	57.0	51.5
16:53	56.5	59.0	52.5
17:03	56.5	58.0	52.5
17:13	62.8	65.0	53.5
17:23	54.9	57.0	51.0
17:33	57.1	59.5	51.0
17:43	53.4	55.5	50.0
17:53	60.8	64.5	50.5

TABLE NO-6
10-minute Measurements – Position M3

Period Ending	Leq	L10	L90
18:03	54.6	56.5	51.5
18:13	60.5	62.0	52.5
18:23	59.3	60.0	51.5
18:33	59.2	62.0	52.0
18:43	62.2	61.0	51.0
18:53	56.3	59.0	50.0

TABLE NO-7
Hourly Results – Position M4

Time	Leq (hr)	L10 (hr)	L90 (hr)
7:00 PM	60	64	52
8:00 PM	64	66	52
9:00 PM	59	61	54
10:00 PM	59	60	55
11:00 PM	62	59	55
12:00 AM	59	60	57
8:00 PM	63	65	53
9:00 PM	60	63	54
10:00 PM	59	61	55
11:00 PM	60	61	56
12:00 AM	61	62	59
1:00 AM	62	63	60
2:00 AM	63	63	61
3:00 AM	62	63	60
4:00 AM	60	61	58
5:00 AM	61	63	58

TABLE NO-7
Hourly Results – Position M4

Time	Leq (hr)	L10 (hr)	L90 (hr)
6:00 AM	64	66	61
7:00 AM	64	68	56
8:00 AM	65	69	53
9:00 AM	64	68	52
10:00 AM	64	68	52
11:00 AM	65	68	51
12:00 PM	64	67	51
1:00 PM	64	67	51

TABLE NO-8
10-minute Results – Position M4

Period Ending	Leq	L10	L90
19:10	67.5	62.5	52.0
19:20	62.7	66.0	53.5
19:30	61.8	64.5	52.5
19:40	59.3	63.5	52.5
19:50	63.7	68.0	53.5
20:00	59.3	62.0	53.5
20:10	56.1	57.5	52.5
20:20	61.2	64.5	54.0
20:30	61.9	62.5	53.5
20:40	59.8	61.0	54.0
20:50	62.6	67.0	54.5
21:00	57.6	59.0	54.5
21:10	60.4	64.5	54.5
21:20	58.0	59.0	54.5
21:30	58.0	59.5	54.0

TABLE NO-8
10-minute Results – Position M4

Period Ending	Leq	L10	L90
21:40	58.1	59.0	54.5
21:50	58.7	61.0	55.0
22:00	58.7	60.5	55.0
22:10	61.4	61.0	55.0
22:20	58.3	60.0	55.0
22:30	58.2	59.5	55.0
22:40	59.5	62.0	55.0
22:50	60.4	62.0	56.0
23:00	60.8	62.0	58.5
23:10	62.2	63.5	59.0
23:20	61.2	62.5	59.0
23:30	60.7	61.5	58.0
23:40	60.0	61.0	58.0
23:50	61.4	62.5	59.0
0:00	61.3	62.0	59.5
0:10	61.0	62.0	59.0
0:20	61.8	63.0	60.0
0:30	62.0	63.0	60.5
0:40	61.7	62.5	60.0
0:50	62.7	63.5	61.0
1:00	62.9	63.5	61.5
1:10	63.4	64.0	62.0
1:20	63.0	64.0	61.5
1:30	63.1	64.0	62.0
1:40	61.7	62.5	59.5
1:50	60.4	61.5	58.0
2:00	63.2	64.0	62.0
2:10	62.2	63.0	60.5
2:20	62.1	63.0	60.5
2:30	62.2	63.0	60.5
2:40	61.1	62.5	59.0

TABLE NO-8
10-minute Results – Position M4

Period Ending	Leq	L10	L90
2:50	61.0	62.0	59.0
3:00	62.0	64.0	59.5
3:10	60.5	62.5	57.5
3:20	59.2	60.5	57.5
3:30	59.4	60.0	57.0
3:40	59.1	60.5	57.5
3:50	60.3	61.5	58.0
4:00	61.6	62.5	59.5
4:10	61.5	63.0	59.0
4:20	62.9	64.0	60.0
4:30	60.8	63.0	57.0
4:40	61.4	63.5	57.0
4:50	60.3	61.0	57.5
5:00	60.0	61.5	58.0
5:10	61.4	62.5	58.5
5:20	63.6	65.5	57.5
5:30	64.2	66.0	60.5
5:40	65.4	67.0	62.5
5:50	65.3	67.0	61.5
6:00	64.3	66.0	61.0
6:10	63.1	66.5	57.0
6:20	63.5	66.5	56.5
6:30	63.5	66.5	57.0
6:40	65.4	68.0	56.5
6:50	66.0	69.5	53.5
7:00	63.9	68.0	53.5
7:10	62.9	67.0	54.5
7:20	66.6	71.0	55.5
7:30	65.1	69.0	52.5
7:40	63.5	67.5	51.5
7:50	64.8	69.0	51.5

TABLE NO-8
10-minute Results – Position M4

Period Ending	Leq	L10	L90
8:00	63.3	67.0	52.5
8:10	63.8	68.0	51.5
8:20	63.9	68.0	52.0
8:30	63.9	67.5	52.0
8:40	62.5	66.5	52.0
8:50	65.4	69.0	51.0
9:00	64.6	69.5	53.0
9:10	64.0	68.0	52.5
9:20	63.6	67.5	52.0
9:30	65.0	68.5	51.5
9:40	66.5	69.5	52.0
9:50	62.4	66.5	51.0
10:00	64.2	68.0	51.0
10:10	65.1	70.0	52.0
10:20	63.5	67.5	51.0
10:30	64.1	67.5	50.5
10:40	68.7	69.5	51.0
10:50	61.7	65.5	52.0
11:00	65.3	68.5	50.5
11:10	62.0	66.5	51.0
11:20	61.1	64.5	50.0
11:30	60.7	64.0	50.0
11:40	68.8	70.5	51.0
11:50	62.8	66.0	51.0
12:00	63.9	68.0	52.0
12:10	64.9	68.5	52.5
12:20	61.7	63.5	50.5
12:30	66.6	70.5	51.5
12:40	60.6	64.5	50.0
12:50	64.6	67.5	52.5
13:00	63.3	66.0	50.5

TABLE NO-8
10-minute Results – Position M4

Period Ending	Leq	L10	L90
13:10	65.0	69.5	51.5
13:20	63.4	67.5	53.0
13:30	63.9	68.5	52.0
13:40	64.6	69.0	53.0

Appendix 8.6

TABLE 8.6A -1
Sensitive Receptors within a 3-Mile Radius of the Site

Schools			
Name	Address	Phone (Area Code 408)	legend
Zanker (Pearl) Elementary	1585 Fallen Leaf Dr Milpitas CA, 95035	945-2438	1
Weller (Joseph) School	345 Boulder Street Milpitas CA, 95035	945-2428	2
Pomeroy (Marshall) School	1505 Escuela Parkway Milpitas CA. 95035	945-2424	3
Russell (Thomas) Middle School	1500 Escuela Parkway Milpitas CA, 95035	945-2333	4
Vargas School	1054 Carson Drive Sunnyvale CA, 94086	522-8288	5
Milpitas High School	1285 Escuela Parkway Milpitas CA, 95035	945-5500	6
Curtner School	275 Redwood Avenue Milpitas CA, 95035	945-2434	7
Anthony Spangler Elementary	140 N Abbot Ave, Milpitas, CA 95035	945-5592	8
William (Burnett) School	400 Fanyon Street Milpitas CA, 95035	945-2431	9
Rose (Alexander) School	250 Rosewell Drive Milpitas CA, 95035	945-5580	10
Randall (Robert) School	1300 Edsel Drive Milpitas CA, 95035	945-5587	11
George Mayne Elementary	5030 N. First Avenue AlvisoCA, 95002	262-3600	12
Montague Elementary School	750 Laurie Ave Santa Clara, CA 95054	988-3052	13
San Miguel School	777 San Miguel Avenue Sunnyvale CA, 94087	522-8279	14
St John the Baptist School	360 South Abel Street Milpitas CA, 95035	262-8110	15
Calaveras Hills High School	1331 E Calaveras Blvd, Milpitas, CA 95035	945-2398	16
Northwood Elementary School	2760 E Trimble Rd San Jose, CA 95132	923-1941	17
Milpitas Christian Preschool	10 Dempsey Rd Milpitas, CA 95035	946-5795	18
Milpitas Unified School District	1331 E Calaveras Blvd, Milpitas, CA 95035	945-2300	19
Kathern Hughes Elementary	4949 Calle de Escuela, Santa Clara, CA 95054	988-2390	20

Daycare centers			
Name	Address	Phone (Area Codes 408)	Legend
Agnews Developmental Center	3500 Zanker Rd, San Jose, CA 95134	432-0942	21
Cisco Systems Child Care Center	170 W Tasman Dr, San Jose, CA 95134	526-4000	22

Convalescent Homes			
Name	Address	Phone (Area Codes 408)	Legend
Milpitas Care Center	120 Corning Ave, Milpitas, CA 95035	262-0217	23
Long-Term Care Ombudsman Program	2625 Zanker Rd, San Jose, CA 95134	944-0567	24
Valley House Care Center	991 Clyde Ave, Santa Clara, CA 95054	988-7666	25
Corpus Christi Residental Care	1619 Conway St, Milpitas, CA 95035	942-0171	26

Emergency Response			
Name	Address	Phone (Area Code 408)	Legend
San Jose Fire Station 29	199 Innovation Dr, San Jose, CA 95134	277-4629	27
Highway Patrol	2020 Junction Ave, San Jose, CA 95131	467-5400	28
Milpitas Police Dept	1265 N Milpitas Blvd, Milpitas, CA 95035	586-2492	29

Appendix 8.8

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Ruben Dalaison

Phone No.: 408.994.4047 **Date:** May 31, 2001

Call From: Robyn Smith **Time:** 11:07 AM

Subject: San Jose Police Services

Ruben Dalaison, Crime Prevention Officer with the San Jose Police Department, told me that the police department is separated into 16 districts and has law enforcement responsibility wtihin the city limits. The plant site is in the Department's "R" District, which covers the north end of the city. This district is split into five beats, each of which has at least one officer patrolling it at any given time. Between 9:00 PM and 1:00 AM, up to 10 officers patrol the district. The Department generally has a response time from 90 seconds to 4.5 minutes, depending on other incidents in the area.

In the event of an emergency, officers from outside the "R" district would be called upon. The City of San Jose Police Department has the support of 114 patrolling officers from 6:00 AM to 4:00 PM, 131 patrolling officers from 3:00 PM to 1:00 AM, and 86 officers from 9:00 PM to 7:00 AM. The Department's "Fourth Watch" has 22 officers who patrol from 5:00 PM to 3:00 AM. In addition to the on-duty patrollers, the department employs 22 officers in its Special Operations division.

Mr. Dalaison also told me that the proposed project site lies just a few hundred feet from the police district of the City of Milpitas. Officers from this district would be additional support in terms of day-to-day roving and emergency support.

In addition, the Santa Clara County Sheriff's Department patrols areas in San Jose, because pockets of land fall under their jurisdiction. This Department, too, would provide support in the event of an emergency.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Lynn Nashlund

Phone No.: 408.299.2541 x153 **Date:** May 30, 2001

Call From: Robyn Smith **Time:** 02:33 PM

Subject: Distribution of Property Tax Revenues in Santa Clara County

Lynn Nashlund, Senior Accountant with Santa Clara County's Tax Collector's Office, told me that property taxes go first to the state, where they are reallocated back to the cities, counties, and special districts. In Santa Clara County, 59.90 percent of the tax revenues are paid to schools, 11.66 percent are paid into the county general fund, 13.98 percent to local redevelopment agencies, 8.75 to cities, and 5.7 to special districts. These numbers are accurrate for FY 00-01 ending in June.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Rene Delgado

Phone No.: 800.400.7115 **Date:** June 13, 2001

Call From: Robyn Smith **Time:** 1:39 PM

Subject: Distribution of Sales Tax Revenues in Santa Clara County

Rene Delgado, Senior Tax Auditor with the State Board of Equalization, told me that the sales tax rate in Santa Clara County is 8.00 percent. Of this, 5.75 goes to the state; 0.25 percent is allotted to the county; 1 percent goes to the city; the remaining 1 percent is split between the Santa Clara County Traffic Authority and the Santa Clara County Transit District.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Wayne Hooper

Phone No.: 408.423.2026 **Date:** June 13, 2001

Call From: Robyn Smith **Time:** 03:39 PM

Subject: School District Development Fee

Wayne Hooper, Assistant Superintendent of Business Services for the Santa Clara County Unified School District, told me that commercial and industrial developments are charged a $0.33 per square foot development fee based on building space. The fee is assessed based on square footage of the new building.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Bob King, City of San Jose
Department Fire

Phone No.: (408) 277-8781 **Date:** May 16, 2001

Call From: Rachel Hanson **Time:** 02:00 PM

Message Taken By: Rachel Hanson

Subject: U.S. DataPort Peaker Project - Fire Station Locations and Servicing

Where is the closest fire station to the intersection of SR 237 and Zanker Rd? What is the number of firefighters, engines, etc. at the station? What is the first backup station?

Without an address, the woman I spoke with could not confirm anything for certain, but she was fairly certain of the information she gave me.

First Station to respond : Fire Station #29 at 199 Innovation Drive
Personnel – 1 chief, 3 captains, 11 firefighters, 1 paramedic
Vehicles – 1 fire engine, 1 fire truck, 1 Hazmat unit

Second Station to respond: Fire Station #25 at 1590 Gold St. Alviso
Personnel – 1 captain, 2 or 3 firefighters, 1 paramedic
Vehicles – 1 fire engine

Contact name: Chief Mike Jonasson (408) 277-4629

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Santa Clara County Unions

Phone No.: See list below **Date:** May 30, 2001

Call From: Robyn Smith **Time:** 12:30 PM

Subject: Labor Force Availability in Santa Clara County

I spoke with the following Unions about the availability of skilled labor in Santa Clara County. An abundance of appropriate laborers reside in the county:

Name	No. of available workers	Contact	Phone
Cement Masons Union Local 400	16+	Hector Cartez	408.266.9160
IBEW Local No. 332	250+	Julie McCarthy	408.194.4906
Millwrights Local Union 102	35+	Ed Gable	510.635.0323
Operating Engineers Union Local No. 3	150+	Joe Morrison	408.295.8788

+ denotes the Union stated it has more than enough workers to meet demand and has the ability to recruit more if needed.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Don Jackson

Phone No.: 916.323.6940 **Date:** May 30, 2001

Call From: Robyn Smith **Time:** 11:03 AM

Subject: Valuation of a Power Generating Facility

Don Jackson, Senior Property Auditor Appraiser, confirmed that the valuation of a power generating facility for property tax purposes is typically based on one of two approaches: 1) the cost approach (i.e., the cost to build the LECEF until the point at which it is operational; includes tangible and soft costs); or 2) the revenue approach (i.e., the LECEF's anticipated revenue generating capability over time). Generally, the cost approach is used if projected revenues are difficult to establish. The decision of which approach to use is decided by the jurisdiction that is charged with assessing the property. Power generation was deregulated with the CPUC. As of that time, jurisdiction of all power generation was transferred to the county level assessment.

Appendix 8.8-2
Environmental Justice

This report addresses compliance of the Los Esteros Critical Energy Facility (LECEF) with the principles expressed in Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (1994). The Executive Order requires that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects…on minority populations and low-income populations." Although both the California Energy Commission and the Bay Area Air Quality Management District are in the process of developing an environmental justice policy, neither have yet issued guidance on compliance.

NECESSARY CONDITIONS FOR AN ADVERSE FINDING

To make a finding that disproportionately high and adverse effects would likely fall on the minority or low-income population, three conditions must be met simultaneously:

1. <u>There must be a minority or low-income population in the impact zone</u>. Presidential Executive Order 12898 refers to *populations* of low-income and minority people. It is important to differentiate a population from a community, neighborhood, or other small geographic area. Focusing solely on neighborhoods, for example, would ignore impacts on members of a low-income population that do not live in a neighborhood that would be classified as "low-income." While some agencies' guidance, and many EISs, use the terms *population, community, and neighborhood* interchangeably, the only term used in the Presidential Executive Order is *population*. As a result, its applicability encompasses individuals collectively who may be geographically dispersed. In determining whether an impact falls disproportionately on minority or low-income populations, this report also considers the entire low-income and minority population in the affected area so as not to exclude those who do not live in a geographic area that might be classified as "minority" or "low-income."

   The Council on Environmental Quality's (CEQ) 1997 guidance describes what constitutes a minority population: "Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent; or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis." For this analysis, the 50 percent threshold was adopted to identify both minority and low-income populations (see additional definitions below), and minority and low-income areas. In this way, an impact falling on an area that is more than 50 percent minority or low-income may expose that population disproportionately.

2. A high and adverse impact must exist. In accordance with the spirit of the Executive Order and its implementation through the National Environmental Policy Act (NEPA) (the federal equivalent of the California Environmental Quality Act (CEQA)), a high and adverse impact is considered in this report to generally be synonymous with *significant* adverse human health or environmental effects. The CEQ (1997) Guidance indicates that, when determining whether effects are disproportionately high and adverse, agencies are to consider whether the risks or rates of impact "are significant (as employed by NEPA) or above generally accepted norms." Under NEPA and CEQA the term "significant" has special meaning, considering both the context in which the impact would occur and the relative intensity of the impact. Consequently, this environmental justice analysis generally considers a *significant* adverse impact (under CEQA) to be a *high and adverse* impact (under the Executive Order).

3. The impact on the minority or low-income population must be *disproportionately* high and adverse. None of the guidance on environmental justice quantitatively defines the term *disproportionately high and adverse impact*. However, the CEQ Guidance (1997) includes a non-quantitative definition, indicating that an effect is disproportionate if it appreciably exceeds the risk or rate to the general population. This definition is used in this report.

KEY PHASES IN THE ANALYTICAL PROCESS

The environmental justice analytical process has three key phases: (1) focused outreach to, and involvement of, the minority and low-income population in the decision making process; (2) a screening-level analysis to determine the potential for environmental justice issues; and, (3) if indicated by the screening results, a more detailed analysis of the relative distribution and intensity of impacts. These three phases and how they were conducted are discussed below.

1. Outreach and Involvement

The Executive Order requires agencies to ensure effective public participation and access to information. Consequently, a key phase of environmental justice analysis is outreach to the potentially affected minority or low-income population to discover issues of importance that may not otherwise be apparent.

At the current stage of this project, a public outreach and information program would be premature, since details of the project that would be of interest to the public have not been fully developed. In later stages, the California Energy Commission will provide information to residents in the area and provide opportunities for their involvement.

The California Energy Commission typically:

- Mails written notice to all property owners within 1000 feet of the site and within 500 feet of any linear corridor.
- Publishes notice in the local newspaper announcing public workshops and hearings

- Provides access to information by submitting copies of key documents to local libraries and providing materials via a web page
- Holds hearings and workshops in the local community
- Assigns a public advisor to assist the public in participating in the process

2. Screening-level Analysis

The guidance that the U.S. Environmental Protection Agency (USEPA) uses when incorporating environmental justice concerns in its own analyses (USEPA, 1998) describes a screening-level analysis that is used in practice by many federal agencies. The first step is to determine the existence of a low-income and/or minority population. Depending on the outcome, it may then be appropriate to increase public participation efforts, initiate the development of alternatives, or conduct more detailed analyses of the distribution of environmental or human health effects.

The USEPA method specifies that Census and other data should be used to characterize the population in the affected area. While 1990 Census data are acknowledged to be potentially inexact due to their age, the USEPA Guidance (1998) indicates that "extensive efforts to validate census data should not be necessary at this stage, unless there is substantial uncertainty."

As shown in Table 8.8-1A, the population of a 6-mile-radius area surrounding the power plant site is predominantly minority, with the minority segment comprising 60.6 percent of the total population (see Attachment 8.8-2A). By comparison, the minority population within the City of San Jose has also increased over the last decade. In 1990, San Jose had a minority population of 37.0 percent. According to the 2000 Census data, the City's minority population now comprises 64.0 percent. The population within a 6-mile radius is slightly lower than, but not substantially different from, the city average. In this same 6-mile area, the low-income population is 6.4% of the total (see Attachment 8.8-2B) as compared to the City average of 9.3 percent.

TABLE 8.8-1A
Minority and Low-Income Population (%)

	City Average	6-mile Radius
Minority	64.0%	60.6%
Low Income	9.3%	6.4%

Source: Minority data, 2000 Census; Low income data, 1990 Census data

Since the surrounding population is predominantly minority and the City population is predominately minority, any potential adverse impacts would not fall *disproportionately* on the minority population. Consequently, the need for a more detailed analysis is not indicated. Similarly, the population within the affected area is not predominately low

income, it is unlikely that any potential impacts could fall disproportionately on the low income population.

The third step in the USEPA method is to determine if high and adverse impacts are likely to fall disproportionately on the minority and/or low-income population. As described below, no high and adverse impacts are likely to result from the project after mitigation is implemented. As a consequence, no further evaluation would ordinarily be conducted.

3. Detailed Examination of the Distribution of Impacts on Segments of the Population

If the screening-level analysis indicates that environmental justice issues are likely to arise from the proposed project, a more detailed examination is appropriate. The screening analysis summarized above indicated that a more detailed study is not warranted due to the lack of significant impacts from the project. Nevertheless, a more detailed study was performed in the areas that are commonly of interest to the public. The results are described below.

DISTRIBUTION OF IMPACTS ON THE MINORITY AND LOW-INCOME POPULATION

This Application for Certification documents that the potential impacts of the turbine generators, to the extent they may exist, are proposed to be mitigated to a level below significance. Consequently, there are no high and adverse impacts associated with the proposed project.

The discussion below focuses on the issue areas of common concern for similar types of projects and those that have commonly been of concern in environmental justice complaints around the Bay Area.

Air Quality: There are no unmitigated high and adverse air quality impacts. According to modeling performed for the project, emissions from the turbines will comply with air quality standards set by USEPA at a level presumptively sufficient to protect the public health.

Health Risk: The public health risk assessment, documented in this Application for Certification, determined the following: (1) Air emissions will not result in concentrations of criteria pollutants in air that exceed ambient air quality standards (either NAAQS or CAAQS); (2) The excess lifetime cancer risk associated with concentrations in air estimated for the hypothetical Maximum Exposed Individual (MEI) location is estimated to be less than one in one million. (Excess lifetime cancer risks less than 1 in one million are unlikely to represent significant public health impacts that require additional control of facility emissions.); and, (3) The chronic and acute noncancer hazard quotients associated with concentrations in air estimated for the MEI location were both well below one. (A noncancer hazard quotient less than one is unlikely to represent a significant impact to public health.). These public health risk impacts are below the threshold of significance and therefore cannot be described as high and adverse. As a consequence, there would be no disproportionately high and adverse public health impacts on the minority and/or low-income population associated with the proposed project.

Noise: The noise analysis documented in this Application for Certification has determined that operational noise levels would comply with local noise ordinances as established in the

EIR prepared for the U.S. DataPort project. The incremental increase in noise above background levels will not rise to the level of a "high and adverse" impact in environmental justice terms. Therefore, there would be no disproportionately high and adverse noise impacts on the minority and/or low-income population associated with the project.

CONCLUSION

The screening level environmental justice analysis indicated that a minority population existed in the surrounding vicinity. However, the low-income segment of the population is small. A more detailed analysis indicated that high and adverse impacts would not result from installation and operation of the power plant and appurtenant facilities. Consequently, the project will not result in any disproportionately high and adverse impacts on the minority or low-income population.

In addition to examining all impacts, specific attention was given to the impact categories that are commonly of concern for this type of project, and those that have historically been identified as being of concern.

Air pollutant emissions from the plant will be minimized by the use of best available control technology and the purchase of emission offsets. The effect of this is to control emissions to a level that is not considered significant.

The risk to public health is below the level of significance (less than 1 in 1 million chance of severe health effect).

Noise emissions will comply with local ordinances.

Since there are no high and adverse impacts, the proposed project is consistent with the principles of environmental justice.

REFERENCES

Clinton, William. February 11, 1994. *Memorandum for the Heads of All Departments and Agencies; Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.* Presidential Documents, Vol. 30, No. 6, 279-280.

Code of Federal Regulations, Title 40, Section 7.120 *Complaint Investigations* [by USEPA of alleged discrimination]

Council on Environmental Quality. December 10, 1997 [released July 1998]. *Environmental Justice; Guidance Under the National Environmental Policy Act.* Council on Environmental Quality, Executive Office of the President, Washington, DC

Executive Order 12898. February 11, 1994. *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.* Federal Register, Vol. 59, No. 32, 7629-7633.

U.S. Census Bureau. 2000 Census of Population

U.S. Census Bureau. 1990 Census of Population

U.S. Environmental Protection Agency, Office of Federal Activities. July 19, 1995. *Draft Guidance for Consideration of Environmental Justice in Clean Air Act 309 Reviews.* USEPA, Office of Federal Activities, NEPA Compliance Division, Washington, DC

U.S. Environmental Protection Agency. April 1998. *Guidance for Incorporating Environmental Justice in USEPA's NEPA Compliance Analyses.* USEPA, Office of Federal Activities, NEPA Compliance Division, Washington, DC

APPENDIX 8.8-2A

2000 Census Ethnic Data by Block
LECEF 6-mile Radius

Block Code	Population	White	Minority	% Minority
060014415031002	2	2	0	0.0%
060014415031005	2	1	1	50.0%
060014415031010	2	2	0	0.0%
060014415031011	4	4	0	0.0%
060014415031018	3	0	3	100.0%
060014415031025	7	0	7	100.0%
060014415031030	1	0	1	100.0%
060014415031032	374	107	267	71.4%
060014415031033	192	38	154	80.2%
060014415031037	3	0	3	100.0%
060014415031045	2	2	0	0.0%
060014415031064	5	1	4	80.0%
060014431021000	708	214	494	69.8%
060014431021002	83	29	54	65.1%
060014431021003	384	111	273	71.1%
060014431021004	113	18	95	84.1%
060014431022000	430	146	284	66.0%
060014431022001	129	41	88	68.2%
060014431022002	65	12	53	81.5%
060014431022003	115	24	91	79.1%
060014431022004	87	29	58	66.7%
060014431022005	104	45	59	56.7%
060014431022006	57	26	31	54.4%
060014431023000	318	51	267	84.0%
060014431023001	121	40	81	66.9%
060014431023002	137	51	86	62.8%
060014431023003	14	3	11	78.6%
060014431023004	30	8	22	73.3%
060014431023005	39	16	23	59.0%
060014431023006	46	12	34	73.9%
060014431023007	220	80	140	63.6%
060014431023008	108	39	69	63.9%
060014431023009	44	9	35	79.5%
060014431023010	122	35	87	71.3%
060014431023011	19	4	15	78.9%
060014431024000	97	23	74	76.3%
060014431024001	337	151	186	55.2%
060014431024003	349	172	177	50.7%
060014431024004	110	23	87	79.1%
060014431024005	27	22	5	18.5%
060014431024006	60	31	29	48.3%
060014431024007	94	44	50	53.2%
060014431024008	69	34	35	50.7%

Block Code	Population	White	Minority	% Minority
060014431024009	30	2	28	93.3%
060014431024010	17	2	15	88.2%
060014431031013	649	146	503	77.5%
060014431031026	140	14	126	90.0%
060014431031027	671	114	557	83.0%
060014431031028	242	25	217	89.7%
060014431031029	13	5	8	61.5%
060014431031030	130	21	109	83.8%
060014431031031	231	22	209	90.5%
060014431031032	66	6	60	90.9%
060014431031033	190	8	182	95.8%
060014431031034	193	17	176	91.2%
060014431031035	92	21	71	77.2%
060014432001000	804	288	516	64.2%
060014432001001	53	15	38	71.7%
060014432001002	280	94	186	66.4%
060014432001003	80	9	71	88.8%
060014432001004	46	17	29	63.0%
060014432001005	126	37	89	70.6%
060014432001006	179	31	148	82.7%
060014432001007	51	8	43	84.3%
060014432001008	30	6	24	80.0%
060014432001009	293	62	231	78.8%
060014432001010	78	13	65	83.3%
060014432001011	51	19	32	62.7%
060014432001012	196	60	136	69.4%
060014432001014	44	18	26	59.1%
060014432001015	83	44	39	47.0%
060014432001016	197	96	101	51.3%
060014432001017	47	27	20	42.6%
060014432001018	64	29	35	54.7%
060014432001019	60	23	37	61.7%
060014432001020	57	27	30	52.6%
060014432001021	165	53	112	67.9%
060014432001022	63	22	41	65.1%
060014432001023	43	25	18	41.9%
060014432001024	60	27	33	55.0%
060014432001025	113	50	63	55.8%
060014432001026	74	38	36	48.6%
060014432001027	4	4	0	0.0%
060014432001028	89	51	38	42.7%
060014432001029	48	20	28	58.3%
060014432001030	69	16	53	76.8%

Block Code	Population	White	Minority	% Minority
060014433011000	93	66	27	29.0%
060014433011001	188	127	61	32.4%
060014433011002	107	69	38	35.5%
060014433011003	176	78	98	55.7%
060014433011004	110	63	47	42.7%
060014433011005	42	20	22	52.4%
060014433011006	76	52	24	31.6%
060014433011007	63	38	25	39.7%
060014433011008	82	47	35	42.7%
060014433011009	100	66	34	34.0%
060014433011010	49	21	28	57.1%
060014433011011	48	17	31	64.6%
060014433012000	1010	585	425	42.1%
060014433012001	38	29	9	23.7%
060014433012002	39	24	15	38.5%
060014433012003	256	136	120	46.9%
060014433012004	89	38	51	57.3%
060014433012005	96	43	53	55.2%
060014433012006	69	36	33	47.8%
060014433012007	79	30	49	62.0%
060014433012008	130	75	55	42.3%
060014433012009	56	18	38	67.9%
060014433012010	138	93	45	32.6%
060014433012011	8	8	0	0.0%
060014433012012	60	48	12	20.0%
060014433012013	42	31	11	26.2%
060014433012014	28	20	8	28.6%
060014433013000	433	115	318	73.4%
060014433013001	56	7	49	87.5%
060014433013002	45	18	27	60.0%
060014433013003	124	29	95	76.6%
060014433021000	432	147	285	66.0%
060014433021003	67	30	37	55.2%
060014433021004	115	48	67	58.3%
060014433021005	26	13	13	50.0%
060014433021006	78	30	48	61.5%
060014433021007	13	2	11	84.6%
060014433021008	336	134	202	60.1%
060014433021010	111	85	26	23.4%
060014433021011	65	39	26	40.0%
060014433021012	64	31	33	51.6%
060014433021013	420	102	318	75.7%
060014433021014	62	26	36	58.1%
060014433021015	191	46	145	75.9%
060014433021016	327	74	253	77.4%
060014433022000	107	57	50	46.7%
060014433022001	88	37	51	58.0%
060014433022002	18	16	2	11.1%
060014433022003	141	47	94	66.7%
060014433022004	423	207	216	51.1%
060014433022005	65	33	32	49.2%

Block Code	Population	White	Minority	% Minority
060014433022006	17	11	6	35.3%
060014433022007	560	226	334	59.6%
060014433022008	27	12	15	55.6%
060014433022009	34	25	9	26.5%
060014433022010	71	28	43	60.6%
060014433022011	36	14	22	61.1%
060014433022012	94	47	47	50.0%
060014433022013	69	34	35	50.7%
060014433022014	142	110	32	22.5%
060014433022015	181	111	70	38.7%
060014433022016	72	25	47	65.3%
060014433022017	124	67	57	46.0%
060014433022018	22	18	4	18.2%
060014433023000	27	7	20	74.1%
060014433023001	63	43	20	31.7%
060014433023002	40	29	11	27.5%
060014433023003	35	22	13	37.1%
060014433023004	13	11	2	15.4%
060014433023005	46	22	24	52.2%
060014433023006	36	6	30	83.3%
060014433023007	15	7	8	53.3%
060014433023008	95	30	65	68.4%
060014433023009	112	51	61	54.5%
060014433023010	150	94	56	37.3%
060014433023011	118	58	60	50.8%
060014433024000	264	151	113	42.8%
060014433024001	86	49	37	43.0%
060014433024002	97	59	38	39.2%
060014433024003	80	45	35	43.8%
060014507013118	11	11	0	0.0%
060855001001002	29	11	18	62.1%
060855001001007	200	75	125	62.5%
060855001001008	73	15	58	79.5%
060855001001011	10	1	9	90.0%
060855001001012	40	15	25	62.5%
060855001001013	64	4	60	93.8%
060855001001015	57	15	42	73.7%
060855001001016	23	0	23	100.0%
060855001001018	82	46	36	43.9%
060855001001019	131	38	93	71.0%
060855001001020	107	46	61	57.0%
060855001001021	163	66	97	59.5%
060855001001022	86	30	56	65.1%
060855001002003	96	21	75	78.1%
060855001002004	75	30	45	60.0%
060855001002005	185	80	105	56.8%
060855001002006	72	45	27	37.5%
060855001002007	104	43	61	58.7%
060855001002008	75	15	60	80.0%
060855001002009	122	27	95	77.9%
060855001002010	106	24	82	77.4%

Block Code	Population	White	Minority	% Minority
060855001002011	49	23	26	53.1%
060855001002012	51	37	14	27.5%
060855001002013	38	17	21	55.3%
060855001002014	44	12	32	72.7%
060855001002015	81	52	29	35.8%
060855001002016	60	30	30	50.0%
060855001002017	96	68	28	29.2%
060855001003000	403	130	273	67.7%
060855001003001	242	36	206	85.1%
060855001003002	66	10	56	84.8%
060855001003003	253	53	200	79.1%
060855001003004	63	25	38	60.3%
060855001003005	69	29	40	58.0%
060855001003006	84	39	45	53.6%
060855001003007	72	42	30	41.7%
060855001003008	76	58	18	23.7%
060855001003009	98	67	31	31.6%
060855001003010	159	97	62	39.0%
060855001003011	143	51	92	64.3%
060855001003012	139	54	85	61.2%
060855001004000	29	2	27	93.1%
060855001004001	121	20	101	83.5%
060855001004002	30	5	25	83.3%
060855001004003	5	0	5	100.0%
060855001004007	73	33	40	54.8%
060855001004008	81	20	61	75.3%
060855001004009	100	43	57	57.0%
060855001004010	84	40	44	52.4%
060855001004011	95	28	67	70.5%
060855001004012	34	16	18	52.9%
060855001004013	15	11	4	26.7%
060855001004020	53	25	28	52.8%
060855001004021	97	48	49	50.5%
060855001004022	38	26	12	31.6%
060855001004023	93	43	50	53.8%
060855001004024	226	93	133	58.8%
060855002001000	98	38	60	61.2%
060855002001002	20	14	6	30.0%
060855002001007	58	13	45	77.6%
060855002001008	43	25	18	41.9%
060855002001009	84	52	32	38.1%
060855002001010	119	35	84	70.6%
060855002001011	82	47	35	42.7%
060855002001012	66	46	20	30.3%
060855002002000	1106	304	802	72.5%
060855002002001	331	88	243	73.4%
060855002003001	45	20	25	55.6%
060855002003003	4	4	0	0.0%
060855002003004	115	72	43	37.4%
060855002003005	96	50	46	47.9%
060855002003006	86	38	48	55.8%

Block Code	Population	White	Minority	% Minority
060855002003007	57	19	38	66.7%
060855002003008	24	16	8	33.3%
060855002003010	3	1	2	66.7%
060855002004000	245	76	169	69.0%
060855002004001	204	68	136	66.7%
060855002004002	46	26	20	43.5%
060855002004003	5	1	4	80.0%
060855002004004	64	54	10	15.6%
060855002004005	108	44	64	59.3%
060855002004006	72	30	42	58.3%
060855002004007	216	104	112	51.9%
060855002004008	61	28	33	54.1%
060855002004009	157	55	102	65.0%
060855002004010	231	99	132	57.1%
060855002004011	130	67	63	48.5%
060855002005000	47	28	19	40.4%
060855002005001	8	7	1	12.5%
060855002005002	37	28	9	24.3%
060855002005003	66	55	11	16.7%
060855002005004	229	105	124	54.1%
060855002005009	10	5	5	50.0%
060855002005013	73	47	26	35.6%
060855002005014	115	71	44	38.3%
060855002005015	98	70	28	28.6%
060855002005016	88	70	18	20.5%
060855003001000	2	2	0	0.0%
060855003001001	11	4	7	63.6%
060855003001006	2	1	1	50.0%
060855003001022	123	50	73	59.3%
060855003001024	4	0	4	100.0%
060855003001025	84	23	61	72.6%
060855003001026	29	16	13	44.8%
060855003001027	94	32	62	66.0%
060855003001032	2	1	1	50.0%
060855003001048	27	4	23	85.2%
060855003001051	30	20	10	33.3%
060855004001000	38	29	9	23.7%
060855004001001	26	26	0	0.0%
060855004001002	28	21	7	25.0%
060855004001003	23	18	5	21.7%
060855004001004	228	102	126	55.3%
060855004001005	110	50	60	54.5%
060855004001006	4	0	4	100.0%
060855004001007	60	26	34	56.7%
060855004001008	65	44	21	32.3%
060855004001009	87	51	36	41.4%
060855004001010	44	30	14	31.8%
060855004001011	29	18	11	37.9%
060855004001012	64	50	14	21.9%
060855004001013	74	61	13	17.6%
060855004001014	140	87	53	37.9%

Block Code	Population	White	Minority	% Minority
060855004001015	59	55	4	6.8%
060855004001016	34	29	5	14.7%
060855004001017	33	24	9	27.3%
060855004001018	73	52	21	28.8%
060855004001019	23	21	2	8.7%
060855004001020	30	25	5	16.7%
060855004001021	20	17	3	15.0%
060855004002000	7	7	0	0.0%
060855004002001	11	11	0	0.0%
060855004002002	49	37	12	24.5%
060855004002003	115	66	49	42.6%
060855004002004	19	9	10	52.6%
060855004002006	47	41	6	12.8%
060855004002007	47	38	9	19.1%
060855004002008	66	43	23	34.8%
060855004002009	65	65	0	0.0%
060855004002015	113	52	61	54.0%
060855004002016	167	127	40	24.0%
060855005001010	100	75	25	25.0%
060855006001006	452	270	182	40.3%
060855006001008	85	59	26	30.6%
060855006001009	116	65	51	44.0%
060855010001000	210	73	137	65.2%
060855010001001	191	113	78	40.8%
060855010001002	246	60	186	75.6%
060855010001003	162	78	84	51.9%
060855010002000	251	104	147	58.6%
060855010002001	266	132	134	50.4%
060855010002002	8	7	1	12.5%
060855010002003	114	76	38	33.3%
060855011001000	240	92	148	61.7%
060855011001001	4	0	4	100.0%
060855011001002	130	51	79	60.8%
060855011001003	116	59	57	49.1%
060855011001004	122	37	85	69.7%
060855011001005	99	54	45	45.5%
060855011001006	165	101	64	38.8%
060855011001007	128	53	75	58.6%
060855011001008	134	46	88	65.7%
060855011001009	84	43	41	48.8%
060855011001010	100	44	56	56.0%
060855011001011	100	78	22	22.0%
060855011002000	121	46	75	62.0%
060855011002001	83	30	53	63.9%
060855011002002	153	53	100	65.4%
060855011002003	144	65	79	54.9%
060855011002004	123	68	55	44.7%
060855011002005	133	95	38	28.6%
060855011002006	135	96	39	28.9%
060855011002008	155	48	107	69.0%
060855011002009	109	58	51	46.8%

Block Code	Population	White	Minority	% Minority
060855011002010	173	74	99	57.2%
060855011003000	121	62	59	48.8%
060855011003001	110	49	61	55.5%
060855011003002	227	145	82	36.1%
060855011003003	202	95	107	53.0%
060855011003004	186	45	141	75.8%
060855011003005	206	75	131	63.6%
060855011003006	235	71	164	69.8%
060855011003007	95	46	49	51.6%
060855011003008	128	58	70	54.7%
060855011003010	202	94	108	53.5%
060855011003011	130	39	91	70.0%
060855011003012	169	47	122	72.2%
060855011003013	136	45	91	66.9%
060855011003014	197	41	156	79.2%
060855011003015	153	66	87	56.9%
060855011004002	68	15	53	77.9%
060855011004004	175	43	132	75.4%
060855011004005	195	55	140	71.8%
060855011004006	231	87	144	62.3%
060855011004007	260	124	136	52.3%
060855011004008	43	22	21	48.8%
060855011005002	217	13	204	94.0%
060855011005003	98	29	69	70.4%
060855011005004	186	45	141	75.8%
060855011005005	84	26	58	69.0%
060855011005006	169	40	129	76.3%
060855011005007	30	25	5	16.7%
060855011005008	116	62	54	46.6%
060855011005009	94	44	50	53.2%
060855011005010	68	37	31	45.6%
060855011005011	142	63	79	55.6%
060855011005012	220	166	54	24.5%
060855011005013	134	104	30	22.4%
060855011005014	125	65	60	48.0%
060855012001000	158	54	104	65.8%
060855012001001	145	58	87	60.0%
060855012001002	145	68	77	53.1%
060855012002000	74	30	44	59.5%
060855012002001	178	84	94	52.8%
060855012002002	194	67	127	65.5%
060855012002003	189	54	135	71.4%
060855012004000	128	64	64	50.0%
060855012004001	211	118	93	44.1%
060855012004002	172	97	75	43.6%
060855012004003	169	62	107	63.3%
060855012004004	207	101	106	51.2%
060855014001004	338	136	202	59.8%
060855014001012	480	167	313	65.2%
060855014001013	719	287	432	60.1%
060855014001014	213	106	107	50.2%

Block Code	Population	White	Minority	% Minority
060855014001015	477	215	262	54.9%
060855036011004	2	0	2	100.0%
060855036011010	135	62	73	54.1%
060855036011012	624	258	366	58.7%
060855036011013	86	70	16	18.6%
060855036011014	100	66	34	34.0%
060855036011015	77	58	19	24.7%
060855036011017	30	22	8	26.7%
060855036011018	16	12	4	25.0%
060855036012001	149	93	56	37.6%
060855036012002	148	83	65	43.9%
060855036012003	134	71	63	47.0%
060855036012004	103	70	33	32.0%
060855037071000	2110	607	1503	71.2%
060855037072010	333	46	287	86.2%
060855037072011	192	22	170	88.5%
060855037073004	15	5	10	66.7%
060855037081000	1010	179	831	82.3%
060855037081002	345	26	319	92.5%
060855037081003	132	4	128	97.0%
060855037081004	142	16	126	88.7%
060855037081005	154	11	143	92.9%
060855037081006	151	25	126	83.4%
060855037081008	2	2	0	0.0%
060855037081009	103	13	90	87.4%
060855037082000	464	108	356	76.7%
060855037082001	184	38	146	79.3%
060855037082002	123	27	96	78.0%
060855037082003	203	31	172	84.7%
060855037091000	238	39	199	83.6%
060855037091001	159	26	133	83.6%
060855037091002	7	2	5	71.4%
060855037091003	78	4	74	94.9%
060855037091004	178	20	158	88.8%
060855037091005	118	24	94	79.7%
060855037091006	145	42	103	71.0%
060855037091007	447	73	374	83.7%
060855037091008	543	139	404	74.4%
060855037091009	294	27	267	90.8%
060855037091010	307	47	260	84.7%
060855037091011	22	11	11	50.0%
060855037091012	122	38	84	68.9%
060855037092000	1883	304	1579	83.9%
060855037092001	50	0	50	100.0%
060855037092002	1566	465	1101	70.3%
060855037092003	223	91	132	59.2%
060855038021000	138	79	59	42.8%
060855038021001	135	72	63	46.7%
060855038021002	78	39	39	50.0%
060855038021003	88	52	36	40.9%
060855038021004	90	61	29	32.2%

Block Code	Population	White	Minority	% Minority
060855038021005	195	144	51	26.2%
060855038021006	160	88	72	45.0%
060855038021007	158	73	85	53.8%
060855038021008	141	80	61	43.3%
060855038021009	145	88	57	39.3%
060855038021010	4	1	3	75.0%
060855038021011	76	33	43	56.6%
060855038021012	73	23	50	68.5%
060855038021013	60	16	44	73.3%
060855038021014	36	16	20	55.6%
060855038021015	23	13	10	43.5%
060855038021016	67	20	47	70.1%
060855038021017	110	56	54	49.1%
060855038021018	159	90	69	43.4%
060855038021019	216	104	112	51.9%
060855038021020	49	14	35	71.4%
060855038021021	107	53	54	50.5%
060855038021022	78	28	50	64.1%
060855038021023	94	34	60	63.8%
060855038021024	127	47	80	63.0%
060855038021025	85	32	53	62.4%
060855038021026	28	20	8	28.6%
060855038021027	181	63	118	65.2%
060855038021028	76	42	34	44.7%
060855038021029	39	12	27	69.2%
060855038022001	51	36	15	29.4%
060855038022003	43	11	32	74.4%
060855038022004	31	10	21	67.7%
060855038022005	163	57	106	65.0%
060855038022006	75	38	37	49.3%
060855038022007	96	17	79	82.3%
060855038022008	128	32	96	75.0%
060855038022013	143	51	92	64.3%
060855038023000	40	10	30	75.0%
060855038023001	39	15	24	61.5%
060855038023002	61	7	54	88.5%
060855038023003	59	37	22	37.3%
060855038023004	51	11	40	78.4%
060855038023005	57	54	3	5.3%
060855038023006	50	29	21	42.0%
060855038023010	294	181	113	38.4%
060855038023012	12	6	6	50.0%
060855038024000	89	54	35	39.3%
060855038024001	83	14	69	83.1%
060855038024002	127	42	85	66.9%
060855038024003	114	44	70	61.4%
060855038024004	186	86	100	53.8%
060855038024005	105	35	70	66.7%
060855038024006	130	68	62	47.7%
060855038024007	6	4	2	33.3%
060855038024008	61	24	37	60.7%

Block Code	Population	White	Minority	% Minority
060855038024009	65	34	31	47.7%
060855038031002	314	58	256	81.5%
060855038031003	149	61	88	59.1%
060855038031004	116	13	103	88.8%
060855038031005	61	9	52	85.2%
060855038031006	70	18	52	74.3%
060855038031007	408	70	338	82.8%
060855038031008	662	132	530	80.1%
060855038031009	382	37	345	90.3%
060855038031010	102	12	90	88.2%
060855038031011	51	4	47	92.2%
060855038031012	84	9	75	89.3%
060855038031013	102	17	85	83.3%
060855038031014	206	88	118	57.3%
060855038031015	150	55	95	63.3%
060855038032000	50	11	39	78.0%
060855038032001	62	23	39	62.9%
060855038032002	63	13	50	79.4%
060855038032003	36	13	23	63.9%
060855038032004	4	4	0	0.0%
060855038032005	90	32	58	64.4%
060855038032006	421	90	331	78.6%
060855038032007	96	15	81	84.4%
060855038032008	300	70	230	76.7%
060855038032009	144	21	123	85.4%
060855038032010	149	34	115	77.2%
060855038032011	85	34	51	60.0%
060855038032012	228	97	131	57.5%
060855038032013	110	26	84	76.4%
060855038041000	340	134	206	60.6%
060855038041001	40	21	19	47.5%
060855038041002	34	21	13	38.2%
060855038041003	53	28	25	47.2%
060855038041004	60	35	25	41.7%
060855038041005	55	30	25	45.5%
060855038041006	27	23	4	14.8%
060855038041007	160	74	86	53.8%
060855038041008	118	36	82	69.5%
060855038041009	41	14	27	65.9%
060855038041010	46	19	27	58.7%
060855038041011	69	41	28	40.6%
060855038041012	112	38	74	66.1%
060855038041013	95	39	56	58.9%
060855038041014	82	37	45	54.9%
060855038041017	17	17	0	0.0%
060855038041018	34	26	8	23.5%
060855038041019	23	0	23	100.0%
060855038041020	166	9	157	94.6%
060855038041021	226	103	123	54.4%
060855038041022	18	9	9	50.0%
060855038041023	35	14	21	60.0%

Block Code	Population	White	Minority	% Minority
060855038041024	23	15	8	34.8%
060855038041025	271	96	175	64.6%
060855038041026	478	82	396	82.8%
060855038041027	140	25	115	82.1%
060855038041028	139	3	136	97.8%
060855038041029	70	5	65	92.9%
060855038041030	59	14	45	76.3%
060855038041031	21	11	10	47.6%
060855038041032	4	3	1	25.0%
060855038041033	183	61	122	66.7%
060855038041034	141	27	114	80.9%
060855038041035	62	7	55	88.7%
060855038041037	21	12	9	42.9%
060855038041038	88	19	69	78.4%
060855038041039	152	50	102	67.1%
060855038041041	154	64	90	58.4%
060855038041042	26	22	4	15.4%
060855038041043	27	22	5	18.5%
060855038041044	25	18	7	28.0%
060855038041045	32	18	14	43.8%
060855038041046	149	32	117	78.5%
060855038041047	48	15	33	68.8%
060855038042000	61	12	49	80.3%
060855038042001	8	7	1	12.5%
060855038042002	7	6	1	14.3%
060855038042003	30	4	26	86.7%
060855038042004	24	12	12	50.0%
060855038042005	43	25	18	41.9%
060855038042006	23	11	12	52.2%
060855038042008	58	16	42	72.4%
060855038042013	35	22	13	37.1%
060855042011002	17	14	3	17.6%
060855042011003	123	56	67	54.5%
060855042011004	63	42	21	33.3%
060855042011005	8	8	0	0.0%
060855042011006	68	37	31	45.6%
060855042011007	47	28	19	40.4%
060855042011008	6	6	0	0.0%
060855042011009	63	43	20	31.7%
060855042011010	123	97	26	21.1%
060855042011011	27	16	11	40.7%
060855042011012	8	8	0	0.0%
060855042011013	49	36	13	26.5%
060855042011014	40	30	10	25.0%
060855042011021	99	70	29	29.3%
060855042011022	6	3	3	50.0%
060855042011025	18	6	12	66.7%
060855042011027	69	59	10	14.5%
060855043071000	337	33	304	90.2%
060855043071001	450	93	357	79.3%
060855043071002	260	114	146	56.2%

Block Code	Population	White	Minority	% Minority
060855043071003	61	16	45	73.8%
060855043071004	162	50	112	69.1%
060855043071005	113	45	68	60.2%
060855043071006	184	90	94	51.1%
060855043071007	36	19	17	47.2%
060855043071008	97	31	66	68.0%
060855043071009	72	28	44	61.1%
060855043071010	169	65	104	61.5%
060855043071011	98	40	58	59.2%
060855043071012	63	8	55	87.3%
060855043071013	69	32	37	53.6%
060855043071014	68	15	53	77.9%
060855043071015	48	17	31	64.6%
060855043071016	219	55	164	74.9%
060855043071017	210	81	129	61.4%
060855043071018	69	17	52	75.4%
060855043071019	107	19	88	82.2%
060855043071020	259	94	165	63.7%
060855043071021	61	30	31	50.8%
060855043071022	243	86	157	64.6%
060855043071023	107	28	79	73.8%
060855043071024	218	98	120	55.0%
060855043071025	141	54	87	61.7%
060855043071026	123	42	81	65.9%
060855043071027	107	49	58	54.2%
060855043071028	153	39	114	74.5%
060855043071029	174	57	117	67.2%
060855043071030	92	27	65	70.7%
060855043071032	23	8	15	65.2%
060855043071033	497	109	388	78.1%
060855043071034	17	2	15	88.2%
060855043081001	73	63	10	13.7%
060855043081002	9	5	4	44.4%
060855043081003	17	17	0	0.0%
060855043081004	419	199	220	52.5%
060855043081007	11	0	11	100.0%
060855043081008	91	59	32	35.2%
060855043081009	45	15	30	66.7%
060855043081012	17	13	4	23.5%
060855043081013	108	62	46	42.6%
060855043081014	76	25	51	67.1%
060855043081015	177	90	87	49.2%
060855043081016	100	33	67	67.0%
060855043081017	116	28	88	75.9%
060855043081019	45	6	39	86.7%
060855043081020	44	7	37	84.1%
060855043081021	199	34	165	82.9%
060855043081022	65	26	39	60.0%
060855043081023	30	12	18	60.0%
060855043081024	50	22	28	56.0%
060855043082013	295	209	86	29.2%

Block Code	Population	White	Minority	% Minority
060855043082015	4	1	3	75.0%
060855043082018	16	6	10	62.5%
060855043082019	5	5	0	0.0%
060855043082020	6	6	0	0.0%
060855043082021	26	18	8	30.8%
060855043082022	6	6	0	0.0%
060855043082024	258	97	161	62.4%
060855043082025	90	43	47	52.2%
060855043082026	112	56	56	50.0%
060855043082027	53	33	20	37.7%
060855043082028	3	3	0	0.0%
060855043082029	105	79	26	24.8%
060855043082030	68	49	19	27.9%
060855043083000	86	75	11	12.8%
060855043083001	36	16	20	55.6%
060855043083002	88	56	32	36.4%
060855043083003	87	47	40	46.0%
060855043083004	67	25	42	62.7%
060855043083005	47	22	25	53.2%
060855043083006	114	59	55	48.2%
060855043083007	62	37	25	40.3%
060855043083008	44	24	20	45.5%
060855043083009	154	86	68	44.2%
060855043083010	10	9	1	10.0%
060855043083012	34	30	4	11.8%
060855043083013	90	45	45	50.0%
060855043083014	65	39	26	40.0%
060855043083015	99	50	49	49.5%
060855043083016	46	16	30	65.2%
060855043083018	2	1	1	50.0%
060855043083021	52	22	30	57.7%
060855043083022	36	15	21	58.3%
060855043083023	115	72	43	37.4%
060855043101002	7	0	7	100.0%
060855043101003	2	2	0	0.0%
060855043101007	935	221	714	76.4%
060855043101008	117	21	96	82.1%
060855043101009	82	0	82	100.0%
060855043101010	218	33	185	84.9%
060855043101013	140	52	88	62.9%
060855043101014	440	93	347	78.9%
060855043101015	108	42	66	61.1%
060855043101016	29	6	23	79.3%
060855043101017	96	29	67	69.8%
060855043101018	55	16	39	70.9%
060855043101019	192	78	114	59.4%
060855043101020	264	134	130	49.2%
060855043101021	149	63	86	57.7%
060855043101022	87	23	64	73.6%
060855043101023	30	17	13	43.3%
060855043101024	9	2	7	77.8%

Block Code	Population	White	Minority	% Minority
060855043102000	146	12	134	91.8%
060855043102001	485	62	423	87.2%
060855043102002	65	2	63	96.9%
060855043102003	698	143	555	79.5%
060855043102004	79	29	50	63.3%
060855043102005	105	40	65	61.9%
060855043102006	129	23	106	82.2%
060855043102007	54	3	51	94.4%
060855043102008	115	43	72	62.6%
060855043102017	62	32	30	48.4%
060855043102018	76	13	63	82.9%
060855043102019	224	7	217	96.9%
060855043102021	72	15	57	79.2%
060855043102023	282	53	229	81.2%
060855043102024	137	35	102	74.5%
060855043102025	96	32	64	66.7%
060855043102026	188	40	148	78.7%
060855043102027	158	49	109	69.0%
060855043102028	134	19	115	85.8%
060855043102029	163	20	143	87.7%
060855043102030	38	0	38	100.0%
060855043102031	32	7	25	78.1%
060855043102034	36	1	35	97.2%
060855043102035	41	8	33	80.5%
060855043102036	92	5	87	94.6%
060855043102037	592	161	431	72.8%
060855043102038	8	1	7	87.5%
060855043102039	10	2	8	80.0%
060855043102040	59	7	52	88.1%
060855043102041	54	11	43	79.6%
060855043102042	44	15	29	65.9%
060855043102043	82	34	48	58.5%
060855043103000	104	7	97	93.3%
060855043103001	386	68	318	82.4%
060855043103002	205	46	159	77.6%
060855043103004	197	54	143	72.6%
060855043103005	137	26	111	81.0%
060855043103006	114	34	80	70.2%
060855043103007	122	32	90	73.8%
060855043103008	328	32	296	90.2%
060855043103010	162	49	113	69.8%
060855043111000	93	8	85	91.4%
060855043111001	378	54	324	85.7%
060855043111002	17	10	7	41.2%
060855043111003	168	44	124	73.8%
060855043111004	29	3	26	89.7%
060855043111005	114	3	111	97.4%
060855043111006	71	1	70	98.6%
060855043111007	18	3	15	83.3%
060855043111008	85	12	73	85.9%
060855043111009	364	73	291	79.9%

Block Code	Population	White	Minority	% Minority
060855043111010	27	4	23	85.2%
060855043111011	264	34	230	87.1%
060855043111012	25	6	19	76.0%
060855043111013	76	7	69	90.8%
060855043111014	81	11	70	86.4%
060855043111015	6	4	2	33.3%
060855043111016	15	4	11	73.3%
060855043111017	5	1	4	80.0%
060855043111018	120	4	116	96.7%
060855043111019	44	0	44	100.0%
060855043111020	25	2	23	92.0%
060855043111021	76	6	70	92.1%
060855043111022	246	10	236	95.9%
060855043111023	11	0	11	100.0%
060855043111024	39	7	32	82.1%
060855043111025	220	41	179	81.4%
060855043111027	200	81	119	59.5%
060855043111028	47	25	22	46.8%
060855043111029	56	16	40	71.4%
060855043111030	188	22	166	88.3%
060855043111031	49	3	46	93.9%
060855043111032	86	10	76	88.4%
060855043111033	332	102	230	69.3%
060855043111034	184	97	87	47.3%
060855043111035	46	15	31	67.4%
060855043111036	79	4	75	94.9%
060855043111037	88	6	82	93.2%
060855043112000	48	6	42	87.5%
060855043112001	263	39	224	85.2%
060855043112002	73	9	64	87.7%
060855043112003	70	12	58	82.9%
060855043112004	23	0	23	100.0%
060855043112005	80	10	70	87.5%
060855043112006	52	10	42	80.8%
060855043112007	84	9	75	89.3%
060855043112008	30	10	20	66.7%
060855043112009	301	39	262	87.0%
060855043112010	196	14	182	92.9%
060855043112011	316	48	268	84.8%
060855043112012	35	14	21	60.0%
060855043112013	111	29	82	73.9%
060855043112014	52	7	45	86.5%
060855043112015	161	11	150	93.2%
060855043112016	64	11	53	82.8%
060855043112017	247	22	225	91.1%
060855043112018	200	11	189	94.5%
060855043112019	61	7	54	88.5%
060855043112020	112	14	98	87.5%
060855043112021	155	20	135	87.1%
060855043112022	78	17	61	78.2%
060855043112023	95	12	83	87.4%

Block Code	Population	White	Minority	% Minority
060855043112024	122	35	87	71.3%
060855043112025	39	12	27	69.2%
060855043112026	86	11	75	87.2%
060855043141000	380	135	245	64.5%
060855043141001	171	51	120	70.2%
060855043141002	51	10	41	80.4%
060855043141003	102	36	66	64.7%
060855043141004	259	71	188	72.6%
060855043141005	293	63	230	78.5%
060855043141006	62	22	40	64.5%
060855043141007	66	25	41	62.1%
060855043141008	68	13	55	80.9%
060855043142000	144	27	117	81.3%
060855043142001	122	33	89	73.0%
060855043142002	128	47	81	63.3%
060855043142003	151	36	115	76.2%
060855043142004	208	68	140	67.3%
060855043142005	204	76	128	62.7%
060855043143000	470	130	340	72.3%
060855043143001	81	12	69	85.2%
060855043143002	77	34	43	55.8%
060855043143003	238	65	173	72.7%
060855043143004	83	29	54	65.1%
060855043143005	101	43	58	57.4%
060855043143006	147	59	88	59.9%
060855043144000	70	26	44	62.9%
060855043144001	133	24	109	82.0%
060855043144002	97	52	45	46.4%
060855043144003	255	74	181	71.0%
060855043144004	148	55	93	62.8%
060855043144005	143	45	98	68.5%
060855043144006	152	66	86	56.6%
060855043144007	151	56	95	62.9%
060855043151000	142	45	97	68.3%
060855043151001	168	56	112	66.7%
060855043151003	10	5	5	50.0%
060855043151004	171	66	105	61.4%
060855043151005	140	63	77	55.0%
060855043151007	83	17	66	79.5%
060855043151008	351	112	239	68.1%
060855043151009	20	9	11	55.0%
060855043151010	8	0	8	100.0%
060855043151012	47	7	40	85.1%
060855043151013	130	60	70	53.8%
060855043151014	65	20	45	69.2%
060855043151016	85	34	51	60.0%
060855043151018	64	23	41	64.1%
060855043151019	33	7	26	78.8%
060855043151020	150	66	84	56.0%
060855043151021	48	23	25	52.1%
060855043152000	263	46	217	82.5%

Block Code	Population	White	Minority	% Minority
060855043152001	61	22	39	63.9%
060855043152002	84	28	56	66.7%
060855043152003	3	2	1	33.3%
060855043152004	49	27	22	44.9%
060855043152005	10	2	8	80.0%
060855043152006	341	81	260	76.2%
060855043152007	21	8	13	61.9%
060855043152008	6	2	4	66.7%
060855043152009	26	9	17	65.4%
060855043152010	63	20	43	68.3%
060855043152011	84	16	68	81.0%
060855043152012	36	7	29	80.6%
060855043152013	19	12	7	36.8%
060855043152014	24	5	19	79.2%
060855043152015	80	40	40	50.0%
060855043152016	158	55	103	65.2%
060855043152017	84	39	45	53.6%
060855043153000	3	2	1	33.3%
060855043153001	91	24	67	73.6%
060855043153003	54	30	24	44.4%
060855043153004	45	15	30	66.7%
060855043153005	78	26	52	66.7%
060855043153006	169	62	107	63.3%
060855043153007	143	58	85	59.4%
060855043153008	143	67	76	53.1%
060855043153009	22	4	18	81.8%
060855043153010	5	5	0	0.0%
060855043153011	165	43	122	73.9%
060855043153012	219	96	123	56.2%
060855043153013	177	36	141	79.7%
060855043154000	122	45	77	63.1%
060855043154001	50	33	17	34.0%
060855043154002	121	60	61	50.4%
060855043154003	269	69	200	74.3%
060855043154004	289	80	209	72.3%
060855043154005	137	44	93	67.9%
060855043155000	116	24	92	79.3%
060855043155001	97	23	74	76.3%
060855043155002	82	21	61	74.4%
060855043155003	91	38	53	58.2%
060855043155004	117	39	78	66.7%
060855043155005	172	39	133	77.3%
060855043155006	143	64	79	55.2%
060855043155007	188	77	111	59.0%
060855043155008	266	75	191	71.8%
060855043155009	97	29	68	70.1%
060855043155010	148	52	96	64.9%
060855043155011	128	50	78	60.9%
060855043161001	689	182	507	73.6%
060855043161002	128	35	93	72.7%
060855043161003	48	0	48	100.0%

Block Code	Population	White	Minority	% Minority
060855043161004	170	24	146	85.9%
060855043161005	136	26	110	80.9%
060855043161006	85	7	78	91.8%
060855043161007	278	51	227	81.7%
060855043161008	207	28	179	86.5%
060855043161009	40	0	40	100.0%
060855043161010	10	5	5	50.0%
060855043161011	20	0	20	100.0%
060855043161012	11	2	9	81.8%
060855043161013	14	1	13	92.9%
060855043161014	90	15	75	83.3%
060855043161015	65	5	60	92.3%
060855043161016	56	10	46	82.1%
060855043161017	144	23	121	84.0%
060855043161018	162	52	110	67.9%
060855043162000	189	41	148	78.3%
060855043162001	173	35	138	79.8%
060855043162002	253	55	198	78.3%
060855043162003	82	25	57	69.5%
060855043162004	160	56	104	65.0%
060855043162005	118	47	71	60.2%
060855043162006	144	39	105	72.9%
060855043162007	560	105	455	81.3%
060855043163000	445	80	365	82.0%
060855043163001	33	0	33	100.0%
060855043163002	358	74	284	79.3%
060855043171000	179	54	125	69.8%
060855043171001	136	50	86	63.2%
060855043171002	242	37	205	84.7%
060855043171003	121	22	99	81.8%
060855043171004	97	4	93	95.9%
060855043171005	132	30	102	77.3%
060855043171006	413	37	376	91.0%
060855043171007	101	17	84	83.2%
060855043171008	193	49	144	74.6%
060855043171009	260	51	209	80.4%
060855043171010	145	21	124	85.5%
060855043171011	191	53	138	72.3%
060855043171012	43	10	33	76.7%
060855043171013	82	25	57	69.5%
060855043171014	173	10	163	94.2%
060855043171015	188	13	175	93.1%
060855043172000	192	54	138	71.9%
060855043172001	114	47	67	58.8%
060855043172002	251	45	206	82.1%
060855043172003	186	37	149	80.1%
060855043172004	138	9	129	93.5%
060855043172005	61	12	49	80.3%
060855043172006	373	103	270	72.4%
060855043172007	149	35	114	76.5%
060855043172008	120	31	89	74.2%

Block Code	Population	White	Minority	% Minority
060855043172009	52	10	42	80.8%
060855043172010	90	21	69	76.7%
060855043172011	36	8	28	77.8%
060855043172012	22	13	9	40.9%
060855043172013	208	71	137	65.9%
060855043172014	29	13	16	55.2%
060855043181002	163	99	64	39.3%
060855043181003	42	9	33	78.6%
060855043181004	31	9	22	71.0%
060855043181005	319	126	193	60.5%
060855043181007	33	11	22	66.7%
060855043181009	48	18	30	62.5%
060855043181010	53	24	29	54.7%
060855043181011	152	55	97	63.8%
060855043181012	42	27	15	35.7%
060855043181013	39	13	26	66.7%
060855043181014	110	51	59	53.6%
060855043181017	44	13	31	70.5%
060855043181018	3	3	0	0.0%
060855043181019	120	41	79	65.8%
060855043181020	116	54	62	53.4%
060855043181021	174	60	114	65.5%
060855043181022	42	34	8	19.0%
060855043181023	61	47	14	23.0%
060855043181024	99	48	51	51.5%
060855043181025	49	16	33	67.3%
060855043181026	51	26	25	49.0%
060855043181027	45	23	22	48.9%
060855043181029	86	49	37	43.0%
060855043181030	109	59	50	45.9%
060855043181031	63	35	28	44.4%
060855043181040	8	1	7	87.5%
060855043181042	1	1	0	0.0%
060855043181043	2	2	0	0.0%
060855043181049	203	105	98	48.3%
060855043181054	77	16	61	79.2%
060855043181057	1	0	1	100.0%
060855043181059	8	8	0	0.0%
060855043182001	7	5	2	28.6%
060855043182002	1307	641	666	51.0%
060855043182005	595	260	335	56.3%
060855043182027	9	5	4	44.4%
060855043191000	237	47	190	80.2%
060855043191002	149	31	118	79.2%
060855043191003	72	29	43	59.7%
060855043191004	197	57	140	71.1%
060855043191005	210	63	147	70.0%
060855043191006	130	44	86	66.2%
060855043191007	26	5	21	80.8%
060855043191008	67	11	56	83.6%
060855043191009	156	28	128	82.1%

Block Code	Population	White	Minority	% Minority
060855043191010	36	4	32	88.9%
060855043191012	38	16	22	57.9%
060855043191015	4	0	4	100.0%
060855043192000	113	23	90	79.6%
060855043192001	142	45	97	68.3%
060855043192002	186	39	147	79.0%
060855043192003	176	13	163	92.6%
060855043192004	191	28	163	85.3%
060855043192005	328	119	209	63.7%
060855043192006	112	42	70	62.5%
060855043192007	83	18	65	78.3%
060855043192008	177	62	115	65.0%
060855043192009	234	38	196	83.8%
060855043192010	41	4	37	90.2%
060855043192011	322	50	272	84.5%
060855043192012	45	3	42	93.3%
060855043192013	76	23	53	69.7%
060855043193000	143	38	105	73.4%
060855043193001	183	12	171	93.4%
060855043193002	134	27	107	79.9%
060855043193003	205	29	176	85.9%
060855043193004	167	15	152	91.0%
060855043193005	74	7	67	90.5%
060855043193006	44	9	35	79.5%
060855043193007	46	16	30	65.2%
060855043193008	36	0	36	100.0%
060855043193009	28	9	19	67.9%
060855043193010	18	10	8	44.4%
060855043193011	9	3	6	66.7%
060855043193012	63	26	37	58.7%
060855043193013	8	0	8	100.0%
060855043193014	8	2	6	75.0%
060855043193015	54	29	25	46.3%
060855043193016	65	1	64	98.5%
060855043193017	24	6	18	75.0%
060855043193018	169	55	114	67.5%
060855043193019	109	60	49	45.0%
060855043193020	14	7	7	50.0%
060855043193021	73	24	49	67.1%
060855043193022	26	6	20	76.9%
060855043193023	31	9	22	71.0%
060855043193024	114	50	64	56.1%
060855043193025	110	22	88	80.0%
060855043193026	13	5	8	61.5%
060855043201000	50	5	45	90.0%
060855043201001	60	9	51	85.0%
060855043201002	95	32	63	66.3%
060855043201003	75	20	55	73.3%
060855043201004	86	42	44	51.2%
060855043201005	75	39	36	48.0%
060855043201006	154	54	100	64.9%

Block Code	Population	White	Minority	% Minority
060855043201007	66	18	48	72.7%
060855043201008	157	83	74	47.1%
060855043201009	118	21	97	82.2%
060855043201010	205	43	162	79.0%
060855043201011	142	34	108	76.1%
060855043201012	221	47	174	78.7%
060855043201013	177	32	145	81.9%
060855043201014	201	106	95	47.3%
060855043201015	104	18	86	82.7%
060855043202000	198	77	121	61.1%
060855043202002	265	47	218	82.3%
060855043202003	81	16	65	80.2%
060855043202004	191	41	150	78.5%
060855043202005	79	10	69	87.3%
060855043202006	132	37	95	72.0%
060855043202007	151	56	95	62.9%
060855043211000	371	129	242	65.2%
060855043211001	104	35	69	66.3%
060855043211002	124	53	71	57.3%
060855043211003	181	81	100	55.2%
060855043211004	136	60	76	55.9%
060855043211005	142	36	106	74.6%
060855043211006	153	60	93	60.8%
060855043211007	176	80	96	54.5%
060855043211008	124	33	91	73.4%
060855043211009	301	86	215	71.4%
060855043211010	273	64	209	76.6%
060855043211011	52	20	32	61.5%
060855043211012	91	42	49	53.8%
060855043211013	139	31	108	77.7%
060855043212000	191	44	147	77.0%
060855043212002	541	83	458	84.7%
060855043212003	354	48	306	86.4%
060855043212004	106	12	94	88.7%
060855043212005	13	0	13	100.0%
060855043212006	130	13	117	90.0%
060855043212007	136	16	120	88.2%
060855043212008	69	0	69	100.0%
060855043212009	126	16	110	87.3%
060855043212010	2	0	2	100.0%
060855043213000	131	38	93	71.0%
060855043213001	69	23	46	66.7%
060855043213002	125	23	102	81.6%
060855043213003	147	35	112	76.2%
060855043213004	37	12	25	67.6%
060855043213005	92	24	68	73.9%
060855043213006	100	11	89	89.0%
060855043213007	118	29	89	75.4%
060855043213008	87	21	66	75.9%
060855043213009	218	54	164	75.2%
060855043213010	136	37	99	72.8%

Block Code	Population	White	Minority	% Minority
060855043213011	39	14	25	64.1%
060855044103000	179	79	100	55.9%
060855044103001	161	35	126	78.3%
060855044103002	131	33	98	74.8%
060855044103003	244	86	158	64.8%
060855044103004	24	5	19	79.2%
060855044103005	192	68	124	64.6%
060855044103006	173	70	103	59.5%
060855044103007	250	88	162	64.8%
060855044103008	105	51	54	51.4%
060855044103009	84	41	43	51.2%
060855044103010	101	40	61	60.4%
060855044103011	106	48	58	54.7%
060855044103012	65	22	43	66.2%
060855044103013	1	1	0	0.0%
060855044103014	160	54	106	66.3%
060855044103015	138	64	74	53.6%
060855044103016	17	7	10	58.8%
060855044104000	100	39	61	61.0%
060855044104001	58	15	43	74.1%
060855044104002	62	35	27	43.5%
060855044104003	174	77	97	55.7%
060855044104004	126	30	96	76.2%
060855044104005	205	84	121	59.0%
060855044104006	82	22	60	73.2%
060855044104007	31	6	25	80.6%
060855044104008	18	5	13	72.2%
060855044104009	169	30	139	82.2%
060855044104010	318	80	238	74.8%
060855044104011	166	58	108	65.1%
060855044104012	155	25	130	83.9%
060855044104013	603	165	438	72.6%
060855044111000	246	143	103	41.9%
060855044111001	83	27	56	67.5%
060855044111002	106	39	67	63.2%
060855044111003	9	7	2	22.2%
060855044111004	124	43	81	65.3%
060855044111005	110	42	68	61.8%
060855044111006	145	62	83	57.2%
060855044111007	326	71	255	78.2%
060855044111008	202	64	138	68.3%
060855044111009	159	58	101	63.5%
060855044111010	80	49	31	38.8%
060855044111011	200	67	133	66.5%
060855044111012	220	110	110	50.0%
060855044111013	104	79	25	24.0%
060855044111014	30	9	21	70.0%
060855044111015	93	54	39	41.9%
060855044111016	93	36	57	61.3%
060855044111017	120	33	87	72.5%
060855044111018	143	68	75	52.4%

Block Code	Population	White	Minority	% Minority
060855044111019	158	63	95	60.1%
060855044112000	184	76	108	58.7%
060855044112001	253	102	151	59.7%
060855044112002	164	62	102	62.2%
060855044112003	171	46	125	73.1%
060855044112004	209	87	122	58.4%
060855044112005	199	75	124	62.3%
060855044112006	96	57	39	40.6%
060855044112007	177	82	95	53.7%
060855044112008	184	54	130	70.7%
060855044112009	145	49	96	66.2%
060855044112010	149	66	83	55.7%
060855044112011	328	107	221	67.4%
060855044112012	151	51	100	66.2%
060855044112013	98	18	80	81.6%
060855044112014	180	46	134	74.4%
060855044112015	163	29	134	82.2%
060855044121000	324	127	197	60.8%
060855044121001	142	50	92	64.8%
060855044121002	173	39	134	77.5%
060855044121003	268	43	225	84.0%
060855044121004	68	21	47	69.1%
060855044121005	57	6	51	89.5%
060855044122000	514	107	407	79.2%
060855044122001	491	72	419	85.3%
060855044122002	489	45	444	90.8%
060855044123000	165	83	82	49.7%
060855044123001	639	141	498	77.9%
060855044123002	151	34	117	77.5%
060855044123003	83	22	61	73.5%
060855044123004	91	28	63	69.2%
060855044123005	86	42	44	51.2%
060855044123006	73	31	42	57.5%
060855044124000	567	121	446	78.7%
060855044124001	225	74	151	67.1%
060855044124002	222	88	134	60.4%
060855044124003	34	17	17	50.0%
060855044131001	64	26	38	59.4%
060855044131002	29	12	17	58.6%
060855044131003	218	59	159	72.9%
060855044131004	72	4	68	94.4%
060855044131005	69	35	34	49.3%
060855044131006	43	22	21	48.8%
060855044131007	52	25	27	51.9%
060855044131008	23	11	12	52.2%
060855044131009	18	7	11	61.1%
060855044131010	43	15	28	65.1%
060855044131011	86	28	58	67.4%
060855044131012	100	48	52	52.0%
060855044131013	287	14	273	95.1%
060855044131014	170	21	149	87.6%

Block Code	Population	White	Minority	% Minority
060855044131015	19	2	17	89.5%
060855044131016	85	7	78	91.8%
060855044131017	297	112	185	62.3%
060855044131019	41	4	37	90.2%
060855044131023	22	12	10	45.5%
060855044141000	443	104	339	76.5%
060855044141001	71	12	59	83.1%
060855044141002	157	52	105	66.9%
060855044141003	65	21	44	67.7%
060855044141004	734	162	572	77.9%
060855044141005	69	8	61	88.4%
060855044141006	108	32	76	70.4%
060855044141007	296	72	224	75.7%
060855044141008	155	20	135	87.1%
060855044141009	151	32	119	78.8%
060855044141010	143	29	114	79.7%
060855044141011	190	37	153	80.5%
060855044141012	164	32	132	80.5%
060855044141013	18	2	16	88.9%
060855044142001	180	56	124	68.9%
060855044142002	102	39	63	61.8%
060855044142003	358	41	317	88.5%
060855044142004	288	28	260	90.3%
060855044142005	29	5	24	82.8%
060855044142006	107	3	104	97.2%
060855044142014	68	2	66	97.1%
060855044142015	33	4	29	87.9%
060855044142016	87	13	74	85.1%
060855044143000	33	20	13	39.4%
060855044143002	58	11	47	81.0%
060855044143003	60	12	48	80.0%
060855044143005	13	0	13	100.0%
060855044143006	552	86	466	84.4%
060855044143007	110	19	91	82.7%
060855044143008	156	28	128	82.1%
060855044143009	152	21	131	86.2%
060855044143010	187	9	178	95.2%
060855044143011	33	6	27	81.8%
060855044151001	17	0	17	100.0%
060855044151002	140	10	130	92.9%
060855044151003	252	31	221	87.7%
060855044151004	149	37	112	75.2%
060855044151005	95	4	91	95.8%
060855044151006	50	11	39	78.0%
060855044151007	9	1	8	88.9%
060855044151008	553	98	455	82.3%
060855044151009	70	20	50	71.4%
060855044151010	125	21	104	83.2%
060855044151011	26	6	20	76.9%
060855044151012	105	29	76	72.4%
060855044151013	56	23	33	58.9%

Block Code	Population	White	Minority	% Minority
060855044151014	37	4	33	89.2%
060855044151015	35	7	28	80.0%
060855044151016	55	11	44	80.0%
060855044151017	32	11	21	65.6%
060855044151018	85	6	79	92.9%
060855044151019	43	8	35	81.4%
060855044151020	55	7	48	87.3%
060855044152000	631	305	326	51.7%
060855044152001	108	61	47	43.5%
060855044152002	110	45	65	59.1%
060855044152003	107	48	59	55.1%
060855044152004	39	14	25	64.1%
060855044152005	64	27	37	57.8%
060855044152006	30	18	12	40.0%
060855044152007	993	375	618	62.2%
060855044152008	144	31	113	78.5%
060855044152009	106	48	58	54.7%
060855044152010	112	43	69	61.6%
060855044152011	111	53	58	52.3%
060855044152012	63	39	24	38.1%
060855044152013	237	46	191	80.6%
060855044152014	9	0	9	100.0%
060855044152015	122	69	53	43.4%
060855044152016	19	7	12	63.2%
060855044152017	33	11	22	66.7%
060855044152018	94	45	49	52.1%
060855044152019	110	41	69	62.7%
060855044161000	830	288	542	65.3%
060855044161001	105	28	77	73.3%
060855044161002	79	20	59	74.7%
060855044161003	87	11	76	87.4%
060855044161004	27	1	26	96.3%
060855044161006	364	128	236	64.8%
060855044161007	236	79	157	66.5%
060855044161008	271	45	226	83.4%
060855044161009	45	7	38	84.4%
060855044161010	68	3	65	95.6%
060855044161011	13	0	13	100.0%
060855044162000	842	304	538	63.9%
060855044162001	122	41	81	66.4%
060855044162002	97	42	55	56.7%
060855044162003	171	62	109	63.7%
060855044162004	120	48	72	60.0%
060855044162005	113	57	56	49.6%
060855044162006	122	58	64	52.5%
060855044171000	17	15	2	11.8%
060855044171001	16	15	1	6.3%
060855044171002	24	22	2	8.3%
060855044171004	83	48	35	42.2%
060855044171005	27	19	8	29.6%
060855044171006	1	0	1	100.0%

Block Code	Population	White	Minority	% Minority
060855044171007	218	103	115	52.8%
060855044171009	87	53	34	39.1%
060855044171010	77	35	42	54.5%
060855044171011	76	37	39	51.3%
060855044171012	97	45	52	53.6%
060855044171013	93	57	36	38.7%
060855044171014	109	51	58	53.2%
060855044171015	47	9	38	80.9%
060855044171016	81	57	24	29.6%
060855044171017	215	140	75	34.9%
060855044171019	230	150	80	34.8%
060855044171020	55	49	6	10.9%
060855044171021	82	31	51	62.2%
060855044171022	87	38	49	56.3%
060855044171023	101	23	78	77.2%
060855044171024	140	69	71	50.7%
060855044171025	86	32	54	62.8%
060855044171026	100	40	60	60.0%
060855044171027	69	15	54	78.3%
060855044171028	25	13	12	48.0%
060855044171029	98	36	62	63.3%
060855044171030	79	16	63	79.7%
060855044171031	70	20	50	71.4%
060855044171032	22	14	8	36.4%
060855044171033	20	12	8	40.0%
060855044171037	91	59	32	35.2%
060855044171038	15	14	1	6.7%
060855044181000	35	9	26	74.3%
060855044181007	676	143	533	78.8%
060855044181008	239	63	176	73.6%
060855044181009	214	1	213	99.5%
060855044181010	991	171	820	82.7%
060855044181011	36	10	26	72.2%
060855044181012	196	39	157	80.1%
060855044181013	61	24	37	60.7%
060855044181014	85	36	49	57.6%
060855044181015	173	39	134	77.5%
060855044181016	105	27	78	74.3%
060855044181017	616	83	533	86.5%
060855044182000	100	23	77	77.0%
060855044182001	84	26	58	69.0%
060855044182002	198	55	143	72.2%
060855044182003	96	45	51	53.1%
060855044182004	86	30	56	65.1%
060855044182005	148	60	88	59.5%
060855044182006	108	46	62	57.4%
060855044182007	56	26	30	53.6%
060855044182008	149	36	113	75.8%
060855044182009	72	17	55	76.4%
060855044182010	339	101	238	70.2%
060855044182011	190	62	128	67.4%

Block Code	Population	White	Minority	% Minority
060855044182012	111	38	73	65.8%
060855044182013	68	14	54	79.4%
060855044182014	41	15	26	63.4%
060855044182015	22	10	12	54.5%
060855044182016	36	9	27	75.0%
060855044182017	45	11	34	75.6%
060855044182018	48	18	30	62.5%
060855044201003	17	16	1	5.9%
060855044201004	5	0	5	100.0%
060855044201006	16	13	3	18.8%
060855044201007	3	0	3	100.0%
060855044201010	6	6	0	0.0%
060855044201012	18	3	15	83.3%
060855044201014	120	37	83	69.2%
060855044201015	84	34	50	59.5%
060855044201016	149	90	59	39.6%
060855044201017	154	67	87	56.5%
060855044201018	68	35	33	48.5%
060855044201019	59	7	52	88.1%
060855044202001	155	59	96	61.9%
060855044202002	26	5	21	80.8%
060855044202004	88	45	43	48.9%
060855044202005	2	1	1	50.0%
060855044202006	16	8	8	50.0%
060855044202008	34	3	31	91.2%
060855044202009	39	13	26	66.7%
060855044202010	38	1	37	97.4%
060855044202011	135	49	86	63.7%
060855044202012	56	20	36	64.3%
060855044202013	182	57	125	68.7%
060855044202014	89	39	50	56.2%
060855044202016	22	19	3	13.6%
060855044203000	254	55	199	78.3%
060855044203001	438	109	329	75.1%
060855044203002	209	28	181	86.6%
060855044203003	138	41	97	70.3%
060855044203006	68	13	55	80.9%
060855044203007	269	72	197	73.2%
060855044203008	105	31	74	70.5%
060855044203009	92	45	47	51.1%
060855044203010	81	40	41	50.6%
060855044204000	179	68	111	62.0%
060855044204001	82	32	50	61.0%
060855044204002	163	45	118	72.4%
060855044204003	21	7	14	66.7%
060855044204004	492	164	328	66.7%
060855044204005	204	68	136	66.7%
060855044204006	223	70	153	68.6%
060855044211000	315	112	203	64.4%
060855044211001	307	114	193	62.9%
060855044211002	208	46	162	77.9%

Block Code	Population	White	Minority	% Minority
060855044211003	76	21	55	72.4%
060855044211004	108	32	76	70.4%
060855044211005	52	20	32	61.5%
060855044211006	312	69	243	77.9%
060855044211007	74	18	56	75.7%
060855044211008	137	25	112	81.8%
060855044211009	172	51	121	70.3%
060855044211010	1	1	0	0.0%
060855044211011	114	33	81	71.1%
060855044211012	58	15	43	74.1%
060855044211013	136	35	101	74.3%
060855044211014	143	35	108	75.5%
060855044211015	237	63	174	73.4%
060855044211016	173	34	139	80.3%
060855044211017	204	57	147	72.1%
060855044211018	88	24	64	72.7%
060855044211019	57	24	33	57.9%
060855044211020	110	22	88	80.0%
060855044211021	42	12	30	71.4%
060855044212000	236	38	198	83.9%
060855044212001	44	25	19	43.2%
060855044212002	71	43	28	39.4%
060855044212003	160	58	102	63.8%
060855044212004	92	27	65	70.7%
060855044212005	69	20	49	71.0%
060855044212006	179	67	112	62.6%
060855044212007	69	22	47	68.1%
060855044212008	71	18	53	74.6%
060855044212009	77	38	39	50.6%
060855044212010	89	42	47	52.8%
060855044212011	264	87	177	67.0%
060855044212012	62	6	56	90.3%
060855044212013	55	10	45	81.8%
060855044212014	30	8	22	73.3%
060855044212015	48	13	35	72.9%
060855044212016	29	7	22	75.9%
060855044212017	13	0	13	100.0%
060855044212018	88	14	74	84.1%
060855044221000	218	75	143	65.6%
060855044221001	97	34	63	64.9%
060855044221002	93	26	67	72.0%
060855044221003	1184	205	979	82.7%
060855044221004	253	43	210	83.0%
060855044221005	63	0	63	100.0%
060855044221006	100	14	86	86.0%
060855044221007	102	32	70	68.6%
060855044221008	133	53	80	60.2%
060855044221009	101	36	65	64.4%
060855044221010	96	29	67	69.8%
060855044222000	827	224	603	72.9%
060855044222001	60	10	50	83.3%

Block Code	Population	White	Minority	% Minority
060855044222002	57	26	31	54.4%
060855044222003	378	133	245	64.8%
060855044222004	116	24	92	79.3%
060855044222005	127	33	94	74.0%
060855044222006	68	28	40	58.8%
060855044222007	100	11	89	89.0%
060855044222008	21	5	16	76.2%
060855044222009	94	25	69	73.4%
060855045041001	797	180	617	77.4%
060855045041002	151	66	85	56.3%
060855045041004	207	83	124	59.9%
060855045041005	83	47	36	43.4%
060855045042002	58	0	58	100.0%
060855045042003	13	0	13	100.0%
060855045042004	40	0	40	100.0%
060855045042005	30	1	29	96.7%
060855045042006	45	0	45	100.0%
060855045042007	68	0	68	100.0%
060855045042025	24	0	24	100.0%
060855045042027	29	15	14	48.3%
060855045042031	10	7	3	30.0%
060855045042032	7	2	5	71.4%
060855045042066	779	223	556	71.4%
060855045042068	45	33	12	26.7%
060855045042069	3092	2016	1076	34.8%
060855045051007	99	64	35	35.4%
060855045051010	213	53	160	75.1%
060855045051011	94	45	49	52.1%
060855045051012	29	18	11	37.9%
060855045051013	116	22	94	81.0%
060855045051014	102	35	67	65.7%
060855045051015	5	0	5	100.0%
060855045052000	632	112	520	82.3%
060855045052001	58	6	52	89.7%
060855045052002	101	16	85	84.2%
060855045053000	120	32	88	73.3%
060855045053001	157	32	125	79.6%
060855045053002	153	32	121	79.1%
060855045053003	814	211	603	74.1%
060855045053004	88	33	55	62.5%
060855045053005	31	5	26	83.9%
060855045053006	137	50	87	63.5%
060855045053007	120	42	78	65.0%
060855045053008	170	42	128	75.3%
060855045053009	321	83	238	74.1%
060855045053010	116	42	74	63.8%
060855045053012	62	21	41	66.1%
060855045053013	58	14	44	75.9%
060855045061000	522	200	322	61.7%
060855045061002	28	12	16	57.1%
060855045061003	16	4	12	75.0%

Block Code	Population	White	Minority	% Minority
060855045061006	1495	426	1069	71.5%
060855045061007	33	8	25	75.8%
060855045061008	26	4	22	84.6%
060855045061009	8	5	3	37.5%
060855045061010	25	0	25	100.0%
060855045061013	507	255	252	49.7%
060855045061014	253	153	100	39.5%
060855045061016	25	0	25	100.0%
060855045061017	123	13	110	89.4%
060855045061018	206	28	178	86.4%
060855045061019	48	5	43	89.6%
060855045061020	44	4	40	90.9%
060855045061022	23	0	23	100.0%
060855045061023	37	6	31	83.8%
060855045061024	108	23	85	78.7%
060855045061025	32	5	27	84.4%
060855045061026	26	7	19	73.1%
060855045061027	87	14	73	83.9%
060855045061028	89	18	71	79.8%
060855045061029	139	15	124	89.2%
060855045061030	161	13	148	91.9%
060855045061031	51	0	51	100.0%
060855045061034	812	217	595	73.3%
060855045061035	111	27	84	75.7%
060855045061036	55	13	42	76.4%
060855045071000	144	65	79	54.9%
060855045071001	175	63	112	64.0%
060855045071002	87	53	34	39.1%
060855045071003	65	35	30	46.2%
060855045071004	166	67	99	59.6%
060855045071005	123	67	56	45.5%
060855045071006	61	35	26	42.6%
060855045071007	170	59	111	65.3%
060855045072000	3	1	2	66.7%
060855045072003	178	57	121	68.0%
060855045072004	121	28	93	76.9%
060855045072005	299	82	217	72.6%
060855045072006	103	28	75	72.8%
060855045072007	141	64	77	54.6%
060855045072008	182	93	89	48.9%
060855045072009	249	104	145	58.2%
060855045072010	306	61	245	80.1%
060855045072011	184	38	146	79.3%
060855045073000	183	67	116	63.4%
060855045073001	141	41	100	70.9%
060855045073002	97	49	48	49.5%
060855045073003	62	30	32	51.6%
060855045073004	178	24	154	86.5%
060855045073005	392	95	297	75.8%
060855045073006	59	12	47	79.7%
060855045073007	28	12	16	57.1%

Block Code	Population	White	Minority	% Minority
060855045073008	67	16	51	76.1%
060855045074000	93	48	45	48.4%
060855045074001	71	25	46	64.8%
060855045074002	95	44	51	53.7%
060855045074003	75	50	25	33.3%
060855045074004	174	77	97	55.7%
060855045074005	195	79	116	59.5%
060855045074006	346	109	237	68.5%
060855045074008	133	28	105	78.9%
060855045074009	41	26	15	36.6%
060855045074010	111	67	44	39.6%
060855045074011	76	42	34	44.7%
060855045074012	135	67	68	50.4%
060855045074013	106	76	30	28.3%
060855045074014	55	22	33	60.0%
060855045074015	97	43	54	55.7%
060855046021003	70	54	16	22.9%
060855046021008	29	2	27	93.1%
060855046021039	6	2	4	66.7%
060855046021040	2	0	2	100.0%
060855046021042	3	3	0	0.0%
060855046021043	182	105	77	42.3%
060855046021044	265	50	215	81.1%
060855046021045	195	60	135	69.2%
060855046021046	7	7	0	0.0%
060855046021048	158	78	80	50.6%
060855046021049	84	43	41	48.8%
060855046021050	173	40	133	76.9%
060855046021051	99	29	70	70.7%
060855046021052	138	41	97	70.3%
060855046021053	95	41	54	56.8%
060855046021055	272	103	169	62.1%
060855046021056	30	18	12	40.0%
060855046021057	20	19	1	5.0%
060855046021058	26	17	9	34.6%
060855046021061	7	6	1	14.3%
060855046021062	18	10	8	44.4%
060855046021063	45	3	42	93.3%
060855046021064	4	3	1	25.0%
060855046021066	11	6	5	45.5%
060855046021072	3	0	3	100.0%
060855046021073	3	3	0	0.0%
060855046021074	206	136	70	34.0%
060855046021075	44	31	13	29.5%
060855046021076	39	22	17	43.6%
060855048021013	1129	871	258	22.9%
060855048021014	256	102	154	60.2%
060855048022000	195	65	130	66.7%
060855048022001	59	24	35	59.3%
060855048022002	172	74	98	57.0%
060855048022003	75	25	50	66.7%

Block Code	Population	White	Minority	% Minority
060855048022004	134	40	94	70.1%
060855048022005	195	91	104	53.3%
060855048022006	176	60	116	65.9%
060855048022007	182	50	132	72.5%
060855048023000	137	41	96	70.1%
060855048023001	225	94	131	58.2%
060855048023002	170	54	116	68.2%
060855048023003	86	17	69	80.2%
060855048023004	104	25	79	76.0%
060855048023005	102	57	45	44.1%
060855048023006	52	14	38	73.1%
060855048023007	34	18	16	47.1%
060855048023008	123	39	84	68.3%
060855048023009	1146	97	1049	91.5%
060855048023010	139	41	98	70.5%
060855048023011	122	58	64	52.5%
060855048023012	186	55	131	70.4%
060855048031001	64	6	58	90.6%
060855048031002	100	30	70	70.0%
060855048031003	118	46	72	61.0%
060855048031004	123	71	52	42.3%
060855048031005	143	71	72	50.3%
060855048031006	154	66	88	57.1%
060855048031007	665	251	414	62.3%
060855048031008	81	26	55	67.9%
060855048032001	383	188	195	50.9%
060855048032003	1142	856	286	25.0%
060855048032008	826	434	392	47.5%
060855048051005	466	311	155	33.3%
060855048051009	1895	1367	528	27.9%
060855048051015	624	487	137	22.0%
060855048052000	1547	1272	275	17.8%
060855048052001	373	132	241	64.6%
060855048061000	165	61	104	63.0%
060855048061001	174	77	97	55.7%
060855048061002	203	67	136	67.0%
060855048061003	192	74	118	61.5%
060855048061004	139	54	85	61.2%
060855048061005	135	46	89	65.9%
060855048061006	84	20	64	76.2%
060855048061007	182	59	123	67.6%
060855048062000	69	9	60	87.0%
060855048062001	149	25	124	83.2%
060855048062002	92	34	58	63.0%
060855048062003	58	4	54	93.1%
060855048062004	222	66	156	70.3%
060855048062005	186	81	105	56.5%
060855048062006	377	154	223	59.2%
060855048062007	34	11	23	67.6%
060855048062009	271	100	171	63.1%
060855048062010	153	51	102	66.7%

Block Code	Population	White	Minority	% Minority
060855048062011	89	34	55	61.8%
060855048062012	93	22	71	76.3%
060855049011000	809	325	484	59.8%
060855049011001	107	46	61	57.0%
060855049011003	502	215	287	57.2%
060855049011004	112	37	75	67.0%
060855049011009	4	1	3	75.0%
060855049011010	17	0	17	100.0%
060855050011000	91	45	46	50.5%
060855050011005	398	192	206	51.8%
060855050011006	207	132	75	36.2%
060855050011007	82	18	64	78.0%
060855050011008	104	20	84	80.8%
060855050011009	180	24	156	86.7%
060855050011010	79	27	52	65.8%
060855050011011	53	20	33	62.3%
060855050011012	88	17	71	80.7%
060855050011013	108	21	87	80.6%
060855050011014	99	12	87	87.9%
060855050011015	221	25	196	88.7%
060855050011016	409	242	167	40.8%
060855050011018	246	126	120	48.8%
060855050011020	158	96	62	39.2%
060855050011021	386	104	282	73.1%
060855050011022	97	30	67	69.1%
060855050011023	117	34	83	70.9%
060855050011024	117	29	88	75.2%
060855050011025	145	42	103	71.0%
060855050011026	57	16	41	71.9%
060855050011027	136	53	83	61.0%
060855050012010	237	62	175	73.8%
060855050012011	155	30	125	80.6%
060855050012012	217	63	154	71.0%
060855050012013	109	65	44	40.4%
060855050012015	229	76	153	66.8%
060855050012016	154	24	130	84.4%
060855050012017	94	21	73	77.7%
060855050012018	325	54	271	83.4%
060855050012019	47	10	37	78.7%
060855050012020	92	9	83	90.2%
060855050012021	24	6	18	75.0%
060855050012022	44	27	17	38.6%
060855050012023	71	36	35	49.3%
060855050012024	77	37	40	51.9%
060855050012025	57	28	29	50.9%
060855050012026	111	55	56	50.5%
060855050012027	180	56	124	68.9%
060855050012029	50	30	20	40.0%
060855050012030	58	32	26	44.8%
060855050012031	349	222	127	36.4%
060855050012032	30	12	18	60.0%

Block Code	Population	White	Minority	% Minority
060855050012033	82	44	38	46.3%
060855050012034	49	14	35	71.4%
060855050012051	6	5	1	16.7%
060855050013000	8	4	4	50.0%
060855050013001	94	43	51	54.3%
060855050013002	67	25	42	62.7%
060855050013003	358	149	209	58.4%
060855050013004	73	53	20	27.4%
060855050013005	61	31	30	49.2%
060855050013006	64	40	24	37.5%
060855050013007	58	37	21	36.2%
060855050013008	16	1	15	93.8%
060855050051001	1998	755	1243	62.2%
060855050051002	38	21	17	44.7%
060855050051004	53	30	23	43.4%
060855050051005	148	50	98	66.2%
060855050051006	15	4	11	73.3%
060855050051007	26	8	18	69.2%
060855050051008	139	27	112	80.6%
060855050051009	107	28	79	73.8%
060855050051010	64	22	42	65.6%
060855050051011	27	2	25	92.6%
060855050051012	354	199	155	43.8%
060855050051013	161	82	79	49.1%
060855050051014	98	56	42	42.9%
060855050051015	74	44	30	40.5%
060855050051016	174	83	91	52.3%
060855050051017	347	297	50	14.4%
060855050052005	683	446	237	34.7%
060855050052006	73	57	16	21.9%
060855050052007	42	35	7	16.7%
060855050052008	68	47	21	30.9%
060855050052009	85	61	24	28.2%
060855050052010	115	52	63	54.8%
060855050052011	58	45	13	22.4%
060855050052012	50	31	19	38.0%
060855050052013	39	22	17	43.6%
060855050052014	38	25	13	34.2%
060855050052015	116	87	29	25.0%
060855050052016	42	32	10	23.8%
060855050052018	137	115	22	16.1%
060855050052019	61	43	18	29.5%
060855050052020	93	66	27	29.0%
060855050052021	64	58	6	9.4%
060855050052032	15	6	9	60.0%
060855050052034	92	65	27	29.3%
060855050052035	101	54	47	46.5%
060855050052036	40	28	12	30.0%
060855050052037	79	49	30	38.0%
060855050061015	640	360	280	43.8%
060855050061016	39	22	17	43.6%

Block Code	Population	White	Minority	% Minority
060855050061018	294	144	150	51.0%
060855050061019	455	251	204	44.8%
060855050061020	16	4	12	75.0%
060855050061021	111	74	37	33.3%
060855050061022	72	42	30	41.7%
060855050061023	534	212	322	60.3%
060855050061024	860	375	485	56.4%
060855050061045	3	0	3	100.0%
060855050061049	23	16	7	30.4%
060855050061050	117	47	70	59.8%
060855050061060	529	456	73	13.8%
060855050061091	2	1	1	50.0%
060855050061105	4	2	2	50.0%
060855050071000	320	126	194	60.6%
060855050071001	158	83	75	47.5%
060855050071002	151	85	66	43.7%
060855050071003	134	71	63	47.0%
060855050071004	184	71	113	61.4%
060855050071005	118	61	57	48.3%
060855050071006	132	70	62	47.0%
060855050072000	599	236	363	60.6%
060855050072001	93	42	51	54.8%
060855050072002	56	18	38	67.9%
060855050072003	602	176	426	70.8%
060855050072004	133	66	67	50.4%
060855050072005	105	25	80	76.2%
060855050072006	97	60	37	38.1%
060855050072007	311	126	185	59.5%
060855050072008	106	41	65	61.3%
060855050072009	58	18	40	69.0%
060855050072010	115	45	70	60.9%
060855050072011	231	29	202	87.4%
060855050072012	353	118	235	66.6%
060855050072013	141	33	108	76.6%
060855050073002	2	0	2	100.0%
060855050073005	29	10	19	65.5%
060855051001007	323	141	182	56.3%
060855051001008	1	1	0	0.0%
060855051001010	40	15	25	62.5%
060855051001011	292	76	216	74.0%
060855051001017	31	15	16	51.6%
060855051001018	251	96	155	61.8%
060855051001021	97	52	45	46.4%
060855051001022	92	52	40	43.5%
060855051001023	66	54	12	18.2%
060855051001024	53	44	9	17.0%
060855051001025	68	49	19	27.9%
060855051001026	60	53	7	11.7%
060855051001027	47	27	20	42.6%
060855051001028	66	50	16	24.2%
060855051001029	57	51	6	10.5%

Block Code	Population	White	Minority	% Minority
060855051001030	62	50	12	19.4%
060855051001032	16	8	8	50.0%
060855051002000	208	128	80	38.5%
060855051002002	76	43	33	43.4%
060855051002003	52	37	15	28.8%
060855051002004	95	62	33	34.7%
060855051002034	40	27	13	32.5%
060855051002035	31	11	20	64.5%
060855051002036	14	14	0	0.0%
060855052021000	5	0	5	100.0%
060855052021001	957	313	644	67.3%
060855052021002	469	185	284	60.6%
060855052021003	231	101	130	56.3%
060855052021004	389	199	190	48.8%
060855052021005	57	38	19	33.3%
060855052021006	56	36	20	35.7%
060855052021007	140	87	53	37.9%
060855052021008	47	38	9	19.1%
060855052021009	35	26	9	25.7%
060855052021010	124	58	66	53.2%
060855052021011	34	23	11	32.4%
060855052021012	48	11	37	77.1%
060855052021013	57	40	17	29.8%
060855052021014	53	23	30	56.6%
060855052021015	58	26	32	55.2%
060855052022000	824	375	449	54.5%
060855052022001	353	150	203	57.5%
060855052022002	286	113	173	60.5%
060855052022003	237	95	142	59.9%
060855052022004	44	21	23	52.3%
060855052022005	462	199	263	56.9%
060855052022006	70	47	23	32.9%
060855052022007	13	10	3	23.1%
060855052022008	15	6	9	60.0%
060855052022009	593	439	154	26.0%
060855052023003	4	4	0	0.0%
060855052023040	2	1	1	50.0%
060855052023043	4	2	2	50.0%
060855052023046	3	0	3	100.0%
060855052023056	1	0	1	100.0%
060855052023070	18	10	8	44.4%
060855052023071	6	6	0	0.0%
060855052023074	280	94	186	66.4%
060855052023075	40	15	25	62.5%
060855052023076	46	29	17	37.0%
060855052031004	776	531	245	31.6%
060855052031005	323	203	120	37.2%
060855052031006	144	120	24	16.7%
060855052031007	128	101	27	21.1%
060855052031008	44	40	4	9.1%
060855052031009	60	49	11	18.3%

Block Code	Population	White	Minority	% Minority
060855052031010	28	19	9	32.1%
060855052031012	118	82	36	30.5%
060855052031013	4	4	0	0.0%
060855052031014	2	2	0	0.0%
060855052031015	78	49	29	37.2%
060855052031016	46	41	5	10.9%
060855052031017	35	24	11	31.4%
060855052031018	2	2	0	0.0%
060855052031019	23	13	10	43.5%
060855052031021	10	10	0	0.0%
060855052031022	128	97	31	24.2%
060855052031023	11	8	3	27.3%
060855052031024	27	20	7	25.9%
060855052032000	49	23	26	53.1%
060855052032001	42	33	9	21.4%
060855052032002	33	27	6	18.2%
060855052032003	41	33	8	19.5%
060855052032004	46	36	10	21.7%
060855052032005	190	89	101	53.2%
060855052032006	43	25	18	41.9%
060855052032007	39	32	7	17.9%
060855052032008	68	49	19	27.9%
060855052032009	2	0	2	100.0%
060855052032010	6	6	0	0.0%
060855052032011	41	40	1	2.4%
060855052032013	44	33	11	25.0%
060855052032014	19	16	3	15.8%
060855052032015	167	111	56	33.5%
060855052032016	17	12	5	29.4%
060855052032017	34	29	5	14.7%
060855052032018	21	17	4	19.0%
060855052032019	40	28	12	30.0%
060855052032020	53	43	10	18.9%
060855053011000	216	74	142	65.7%
060855053011001	166	113	53	31.9%
060855053011002	223	105	118	52.9%
060855053011003	179	78	101	56.4%
060855053011004	176	85	91	51.7%
060855053011005	57	33	24	42.1%
060855053011006	252	84	168	66.7%
060855053012000	268	92	176	65.7%
060855053012001	78	49	29	37.2%
060855053012002	193	98	95	49.2%
060855053012003	66	29	37	56.1%
060855053012004	93	65	28	30.1%
060855053012005	120	45	75	62.5%
060855053013000	132	72	60	45.5%
060855053013001	123	62	61	49.6%
060855053013002	98	59	39	39.8%
060855053013003	77	41	36	46.8%
060855053013004	92	29	63	68.5%

Block Code	Population	White	Minority	% Minority
060855053013005	121	86	35	28.9%
060855053014000	68	33	35	51.5%
060855053014001	77	27	50	64.9%
060855053014002	536	134	402	75.0%
060855053014005	492	177	315	64.0%
060855053014006	92	32	60	65.2%
060855053014007	188	81	107	56.9%
060855053014008	258	57	201	77.9%
060855053021000	95	43	52	54.7%
060855053021001	587	240	347	59.1%
060855053021002	175	8	167	95.4%
060855053021003	228	154	74	32.5%
060855053021004	279	192	87	31.2%
060855053021005	46	35	11	23.9%
060855053021006	155	112	43	27.7%
060855053021007	51	36	15	29.4%
060855053021008	50	26	24	48.0%
060855053021009	101	57	44	43.6%
060855053021010	124	93	31	25.0%
060855053021011	60	38	22	36.7%
060855053021012	50	36	14	28.0%
060855053021013	62	20	42	67.7%
060855053021015	47	24	23	48.9%
060855053021016	74	40	34	45.9%
060855053021017	68	40	28	41.2%
060855053021018	135	99	36	26.7%
060855053021019	68	47	21	30.9%
060855053021020	175	118	57	32.6%
060855053021021	132	77	55	41.7%
060855053021022	38	36	2	5.3%
060855053021023	50	29	21	42.0%
060855053022000	30	13	17	56.7%
060855053022001	92	73	19	20.7%
060855053022002	154	89	65	42.2%
060855053022003	90	83	7	7.8%
060855053022004	61	46	15	24.6%
060855053022005	132	99	33	25.0%
060855053022006	39	17	22	56.4%
060855053022007	113	76	37	32.7%
060855053022008	15	15	0	0.0%
060855053022009	79	60	19	24.1%
060855053022010	121	75	46	38.0%
060855053022011	65	44	21	32.3%
060855053022012	37	31	6	16.2%
060855053022013	77	49	28	36.4%
060855053022014	50	26	24	48.0%
060855053022015	37	22	15	40.5%
060855053022016	103	46	57	55.3%
060855053022017	70	57	13	18.6%
060855053031000	998	353	645	64.6%
060855053031001	162	94	68	42.0%

Block Code	Population	White	Minority	% Minority
060855053031002	104	82	22	21.2%
060855053031003	111	62	49	44.1%
060855053031004	163	142	21	12.9%
060855053031005	20	16	4	20.0%
060855053032000	382	141	241	63.1%
060855053032001	92	53	39	42.4%
060855053032002	279	118	161	57.7%
060855053032003	566	198	368	65.0%
060855053032004	72	61	11	15.3%
060855053032005	62	48	14	22.6%
060855053032006	24	16	8	33.3%
060855053032007	61	42	19	31.1%
060855053032008	81	56	25	30.9%
060855053032009	64	33	31	48.4%
060855053032010	65	34	31	47.7%
060855053033000	68	41	27	39.7%
060855053033001	52	36	16	30.8%
060855053033002	73	54	19	26.0%
060855053033003	71	43	28	39.4%
060855053033004	62	56	6	9.7%
060855053033005	60	40	20	33.3%
060855053033006	71	47	24	33.8%
060855053033007	86	71	15	17.4%
060855053033008	69	56	13	18.8%
060855053033009	73	53	20	27.4%
060855053033010	76	60	16	21.1%
060855053034000	1152	341	811	70.4%
060855053034001	457	86	371	81.2%
060855053034002	394	130	264	67.0%
060855053041000	89	33	56	62.9%
060855053041001	55	37	18	32.7%
060855053041002	105	42	63	60.0%
060855053041003	145	93	52	35.9%
060855053041004	139	48	91	65.5%
060855053041005	25	7	18	72.0%
060855053041006	49	22	27	55.1%
060855053041007	194	99	95	49.0%
060855053041008	86	17	69	80.2%
060855053041009	103	63	40	38.8%
060855053042000	190	92	98	51.6%
060855053042002	70	50	20	28.6%
060855053042003	52	38	14	26.9%
060855053042004	35	22	13	37.1%
060855053042005	62	40	22	35.5%
060855053042006	52	36	16	30.8%
060855053042007	214	119	95	44.4%
060855053042008	17	12	5	29.4%
060855053042009	23	12	11	47.8%
060855053042010	38	24	14	36.8%
060855053042011	49	41	8	16.3%
060855053043000	75	51	24	32.0%

Block Code	Population	White	Minority	% Minority
060855053043001	149	96	53	35.6%
060855053043003	89	72	17	19.1%
060855053043004	62	55	7	11.3%
060855053043005	82	60	22	26.8%
060855053043006	96	42	54	56.3%
060855053043007	89	53	36	40.4%
060855053044000	136	92	44	32.4%
060855053044001	123	81	42	34.1%
060855053044002	98	77	21	21.4%
060855053044003	184	123	61	33.2%
060855053044004	111	54	57	51.4%
060855053044005	132	76	56	42.4%
060855053051000	49	39	10	20.4%
060855053051001	57	50	7	12.3%
060855053051002	53	24	29	54.7%
060855053051003	354	147	207	58.5%
060855053051004	192	135	57	29.7%
060855053051005	57	43	14	24.6%
060855053051006	116	109	7	6.0%
060855053051007	44	32	12	27.3%
060855053052001	120	73	47	39.2%
060855053052002	334	177	157	47.0%
060855053052003	140	50	90	64.3%
060855053052004	26	8	18	69.2%
060855053052005	28	14	14	50.0%
060855053052006	41	16	25	61.0%
060855053052007	12	4	8	66.7%
060855053052008	258	102	156	60.5%
060855053052009	27	12	15	55.6%
060855053052010	18	5	13	72.2%
060855053052011	22	8	14	63.6%
060855053052012	82	47	35	42.7%
060855053052013	2	1	1	50.0%
060855053052014	123	94	29	23.6%
060855053052015	92	64	28	30.4%
060855053052016	59	38	21	35.6%
060855053052017	66	40	26	39.4%
060855053052018	73	42	31	42.5%
060855053053001	110	70	40	36.4%
060855053053002	164	50	114	69.5%
060855053053003	317	122	195	61.5%
060855053053004	132	82	50	37.9%
060855053053005	71	53	18	25.4%
060855053053006	113	80	33	29.2%
060855053053007	82	58	24	29.3%
060855053053008	69	39	30	43.5%
060855053053009	112	68	44	39.3%
060855053053010	78	57	21	26.9%
060855053053011	369	119	250	67.8%
060855053054000	52	41	11	21.2%
060855053054001	328	180	148	45.1%

Block Code	Population	White	Minority	% Minority
060855053054002	58	30	28	48.3%
060855053054003	43	28	15	34.9%
060855053054004	51	34	17	33.3%
060855053054005	94	50	44	46.8%
060855053054006	90	63	27	30.0%
060855053054007	106	84	22	20.8%
060855053054008	65	52	13	20.0%
060855053054009	69	38	31	44.9%
060855053054010	119	66	53	44.5%
060855053054011	152	106	46	30.3%
060855054011000	116	30	86	74.1%
060855054011001	190	116	74	38.9%
060855054011002	297	104	193	65.0%
060855054011003	73	61	12	16.4%
060855054011004	81	57	24	29.6%
060855054011005	66	45	21	31.8%
060855054011006	68	44	24	35.3%
060855054012000	37	24	13	35.1%
060855054012002	57	43	14	24.6%
060855054012003	62	24	38	61.3%
060855054012004	1002	378	624	62.3%
060855054015000	88	55	33	37.5%
060855054015001	148	48	100	67.6%
060855054015003	90	48	42	46.7%
060855054015004	170	81	89	52.4%
060855054021002	159	126	33	20.8%
060855054021003	115	76	39	33.9%
060855054021004	67	53	14	20.9%
060855054021005	135	104	31	23.0%
060855054021006	181	104	77	42.5%
060855054021007	100	68	32	32.0%
060855054021008	57	40	17	29.8%
060855054021009	88	66	22	25.0%
060855054022000	313	172	141	45.0%
060855054022001	240	169	71	29.6%
060855054022004	98	58	40	40.8%
060855054022005	166	101	65	39.2%
060855054022006	56	32	24	42.9%
060855054022007	51	50	1	2.0%
060855054022008	270	111	159	58.9%
060855054022009	85	73	12	14.1%
060855054022010	42	33	9	21.4%
060855054022011	368	202	166	45.1%
060855054022012	10	8	2	20.0%
060855054022013	78	33	45	57.7%
060855055001000	102	84	18	17.6%
060855055001001	4	3	1	25.0%
060855055001002	35	32	3	8.6%
060855055001003	43	43	0	0.0%
060855055001004	26	21	5	19.2%
060855055001005	65	53	12	18.5%

Block Code	Population	White	Minority	% Minority
060855055001006	39	32	7	17.9%
060855055001007	94	74	20	21.3%
060855055001008	85	65	20	23.5%
060855055001009	68	54	14	20.6%
060855055001010	33	29	4	12.1%
060855055001011	67	42	25	37.3%
060855055001012	94	68	26	27.7%
060855055002000	108	84	24	22.2%
060855055002001	32	28	4	12.5%
060855055002002	114	85	29	25.4%
060855055002003	84	69	15	17.9%
060855055002004	76	64	12	15.8%
060855055002005	63	59	4	6.3%
060855055002006	347	219	128	36.9%
060855055002007	49	41	8	16.3%
060855055002008	32	32	0	0.0%
060855055002009	56	40	16	28.6%
060855055002010	123	64	59	48.0%
060855055002016	255	111	144	56.5%
060855055003000	194	118	76	39.2%
060855055003001	49	41	8	16.3%
060855055003002	60	42	18	30.0%
060855055003003	53	45	8	15.1%
060855055003004	68	62	6	8.8%
060855055003005	40	27	13	32.5%
060855055003006	44	33	11	25.0%
060855055003007	31	28	3	9.7%
060855055003008	57	55	2	3.5%
060855055004000	39	36	3	7.7%
060855055004001	45	29	16	35.6%
060855055004002	59	44	15	25.4%
060855055004003	80	69	11	13.8%
060855055004004	114	85	29	25.4%
060855055004005	64	41	23	35.9%
060855055004006	79	68	11	13.9%
060855055004007	80	71	9	11.3%
060855055004008	84	81	3	3.6%
060855056001002	8	8	0	0.0%
060855056001003	21	15	6	28.6%
060855056001004	57	15	42	73.7%
060855056001005	42	19	23	54.8%
060855056001006	66	25	41	62.1%
060855056001007	1	0	1	100.0%
060855056001008	45	31	14	31.1%
060855056001009	26	3	23	88.5%
060855056001010	15	10	5	33.3%
060855056001011	63	24	39	61.9%
060855056001012	29	19	10	34.5%
060855056001013	42	11	31	73.8%
060855056001014	47	25	22	46.8%
060855056002000	60	32	28	46.7%

Block Code	Population	White	Minority	% Minority
060855056002002	19	13	6	31.6%
060855056002004	32	30	2	6.3%
060855056002005	6	4	2	33.3%
060855056002006	42	31	11	26.2%
060855056002007	64	54	10	15.6%
060855056002008	73	53	20	27.4%
060855056002010	7	5	2	28.6%
060855056002011	38	27	11	28.9%
060855056002012	18	13	5	27.8%
060855056002013	77	52	25	32.5%
060855056002014	115	70	45	39.1%
060855056003000	886	698	188	21.2%
060855056003001	80	72	8	10.0%
060855056003002	3	3	0	0.0%
060855056003003	13	11	2	15.4%
060855056003004	368	211	157	42.7%
060855056003006	18	18	0	0.0%
060855056003007	19	15	4	21.1%
060855056003008	74	53	21	28.4%
060855056003009	30	30	0	0.0%
060855056003010	128	108	20	15.6%
060855056003011	44	38	6	13.6%
060855056003012	18	10	8	44.4%
060855056003014	54	48	6	11.1%
060855056003015	43	34	9	20.9%
060855056003016	37	36	1	2.7%
060855056003017	46	46	0	0.0%
060855056003018	31	26	5	16.1%
060855056003019	78	45	33	42.3%
060855056003020	49	37	12	24.5%
060855056004000	49	39	10	20.4%
060855056004001	39	27	12	30.8%
060855056004002	78	47	31	39.7%
060855056004003	85	66	19	22.4%
060855056004004	85	30	55	64.7%
060855056004005	45	38	7	15.6%
060855056004006	50	35	15	30.0%
060855056004007	35	31	4	11.4%
060855056004008	18	16	2	11.1%
060855056004009	9	8	1	11.1%
060855056004010	34	32	2	5.9%
060855056004011	53	41	12	22.6%
060855056004012	23	18	5	21.7%
060855056004013	55	49	6	10.9%
060855057001000	16	10	6	37.5%
060855057001001	44	32	12	27.3%
060855057001002	82	63	19	23.2%
060855057001003	25	24	1	4.0%
060855057001004	36	21	15	41.7%
060855057001006	14	14	0	0.0%
060855057001007	61	35	26	42.6%

Block Code	Population	White	Minority	% Minority
060855057001008	23	20	3	13.0%
060855057001009	124	81	43	34.7%
060855057001010	98	57	41	41.8%
060855057001011	34	30	4	11.8%
060855057001012	25	23	2	8.0%
060855057001013	112	67	45	40.2%
060855057002000	46	36	10	21.7%
060855057002001	39	24	15	38.5%
060855057002002	85	43	42	49.4%
060855057002003	64	41	23	35.9%
060855057002004	57	42	15	26.3%
060855057002005	24	22	2	8.3%
060855057002007	103	55	48	46.6%
060855057002008	14	14	0	0.0%
060855057002009	114	55	59	51.8%
060855057002010	43	32	11	25.6%
060855057002011	84	66	18	21.4%
060855057002012	44	35	9	20.5%
060855057002013	40	33	7	17.5%
060855057002014	109	78	31	28.4%
060855057002015	55	42	13	23.6%
060855057002016	6	6	0	0.0%
060855057002017	84	44	40	47.6%
060855057002018	57	46	11	19.3%
060855057002019	53	43	10	18.9%
060855057003000	10	8	2	20.0%
060855057003001	102	87	15	14.7%
060855057003002	74	62	12	16.2%
060855057003003	56	41	15	26.8%
060855057003004	37	36	1	2.7%
060855057003005	46	44	2	4.3%
060855057003006	50	40	10	20.0%
060855057003007	22	21	1	4.5%
060855057003008	73	56	17	23.3%
060855057003009	137	105	32	23.4%
060855057003010	294	223	71	24.1%
060855057003011	125	114	11	8.8%
060855057003012	89	73	16	18.0%
060855057003013	39	35	4	10.3%
060855057003014	29	27	2	6.9%
060855057003015	49	43	6	12.2%
060855057003016	49	46	3	6.1%
060855057003017	75	47	28	37.3%
060855057003018	45	37	8	17.8%
060855057003019	21	21	0	0.0%
060855057003020	36	29	7	19.4%
060855057003021	28	21	7	25.0%
060855057003022	50	45	5	10.0%
060855057003023	70	59	11	15.7%
060855057003024	6	3	3	50.0%
060855057003027	64	48	16	25.0%

Block Code	Population	White	Minority	% Minority
060855057003028	37	24	13	35.1%
060855057004000	9	7	2	22.2%
060855057004001	41	39	2	4.9%
060855057004002	167	121	46	27.5%
060855057004003	107	75	32	29.9%
060855057004004	94	67	27	28.7%
060855057004005	253	170	83	32.8%
060855057004006	122	63	59	48.4%
060855057004007	127	95	32	25.2%
060855057004008	656	369	287	43.8%
060855058001000	31	25	6	19.4%
060855058001001	13	13	0	0.0%
060855059001000	306	194	112	36.6%
060855059001001	71	48	23	32.4%
060855059001002	351	202	149	42.5%
060855060001000	55	51	4	7.3%
060855060001001	60	57	3	5.0%
060855060001002	47	45	2	4.3%
060855060001003	35	23	12	34.3%
060855060001004	120	104	16	13.3%
060855060001005	70	64	6	8.6%
060855060001006	37	32	5	13.5%
060855060001007	16	9	7	43.8%
060855060001008	157	96	61	38.9%
060855060001009	261	176	85	32.6%
060855060001010	257	173	84	32.7%
060855060002000	74	39	35	47.3%
060855060002001	59	44	15	25.4%
060855060002002	90	85	5	5.6%
060855060002004	47	45	2	4.3%
060855060002005	52	50	2	3.8%
060855085051000	174	67	107	61.5%
060855085051002	27	18	9	33.3%
060855085051003	76	40	36	47.4%
060855085052000	88	43	45	51.1%
060855085061000	318	156	162	50.9%
060855085061001	54	23	31	57.4%
060855085061002	65	36	29	44.6%
060855085061003	320	126	194	60.6%
060855085061004	58	30	28	48.3%
060855085061005	242	106	136	56.2%
060855085061006	67	37	30	44.8%
060855085061007	8	6	2	25.0%
060855085062000	117	68	49	41.9%
060855085062001	157	93	64	40.8%
060855085062002	118	84	34	28.8%
060855085062003	143	88	55	38.5%
060855085062004	136	64	72	52.9%
060855085062005	110	56	54	49.1%
060855085063000	2007	935	1072	53.4%
060855085063001	144	76	68	47.2%

Block Code	Population	White	Minority	% Minority
060855085064000	29	4	25	86.2%
060855085064001	127	72	55	43.3%
060855085064002	225	101	124	55.1%
060855085064003	80	51	29	36.3%
060855085064004	364	86	278	76.4%
060855085064006	865	130	735	85.0%
060855085064007	352	55	297	84.4%
060855085064008	53	29	24	45.3%
060855085065000	186	112	74	39.8%
060855085065005	346	121	225	65.0%
060855087031000	512	274	238	46.5%
060855087031002	40	21	19	47.5%
060855087032000	1391	612	779	56.0%
060855087033000	134	79	55	41.0%
060855087033001	60	31	29	48.3%
060855087033002	89	58	31	34.8%
060855087033003	76	40	36	47.4%
060855087033004	103	63	40	38.8%
060855087033005	187	114	73	39.0%
060855087033006	50	29	21	42.0%
060855087033007	18	13	5	27.8%
060855087033008	91	62	29	31.9%
060855087033009	26	1	25	96.2%
060855087033010	100	47	53	53.0%
060855087033011	30	21	9	30.0%
060855087033012	140	82	58	41.4%
060855087034003	194	48	146	75.3%
060855087034004	299	87	212	70.9%
060855087034005	151	61	90	59.6%
060855087034006	63	20	43	68.3%
060855087034007	199	102	97	48.7%
060855087035001	385	171	214	55.6%
060855087035003	592	160	432	73.0%
060855087042000	972	489	483	49.7%
060855087042007	63	24	39	61.9%
060855087042009	127	49	78	61.4%
060855087042011	115	16	99	86.1%
060855087042012	47	12	35	74.5%
060855087042013	398	187	211	53.0%
060855087042015	397	186	211	53.1%
060855087042019	6	3	3	50.0%
060855087042033	185	74	111	60.0%
060855087042034	74	51	23	31.1%
060855087042039	113	71	42	37.2%
060855087042040	54	38	16	29.6%
060855087042041	160	99	61	38.1%
060855087042042	112	71	41	36.6%
060855087042043	115	51	64	55.7%
060855087042044	27	25	2	7.4%
060855087042057	27	18	9	33.3%
060855087042058	92	58	34	37.0%

Block Code	Population	White	Minority	% Minority
060855087042059	106	48	58	54.7%
060855087042060	70	43	27	38.6%
060855087042061	28	8	20	71.4%
060855088001000	143	62	81	56.6%
060855088001001	225	124	101	44.9%
060855088001002	7	1	6	85.7%
060855088001003	187	94	93	49.7%
060855088001004	77	51	26	33.8%
060855088001005	169	119	50	29.6%
060855088001006	984	193	791	80.4%
060855088001007	121	91	30	24.8%
060855088002000	525	186	339	64.6%
060855088002001	522	199	323	61.9%
060855088002002	97	44	53	54.6%
060855088002003	64	57	7	10.9%
060855088002004	80	40	40	50.0%
060855088002005	44	40	4	9.1%
060855088002006	54	48	6	11.1%
060855088002007	40	32	8	20.0%
060855088002010	132	51	81	61.4%
060855088002011	115	44	71	61.7%
060855089001001	2	0	2	100.0%
060855089001004	912	405	507	55.6%
060855089001005	156	81	75	48.1%
060855089001006	104	67	37	35.6%
060855089001007	389	139	250	64.3%
060855089001008	165	61	104	63.0%
060855089001009	732	163	569	77.7%
060855089001010	182	33	149	81.9%
060855089001011	79	20	59	74.7%
060855089001012	319	81	238	74.6%
060855089001013	59	15	44	74.6%
060855089002001	191	92	99	51.8%
060855089002002	127	40	87	68.5%
060855089002003	105	55	50	47.6%
060855089002004	74	23	51	68.9%
060855089002005	56	4	52	92.9%
060855089002006	83	7	76	91.6%
060855089002007	86	40	46	53.5%
060855089002008	87	34	53	60.9%
060855089002009	67	29	38	56.7%
060855089002010	52	30	22	42.3%
060855089002011	142	45	97	68.3%
060855089002012	41	20	21	51.2%
060855089002013	57	19	38	66.7%
060855089002014	47	27	20	42.6%
060855089002015	70	24	46	65.7%
060855089002016	61	35	26	42.6%
060855089003001	43	4	39	90.7%
060855089003002	185	78	107	57.8%
060855089003003	87	25	62	71.3%

Block Code	Population	White	Minority	% Minority
060855089003004	76	28	48	63.2%
060855089003005	90	34	56	62.2%
060855089003006	84	40	44	52.4%
060855089003007	78	36	42	53.8%
060855089003008	75	38	37	49.3%
060855089003009	95	28	67	70.5%
060855089003010	94	31	63	67.0%
060855089003011	19	7	12	63.2%
060855090001000	6	1	5	83.3%
060855090001001	235	37	198	84.3%
060855090001002	932	430	502	53.9%
060855090001003	87	43	44	50.6%
060855090001004	98	60	38	38.8%
060855090001005	74	59	15	20.3%
060855090001006	63	31	32	50.8%
060855090001007	74	51	23	31.1%
060855090001008	88	60	28	31.8%
060855090001009	77	44	33	42.9%
060855090001010	53	38	15	28.3%
060855090001011	75	48	27	36.0%
060855090002001	361	151	210	58.2%
060855090002002	840	440	400	47.6%
060855090002003	52	22	30	57.7%
060855090002004	59	34	25	42.4%
060855090002005	58	30	28	48.3%
060855090002006	166	120	46	27.7%
060855090002007	133	77	56	42.1%
060855090002008	61	29	32	52.5%
060855090002009	53	33	20	37.7%
060855090003002	525	311	214	40.8%
060855090003003	75	41	34	45.3%

Block Code	Population	White	Minority	% Minority
060855090003004	84	53	31	36.9%
060855090003005	1012	553	459	45.4%
060855090003006	189	94	95	50.3%
060855090003007	86	23	63	73.3%
060855090003010	91	49	42	46.2%
060855090003011	51	28	23	45.1%
060855090003013	96	46	50	52.1%
060855090004000	112	40	72	64.3%
060855090004001	55	45	10	18.2%
060855090004002	71	42	29	40.8%
060855090004003	93	46	47	50.5%
060855090004004	66	41	25	37.9%
060855090004005	51	42	9	17.6%
060855090004006	77	51	26	33.8%
060855090004007	80	45	35	43.8%
060855090004008	55	42	13	23.6%
060855090004009	59	38	21	35.6%
060855090004010	56	41	15	26.8%
060855090004011	123	51	72	58.5%
060855090004012	197	60	137	69.5%
060855090004013	43	15	28	65.1%
060855090004014	87	42	45	51.7%
060855090004015	92	39	53	57.6%
060855090004017	195	77	118	60.5%
060855091021007	2	2	0	0.0%
060855127001091	15	15	0	0.0%
060855127001092	5	5	0	0.0%
060855127001097	10	10	0	0.0%
TOTAL	**342601**	**134921**	**207680**	**60.6%**

APPENDIX 8.8-2B

2000 Census Income Data by Block Group
LECEF 6-mile Radius

Block Group Code	Poverty (non-coll.)	Pov.Univ. (non-coll.)	Percent Low-Income
060014415981	26	569	4.6%
060014415989	82	7052	1.2%
060014431 9	298	12092	2.5%
060014432 9	29	1976	1.5%
060014433 1	46	3390	1.4%
060014433 2	64	1954	3.3%
060014433 3	7	1081	0.6%
060014433 9	51	2703	1.9%
060014507019	14	2419	0.6%
060855001 1	82	940	8.7%
060855001 2	94	1056	8.9%
060855001 3	230	1814	12.7%
060855001 4	104	1129	9.2%
060855002 1	79	553	14.3%
060855002 3	73	504	14.5%
060855002 4	49	1241	3.9%
060855002 5	91	746	12.2%
060855003 1	168	345	48.7%
060855003 3	0	26	0.0%
060855003 4	137	385	35.6%
060855003 5	35	368	9.5%
060855004 1	157	1135	13.8%
060855004 2	55	1014	5.4%
060855005 1	39	831	4.7%
060855006 1	128	1106	11.6%
060855010 1	236	1423	16.6%
060855010 2	115	824	14.0%
060855011 1	73	1342	5.4%
060855011 2	179	1093	16.4%
060855011 3	415	2116	19.6%
060855011 4	220	919	23.9%
060855011 5	122	1147	10.6%
060855012 1	12	649	1.8%
060855012 2	213	1203	17.7%
060855012 4	207	1292	16.0%
060855014 1	826	2957	27.9%
060855036011	48	677	7.1%
060855036012	483	1873	25.8%
060855037041	1606	8700	18.5%
060855037053	399	1705	23.4%
060855037054	359	2567	14.0%

Block Group Code	Poverty (non-coll.)	Pov.Univ. (non-coll.)	Percent Low-Income
060855037055	151	1156	13.1%
060855038013	16	602	2.7%
060855038014	447	7897	5.7%
060855038021	150	2823	5.3%
060855038022	258	3172	8.1%
060855038023	28	633	4.4%
060855042 2	72	1542	4.7%
060855043041	120	1547	7.8%
060855043042	160	1820	8.8%
060855043043	7	675	1.0%
060855043044	71	1850	3.8%
060855043045	58	2224	2.6%
060855043051	10	2003	0.5%
060855043052	50	1054	4.7%
060855043053	40	2110	1.9%
060855043054	119	1063	11.2%
060855043055	61	1175	5.2%
060855043071	221	4677	4.7%
060855043081	49	1527	3.2%
060855043082	31	1002	3.1%
060855043083	0	821	0.0%
060855043084	11	477	2.3%
060855043091	106	1575	6.7%
060855043092	0	26	0.0%
060855043093	65	90	72.2%
060855043094	86	3194	2.7%
060855043095	20	2012	1.0%
060855043096	188	1367	13.8%
060855043101	93	475	19.6%
060855043102	237	4109	5.8%
060855043111	45	2378	1.9%
060855043112	105	2482	4.2%
060855043141	68	1409	4.8%
060855043142	4	942	0.4%
060855043143	26	991	2.6%
060855043144	30	1138	2.6%
060855043151	53	1684	3.1%
060855043152	89	1384	6.4%
060855043153	77	1080	7.1%
060855043154	42	925	4.5%
060855043155	154	1640	9.4%

Block Group Code	Poverty (non-coll.)	Pov.Univ. (non-coll.)	Percent Low-Income
060855044071	39	2508	1.6%
060855044072	54	835	6.5%
060855044073	32	532	6.0%
060855044074	50	1511	3.3%
060855044081	207	2675	7.7%
060855044082	52	1853	2.8%
060855044083	27	2068	1.3%
060855044084	0	226	0.0%
060855044092	161	6738	2.4%
060855044103	46	1817	2.5%
060855044104	174	2147	8.1%
060855044111	119	2614	4.6%
060855044112	162	2664	6.1%
060855044121	143	1028	13.9%
060855044122	252	1398	18.0%
060855044123	93	1074	8.7%
060855044124	9	907	1.0%
060855044971	0	705	0.0%
060855044972	8	784	1.0%
060855044973	90	1637	5.5%
060855044974	48	1090	4.4%
060855044975	0	58	0.0%
060855044981	68	1749	3.9%
060855044982	16	1708	0.9%
060855044983	87	2977	2.9%
060855044984	91	1484	6.1%
060855045031	56	1180	4.7%
060855045033	69	3108	2.2%
060855045034	0	52	0.0%
060855045981	102	1988	5.1%
060855045982	76	873	8.7%
060855045983	150	1636	9.2%
060855045984	91	792	11.5%
060855045985	93	1679	5.5%
060855046981	340	2174	15.6%
060855046982	43	207	20.8%
060855047 9	25	662	3.8%
060855048021	32	1133	2.8%
060855048022	21	1340	1.6%
060855048023	74	2428	3.0%
060855048031	201	1232	16.3%
060855048032	16	796	2.0%
060855048041	34	1439	2.4%
060855048042	41	1637	2.5%
060855048043	0	1140	0.0%
060855048044	8	417	1.9%
060855048045	22	1603	1.4%
060855049011	95	1297	7.3%
060855049021	0	5	0.0%

Block Group Code	Poverty (non-coll.)	Pov.Univ. (non-coll.)	Percent Low-Income
060855050011	53	2188	2.4%
060855050012	124	1621	7.6%
060855050013	45	628	7.2%
060855050973	84	3516	2.4%
060855050975	4	380	1.1%
060855050981	9	1068	0.8%
060855050982	66	1866	3.5%
060855050983	0	132	0.0%
060855050984	0	7	0.0%
060855051 1	236	1884	12.5%
060855051 2	0	158	0.0%
060855052011	6	6	100.0%
060855052012	42	311	13.5%
060855052013	0	36	0.0%
060855052021	360	2132	16.9%
060855052022	152	2127	7.1%
060855052031	34	711	4.8%
060855052032	37	859	4.3%
060855053011	66	1043	6.3%
060855053012	47	780	6.0%
060855053013	19	598	3.2%
060855053014	189	1559	12.1%
060855053021	118	2593	4.6%
060855053022	15	514	2.9%
060855053023	71	915	7.8%
060855053031	307	2982	10.3%
060855053032	15	1555	1.0%
060855053033	0	353	0.0%
060855053034	43	306	14.1%
060855053041	40	984	4.1%
060855053042	11	809	1.4%
060855053043	0	694	0.0%
060855053044	6	730	0.8%
060855053051	19	892	2.1%
060855053052	127	1210	10.5%
060855053053	101	1379	7.3%
060855053054	32	1257	2.5%
060855054011	51	729	7.0%
060855054012	7	853	0.8%
060855054015	15	541	2.8%
060855054021	0	987	0.0%
060855054022	47	1900	2.5%
060855054031	108	3436	3.1%
060855055 1	41	668	6.1%
060855055 2	134	1507	8.9%
060855055 3	14	546	2.6%
060855055 4	4	665	0.6%
060855056 1	15	437	3.4%
060855056 2	44	455	9.7%

Block Group Code	Poverty (non-coll.)	Pov.Univ. (non-coll.)	Percent Low-Income
060855056 3	94	801	11.7%
060855056 4	31	637	4.9%
060855057 1	45	610	7.4%
060855057 2	87	1027	8.5%
060855057 3	48	948	5.1%
060855057 4	82	1321	6.2%
060855059 1	161	2217	7.3%
060855060 1	25	905	2.8%
060855060 2	31	373	8.3%
060855060 4	54	706	7.6%
060855060 5	7	285	2.5%
060855085051	40	1242	3.2%
060855085052	7	1161	0.6%
060855085061	0	1093	0.0%
060855085062	55	784	7.0%
060855085063	126	1823	6.9%
060855085064	109	3378	3.2%

Block Group Code	Poverty (non-coll.)	Pov.Univ. (non-coll.)	Percent Low-Income
060855087012	42	823	5.1%
060855087021	49	515	9.5%
060855087031	239	3105	7.7%
060855087032	49	1194	4.1%
060855087033	28	1039	2.7%
060855087034	30	766	3.9%
060855088 1	135	1785	7.6%
060855088 2	128	1294	9.9%
060855089 1	293	2263	12.9%
060855089 2	32	1340	2.4%
060855089 3	25	860	2.9%
060855090 1	43	1974	2.2%
060855090 2	103	1441	7.1%
060855090 3	148	1703	8.7%
060855090 4	89	1389	6.4%
060855127981	24	217	11.1%
TOTAL	**20303**	**315798**	**6.4%**

Appendix 8.12

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Mike Randolph

Phone No.: 408/277-4659 **Date:** July 05, 2001

Call From: Robert Karfiol **Time:** 1:40 PM

Message Taken By: CH2MHILL

Subject: City of San Jose

I spoke to Mr. Randolph, Hazardous Materials Inspector for the City of San Jose Hazardous Materials Division of the City Fire Department. He indicated that the City will administer the issues pertaining to hazardous materials at the site. Although the County is the CUPA, the RMP and HMBP need to be filed with the City. They will respond to any incident that may occur at the site. They will keep the County informed.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Will Bruhns

Phone No.: 510/622-2300 **Date:** July 05, 2001

Call From: Robert Karfiol **Time:** 2:00 PM

Message Taken By: CH2MHILL

Subject: RWQCB- Region 2

I spoke Mr. Bruhns, Ombudsman, RWQCB Region 2. He indicated that any oil spill over 42 gallons needs to be reported plus any spill that may affect a water body, both surface and ground water. He cited the California Water Code Sections 13271,13272 and 13260.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Bob King, City of San Jose
Department Fire

Phone No.: (408) 277-8781 **Date:** May 16, 2001

Call From: Rachel Hanson **Time:** 02:00 PM

Message Taken By: Rachel Hanson

Subject: U.S. DataPort Peaker Project - Fire Station Locations and Servicing

Where is the closest fire station to the intersection of SR 237 and Zanker Rd? What is the number of firefighters, engines, etc. at the station? What is the first backup station?

Without an address, the woman I spoke with could not confirm anything for certain, but she was fairly certain of the information she gave me.

First Station to respond : Fire Station #29 at 199 Innovation Drive
Personnel – 1 chief, 3 captains, 11 firefighters, 1 paramedic
Vehicles – 1 fire engine, 1 fire truck, 1 Hazmat unit

Second Station to respond: Fire Station #25 at 1590 Gold St. Alviso
Personnel – 1 captain, 2 or 3 firefighters, 1 paramedic
Vehicles – 1 fire engine

Contact name: Chief Mike Jonasson (408) 277-4629

Appendix 8.13

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Mariana Buoni

Phone No.: 661/762-7372 **Date:** July 02, 2001

Call From: Robert Karfiol **Time:** 4:40 PM

Message Taken By: CH2MHILL

Subject: Buttonwillow Landfill

I spoke to Ms. Buoni, Facility Manager, about the Safety-Kleen Hazardous Waste Landfill at Buttonwillow. She indicated that the permitted capacity is 13.25 million cubic yards. The current operating capacity is 130,000 to 150,000 cubic yards per year. The remaining capacity is 10.9 million cubic yards. The estimated closure date is 2068 to 2078. It is a Class I facility. The facility does not accept flammables, PCBs with concentrations greater than 50 ppm, medical wastes, explosives, compressed gas cylinders and radioactive waste with radioactivity greater than 2,000 picocuries.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Alan Smith

Phone No.: 760/344-9400 **Date:** July 03, 2001

Call From: Robert Karfiol **Time:** 10:35PM

Message Taken By: CH2MHILL

Subject: Imperial County Landfill

I spoke to Mr. Smith about the Safety-Kleen Hazardous Waste Landfill at Westmorland in Imperial County. He indicated that the permitted capacity is 4.0 million cubic yards. The current operating capacity is 110,000 cubic yards per year. The remaining capacity is 2.7 million cubic yards. The estimated closure date is 2024. It is a Class I facility. The facility does not accept radioactive waste, flammables, biological hazard waste (medical), PCBs, dioxins, air and water reactive wastes and strong oxidizers.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Ed Vasquez

Phone No.: 800/222-2964 **Date:** July 02, 2001

Call From: Robert Karfiol **Time:** 1:40 PM

Message Taken By: CH2MHILL

Subject: Kettleman Hills Landfill

I spoke to Mr. Vasquez about the Chemical Waste Mgt. Hazardous Waste Landfill at Kettleman Hills, CA. He indicated that the permitted capacity is 17.0 million cubic yards. The current operating capacity is 1,000,000 cubic yards per year. The remaining capacity is 13 million cubic yards. The estimated closure date is 2013. It is a Class I facility. The facility does not accept radioactive waste, medical and unexploded ordinances.

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

Phase I Environmental Site Assessment Update

Highway 237 and Coyote Creek

55-Acre Parcel

San Jose, California

This report has been prepared for:

CALPINE

620 Coolidge Drive, Suite 200

Folsom, California 95630

April 13, 2000

Project No. 587-120

Douglas T. Young, R.G.
Senior Project Geologist

Stason I. Foster, P.E.
Principal Environmental Engineer

REGISTERED GEOLOGIST
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MV, 587-12D Calpine 55 acre.DOC

PHASE I ENVIRONMENTAL SITE ASSESSMENT UPDATE

HIGHWAY 237 & COYOTE CREEK

55-ACRE PARCEL

SAN JOSE, CALIFORNIA

1.0 INTRODUCTION

1.1 Purpose

This Phase I environmental site assessment update was performed for Calpine, who we understand is considering developing the site for commercial use.

The purpose of this study was to document environmental concerns at the site related to current and historic chemical use and to evaluate the potential for a release of hazardous materials from on- or off-site sources that could significantly impact the site's soil and/or ground water quality.

1.2 Scope of Work

As requested, the scope of work for this update report was performed to bring the original Phase I study for the site (Lowney Associates, February 15, 2000) into general accordance with the American Society for Testing and Materials (ASTM) Designation E 1527-97 as outlined in our proposal dated March 9, 2000. The scope of work included the following tasks.

- Site walk-through and observation of existing conditions.
- Distribute site history questionnaires.
- Interview owners/workers at the site

This scope of work was combined with the previously completed takes to bring the document into general compliance with ASTM requirements. The previously completed tasks are outline below:

- A drive-by reconnaissance of the site and adjacent properties for readily observable indications of current or historic activities that have or could significantly impact the site.
- Review of readily available topographic maps and reports to evaluate local hydrogeologic conditions, including anticipated ground water depth and flow direction.

- Review of readily available documents, maps, and aerial photographs, and interviews with knowledgeable persons to evaluate past land uses.
- Review of a regulatory agency database report to evaluate the potential impact to the site from reported contamination incidents at nearby facilities.
- Review of available regulatory agency files to obtain information about the use and storage of hazardous materials at the site.

Our scope of services did not include sampling or analysis of on-site building materials, air, soil, or ground water. The limitations of this Phase I environmental assessment are presented in Section 6.0; the terms and conditions of your agreement are presented in Appendix A.

2.0 SITE RECONNAISSANCE

2.1 Site Location and Ownership

The approximately 55-acre site, shown in Figures 1 and 2, is located near the northwest corner of the intersection of Highway 237 and Coyote Creek in San Jose, California and is denoted as assessor's parcel number (APN) 015-31-002. The site is located in an agricultural, residential, and commercial area and is bounded by agricultural land (owned by Cilker Orchards) to the north; Alviso-Milpitas Road to the south; agricultural, residential, and commercial property to the east; and vacant land to the west. There are currently eight property owners; an owner list is presented in Appendix B.

2.2 Topographic Features and Hydrogeology

Based on U.S. Geologic Survey (USGS) topographic maps, the site's elevation is approximately 10 to 15 feet above mean sea level. Topography in the vicinity of the site slopes gently to the north toward the San Francisco Bay. Based on our geotechnical investigation and our experience in the area, the shallow water-bearing zone is variable across the site, and likely encountered from near the ground surface to depths of approximately 19 feet. Ground water beneath the site likely flows northeast toward Coyote Creek and the San Francisco Bay.

2.3 Site Visit

Our representative, environmental geologist John McCain, visited the project site on March 23, 2000 and was accompanied on a part-time basis by Ms. Elizabeth Lin (co-owner of the Lin Nursery, Inc., 1515 & 1515-A Alviso-Milpitas Road), Mr. Wilson Doe (representing the 1515-C Alviso-Milpitas Road property), and Ms. Lily Kwong (co-owner of 1515-E Alviso-Milpitas Road property). A subsequent site visit was made on April 11, 2000 by our representatives, environmental geologist John McCain and Senior Project Geologist Douglas Young; our representatives were accompanied by Mr. Tuck Lin, Mr. Tom Huen, Ms. Lily Kwong, and current tenants at the 1515-B Alviso-Milpitas Road property.

The site was developed with several nursery complexes and residential structures. Several greenhouses were present throughout the site. Alviso-Milpitas Road permitted access along the southern property boundary of the site, while a gravel drive (the middle road) provided access through the center of the site. The middle road extended north from Alviso-Milpitas Road to the northern portion of the site (Figure 3). The current site tenants are listed in Table 1.

Table 1. Curent Site Tenants

Address	Tenant	General Use
1515 Alviso-Milpitas Road	Ms. Elizabeth Lin	Residence
1515-A Alviso-Milpitas Road	Lin Garden	Nursery
1515-B Alviso-Milpitas Road	Hoo Gee Hom	Living quarters and nursery
1515-C Alviso-Milpitas Road	Hing Doe	Living quarters and nursery
1515-D Alviso-Milpitas Road	Tim Wong	Living quarters and nursery
1515-E Alviso-Milpitas Road	Harry Kwong, Lily Kwong	Three residences and flower nursery
1515-G Alviso-Milpitas Road	Hoo Gee Hom, My Sui Hoo	Living quarters
1515-H Alviso-Milpitas Road	Luk Loo Nursery, Inc.	Living quarters
1515-K Alviso-Milpitas Road	Hoo Gee Hom, My Sui Hoo	Living quarters and nursery
1515-L Alviso-Milpitas Road	Lau Brothers Nursery	Nursery
Unknown	United Flower Growers Association	Meeting hall and nursery

Descriptions of the individual properties comprising the 55-acre project site are summarized below.

2.3.1 1515 & 1515-A Alviso-Milpitas Road (Lin Property)

The approximately 10-acre property was developed with an approximately 2,000-square-foot residence, approximately 525-square-foot mobile home, approximately 1,225-square-foot structure (including vegetable cooler and living quarters), approximately 1,400-square-foot boiler structure, approximately 50-square-foot pesticide storage shed, approximately 162,800-square-feet of greenhouse space, and other small storage sheds (Figure 3). The wood framed and finished residence was located on the southwest corner of the site and fronted Alviso-Milpitas Road; observations of the interior of the residence were not made. An approximately 36-foot by 8-foot diameter underground storage tank (UST), formerly used to store diesel, was resting on the ground surface approximately 50 feet east of the residence adjacent to the greenhouses. The UST was empty and had a tar coating. No holes were observed in the tank. No staining was observed on the ground surface beneath the UST.

Based on an April 11, 2000 conversation with Ms. Elizabeth Lin (co-owner of the property), the diesel UST was formerly located beneath the ground surface, to the east of the boiler structure on the property. The UST reportedly floated to the ground surface during a flood in approximately 1982. The UST was then emptied

of diesel fuel (an unknown volume) and moved to its present location. The diesel fuel was reportedly taken off-site.

The mobile home was located approximately 20 feet northwest of the residence and had a wood framed and finished garage structure located adjacent to the west (Figure 3); no observations of the interior of the mobile home were made since it was private. An approximately 4-foot by 4-foot barbeque pit was located adjacent to the north of the garage structure; Ms. Elizabeth Lin reported that the tenants reportedly use the pit to cook.

A vegetable cooler structure was located approximately 75 feet north of the residence (Figure 3). A small, one-room living quarters was located within the southeastern corner of the structure, and a small office was located adjacent to the west of the living quarters. The vegetable cooler (no longer in use) was located in the northern portion of the structure. The cooler and other small storage areas located in the northern portion of the structure contained household debris including furniture, paper, and clothing. Approximately twenty 50-pound bags of fertilizer were located on the northwest corner of the structure.

Domestic trash, irrigation plumbing, concrete, wood, and other debris were scattered on the east side of a fence along the western property boundary. An approximately 500-gallon gasoline UST was reportedly located approximately 40 feet northwest of the cooler/living quarter's structure (Figure 3). A vent pipe for the UST was observed to extend out of the ground on the west side of the fence running along the western property boundary. An asphalt pad was observed on the east side of the fence in the area over the UST location.

An agricultural chemical storage shed was present approximately 10 feet north of the location of the gasoline UST (Figure 3). The wood-framed and metal-sided storage shed contained several gallon containers of fertilizers and 50-pound bags of dry fertilizers. Several of the containers and bags had been damaged exposing virgin fertilizer to the shelves and dirt flooring within the shed. Although, no pesticides were observed within the shed, a sign posted on the front door of the shed read "Pesticide Storage Area."

The concrete floored boiler structure was located approximately 160 feet northeast of the residence. The boiler was used to provide steam heat for the greenhouses on-site and was serviced by natural gas. An approximately 10-foot by 6-foot above ground boiler tank, an approximately 10,000-gallon water tank, an approximately 100-gallon water return tank, hand tools, and an agricultural chemical mixer were located within the boiler structure. Though the boiler was no longer in use, the 10,000-gallon wooden water tank contained approximately 8,000-gallons of water which feeds the irrigation system throughout the greenhouses. The agricultural chemical mixer, located in the northwest corner of the structure, had a mixing/holding tank and pump to pump the agricultural chemicals through a series of 1-inch-diameter metal pipes running from the boiler structure throughout the greenhouses on the property; agricultural chemicals observed within the boiler structure included fertilizers and fungicides.

A PVC cased water supply well was observed approximately 15 feet west of the boiler structure. The well was capped at the ground surface and had a series of metal piping apparently running to the boiler structure.

A second pesticide storage shed was located approximately 25 feet east of the boiler structure (Figure 3). The shed contained pesticides and herbicides including Subdue fungicide, Botani Gard ES, Mycainsecticide, Mavrik Insecticide, Enstar, Daconil, 2787 WDG, Phyton 27, and Micro Lin. The agricultural chemicals were stored within the shed on shelving, in containers no larger than 1 gallon or 5 pounds. A pesticide mixer was observed in the shed and appeared empty. Metal piping ran from the pesticide mixer into the surrounding greenhouses. The dirt floor of the pesticide shed appeared to have been impacted with agricultural chemicals.

The greenhouses were wood framed and plastic/fiber sided and located on the north and east portions of the property (Figure 3). The greenhouses were covered with clear plastic to allow the sun to penetrate. Systems containing 1-inch diameter metal piping (pesticide/fertilizer system), 3-inch-diameter metal piping (steam system), and 1-inch PVC piping (irrigation system) ran along the ceiling of the greenhouses. The greenhouses located on the northern portion of the property were partially collapsed. The greenhouses to the east and northeast of the residence were operational, although they are reportedly being phased out of operation.

The property adjacent to the north of the greenhouses was vacant and overgrown with weeds and tall grasses. Two inoperative vans were observed near the middle road. A pile of household debris was located on the north side of the vans and contained metal, wood, clothing, furniture, and trash.

2.3.2 1515-B Alviso-Milpitas Road (Hom Property)

The approximately 5-acre property was developed with an approximately 1,500-square-foot living quarters, boiler structure, pesticide storage and mixing shed, and greenhouses, all located on the west side of the middle road (Figure 3). A concrete floored garage space was located in the north portion of the living quarters and served as a cleaning and boxing area for the vegetables grown in the greenhouses on-site. A metal boiler tank and metal water return tank were located in a concrete floored shed approximately 20 feet north of the living quarters; both tanks were mounted on stands. The boiler was fueled by natural gas; metal piping ran from the boiler into the greenhouses adjacent to the west which allowed the boiler to provide steam to the greenhouses. An approximately 10,000-gallon water AST and an approximately 100-gallon water AST were located adjacent to the east of the boiler and apparently supplied the boiler as well as the greenhouses. A second boiler tank (empty and inoperative) was located outside to the north of the boiler structure. According to the current tenants, the tank has been in this location and inoperative since approximately 1978.

The wood floored pesticide storage and mixing shed was located adjacent to the northwest of the boiler structure (Figure 3). Less than 5 pounds of pesticides (Dispel 2x) were observed to be stored on shelving within the shed. A pesticide mixer was located in the center of the shed. The mixer was empty and rested directly on the wood floor of the shed. Metal piping ran from the mixer to the greenhouses adjacent to the west.

The approximately 80,000 square feet of greenhouses were currently being used for cultivation of vegetables. Systems containing 1-inch-diameter metal piping (pesticide/fertilizer system), 3-inch-diameter metal piping (steam system), and 1-inch PVC piping (irrigation system) ran along the ceiling of the greenhouses.

2.3.3 1515-C Alviso-Milpitas Road (Doe Property)

The approximately 6-acre property was occupied by a living quarters, boiler and water tank structure, pesticide storage and mixing shed, and greenhouses (Figure 3). The approximately 12,000-square-foot, wood framed and metal sided living quarters was located on the west side of the middle road and reportedly contained 10 bedrooms. Observations of the interior of the living quarters were not made. The southeastern corner of the living quarters contained a concrete floored garage. A vehicle, tractor, and household items including clothing, furniture, and trash were observed in the garage area.

A boiler and water tank structure was located adjacent to the west of the living quarters (Figure 3). The wood framed and metal sided boiler and water tank structure was concrete floored and contained a metal boiler tank and wooden water AST (approximately 10,000-gallon tank). The boiler tank rested on a stand and the metal piping carried the steam from the boiler into the greenhouses on the west side of the property. The boiler was currently fueled by natural gas.

The pesticide storage and mixing shed was located adjacent to the west of the boiler and water tank structure (Figure 3). The shed contained less than 50 pounds (powder) and less than 5 gallons (liquid) of fertilizers and pesticides including Malthion, B-Nine-SP, and Acti-Dione-PM. The pesticides and fertilizers were stored on shelves in the shed in individual containers sold by garden shops/nursery supply stores. The pesticide mixer was located in the center of the shed. The machine was empty and the metal piping used to carry the pesticides to the greenhouses extended out the western side of the shed. The metal piping was above ground and ran to the greenhouses on the west side of the property.

The greenhouses were covered with clear plastic to allow the sun to penetrate. Systems containing 1-inch diameter metal piping (pesticide/fertilizer system), 3-inch diameter metal piping (steam system), and 1-inch PVC piping (irrigation system) ran along the ceiling of the greenhouses.

An approximately 10,000-gallon diesel UST was reportedly located on the east side of the living quarters structure (Figure 3). This tank apparently serviced the boiler

located on this property. The vent pipe for the tank was observed on the east wall of the living quarters.

2.3.4 1515-D Alviso-Milpitas Road (Wong Property)

The approximately 3-acre property contained a boiler structure, living quarters, and a pesticide storage shed. Greenhouse structures were present on the west portion of the property and appeared to be used for the cultivation of flowers. The greenhouses were covered with clear plastic to allow the sun to penetrate. Systems containing 1-inch diameter metal piping (pesticide/fertilizer system), 3-inch-diameter metal piping (steam system), and 1-inch PVC piping (irrigation system) ran along the ceiling of the greenhouses.

The concrete-floored, wood framed and fiberboard sided boiler structure contained a metal boiler tank and a metal water tank; both tanks were mounted on stands. The boiler was fueled by natural gas and reportedly has not been used in the past year. Mr. Thomas Huen (representative of Mr. Tim Wong, the current property owner) reported that the boiler was never fueled by a diesel UST.

The two wood framed and metal-sided living quarters structures were located adjacent to the north of the boiler structure; a total of five bedrooms were reported within the living quarters structures. No observations of the inside of the living quarters were made.

The concrete floored, wood framed and fiberboard sided pesticide storage shed was located to the north of the boiler structure. Approximately 5 gallons of Malathion 8 were observed to be stored on shelving within the shed. A pesticide mixer was located in the south side of the shed and appeared empty. Metal piping was observed to extend from the machine into the greenhouses on the property.

2.3.5 1515-E Alviso-Milpitas Road (Kwong Property)

The approximately 1.65-acre property contained three residential structures and three greenhouse areas. The residential structures (two 3-bedroom structures and one 2-bedroom structure) appeared to be modular type homes; observations of the interiors of the residences were not made.

The greenhouse areas were located west of the residences and had wooden frames covered with plastic sheeting. One of the greenhouses extended onto the United Growers Association (UFGA) property adjacent to the north.

An approximately 4-foot by 3-foot, metal pesticide storage shed was located on the north side of the northern most residence (Figure 3); the shed was empty. Though Ms. Kwong reportedly stored the bulk of the pesticides in the metal shed, a second, dirt floored pesticide storage and mixing area was observed within a shed located adjacent to the greenhouses on the western portion of the UFGA property (adjacent to the north). Ms. Kwong reported that nursery operations ceased approximately three years ago, and only limited flower growing has occurred since that time.

2.3.6 The United Flower Growers Association

The approximately 1.65-acre United Flower Growers Association (UFGA) property was located on the northwestern corner of the site. The property was developed with an approximately 4,400-square-foot single story building used as a meeting hall with some office and classroom space (Figure 3). A garage was located in the western portion of the building and appeared to be empty with the exception of an approximately 20-gallon pesticide spreader (empty) and a lawnmower. Approximately four propane canisters (approximately 5 feet tall) and an outdoor grill area were located on the east side of the building. A gravel parking area was located on the south and west sides of the building. A former propane tank concrete pad was located approximately 30 feet southeast of the building. Ms. Lily Kwong reported that the tank was removed approximately three years ago.

Two metal ASTs were located on the west side of the building. The ASTs were empty, and one (approximately 500-gallon) was on a stand while the second (approximately 100-gallon) rested on the ground surface. Ms. Kwong reported that the 500-gallon tank was used for storage of pesticides at an off-site location, and the 100-gallon tank was reportedly used to store water at an off-site location. Both tanks were brought on-site from the off-site location and were reportedly never used on-site. Plastic sheeting, metal irrigation piping, and metal fencing debris was present on the western portion of the UFGA property.

A former greenhouse area operated by Ms. Lily Kwong extended up onto the western portion of the UFGA property. A shed located adjacent to the east of the greenhouse contained a pesticide mixing and storage area (Figure 3). The mixer was empty and less than 5 pounds of pesticides were observed in plastic containers and bags on the dirt floor of the shed; the dirt floor of the shed appeared to have been impacted with the pesticides.

2.3.7 1515-G and 1515-K Alviso-Milpitas Road (Hom Property)

The approximately 10-acre property was located at the southeastern corner of the site (Figure 3). The property was developed with three living quarters structures (1515-K Alviso-Milpitas Road, 1515-G Alviso-Milpitas Road, and an unlabeled living quarters), a boiler structure, and greenhouses. The 1515-K and 1515-G Alviso-Milpitas Road living quarters were wood framed and metal-sided (Figure 3). The 1515-K Alviso-Milpitas Road structure contained approximately two bedrooms, a kitchen, and a vegetable cooler. The vegetable cooler had been converted into a dry storage space. An apparent agricultural chemical storage area was located in a shed adjacent to the west of the 1515-K Alviso-Milpitas Road structure. Though no pesticides were observed in the shed area, Ms. Elizabeth Lin reported that limited, historical pesticide storage and mixing occurred within the shed. Greenhouses were present to the north of the living quarters.

The interior of the 1515-G Alviso-Milpitas Road living quarters was not observed, but the structure appeared to have at least two bedrooms. The third living quarters structure (not labeled with a number address) was located adjacent to the west of

the 1515-K Alviso-Milpitas Road living quarters structure (Figure 3) and appeared to contain one bedroom. An associated shed and mobile home trailer were located adjacent to the southwest of the structure. Greenhouses were present to the south of the living quarters.

The concrete-floored, wood framed and metal-sided boiler structure was located near the northwestern corner of the property, near the middle road (Figure 3). The natural gas fueled, metal boiler tank was mounted on a metal stand; a metal water return tank was located adjacent to the east. The southern side of the boiler structure contained a single roomed living quarters. A 5-gallon bucket of apparent gear lube was observed on the south side of the boiler structure. The greenhouses were located adjacent to the east of the boiler structure. Mr. Tuck Lin reported that the greenhouses were currently used to grow mushrooms. No pesticides were reportedly used on the mushrooms within the greenhouses. The greenhouses appeared to be in poor condition and some areas had collapsed.

Two active water supply wells, one reportedly inactive water supply well, and an apparent water AST were observed on the southern portion of the property along Alviso-Milpitas Road (Figure 3). One of the water supply wells was located approximately 40 feet west of the 1515-K Alviso-Milpitas Road living quarters structure; metal and PVC piping ran from the well to the apparent water AST which was located approximately five feet to the north of the well. The second active water supply well was located approximately 50 feet west of the first. The well had metal and PVC piping extending to the apparent water tank. The inactive water supply well was observed approximately 25 feet south of the un-numbered living quarters located along Alviso-Milpitas Road. The apparent well was located adjacent to a 4-foot by 4-foot wooden shed that contained two empty 55-gallon drums. No cover was observed on the well; a tape measure was used to determine that the well was open to a depth greater than 25 feet.

The wood framed and fiber sided greenhouses were located adjacent to the north of the 1515-K Alviso-Milpitas Road living quarters and adjacent to the south of the 1515-G Alviso-Milpitas Road living quarters. The greenhouses were in poor condition and several sections of the roof of the greenhouses had collapsed. Systems containing 1-inch diameter metal piping (pesticide/fertilizer system), 3-inch-diameter metal piping (steam system), and 1-inch PVC piping (irrigation system) ran along the ceiling of the greenhouses.

2.3.8 1515-H Alviso-Milpitas Road (Loo Property)

The approximately 5-acre property was developed with a wood-framed and concrete-block structure containing three bedrooms which did not appear to have been occupied within the past year. A water tank and pesticide mixer were located to the east of the living quarters. The pesticide mixer and water tank were located within a structure frame (the walls and roof were not present on the framework) adjacent to the east of the living quarters. Ms. Elizabeth Lin reported that the building contained a natural gas fueled boiler at one time. An apparent water AST was located to the east of the pesticide mixer.

Greenhouses were located to the north and east of the 1515-H Alviso-Milpitas Road structure. The greenhouses were in poor condition and several portions of the roof had collapsed; the greenhouses did not appear to be in operation. A pole-mounted transformer was observed adjacent to the north of the greenhouses.

2.3.9 1515-L Alviso-Milpitas Road (Lau Property)

The approximately 12.3-acre property contained the Lau Brother's Nursery greenhouses located on the east side of the middle road (Figure 3). An approximately 8,000-square-foot, wood framed and metal-sided boiler structure contained a natural gas fed boiler, an above ground water tank, an agricultural chemical mixer, vegetable coolers, and living quarters. The boiler was located within the center of the structure, and the agricultural chemical mixer was located north of the boiler tank inside the structure. Approximately twenty 50-pound bags of fertilizer and two 55-gallon drums of liquid fertilizer (approximately half-full) were stored on the concrete flooring of the structure near the boiler tank. The vegetable coolers (still in use) occupied the western portion of the structure. Vegetables harvested from the greenhouses on the property were reportedly stored in the vegetable cooler prior to distribution. The eastern end of the structure contained living quarters consisting of approximately five bedrooms and three bathrooms.

Ms. Elizabeth Lin and Mr. Wilson Doe reported that a diesel UST was located on the southern side of the boiler structure (Figure 3). A vent pipe apparently associated with the UST was observed on the southern side of the boiler structure.

A wood framed and metal-sided cooler structure was located to the south of the boiler structure. The structure appeared to be used for storage of vegetables after harvesting.

A storage yard area was observed to the south and west of the boiler structure and contained a semi-trailer, a camping trailer, a vehicle, and domestic debris including wood crates, clothing, and trash. An inactive agricultural well reportedly exists near the existing greenhouse structures. The well was not observed during our site visit, however.

2.4 Site Vicinity Reconnaissance

To evaluate adjacent land use, we performed a drive-by survey. Our observations are presented in Table 2. Of the facilities listed in Table 2, Cilker Orchards and the road construction yard may use, handle, and/or store hazardous materials

Table 2. Adjacent Properties

Land Use	Business Name and Address	Direction from Site
Agricultural	Cilker Orchards 1595 Alviso-Milpitas Road	North
Alviso-Milpitas Road, industrial	Road construction storage yard	South
Agricultural, residential, commercial	Cilker Orchards/Silva Produce/Pacheco Tractor Service/Williams Trucking 1595 Alviso-Milpitas Road Raul Ivarra residence 1591 Alviso-Milpitas Road	East
Vacant	buffer zone for San Jose-Santa Clara Water Pollution Control Plant	West

The treatment plant portion of the San Jose-Santa Clara Water Pollution Control Plant is located approximately 1,600 feet west of the site. The plant uses, handles, and stores large quantities of hazardous materials, including chlorine and sulfur dioxide gasses.

2.5 Interviews

During our March 23, 2000 site visit, we contacted Ms. Elizabeth Lin, Mr. Wilson Doe, and Ms. Lilly Kwong for general information regarding past and current site usage. Ms. Lin, Mr. Doe, and Ms. Kwong were asked to complete a questionnaire. Questionnaires were sent to Mr. Norman E. Matteoni, Esq. (representing Tuck & Elizabeth Lin, Hoo Gee Hom and My Sui Hoo, Hoo Gee Hom Nursery, Inc., Yuk Lun Loo Nursery, Inc., and the United Flower Growers, Inc.), Mr. Gordon Chan (representing Kam Cheong Lau & Pou Leng Ip Lau and Kam Wo Lau and Lily L. Lau), and Mr. Thomas Huen (representing Chung Tim Wong & Yin Yi Wong and Harry Kwong & Lily Kwong). Copies of the completed questionnaires received by Lowney Associates are included in Appendix B. A brief discussion of the questionnaires and conversations with selected individuals is provided below.

Ms. Elizabeth Lin has owned her approximately 10-acre portion of the subject site since October 1978. Ms. Lin informed us of the approximate location of the reported 500-gallon gasoline UST present on the western portion of her property. Ms. Lin reported that the gasoline UST was most likely used to fuel machinery used on the orchard, and the tank has not been used since 1978. The orchard reportedly contained orange, prisimon, apricot, and pear trees. Orchard trees were removed from the area currently occupied by greenhouses on Ms. Lin's property. Ms. Lin reported that the UST resting on the ground surface to the east of her 1515 Alviso-Milpitas Road residence was once used as a back-up fuel supply for the boiler located on her property. The UST was reportedly buried on the east side of the boiler structure currently on the Lin property. The UST surfaced during a flood event which occurred in 1982. Following the flood, the tank was emptied of diesel fuel and placed in its current location.

Ms. Lin reported that a boiler used to be located in the structure adjacent to the east of the 1515-H Alviso-Milpitas Road living quarters structure. Ms. Lin did not know the date that the boiler was removed. Ms. Lin reported that the boiler was fueled by natural gas.

Mr. Wilson Doe reported that minor maintenance of the tractor and nursery vehicles was performed within the garage portion of the 1515-C Alviso-Milpitas Road living quarters structure. The maintenance included oil changes for the vehicles and the waste oil was reportedly picked up for off-site disposal/recycling by the City of San Jose. Mr. Doe identified the location of a 10,000-gallon diesel UST on the Doe property. The tank is reportedly located on the east side of the living quarters on-site. Mr. Doe reported that the UST on the Doe property and the diesel UST present on the Lau Brother's property (1515-L Alviso-Milpitas Road) were installed in approximately 1978. Mr. Doe also reported that an approximately 32-foot by 10-foot concrete slab was present above the 10,000-gallon diesel UST on the Doe property. The slab was poured over the UST after a flood occurred in the site vicinity (approximately 1982) and caused the UST to rise to the surface. At that time, the UST was measured to contain approximately 4,000 gallons of diesel fuel. The Doe's pumped water into the tank to weigh the tank down and aid in anchoring it. The current volume of the diesel fuel in the UST present on the Doe property is unknown.

The boiler on the Doe property (1515-C Alviso-Milpitas Road) was last used in approximately 1992 and very limited nursery activities have existed since that time. Mr. Doe reported that pesticides were used approximately 10 to 20 years ago in the greenhouses to the west of the living quarters. The pesticides were reportedly stored and mixed in the pesticide storage/mixing shed located on the west side of the boiler shed on the Doe property (Figure 3). Mr. Doe reported that the property gets its water from the well located on the southern portion of the 55-acre project site near the 1515-K Alviso-Milpitas Road living quarters (Figure 3), Mr. Doe reported that the water line (along with the natural gas line) runs up the middle road; the water line is located along the west side of the middle road, while the natural gas line runs along the east side of the middle road.

According to the questionnaire completed by Mr. Tim Wong (co-owner of the 1515-D Alviso-Milpitas Road property), the greenhouses on the property are used to grow flowers. Agricultural chemicals such as Subdue, Neemazda, and Orthene historically have been applied to the site.

Ms. Lily Kwong reported that the pesticide use at the 1515-E Alviso-Milpitas Road property included Avid, Diazinon AG 500, Dylox, Fore, and Orthene. Pesticide use stopped in approximately 1998.

According to the questionnaire completed by Mr. Kam Wo Lau, Ms. Lily L. Lau, Mr. Kam Cheong Lau, and Mr. Pou Leng Ip Lau, the Lau Brother's Nursery (1515-L Alviso-Milpitas Road) has three structures totaling approximately 9,500 square feet. Chinese vegetables were reportedly grown in the greenhouses on the property. The co-owners reported that no agricultural chemicals were historically applied to

the site. The Lau's reported that the site contained the following: above ground storage tanks (for water), an agricultural well, a boiler, chemical storing and mixing areas, a sump, and an underground storage tank (UST).

3.0 HISTORICAL REVIEW

To evaluate the site history, we reviewed the following.

- Available stereo-paired aerial photographs (1963, 1966, and 1968) from the USGS Library in Menlo Park, California.
- Available USGS 15-minute and 7.5-minute topographic maps (1961, 1968, 1973, and 1980).
- Historic Sanborn fire insurance maps were requested from Sanborn Mapping and Geographic Information Service (Sanborn GIS) in Pelham, New York. Information obtained by us during the study indicated that no Sanborn maps were available.

Our observations are summarized below.

1961 through 1973: Based on the 1961 USGS topographic map, the site appeared to be developed with an orchard and residence. The site appeared to remain similar through at least 1973.

Based on the 1961 topographic map, the properties adjacent to the north and south of the site were developed with orchards. The property adjacent to the west of the site was vacant land. The property adjacent to the east was developed with a residence, an orchard, and associated barn structures. Based on the 1963 aerial photograph, the adjacent properties appeared similar, with the exception of the property adjacent to the south; this property had been cleared of the former orchard and a structure was present on the southeastern corner of the property. Highway 237 also was present to the south. The adjacent properties appeared to remain similar through at least 1973.

1980: Based on the 1980 topographic map, the site appeared to have been cleared of all former orchards and was developed with the existing nursery facility. A residence remained on the southwestern portion of the site. The adjacent properties appeared similar to the prior maps and photographs.

4.0 REGULATORY RECORDS

4.1 City and County Agencies File Review

To obtain information on hazardous materials usage and storage, we reviewed readily available information at the Santa Clara County Building Department (SCCBD), San Jose Fire Department (SJFD), and Santa Clara County Environmental Health Department (SCCEHD) pertaining to the 1515 Alviso-Milpitas Road address.

No files were available at the SJFD or the SCCEHD. A 1994 electrical permit for the 1515 Alviso-Milpitas Road address was the only document made available to us by the SCCBD.

We additionally reviewed a well location map from the Santa Clara Valley Water district (SCVWD). Several wells are shown on the map. A copy of the map is provided in Appendix B.

4.2 Regulatory Agency Database Report

During this study, a regulatory agency database report was obtained and reviewed to help establish whether contamination incidents have been reported within the site vicinity. A list of the database sources reviewed, a detailed description of the sources, and a radius map indicating the location of the reported facilities relative to the project site are presented in Appendix C. Nearby reported hazardous materials incidents and facilities are presented in Table 3.

Table 3. Nearby Hazardous Materials Incidents and Facilities

Facility Name	Map ID No.	Address	Distance and Direction From Site	Potential Concern
Cilker Orchard #3	10	1595 Alviso-Milpitas Road San Jose, CA	Adjacent to the east	The site was reported to have a 3,000-gallon gasoline UST and ground water monitoring well.
AT&T Farms/ McCarthy Ranch	2, 7	Coyote Creek Reach 3/Highway 237 Milpitas, CA	Unknown*	Listed in SMS R_2 and SLIC databases of ground water pollution cases; no further information provided. RWQCB listed as lead agency.

* Although mapped on the site, this facility was not identified/observed on-site or adjacent to the subject property during the site and vicinity reconnaissance.

During interviews with Mr. Cilker, the owner of the adjacent property to the east, he was unaware of the AT&T Farms/McCarthy Ranch facility being anywhere near his property. It is suspected that this site was mislocated on the database report.

5.0 CONCLUSIONS

5.1 Historical Summary

The site's first developed use appears to have been with orchards from at least the early 1960s through the mid- to late 1970s. By 1980, the site was developed with the existing nursery facility and residences. Site information dating back prior to 1961 was unavailable from the sources researched, but based on our experience in this area, site use prior to 1961 was likely agricultural and/or undeveloped land.

5.2 Agricultural Wells

Four water supply wells were observed on the site; three on the 1515-G & 1515-K Alviso-Milpitas Road property and one on the 1515 & 1515-A Alviso-Milpitas Road property. A fifth well was reported, but not observed, to be present at the Lau property (1515-L Alviso-Milpitas Road). The five on-site water supply wells should be properly abandoned in accordance with SCVWD requirements if continued use is no longer intended.

One potential additional well (M6) was identified on the SCVWD well location map (Appendix B). The SCVWD should be contacted to evaluate the status of all wells at the site. If any additional wells are found to exist and are no longer needed, they should be properly destroyed following SCVWD guidelines.

5.3 On-Site Soil Quality

Due to the agricultural history of the site, a potential environmental concern is the possible presence of residual pesticides and associated metals (arsenic, lead, and mercury) in the native soils. Based on the planned use of the site, we do not consider these pesticides, if present, a significant threat to the future occupants of the site. The site will be largely capped by the commercial development and associated asphalt-concrete drives and parking areas; thus, risk to human health and the environment will be significantly reduced if residual pesticides are present. Construction worker health and safety issues and off-site disposal of excess soil, however, can be concerns if high pesticide levels are present. Soil sampling should be performed to evaluate if elevated concentrations of pesticides and associated metals are present throughout the greenhouse areas, and in the pesticide storage and mixing sheds.

5.4 Storage Tanks

The California Code of Regulations requires that all underground storage tanks used for hazardous substances be closed if they are not in use. Temporary closure requirements apply if the tank will be used within 12 months. The application for temporary closure must be submitted within 90 days from the date of last use. Permanent closure (usually removal) is required if the tank will not be used within 12 months.

The gasoline UST located at the Lin property and the two diesel USTs present at the Doe and Lau properties should be removed. Additionally, the approximately 10,000-gallon UST resting on the ground surface to the east of the 1515 Alviso-Milpitas Road residence should be removed from the site for proper disposal or recycling.

A soil and ground water quality evaluation should be conducted at each of the current UST locations as well as at the former location of the tank that is currently resting at the ground surface.

5.5 Asbestos

Due to the construction of the on-site structures prior to 1980, asbestos-containing materials (ACMs) may be present. Since demolition of the buildings is under consideration, an asbestos survey must be conducted under National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines. In addition, NESHAP guidelines require that all potentially friable ACM be removed prior to building demolition or renovation that may disturb the ACM.

5.6 Lead-Based Paint

The on-site structures also should be evaluated for the presence of lead based paint prior to demolition. If the lead based paint is still bonded to the building components, its removal is not required prior to demolition. However, the personnel conducting the demolition must comply with the training, worker protection, and monitoring requirements of the California Occupational Safety and Health Administration (Cal/OSHA) Lead in Construction Standard, Title 8, California Code of Regulations (CCR) 1532.1. If the lead based paint is peeling, flaking or blistered, it should be removed prior to demolition. It is assumed that such paint will become separated from the building components during demolition activities; thus, it must be managed and disposed as a separate waste steam.

5.7 Potential Environmental Concerns Within the Site Vicinity

The regulatory agency database report identified the AT&T/McCarthy Ranch facility as being on or near the site. The owner of the adjacent property, Mr. Cilker, has no knowledge of this facility or where it may be located. The location of this site on the database report appears to be mislabeled. The RWQCB should be contacted to help locate this site if additional information is desired.

The San Jose-Santa Clara Water Pollution Control Plant is located within approximately 1,600 feet west of the project site. Consideration should be given to reviewing the facility's risk management plan to evaluate whether the project site falls within the radius of influence for gas releases from the plant.

5.8 Urban Runoff Pollution Prevention Program

The Urban Runoff Pollution Prevention Program, also called the Non-Point Source Program, was developed in accordance with the requirements of the 1986 San Francisco Bay Basin Water Quality Control Plan to reduce water pollution associated with urban storm water runoff. This program was also designed to fulfill the requirements of the Federal Clean Water Act, which mandated that the EPA develop National Pollution Discharge Elimination System (NPDES) permit application requirements for various storm water discharges, including those from municipal storm drain systems and construction site. For properties of 5 acres or greater, a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) must be prepared prior to commencement of construction.

5.9 Septic Tanks

The on-site structures are reported to have septic systems. Prior to site grading activities, the systems should be properly abandoned in accordance with county health department requirements.

6.0 LIMITATIONS

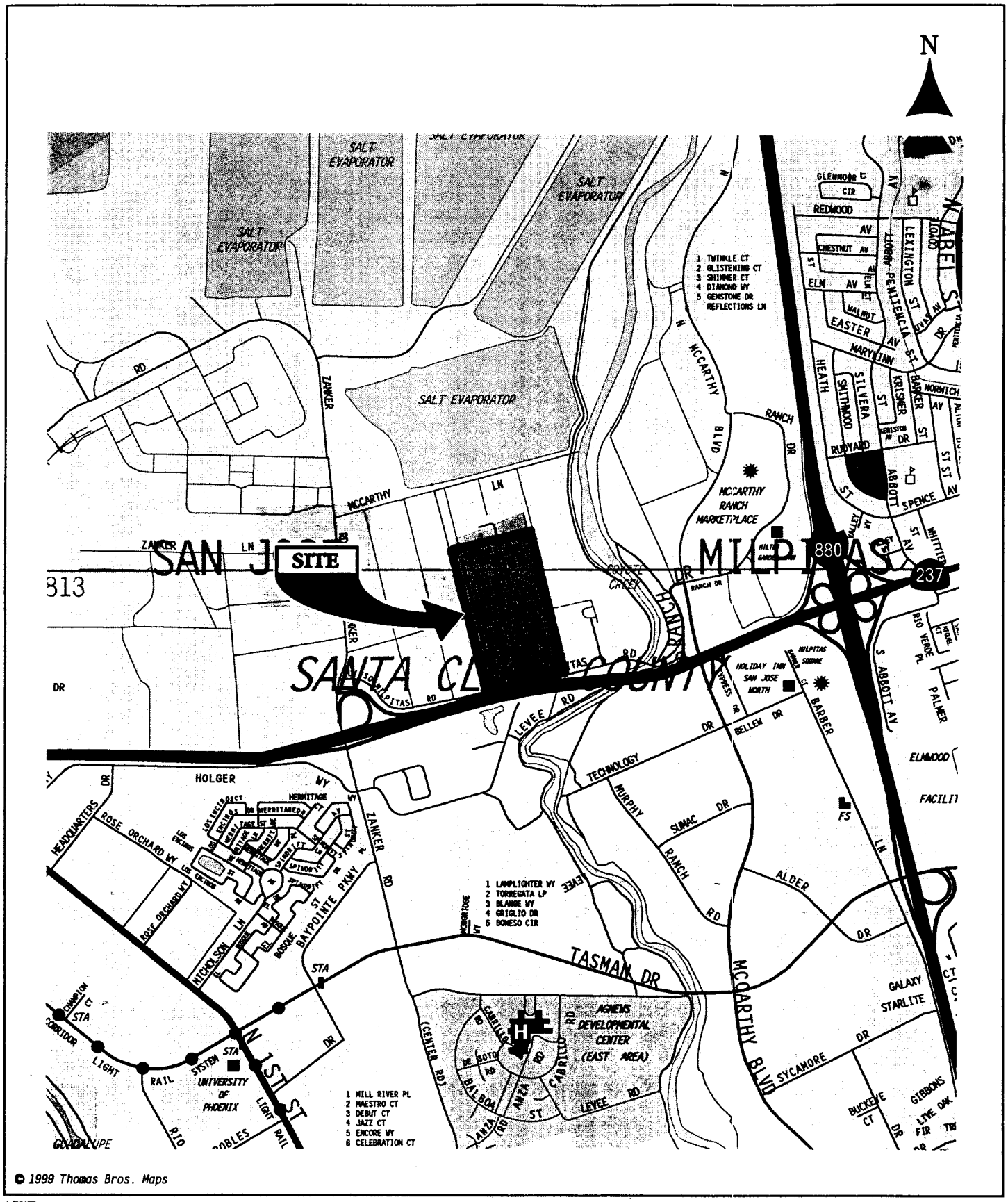
As with all site assessments, the extent of information obtained is a function of client demands, time limitations, and budgetary constraints. Our conclusions and recommendations regarding the site are based on readily observable site conditions, review of readily available documents, maps, aerial photographs, and data collected and/or reported by others. We are not responsible for the accuracy of information or data presented by others. Our conclusions and recommendations in this site assessment are qualified in that no soil, ground water, air, or building material analyses were performed. Sampling and analysis lead to a more reliable assessment of environmental conditions, conditions which often cannot be noted from typical Phase I activities. Should you desire a greater degree of confidence, these samples should be obtained and analyzed to further evaluate environmental conditions.

This report was prepared for the sole use of Calpine. We make no warranty, expressed or implied, except that our services have been performed in accordance with environmental principles generally accepted at this time and location.

7.0 REFERENCE

Lowney Associates. February 15, 2000. *Phase I Environmental Site Assessment.*

* * * * * * * * * * * * * *



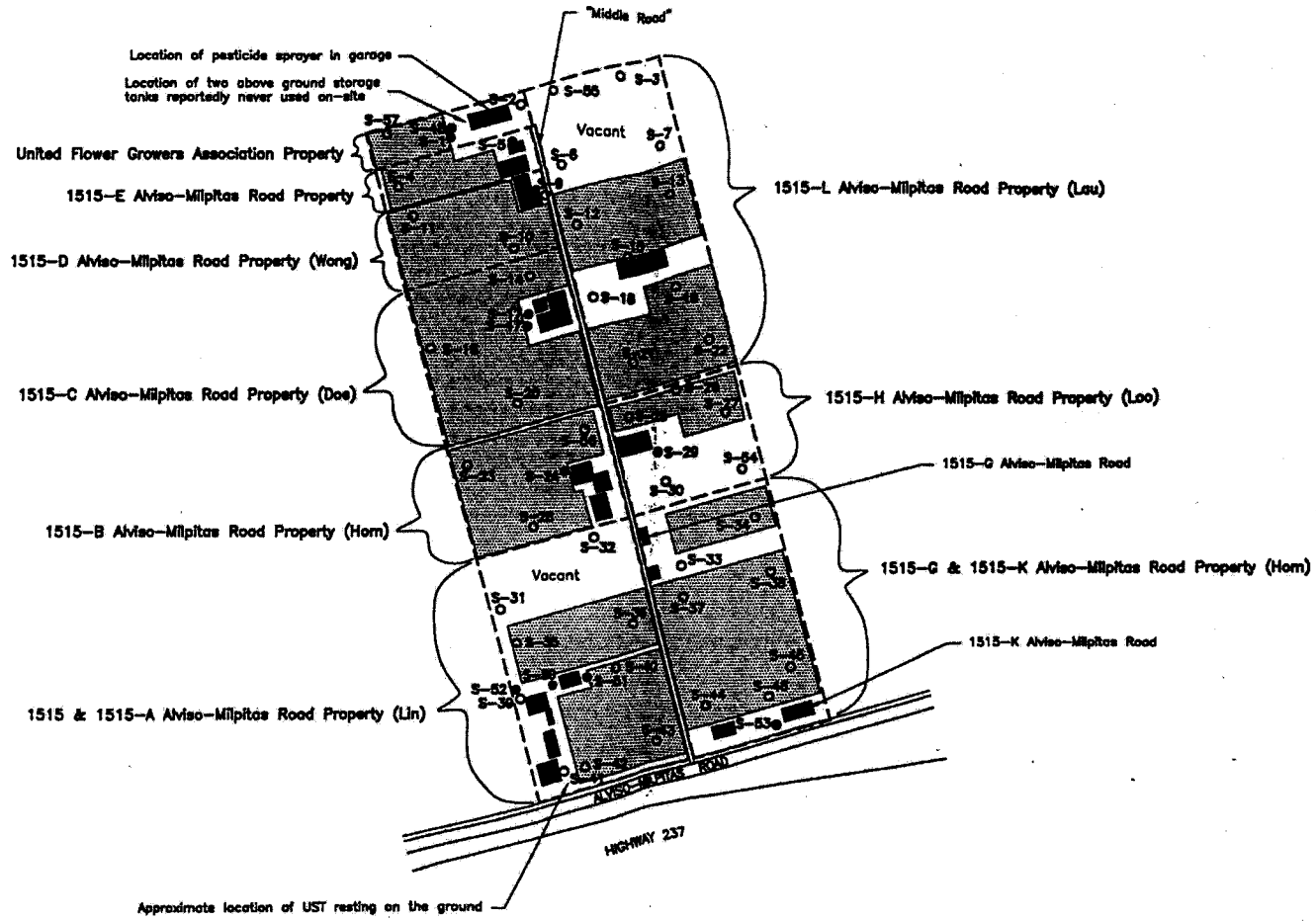
4/00*EB

VICINITY MAP

HIGHWAY 237/COYOTE CREEK 55-ACRE PARCEL
San Jose, California

LOVNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 1
587-12D



LEGEND

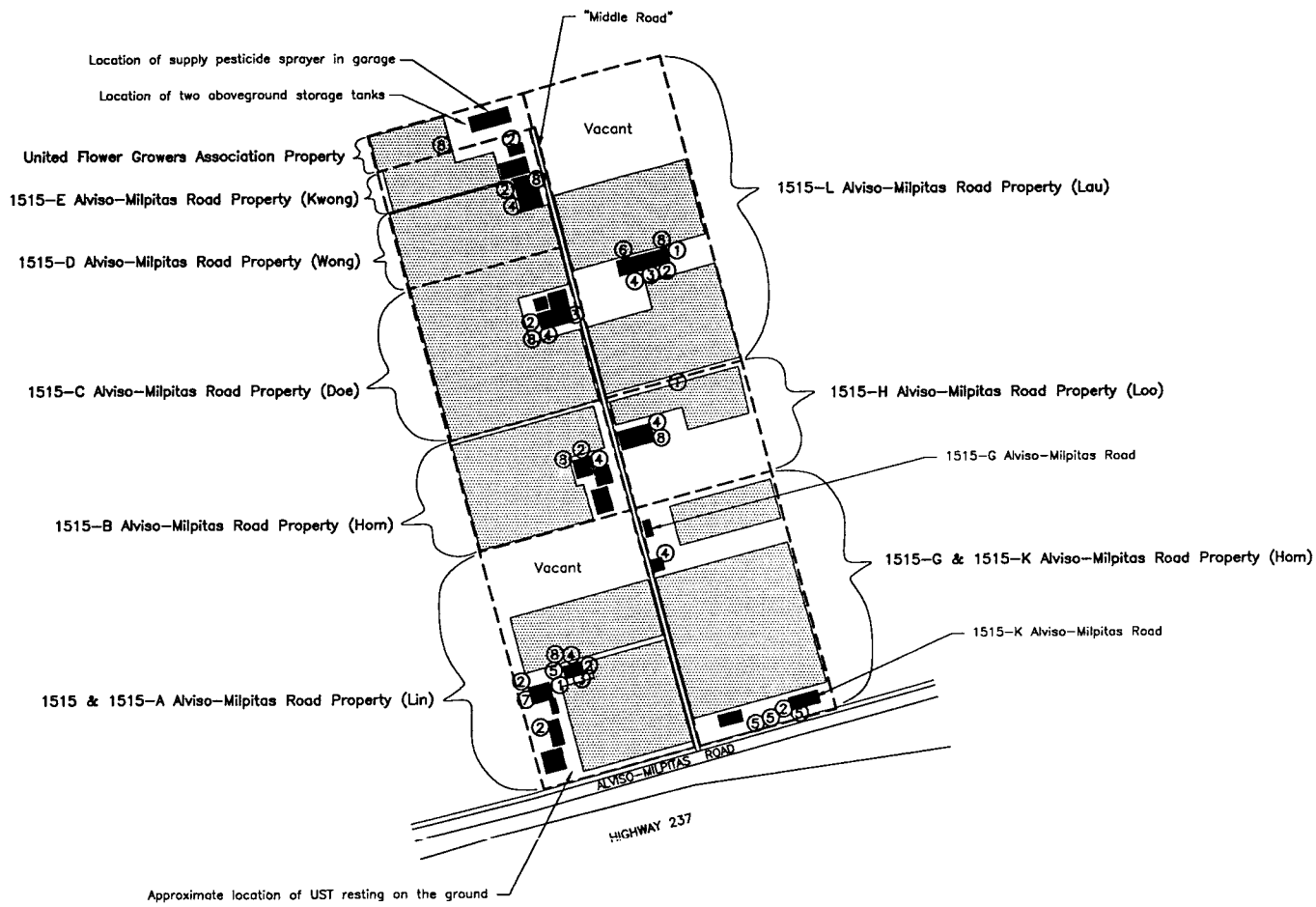
- O – Approximate location of greenhouse area/former agricultural area soil sample
- ● – Approximate location of pesticide mixing/storage area soil sample and/or ground water sample (if applicable)
- ▒ – Approximate location of on-site greenhouse/nursery
- ■ – Approximate location of on-site structures

Base by Unknown.

SITE PLAN
55-ACRE LIN/HOM PROPERTY
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 2
587-127



N

LEGEND

① – Approximate location of pole–mounted transformer
② – Approximate location of pesticide storage shed
③ – Approximate location of diesel UST
④ – Approximate location of boiler
⑤ – Approximate location of water supply well observed by Lowney Associates
⑥ – Approximate location of water supply well reported by others but not observed by Lowney Associates
⑦ – Approximate location of gasoline UST
⑧ – Approximate location of agricultural chemical mixer

– Approximate location of on–site greenhouse/nursery
– Approximate location of on–site structures

0 400
Scale feet

Base by Unknown.

SITE PLAN
HIGWAY 237/COYOTE CREEK 55–ACRE PARCEL
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 3
587–12D

4/00-13

LOWNEYASSOCIATES
Environmental/Geotechnical/Engineering Services

Mountain View
Oakland
San Ramon
Fullerton

July 20, 2000
587-12F

Mr. Neal Pospisil
CALPINE
620 Coolidge Drive, Suite 200
Folsom, California 95630

RE: SUPPLEMENTAL SOIL QUALITY EVALUATION
55-ACRE LIN/HOM PARCEL
SAN JOSE, CALIFORNIA

Dear Mr. Pospisil:

Lowney Associates is pleased to present this supplemental soil quality evaluation for the 55-acre Lin/Hom Parcel located in San Jose, California. This soil quality evaluation was initiated when elevated concentrations of organochlorine pesticides and metals were detected in near-surface soil samples collected during the Phase II investigation of the site (Lowney 2000). This letter presents the results of the additional work performed.

SITE BACKGROUND

The approximately 55-acre parcel is located near the northwest intersection of Highway 237 and Coyote Creek. The site is located in an agricultural, residential, and commercial area and is bounded by McCarthy Lane to the north; Alviso-Milpitas Road to the south; agricultural, residential, and commercial properties to the east; and vacant land to the west (Figure 1). This parcel currently is being used for various agricultural farming purposes. The site is developed with several nursery/greenhouse complexes and residential structures.

During the Phase II investigation of the 55-acre Lin/Hom parcel, elevated concentrations of metals and organochlorine pesticides were detected in shallow soil samples collected at the site. Lead and arsenic were detected at concentrations (up to 310 parts per million [ppm] and 67 ppm, respectively) above what would typically be expected as background concentrations. With regards to organochlorine pesticides, in about half of the samples, concentrations of total DDT were reported above the 1,000 ppb hazardous waste threshold (TTLC), but below the EPA's health-based Preliminary Remediation Goal (PRG) of 12,000 ppb. Additionally, toxaphene was detected in one shallow sample (S-52) at 12,000 ppb, above both the PRG and TTLC for this constituent.

PURPOSE/ SCOPE OF WORK

To evaluate the vertical extent of impacted soil, selected deeper soil samples (collected during the Phase II investigation and preserved at the laboratory) were analyzed for lead, arsenic, and organochlorine pesticides. These additional samples (collected at 1½ and

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2½ feet below the ground surface) were selected from borings S-6, S-15, S-26, and S-31 (see Figure 2 for boring locations). These samples were selected based on analytical results and distribution across the site.

To better evaluate the distribution of toxaphene-impacted soil, the deeper samples collected during the Phase II investigation from boring S-52 were analyzed for organochlorine pesticides. In addition, four additional borings were advanced (SS-1, SS-2, SS-3, and SS-4) to a depth of approximately 1½ feet on July 5, 2000 to evaluate the distribution of toxaphene in the vicinity of boring S-52 (Figure 3). As shown on Figure 3, these additional borings encircled boring S-52 with an approximately 10-foot radius. Two soil samples were collected from each additional boring at depths of ½ and 1½ feet below the ground surface. The eight samples were analyzed for toxaphene only.

RESULTS

The soil samples were analyzed at a state-certified analytical laboratory. A summary of the analytical results for organochlorine pesticides in the selected deeper samples and from the toxaphene-impacted area are presented in Table 1. The prior results from the shallow (½-foot depth) samples are also shown for comparison. Laboratory reports are presented in Attachment A. A brief summary of the deeper sample results is presented below.

- Total DDT was detected at concentrations ranging up to 1,210 ppb. However, in only one of the deeper samples did the concentration exceed the TTLC value for total DDT. None of the concentrations detected exceeded the PRG for an industrial use site.

- Beta- and delta-BHC were detected at concentrations ranging up to 240 and 1,200 ppb, respectively. The levels of beta-BHC detected do not exceed the PRG value, while delta-BHC has no established PRG value.

- At the S-52 sample location, toxaphene was detected in the 1½-foot sample at 15,000 ppb, but decreased to 2,000 ppb in the 2½-foot sample. The lower concentration does not exceed either the PRG or TTLC value.

- All other organochlorine pesticide constituents were not detected.

Table 1. Analytical Results of Soil Samples – Organochlorine Pesticides
(concentrations in parts per billion)

Boring Number	Depth (feet)	DDT	DDE	DDD	Toxaphene	Beta-BHC	Delta-BHC	Alpha-BHC
S-6**	0 – ½	**483**	**1,800**	ND	ND	ND	ND	ND
S-6	1 – 1½	**61**	**383**	ND	ND	ND	ND	ND
S-6	2 – 2½	**27**	**167**	ND	ND	ND	ND	ND
S-15**	0 – ½	ND	**379**	ND	ND	ND	ND	ND
S-15	1 – 1½	ND	ND	ND	ND	ND	ND	ND
S-15	2 – 2½	ND	ND	ND	ND	ND	ND	ND
S-26**	0 – ½	ND	**1,730**	ND	ND	ND	ND	ND
S-26	1 – 1½	ND	**15**	ND	ND	ND	ND	ND
S-26	2 – 2½	ND	ND	ND	ND	ND	ND	ND
S-31**	0 – ½	**1,780**	ND	ND	ND	ND	ND	ND
S-31	1 – 1½	ND	**1,210**	ND	ND	ND	ND	ND
S-31	2 – 2½	ND	**4.7**	ND	ND	ND	ND	ND
S-52**	0 – ½	**98**	**23**	**14**	**12,000**	**230**	**1,400**	**130**
S-52	1 – 1½	ND	ND	ND	**15,000**	**240**	**1,200**	ND
S-52	2 – 2½	ND	ND	ND	**2,000**	**36**	**140**	ND
SS-1	0 – ½	NA	NA	NA	ND	NA	NA	NA
SS-1	1 – 1½	NA	NA	NA	ND	NA	NA	NA
SS-2	0 – ½	NA	NA	NA	ND	NA	NA	NA
SS-2	1 – 1½	NA	NA	NA	ND	NA	NA	NA
SS-3	0 – ½	NA	NA	NA	ND	NA	NA	NA
SS-3	1 – 1½	NA	NA	NA	ND	NA	NA	NA
SS-4	0 – ½	NA	NA	NA	ND	NA	NA	NA
SS-4	1 – 1½	NA	NA	NA	ND	NA	NA	NA
PRG	--	12,000	12,000	17,000	2,200	2,100	NE	590
TTLC	--	1,000*	1,000*	1,000*	5,000	NE	NE	NE

ND Not Detected (detection limits vary)
NA Not Analyzed
PRG Preliminary Remediation Goal for industrial site use-EPA Region 9, 1999
TTLC Total Threshold Limit Concentration
NE Not Established
* Total DDT = DDT + DDE + DDD
** Shallow samples collected during Phase II investigation

Table 2 presents a summary of the analytical results for arsenic and lead in the selected deeper samples. The prior results from the shallow (½-foot samples) are shown for comparison.

- Arsenic was detected in the deeper samples at concentrations ranging up to 36 parts per million (ppm). In general, the concentrations decreased with depth.
- Lead was detected in all but one of the deeper samples. However, only in the 1½-foot sample from boring S-31 did the lead concentration (120 ppm) exceed typical background levels. This concentration does not exceed either the PRG or the TTLC value.

Table 2. Analytical Results of Selected Soil Samples – Metals
(concentrations in parts per million)

Boring Number	Depth (feet)	Arsenic	Lead
S-6*	0 – ½	**48**	**140**
S-6	1 – 1½	**27**	**14**
S-6	2 – 2½	**26**	**11**
S-15*	0 – ½	**19**	**41**
S-15	1 – 1½	**24**	**8.6**
S-15	2 – 2½	**20**	**5.4**
S-26*	0 – ½	**49**	**110**
S-26	1 – 1½	<5.0	<5.0
S-26	2 – 2½	<5.0	**7.3**
S-31*	0 – ½	**34**	**88**
S-31	1 – 1½	**36**	**120**
S-31	2 – 2½	<5.0	**5.2**
PRG	--	2.7	1,000
TTLC	--	500	1,000

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
* Shallow samples collected during Phase II investigation
PRG Preliminary Remediation Goal for industrial site use-EPA Region 9, 1999
TTLC Total Threshold Limit Concentration

CONCLUSIONS AND RECOMMENDATIONS

Vertical Distribution of Impacted Soil

The lead, arsenic, and pesticide concentrations detected in the deeper soil samples appear to generally decrease within depth with the upper 1 or 2 feet of soil. The pesticide levels detected in both the near-surface (½ foot) and deeper samples generally do not exceed their respective PRG values (for industrial site use), with the exception of toxaphene in sample S-52 (as discussed below). Therefore, the concentrations detected do not appear to pose a significant threat to human health in a commercial/industrial setting. Although the metal concentrations detected in shallow soil appear to be above

typical background levels, they also do not appear to pose a significant threat to human health in a commercial/industrial setting. If property use were to be changed to a residential setting, additional work would likely be required. Since the site is planned for commercial use and will be largely capped by buildings and associated concrete drives and parking areas, risk to human health and the environment will be significantly reduced.

As discussed in the Phase II report, due to the presence of residual pesticides and elevated levels of metals, a construction worker health and safety plan should be developed for the earthwork portion of the proposed development. In addition, if on-site soil is to be off-hauled, additional characterization should be performed prior to transport. Total DDT concentrations in mainly the upper ½ foot of soil appear to exceed California's hazardous waste criteria (TTLC of 1,000 ppb). Since off-site disposal of this soil could be costly, we recommend that the planned development be designed to minimize the amount of soil to be exported.

Impacted Soil at Mixing/Storage Areas

Based on the sampling performed, the level of toxaphene in soil near boring S-52 exceeds both the PRG value for industrial site use (2,200 ppb) and the TTLC (1,000 ppb). These elevated levels appear to extend only to a depth of approximately 2 feet. The horizontal extent of toxaphene-impacted soil also appears to be localized around boring S-52. This is demonstrated by the non-detection of toxaphene in samples S-1 through S-4. We understand that this was an area containing a former pesticide storage and mixing structure with dimensions of approximately 5 feet by 5 feet. Since the impacted soil in this area appears to be related to storage and mixing activities and not due to typical agricultural pesticide application, we recommend excavation and proper off-site disposal of the soil in a 7- by 7-foot square around the former extent of the structure, and down to a depth of 2 feet. The estimated volume to be removed consists of approximately 4 cubic yards (6 tons) of material.

An additional pesticide storage/mixing area is located near sample S-24. Total DDT was detected at a concentration of 11,030 ppb in the near-surface sample from this boring during the Phase II investigation. Since the area also appears to have been impacted by storage/mixing activities, we recommend that soil in this area be excavated and properly disposed off-site. Based on the storage area configuration, we estimate that approximately 15 cubic yards (25 tons) of material may need to be excavated and removed from this area. Following removal of the soil, verification soil samples should be collected to document that the impacted soil was adequately removed.

We estimate that the cost to excavate, transport, and dispose the soil will range from $150 to $250 per ton. Verification sampling and consulting services likely will range from $5,000 to $10,000. Due to waste classification laws, soil disposal costs could be higher if it is determined that pure DDT or toxaphene were purchased for use at the site. However, this typically is not the case.

LIMITATIONS

This report was prepared for the sole use of Calpine in evaluating soil quality at selected on-site locations at the time of this study. We make no warranty, expressed or implied, except that our services have been performed in accordance with environmental principles generally accepted at this time and location. The chemical and other data presented in this report can change over time and are applicable only to the time this study was performed. We are not responsible for the data presented by others.

If you have any questions, please call and we will be glad to discuss them with you.

Very truly yours,

LOWNEY ASSOCIATES

James P. Kiernan
Staff Environmental Engineer

Douglas T. Young, R.G.
Senior Project Geologist

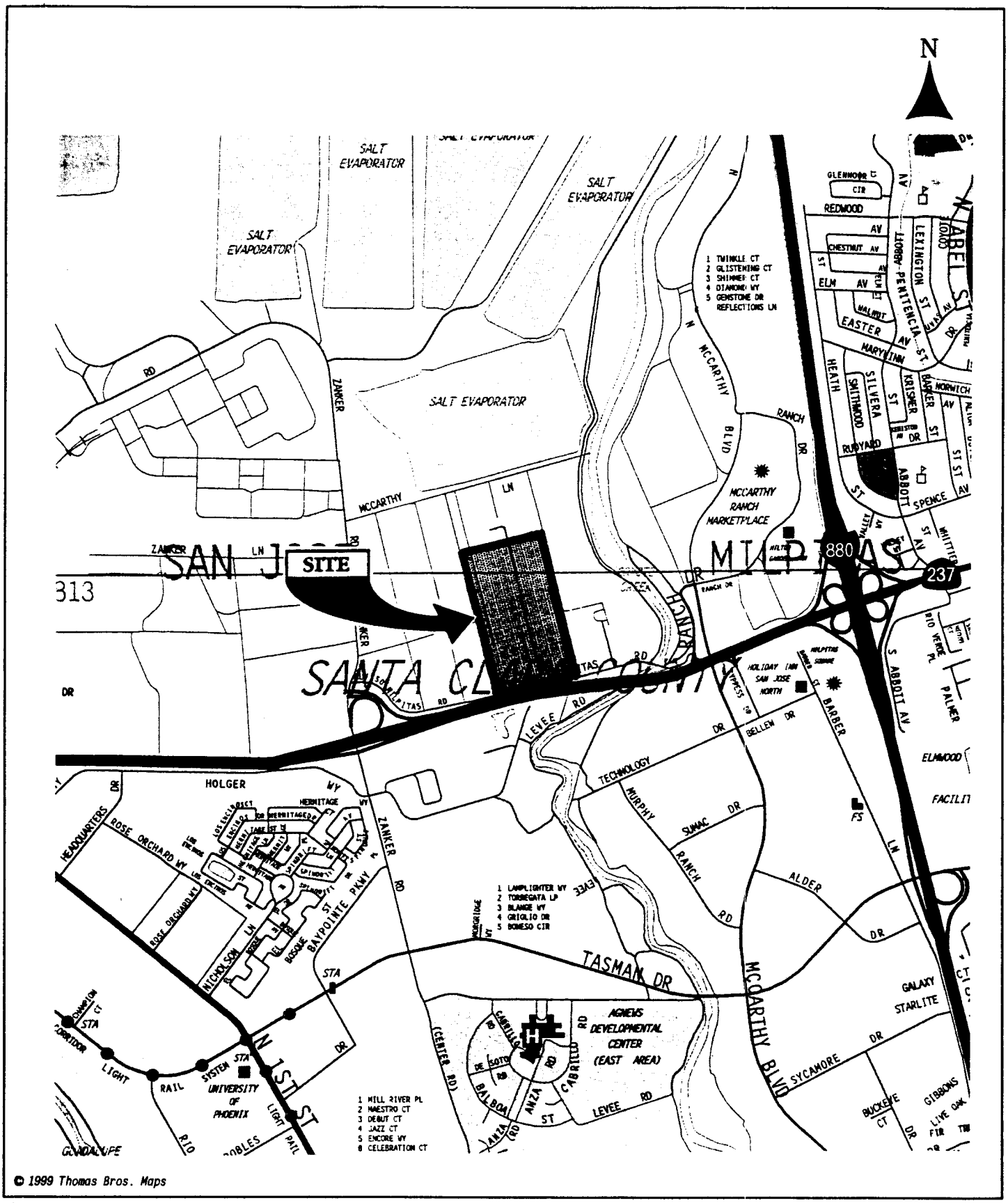
SIF:DTY:JPK:tjc

Copies: Addressee (6)

Attachments: Vicinity Map
Site Plans
Analytical Results

MV, 587-12F phase III letter ver2.doc

REGISTERED GEOLOGIST
DOUGLAS T YOUNG
5859
STATE OF CALIFORNIA



7/00-EB

VICINITY MAP

55-ACRE LIN/HOM PROPERTY

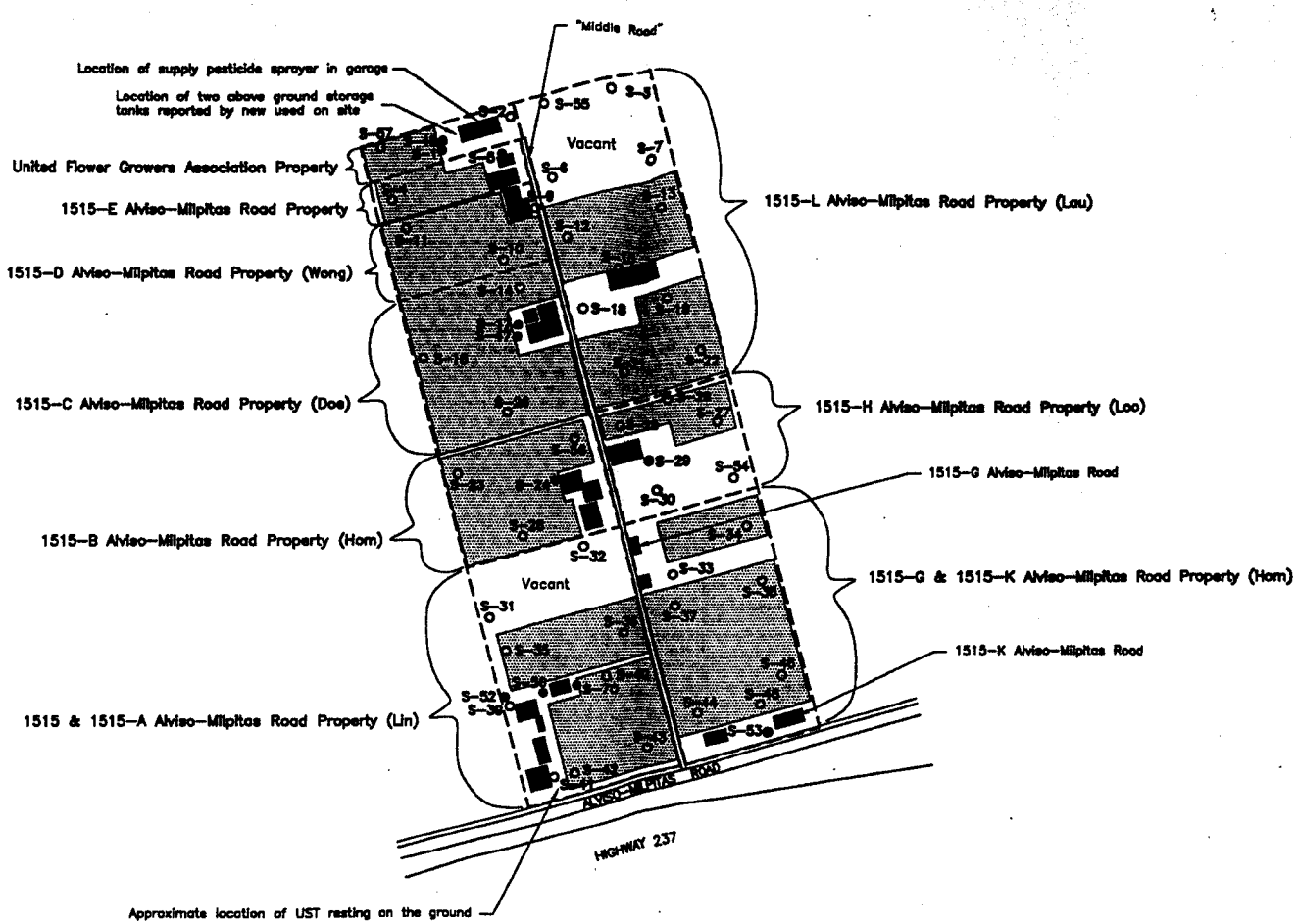
San Jose, California

LOVNEY ASSOCIATES

Environmental/Geotechnical/Engineering Services

FIGURE 1

587-12F



LEGEND

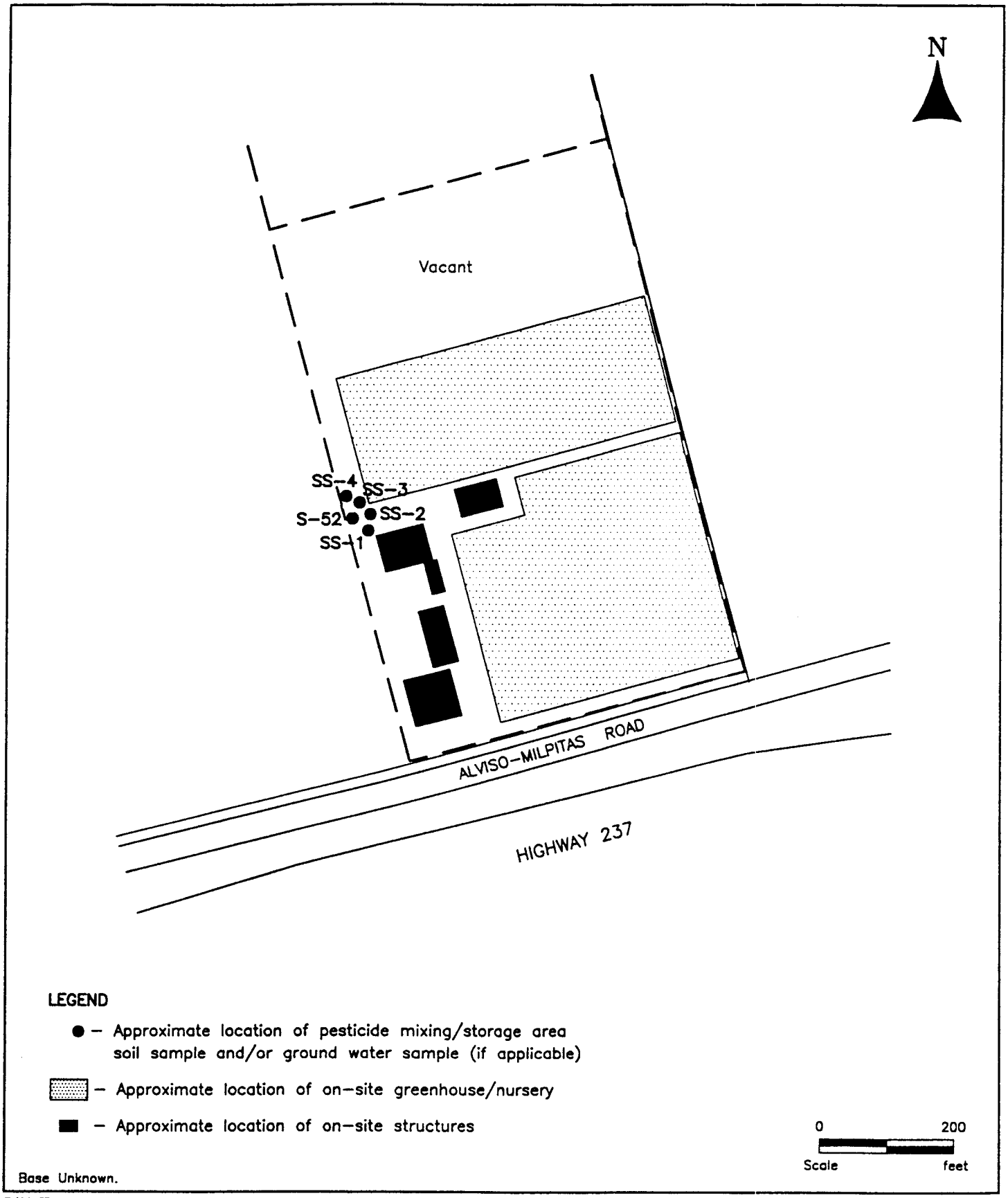
- O – Approximate location of greenhouse area/former agricultural area soil sample
- ● – Approximate location of pesticide mixing/storage area soil sample and ground water sample (if applicable)
- ▒ – Approximate location of on–site greenhouse/nursery
- ■ – Approximate location of on–site structures

Base by Unknown.

SITE PLAN
55–ACRE LIN/HOM PROPERTY
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 6
587–12F



7/00-EB

SITE PLAN

55-ACRE LIN/HOM PROPERTY
San Jose, California

LOVNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 3
587-12F

ATTACHMENT A

ANALYTICAL RESULTS

ELAP No.: 1838

Entech Analytical Labs, Inc.
525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

ATTN: Michelle Anderson
SUBJECT: AMENDED REPORT

Client's Project: 20391
Lab No.: 44184-001/004

The report was amended for the following:

Client Sample I.D. for 44184-004 was corrected.

Please disregard all previous documentation that corresponds to the pages(s) enclosed.

Sincerely,

Date: 6/26/01

Cheryl De Los Reyes
Technical Operations Manager
CDR/jh

Enclosures

This cover letter is an integral part of this analytical report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purpose without authorization is prohibited.

Client:	Entech Analytical Labs, Inc.
Attn:	Michelle Anderson
Client's Project:	20391
Date Received:	05/23/00
Extraction Method:	3550B
Matrix:	Solid
Units:	ug/kg

Date Amended: 06/12/00

EPA Method 8081

Lab No.:		Method Blank		44184-001									
Client Sample I.D.:		--		20391-005 S-6(1-1 1/2)									
Date Sampled:		--		05/09/00									
QC Batch #:		G008080S225		G008080S225									
Date Extracted:		05/23/00		05/23/00									
Date Analyzed :		05/30/00		05/30/00									
Analyst Initials:		NN		NN									
Dilution Factor:		1		10									
ANALYTE	MDL	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results
Alpha-BHC	2	2	ND	20	ND								
Gamma-BHC (Lindane)	2	2	ND	20	ND								
Beta-BHC	2	2	ND	20	ND								
Heptachlor	2	2	ND	20	ND								
Delta-BHC	2	2	ND	20	ND								
Aldrin	2	2	ND	20	ND								
Heptachlor Epoxide	2	2	ND	20	ND								
Endosulfan I	2	2	ND	20	ND								
4,4'-DDE	4	4	ND	40	383								
Dieldrin	4	4	ND	40	ND								
Endrin	4	4	ND	40	ND								
4,4'-DDD	4	4	ND	40	ND								
Endosulfan II	4	4	ND	40	ND								
4,4'-DDT	4	4	ND	40	61								
Endrin Aldehyde	4	4	ND	40	ND								
Endosulfan Sulfate	4	4	ND	40	ND								
Methoxychlor	17	17	ND	170	ND								
gamma-Chlordane	2	2	ND	20	ND								
alpha-Chlordane	2	2	ND	20	ND								
Toxaphene	170	170	ND	1700	ND								
Total Chlordane	17	4	ND	40	ND								

Surrogate Recovery

Surrogate	%Rec.	Limits	%Rec.	Limits								
Tetrachloro-m-xylene	103	30-150	120	30-150								
Decachlorobiphenyl	150	30-150	197*	30-150								

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

* = Surrogate recoveries outside of limits due to matrix interference.

Reviewed/Approved By: E. Morrison

Edgar Morrison
Organics Supervisor

Date: 06/12/00

The cover letter is an integral part of this analytical report.

Client:	**Entech Analytical Labs, Inc.**
Attn:	**Michelle Anderson**
Client's Project:	**20391**
Date Received:	**05/23/00**
Extraction Method:	**3550B**
Matrix:	**Solid**
Units:	**ug/kg**

Date Amended: 06/12/00

EPA Method 8081

Lab No.:		**44184-002**											
Client Sample I.D.:		**20391-006 S-6(2-2 $^1/_2$)**											
Date Sampled:		**05/09/00**											
QC Batch #:		**G008080S225**											
Date Extracted:		**05/23/00**											
Date Analyzed :		**05/30/00**											
Analyst Initials:		**NN**											
Dilution Factor:		**5**											
ANALYTE	**MDL**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**
Alpha-BHC	**2**	**10**	**ND**										
Gamma-BHC (Lindane)	**2**	**10**	**ND**										
Beta-BHC	**2**	**10**	**ND**										
Heptachlor	**2**	**10**	**ND**										
Delta-BHC	**2**	**10**	**ND**										
Aldrin	**2**	**10**	**ND**										
Heptachlor Epoxide	**2**	**10**	**ND**										
Endosulfan I	**2**	**10**	**ND**										
4,4'-DDE	**4**	**20**	**167**										
Dieldrin	**4**	**20**	**ND**										
Endrin	**4**	**20**	**ND**										
4,4'-DDD	**4**	**20**	**ND**										
Endosulfan II	**4**	**20**	**ND**										
4,4'-DDT	**4**	**20**	**27**										
Endrin Aldehyde	**4**	**20**	**ND**										
Endosulfan Sulfate	**4**	**20**	**ND**										
Methoxychlor	**17**	**85**	**ND**										
gamma-Chlordane	**2**	**10**	**ND**										
alpha-Chlordane	**2**	**10**	**ND**										
Toxaphene	**170**	**850**	**ND**										
Total Chlordane	**17**	**20**	**ND**										

Surrogate Recovery

Surrogate	**%Rec.**	**Limits**										
Tetrachloro-m-xylene	**109**	**30-150**										
Decachlorobiphenyl	**177***	**30-150**										

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

*** = Surrogate recoveries outside of limits due to matrix interference.**

Reviewed/Approved By: _____ **Date:** 06/12/00

Edgar Morrison
Organics Supervisor

The cover letter is an integral part of this analytical report.

Advanced Technology Laboratories

1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Client:	**Entech Analytical Labs, Inc.**
Attn:	**Michelle Anderson**
Client's Project:	**20391**
Date Received:	**05/23/00**
Extraction Method:	**3550B**
Matrix:	**Solid**
Units:	**ug/kg**

Date Amended: 06/12/00

EPA Method 8081

Lab No.:		44184-003											
Client Sample I.D.:		20391-017 S-15(1-1 $^1/_2$)											
Date Sampled:		05/09/00											
QC Batch #:		G008080S225											
Date Extracted:		05/23/00											
Date Analyzed :		05/30/00											
Analyst Initials:		NN											
Dilution Factor:		1											
ANALYTE	**MDL**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**
Alpha-BHC	2	2	ND										
Gamma-BHC (Lindane)	2	2	ND										
Beta-BHC	2	2	ND										
Heptachlor	2	2	ND										
Delta-BHC	2	2	ND										
Aldrin	2	2	ND										
Heptachlor Epoxide	2	2	ND										
Endosulfan I	2	2	ND										
4,4'-DDE	4	4	ND										
Dieldrin	4	4	ND										
Endrin	4	4	ND										
4,4'-DDD	4	4	ND										
Endosulfan II	4	4	ND										
4,4'-DDT	4	4	ND										
Endrin Aldehyde	4	4	ND										
Endosulfan Sulfate	4	4	ND										
Methoxychlor	17	17	ND										
gamma-Chlordane	2	2	ND										
alpha-Chlordane	2	2	ND										
Toxaphene	170	170	ND										
Total Chlordane	17	4	ND										

Surrogate Recovery

Surrogate	**%Rec**	**Limits**										
Tetrachloro-m-xylene	87	30-150										
Decachlorobiphenyl	136	30-150										

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

Reviewed/Approved By: _____ **Date:** 06/12/00

Edgar Morrison
Organics Supervisor

The cover letter is an integral part of this analytical report.

Client:	**Entech Analytical Labs, Inc.**
Attn:	**Michelle Anderson**
Client's Project:	**20391**
Date Received:	**05/23/00**
Extraction Method:	**3550B**
Matrix:	**Solid**
Units:	**ug/kg**

Date Amended: 06/12/00, 06/26/00

EPA Method 8081

Lab No.:	44184-004												
Client Sample I.D.:	20391-018 S-15(2-2 1/2)												
Date Sampled:	05/09/00												
QC Batch #:	G008080S225												
Date Extracted:	05/23/00												
Date Analyzed :	05/30/00												
Analyst Initials:	NN												
Dilution Factor:	1												
ANALYTE	**MDL**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**
Alpha-BHC	2	2	ND										
Gamma-BHC (Lindane)	2	2	ND										
Beta-BHC	2	2	ND										
Heptachlor	2	2	ND										
Delta-BHC	2	2	ND										
Aldrin	2	2	ND										
Heptachlor Epoxide	2	2	ND										
Endosulfan I	2	2	ND										
4,4'-DDE	4	4	ND										
Dieldrin	4	4	ND										
Endrin	4	4	ND										
4,4'-DDD	4	4	ND										
Endosulfan II	4	4	ND										
4,4'-DDT	4	4	ND										
Endrin Aldehyde	4	4	ND										
Endosulfan Sulfate	4	4	ND										
Methoxychlor	17	17	ND										
gamma-Chlordane	2	2	ND										
alpha-Chlordane	2	2	ND										
Toxaphene	170	170	ND										
Total Chlordane	17	4	ND										

Surrogate Recovery

Surrogate	%Rec.	Limits										
Tetrachloro-m-xylene	90	30-150										
Decachlorobiphenyl	140	30-150										

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

Reviewed/Approved By: _____ **Date:** 6/26/00

Edgar Morrison
Organics Supervisor

The cover letter is an integral part of this analytical report.

Advanced Technology Laboratories

1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Client:	**Entech Analytical Labs, Inc.**
Attn:	**Michelle Anderson**
Client's Project:	**20391**
Date Received:	**05/23/00**
Extraction Method:	**3550B**
Matrix:	**Solid**
Units:	**ug/kg**

EPA Method 8081

Lab No.:		LCS											
Client Sample I.D.:		--											
Date Sampled:		--											
QC Batch #:		G008080S225											
Date Extracted:		05/23/00											
Date Analyzed :		05/30/00											
Analyst Initials:		NN											
Dilution Factor:		1											
ANALYTE	**MDL**	**%Rec**	**Limits**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**
Alpha-BHC	2	124	26-143										
Gamma-BHC (Lindane)	2	123	26-143										
Beta-BHC	2	106	26-143										
Heptachlor	2	111	26-143										
Delta-BHC	2	119	26-143										
Aldrin	2	115	26-143										
Heptachlor Epoxide	2	112	26-143										
Endosulfan I	2	111	26-143										
4,4'-DDE	4	117	26-143										
Dieldrin	4	118	26-143										
Endrin	4	123	26-143										
4,4'-DDD	4	115	26-143										
Endosulfan II	4	117	26-143										
4,4'-DDT	4	122	26-143										
Endrin Aldehyde	4	105	26-143										
Endosulfan Sulfate	4	127	26-143										
Methoxychlor	17	134	26-143										
gamma-Chlordane	2	113	26-143										
alpha-Chlordane	2	114	26-143										
Toxaphene	170	NS	NS										
Total Chlordane	17	NS	NS										

Surrogate Recovery

Surrogate	%Rec.	Limits											
Tetrachloro-m-xylene	98	30-150											
Decachlorobiphenyl	150	30-150											

NS = Not Spiked

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

Reviewed/Approved By: Ed. Morrison Date: 06/12/00

Edgar Morrison
Organics Supervisor

The cover letter is an integral part of this analytical report.

Spike Recovery and RPD Summary Report - SOIL(ug/kg)

Method : C:\HPCHEM\1\METHODS\8080526.M (Chemstation Integrator)
Title :
Last Update : Sat May 27 19:08:17 2000
Response via : Initial Calibration

Non-Spiked Sample: C0526071.D

	Spike Sample	Spike Duplicate Sample
File ID :	C0526073.D	C0526074.D
Sample :	000523BLKS1,MS,	000523BLKS1,MSD,
Acq Time:	28 May 2000 5:40 am	28 May 2000 6:15 am

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC Limits RPD	QC Limits % Rec
gamma-BHC	0.0	40	41	47	103	117	12#	9	50-127
Heptachlor	0.0	40	38	43	95	106	12	12	35-136
Aldrin	0.0	40	42	47	105	118	11	15	47-143
Dieldrin	0.0	80	83	93	104	117	12#	8	54-134
Endrin	0.0	80	82	90	102	112	9	16	61-138
4,4' -DDT	0.0	80	84	95	106	118	11	22	15-155

- Failed RPD limits. Batch validated by LCS passing.

QCBATCH#C008080S225

Reviewed/Approved by: _____ Date: 06/09/00
Edgar Morrison
Department Supervisor

Entech Analytical Labs, Inc.

CA ELAP # 1-2346

525 Del Rey Avenue, Suite E, Sunnyvale, CA 94086 (408) 735-1550 FAX (408) 735-1554

Subcontract Chain of Custody

Subcontract Lab:	Project Name:	Date Sent:	Due Date:	PO Number:
ATL	20391	5/22/00	5/30/00	20391

Sample Number:	Customer Sample Number:	Matrix:	Test:	Method:	Collect Date:	Collect Time:	Bottle Type:	Preservative:
20391-005	S-6 (1-1½)	Solid	EPA 8081-ATL	EPA 8081	5/9/00		4 oz jar	
20391-006	S-6 (2-2½)	Solid	EPA 8081-ATL	EPA 8081	5/9/00		4 oz jar	
20391-017	S-15 (1-1½)	Solid	EPA 8081-ATL	EPA 8081	5/9/00		4 oz jar	
20391-018	S-15 (2-2½)	Solid	EPA 8081-ATL	EPA 8081	5/9/00		4 oz jar	

Relinquished By:	Received By:	Date:	Time:
Mara Gusli	Golden State	5/22/00	1800
Relinquished By:	Received By: Diane Galvan	Date: 5-23-00	Time: 0900
Relinquished By:	Received By:	Date:	Time:

Notes: Hold time up on 5/23/00

Entech Analytical Labs, Inc.

CA ELAP# 2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

May 31, 2000

Doug Young
Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043

Order:	20399	**Date Collected:**	5/9/00
Project Name:	US Data Port 50-Acre Parcel	**Date Received:**	5/10/00
Project Number:	587-12F	**P.O. Number:**	
Project Notes:			

On May 10, 2000, samples were received under documentented chain of custody. Results for the following analyses are attached:

Matrix	Test	Method
Solid	Arsenic	EPA 6010B
	EPA 8081-ATL	EPA 8081
	Lead	EPA 6010B

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,

Michelle L. Anderson
Lab Director

Entech Analytical Labs, Inc.

CA ELAP# 2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043
Attn: Doug Young

Date: 5/31/00
Date Received: 5/10/00
Project Name: US Data Port 50-Acre Parcel
Project Number: 587-12F
P.O. Number:
Sampled By: Ryan Gerber

Certified Analytical Report

Order ID: 20399 **Lab Sample ID:** 20399-007 **Client Sample ID:** S-26 1-1 1/2
Sample Time: 5:00 PM **Sample Date:** 5/9/00 **Matrix:** Solid

Parameter	Result	DF	PQL	DLR	Units	PrepDate	Analysis Date	QC Batch ID	Method
Arsenic	ND	5	1	5	mg/Kg	5/25/00	5/30/00	SM000524	EPA 6010B
Lead	ND	5	1	5	mg/Kg	5/25/00	5/30/00	SM000524	EPA 6010B

Order ID: 20399 **Lab Sample ID:** 20399-008 **Client Sample ID:** S-26 2-2 1/2
Sample Time: 5:00 PM **Sample Date:** 5/9/00 **Matrix:** Solid

Parameter	Result	DF	PQL	DLR	Units	PrepDate	Analysis Date	QC Batch ID	Method
Arsenic	ND	5	1	5	mg/Kg	5/25/00	5/30/00	SM000524	EPA 6010B
Lead	7.3	5	1	5	mg/Kg	5/25/00	5/30/00	SM000524	EPA 6010B

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Michelle L. Anderson, Laboratory Director

Environmental Analysis Since 1983

May 30, 2000 ELAP No.: 1838

Entech Analytical Labs, Inc.
525 Del Rey Avenue, Suite E,
Sunnyvale, CA 94086

ATTN: Michelle Anderson

Client's Project: 20399
Lab No.: 44185-001/002

Enclosed are the results for sample(s) received by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

Thank you for the opportunity to service the needs of your company. Please feel free to call me at (562) 989 - 4045 if I can be of further assistance to your company.

Sincerely,

Cheryl De Los Reyes
Technical Operations Manager
CDR/jh

Enclosures

This cover letter is an integral part of this analytical report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purpose without authorization is prohibited.

Client:	Entech Analytical Labs, Inc.
Attn:	Michelle Anderson
Client's Project:	20399
Date Received:	05/23/00
Extraction Method:	3550B
Matrix:	Solid
Units:	ug/kg

Date Amended: 06/12/00

EPA Method 8081

Lab No.:		Method Blank		44185-001									
Client Sample I.D.:		--		20399-007 S-26 1-1 1/2									
Date Sampled:		--		05/09/00									
QC Batch #:		G008080S225		G008080S225									
Date Extracted:		05/23/00		05/23/00									
Date Analyzed :		05/30/00		05/31/00									
Analyst Initials:		NN		NN									
Dilution Factor:		1		1									
ANALYTE	MDL	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results
Alpha-BHC	2	2	ND	2	ND								
Gamma-BHC (Lindane)	2	2	ND	2	ND								
Beta-BHC	2	2	ND	2	ND								
Heptachlor	2	2	ND	2	ND								
Delta-BHC	2	2	ND	2	ND								
Aldrin	2	2	ND	2	ND								
Heptachlor Epoxide	2	2	ND	2	ND								
Endosulfan I	2	2	ND	2	ND								
4,4'-DDE	4	4	ND	4	15								
Dieldrin	4	4	ND	4	ND								
Endrin	4	4	ND	4	ND								
4,4'-DDD	4	4	ND	4	ND								
Endosulfan II	4	4	ND	4	ND								
4,4'-DDT	4	4	ND	4	ND								
Endrin Aldehyde	4	4	ND	4	ND								
Endosulfan Sulfate	4	4	ND	4	ND								
Methoxychlor	17	17	ND	17	ND								
gamma-Chlordane	2	2	ND	2	ND								
alpha-Chlordane	2	2	ND	2	ND								
Toxaphene	170	170	ND	170	ND								
Total Chlordane	17	4	ND	4	ND								

Surrogate Recovery

Surrogate	%Rec.	Limits	%Rec.	Limits								
Tetrachloro-m-xylene	103	30-150	89	30-150								
Decachlorobiphenyl	150	30-150	145	30-150								

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

Reviewed/Approved By: E. Morrison Date: 06/12/00

Edgar Morrison
Organics Supervisor

The cover letter is an integral part of this analytical report.

Advanced Technology Laboratories
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Client:	Entech Analytical Labs, Inc.
Attn:	Michelle Anderson
Client's Project:	20399
Date Received:	05/23/00
Extraction Method:	3550B
Matrix:	Solid
Units:	ug/kg

Date Amended: 06/12/00

EPA Method 8081

Lab No.:	44185-002											
Client Sample I.D.:	20399-008 S-26 2-2 1/2											
Date Sampled:	05/09/00											
QC Batch #:	G008080S225											
Date Extracted:	05/23/00											
Date Analyzed :	05/31/00											
Analyst Initials:	NN											
Dilution Factor:	1											
ANALYTE	MDL	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results
Alpha-BHC	2	2	ND										
Gamma-BHC (Lindane)	2	2	ND										
Beta-BHC	2	2	ND										
Heptachlor	2	2	ND										
Delta-BHC	2	2	ND										
Aldrin	2	2	ND										
Heptachlor Epoxide	2	2	ND										
Endosulfan I	2	2	ND										
4,4'-DDE	4	4	ND										
Dieldrin	4	4	ND										
Endrin	4	4	ND										
4,4'-DDD	4	4	ND										
Endosulfan II	4	4	ND										
4,4'-DDT	4	4	ND										
Endrin Aldehyde	4	4	ND										
Endosulfan Sulfate	4	4	ND										
Methoxychlor	17	17	ND										
gamma-Chlordane	2	2	ND										
alpha-Chlordane	2	2	ND										
Toxaphene	170	170	ND										
Total Chlordane	17	4	ND										

Surrogate Recovery

Surrogate	%Rec	Limits										
Tetrachloro-m-xylene	92	30-150										
Decachlorobiphenyl	149	30-150										

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

Reviewed/Approved By: Ed Morrison

Edgar Morrison
Organics Supervisor

Date: 06/12/00

The cover letter is an integral part of this analytical report.

Client:	**Entech Analytical Labs, Inc.**
Attn:	**Michelle Anderson**
Client's Project:	**20399**
Date Received:	**05/23/00**
Extraction Method:	**3550B**
Matrix:	**Solid**
Units:	**ug/kg**

EPA Method 8081

Lab No.:		LCS											
Client Sample I.D.:		--											
Date Sampled:		--											
QC Batch #:		G008080S225											
Date Extracted:		05/23/00											
Date Analyzed :		05/30/00											
Analyst Initials:		NN											
Dilution Factor:		1											
ANALYTE	**MDL**	**%Rec**	**Limits**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**
Alpha-BHC	2	124	26-143										
Gamma-BHC (Lindane)	2	123	26-143										
Beta-BHC	2	106	26-143										
Heptachlor	2	111	26-143										
Delta-BHC	2	119	26-143										
Aldrin	2	115	26-143										
Heptachlor Epoxide	2	112	26-143										
Endosulfan I	2	111	26-143										
4,4'-DDE	4	117	26-143										
Dieldrin	4	118	26-143										
Endrin	4	123	26-143										
4,4'-DDD	4	115	26-143										
Endosulfan II	4	117	26-143										
4,4'-DDT	4	122	26-143										
Endrin Aldehyde	4	105	26-143										
Endosulfan Sulfate	4	127	26-143										
Methoxychlor	17	134	26-143										
gamma-Chlordane	2	113	26-143										
alpha-Chlordane	2	114	26-143										
Toxaphene	170	NS	NS										
Total Chlordane	17	NS	NS										

Surrogate Recovery

Surrogate	%Rec.	Limits										
Tetrachloro-m-xylene	98	30-150										
Decachlorobiphenyl	150	30-150										

NS = Not Spiked

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

Reviewed/Approved By: _____ **Date:** 06/12/00

Edgar Morrison
Organics Supervisor

The cover letter is an integral part of this analytical report.

Spike Recovery and RPD Summary Report - SOIL(ug/kg)

Method : C:\HPCHEM\1\METHODS\8080526.M (Chemstation Integrator)
Title :
Last Update : Sat May 27 19:08:17 2000
Response via : Initial Calibration

Non-Spiked Sample: C0526071.D

	Spike Sample	Spike Duplicate Sample
File ID :	C0526073.D	C0526074.D
Sample :	000523BLKS1,MS,	000523BLKS1,MSD,
Acq Time:	28 May 2000 5:40 am	28 May 2000 6:15 am

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC Limits RPD	QC Limits % Rec
gamma-BHC	0.0	40	41	47	103	117	12#	9	50-127
Heptachlor	0.0	40	38	43	95	106	12	12	35-136
Aldrin	0.0	40	42	47	105	118	11	15	47-143
Dieldrin	0.0	80	83	93	104	117	12#	8	54-134
Endrin	0.0	80	82	90	102	112	9	16	61-138
4,4' -DDT	0.0	80	84	95	106	118	11	22	15-155

- Failed RPD limits. Batch validated by LCS passing.

QCBATCH#C008080S225

Reviewed/Approved by: E. Morrison for Date: 06/09/00
Edgar Morrison
Department Supervisor

Entech Analytical Labs, Inc.

CA ELAP # I-2346

525 Del Rey Avenue, Suite E, Sunnyvale, CA 94086 (408) 735-1550 FAX (408) 735-1554

Subcontract Chain of Custody

Subcontract Lab:	Project Name:	Date Sent:	Due Date:	PO Number:
ATL	20399	5/22/00	5/30/00	20399

Sample Number:	Customer Sample Number:	Matrix:	Test:	Method:	Collect Date:	Collect Time	Bottle Type:	Preservative:
20399-007	S-26 1-1 1/2	Solid	EPA 8081-ATL	EPA 8081	5/9/00	5:00 PM	4 oz jar	
20399-008	S-26 2-2 1/2	Solid	EPA 8081-ATL	EPA 8081	5/9/00	5:00 PM	4 oz jar	

Relinquished By:	Received By:	Date:	Time:
Marc Gisler	Golden State	5/22/00 ~~5/23/00~~	18:00
Relinquished By:	Received By: Diane Galvan	Date: 5-23-00	Time: 0900
Relinquished By:	Received By:	Date:	Time:

Notes: Hold time up on 5/23/00!!

Entech Analytical Labs, Inc.

CA ELAP# 2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

May 18, 2000

Doug Young
Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043

Order:	20391	**Date Collected:**	5/9/00
Project Name:	US Data Port 50-Acre Parcel	**Date Received:**	5/9/00
Project Number:	587-12F	**P.O. Number:**	
Project Notes:			

On May 09, 2000, samples were received under documentented chain of custody. Results for the following analyses are attached:

Matrix	Test	Method
Solid	EPA 8151-APCL	EPA 8151

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,

Michelle L. Anderson
Lab Director

Entech Analytical Labs, Inc.

CA ELAP# 2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

May 31, 2000

Doug Young
Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043

Order:	20391	**Date Collected:**	5/9/00
Project Name:	US Data Port 50-Acre Parcel	**Date Received:**	5/9/00
Project Number:	587-12F	**P.O. Number:**	
Project Notes:			

On May 09, 2000, samples were received under documentented chain of custody. Results for the following analyses are attached:

Matrix	Test	Method
Solid	Arsenic	EPA 6010B
	EPA 8081-ATL	EPA 8081
	Lead	EPA 6010B

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,

Michelle L. Anderson
Lab Director

Entech Analytical Labs, Inc.

CA ELAP# 2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043
Attn: Doug Young

Date: 5/30/00
Date Received: 5/9/00
Project Name: US Data Port 50-Acre Parcel
Project Number: 587-12F
P.O. Number:
Sampled By: Client

Certified Analytical Report

Order ID: 20391 **Lab Sample ID:** 20391-005 **Client Sample ID:** S-6 (1-1½)
Sample Time: **Sample Date:** 5/9/00 **Matrix:** Solid

Parameter	Result	DF	PQL	DLR	Units	PrepDate	Analysis Date	QC Batch ID	Method
Arsenic	27	5	1	5	mg/Kg	5/25/00	5/26/00	SM000524	EPA 6010B
Lead	14	5	1	5	mg/Kg	5/25/00	5/26/00	SM000524	EPA 6010B

Order ID: 20391 **Lab Sample ID:** 20391-006 **Client Sample ID:** S-6 (2-2½)
Sample Time: **Sample Date:** 5/9/00 **Matrix:** Solid

Parameter	Result	DF	PQL	DLR	Units	PrepDate	Analysis Date	QC Batch ID	Method
Arsenic	26	5	1	5	mg/Kg	5/25/00	5/26/00	SM000524	EPA 6010B
Lead	11	5	1	5	mg/Kg	5/25/00	5/26/00	SM000524	EPA 6010B

Order ID: 20391 **Lab Sample ID:** 20391-017 **Client Sample ID:** S-15 (1-1½)
Sample Time: **Sample Date:** 5/9/00 **Matrix:** Solid

Parameter	Result	DF	PQL	DLR	Units	PrepDate	Analysis Date	QC Batch ID	Method
Arsenic	24	5	1	5	mg/Kg	5/25/00	5/26/00	SM000524	EPA 6010B
Lead	8.6	5	1	5	mg/Kg	5/25/00	5/26/00	SM000524	EPA 6010B

Order ID: 20391 **Lab Sample ID:** 20391-018 **Client Sample ID:** S-15 (2-2½)
Sample Time: **Sample Date:** 5/9/00 **Matrix:** Solid

Parameter	Result	DF	PQL	DLR	Units	PrepDate	Analysis Date	QC Batch ID	Method
Arsenic	20	5	1	5	mg/Kg	5/25/00	5/26/00	SM000524	EPA 6010B
Lead	5.4	5	1	5	mg/Kg	5/25/00	5/26/00	SM000524	EPA 6010B

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Michelle L. Anderson, Laboratory Director

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# 2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

May 31, 2000

Doug Young
Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043

Order: 20420
Project Name: US Data Port 50-Acre Parcel
Project Number: 587-12F
Project Notes:

Date Collected: 5/10/00
Date Received: 5/10/00
P.O. Number:

On May 10, 2000, samples were received under documentented chain of custody. Results for the following analyses are attached:

Matrix	Test	Method
Solid	Arsenic	EPA 6010B
	EPA 8081-ATL	EPA 8081
	Lead	EPA 6010B

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,

Michelle L. Anderson
Lab Director

Entech Analytical Labs, Inc.

CA ELAP# 2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043
Attn: Doug Young

Date: 5/31/00
Date Received: 5/10/00
Project Name: US Data Port 50-Acre Parcel
Project Number: 587-12F
P.O. Number:
Sampled By: John McCain

Certified Analytical Report

Order ID: 20420 **Lab Sample ID:** 20420-011 **Client Sample ID:** S-31 (1- 1 1/2')
Sample Time: **Sample Date:** 5/10/00 **Matrix:** Solid

Parameter	Result	DF	PQL	DLR	Units	PrepDate	Analysis Date	QC Batch ID	Method
Arsenic	36	5	1	5	mg/Kg	5/30/00	5/30/00	SM000526	EPA 6010B
Lead	120	5	1	5	mg/Kg	5/30/00	5/30/00	SM000526	EPA 6010B

Order ID: 20420 **Lab Sample ID:** 20420-012 **Client Sample ID:** S-31 (2-2 1/2')
Sample Time: **Sample Date:** 5/10/00 **Matrix:** Solid

Parameter	Result	DF	PQL	DLR	Units	PrepDate	Analysis Date	QC Batch ID	Method
Arsenic	ND	5	1	5	mg/Kg	5/30/00	5/30/00	SM000526	EPA 6010B
Lead	5.2	5	1	5	mg/Kg	5/30/00	5/30/00	SM000526	EPA 6010B

DF Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Michelle L. Anderson, Laboratory Director

Environmental Analysis Since 1983

May 30, 2000 ELAP No.: 1838

Entech Analytical Labs, Inc.
525 Del Rey Avenue, Suite E,
Sunnyvale, CA 94086

ATTN: Michelle Anderson

Client's Project: 20420
Lab No.: 44186-001/002

Enclosed are the results for sample(s) received by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

Thank you for the opportunity to service the needs of your company. Please feel free to call me at (562) 989 - 4045 if I can be of further assistance to your company.

Sincerely,

Cheryl De Los Reyes
Technical Operations Manager
CDR/jh

Enclosures

This cover letter is an integral part of this analytical report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purpose without authorization is prohibited.

Client:	**Entech Analytical Labs, Inc.**
Attn:	**Michelle Anderson**
Client's Project:	**20420**
Date Received:	**05/23/00**
Extraction Method:	**3550B**
Matrix:	**Solid**
Units:	**ug/kg**

Date Amended: 06/12/00

EPA Method 8081

Lab No.:	Method Blank		44186-001									
Client Sample I.D.:	--		20420-011 S-31 (1-1 1/2')									
Date Sampled:	--		05/10/00									
QC Batch #:	G008080S225		G008080S225									
Date Extracted:	05/23/00		05/23/00									
Date Analyzed :	05/30/00		05/31/00									
Analyst Initials:	NN		NN									
Dilution Factor:	1		1									
ANALYTE	**MDL**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**
Alpha-BHC	2	2	ND	2	ND								
Gamma-BHC (Lindane)	2	2	ND	2	ND								
Beta-BHC	2	2	ND	2	ND								
Heptachlor	2	2	ND	2	ND								
Delta-BHC	2	2	ND	2	ND								
Aldrin	2	2	ND	2	ND								
Heptachlor Epoxide	2	2	ND	2	ND								
Endosulfan I	2	2	ND	2	ND								
4,4'-DDE	4	4	ND	4	1210								
Dieldrin	4	4	ND	4	ND								
Endrin	4	4	ND	4	ND								
4,4'-DDD	4	4	ND	4	ND								
Endosulfan II	4	4	ND	4	ND								
4,4'-DDT	4	4	ND	4	ND								
Endrin Aldehyde	4	4	ND	4	ND								
Endosulfan Sulfate	4	4	ND	4	ND								
Methoxychlor	17	17	ND	17	ND								
gamma-Chlordane	2	2	ND	2	ND								
alpha-Chlordane	2	2	ND	2	ND								
Toxaphene	170	170	ND	170	ND								
Total Chlordane	17	4	ND	4	ND								

Surrogate Recovery

Surrogate	%Rec.	Limits	%Rec.	Limits								
Tetrachloro-m-xylene	103	30-150	DO	30-150								
Decachlorobiphenyl	150	30-150	DO	30-150								

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

DO = Diluted out

Reviewed/Approved By: E. Persaud for

Edgar Morrison
Organics Supervisor

Date: 06/12/00

The cover letter is an integral part of this analytical report.

Client:	**Entech Analytical Labs, Inc.**
Attn:	**Michelle Anderson**
Client's Project:	**20420**
Date Received:	**05/23/00**
Extraction Method:	**3550B**
Matrix:	**Solid**
Units:	**ug/kg**

Date Amended: 06/12/00

EPA Method 8081

Lab No.:		44186-002											
Client Sample I.D.:		20420-012 S-31 (2-2 1/2')											
Date Sampled:		05/10/00											
QC Batch #:		G008080S225											
Date Extracted:		05/23/00											
Date Analyzed :		05/31/00											
Analyst Initials:		NN											
Dilution Factor:		1											
ANALYTE	**MDL**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**
Alpha-BHC	2	2	ND										
Gamma-BHC (Lindane)	2	2	ND										
Beta-BHC	2	2	ND										
Heptachlor	2	2	ND										
Delta-BHC	2	2	ND										
Aldrin	2	2	ND										
Heptachlor Epoxide	2	2	ND										
Endosulfan I	2	2	ND										
4,4'-DDE	4	4	4.7										
Dieldrin	4	4	ND										
Endrin	4	4	ND										
4,4'-DDD	4	4	ND										
Endosulfan II	4	4	ND										
4,4'-DDT	4	4	ND										
Endrin Aldehyde	4	4	ND										
Endosulfan Sulfate	4	4	ND										
Methoxychlor	17	17	ND										
gamma-Chlordane	2	2	ND										
alpha-Chlordane	2	2	ND										
Toxaphene	170	170	ND										
Total Chlordane	17	4	ND										

Surrogate Recovery

Surrogate	**%Rec**	**Limits**										
Tetrachloro-m-xylene	89	30-150										
Decachlorobiphenyl	145	30-150										

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

Reviewed/Approved By: E. Morrison for

Edgar Morrison
Organics Supervisor

Date: 06/12/00

The cover letter is an integral part of this analytical report.

Advanced Technology Laboratories

1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Client:	**Entech Analytical Labs, Inc.**
Attn:	**Michelle Anderson**
Client's Project:	**20420**
Date Received:	**05/23/00**
Extraction Method:	**3550B**
Matrix:	**Solid**
Units:	**ug/kg**

EPA Method 8081

Lab No.:		LCS											
Client Sample I.D.:		--											
Date Sampled:		--											
QC Batch #:		G008080S225											
Date Extracted:		05/23/00											
Date Analyzed :		05/31/00											
Analyst Initials:		NN											
Dilution Factor:		1											
ANALYTE	**MDL**	**%Rec**	**Limits**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**	**DLR**	**Results**
Alpha-BHC	2	124	26-143										
Gamma-BHC (Lindane)	2	123	26-143										
Beta-BHC	2	106	26-143										
Heptachlor	2	111	26-143										
Delta-BHC	2	119	26-143										
Aldrin	2	115	26-143										
Heptachlor Epoxide	2	112	26-143										
Endosulfan I	2	111	26-143										
4,4'-DDE	4	117	26-143										
Dieldrin	4	118	26-143										
Endrin	4	123	26-143										
4,4'-DDD	4	115	26-143										
Endosulfan II	4	117	26-143										
4,4'-DDT	4	122	26-143										
Endrin Aldehyde	4	105	26-143										
Endosulfan Sulfate	4	127	26-143										
Methoxychlor	17	134	26-143										
gamma-Chlordane	2	113	26-143										
alpha-Chlordane	2	114	26-143										
Toxaphene	170	NS	NS										
Total Chlordane	17	NS	NS										

Surrogate Recovery

Surrogate	%Rec.	Limits										
Tetrachloro-m-xylene	78	30-150										
Decachlorobiphenyl	50	30-150										

NS = Not Spiked

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
NA = Not Analyzed

Reviewed/Approved By: E. Morrison for **Date:** 06/12/00

Edgar Morrison
Organics Supervisor

The cover letter is an integral part of this analytical report.

Spike Recovery and RPD Summary Report - SOIL(ug/kg)

Method : C:\HPCHEM\1\METHODS\8080526.M (Chemstation Integrator)
Title :
Last Update : Sat May 27 19:08:17 2000
Response via : Initial Calibration

Non-Spiked Sample: C0526071.D

	Spike Sample	Spike Duplicate Sample
File ID :	C0526073.D	C0526074.D
Sample :	000523BLKS1,MS,	000523BLKS1,MSD,
Acq Time:	28 May 2000 5:40 am	28 May 2000 6:15 am

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC Limits RPD	QC Limits % Rec
gamma-BHC	0.0	40	41	47	103	117	12#	9	50-127
Heptachlor	0.0	40	38	43	95	106	12	12	35-136
Aldrin	0.0	40	42	47	105	118	11	15	47-143
Dieldrin	0.0	80	83	93	104	117	12#	8	54-134
Endrin	0.0	80	82	90	102	112	9	16	61-138
4,4' -DDT	0.0	80	84	95	106	118	11	22	15-155

- Failed RPD limits. Batch validated by LCS passing.

QCBATCH#C008080S225

Reviewed/Approved by: E. Morrison for Date: 06/09/00
Edgar Morrison
Department Supervisor

Advanced Technology Laboratories
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Entech Analytical Labs, Inc.

CA ELAP # 1-2346

525 Del Rey Avenue, Suite E, Sunnyvale, CA 94086 (408) 735-1550 FAX (408) 735-1554

Subcontract Chain of Custody

Subcontract Lab:	Project Name:	Date Sent:	Due Date:	PO Number:
ATL	20420	5/22/00	5/30/00	20-20

Sample Number:	Customer Sample Number:	Matrix:	Test:	Method:	Collect Date:	Collec. Time	Bottle Type:	Preservative:
20420-011	S-31 (1- 1 1/2')	Solid	EPA 8081-ATL	EPA 8081	5/10/00		4 oz jar	
20420-012	S-31 (2-2 1/2')	Solid	EPA 8081-ATL	EPA 8081	5/10/00		4 oz jar	

Relinquished By:	Received By:	Date:	Time:
Mara Gusles	Golden State	5/22/00	1800
Relinquished By:	Received By: Diane Graham	Date: 5-23-00	Time: 0900
Relinquished By:	Received By:	Date:	Time:

Notes: Hold time up on 5/24/00

Entech Analytical Labs, Inc.

CA ELAP# 2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

June 20, 2000

Doug Young
Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043

Order:	20997	**Date Collected:**	5/13/00
Project Name:	US Data Port 50-Acre Parcel	**Date Received:**	5/15/00
Project Number:	587-12F	**P.O. Number:**	
Project Notes:			

On May 15, 2000, samples were received under documentented chain of custody. Results for the following analyses are attached:

Matrix	Test	Method
Solid	EPA 8081-Acculabs	EPA 8081

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,

Michelle L. Anderson
Lab Director

ACCULABS, INC.

Sample Log 21437
June 20, 2000

Michelle Anderson
Entech Analytical Labs, Inc.
525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

Subject : 2 Soil samples
Project Name : 20997
Project Number :
P.O. Number : 20997

Dear Ms. Anderson,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Acculabs - Davis is certified by the State of California (# 2330), the State of Arizona (AZ0583) and the State of Nevada. If you have any questions regarding procedures or results, please call me at 530-757-0920.

Sincerely,

Tom Kwoka

Tom Kwoka

1046 OLIVE DRIVE, DAVIS, CALIFORNIA 95616
TELEPHONE (530)757-0920 FAX (530)753-6091 WWW.ACCULABS.COM

ACCULABS, INC.

Sample Log 21437
June 20, 2000

Subject : 2 Soil samples
Project Name : 20997
Project Number :
P.O. Number : 20997

Case Narrative

Analysis: EPA 8081A

Multiple dilutions are being reported for samples that have analytes whose concentration has exceeded the linear range of the GC curve. This allows for an accurate concentration of analytes which would be diluted out in the higher dilution.

Tom Kwoka

ACCULABS, INC.

Sample Log 21437
June 20, 2000

EPA 8081A

Sample Name : **S-52(1-1 1/2) (20997-001)**

Project Name : 20997
Project Number :
Sample Date : 05/13/00
Date Extracted : 06/19/00
Extr. Method : EPA 3550
QC Batch : PS000606

Date Analyzed : 06/20/00
Date Received : 06/19/00
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 21437-01

Parameter	MRL	Measured Conc.	Units
alpha-BHC	**0.0050**	**0.12**	mg/Kg
gamma-BHC	0.0050	<0.0050	mg/Kg
beta-BHC	**0.0050**	**0.23**	mg/Kg
Heptachlor	0.0050	<0.0050	mg/Kg
delta-BHC	**0.0050**	**1.1 E**	mg/Kg
Aldrin	0.0050	<0.0050	mg/Kg
Heptachlor Epoxide	0.0050	<0.0050	mg/Kg
gamma-Chlordane	0.0050	<0.0050	mg/Kg
Endosulfan 1	0.0050	<0.0050	mg/Kg
alpha-Chlordane	0.0050	<0.0050	mg/Kg
Dieldrin	0.010	<0.010	mg/Kg
DDE	0.010	<0.010	mg/Kg
Endrin	0.010	<0.010	mg/Kg
Endosulfan 2	0.010	<0.010	mg/Kg
DDD	0.010	<0.010	mg/Kg
Endrin Aldehyde	0.010	<0.010	mg/Kg
DDT	0.010	<0.010	mg/Kg
Endosulfan Sulfate	0.010	<0.010	mg/Kg
Methoxychlor	0.050	<0.050	mg/Kg
Chlordane Technical	0.10	<0.10	mg/Kg
Toxaphene	**0.20**	**13 E**	mg/Kg
Tetrachloro-m-xylene (sur)		102	% Recovery
Decachlorobiphenyl (sur)		102	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

ACCULABS, INC.

Sample Log 21437
June 20, 2000

EPA 8081A

Sample Name : **S-52(1-1 1/2) (20997-001)**

Project Name : 20997
Project Number :
Sample Date : 05/13/00
Date Extracted : 06/19/00
Extr. Method : EPA 3550
QC Batch : PS000606

Date Analyzed : 06/20/00
Date Received : 06/19/00
Dilution : 1:20
Sample Matrix : Soil
Lab Number : 21437-01

Parameter	MRL	Measured Conc.	Units
alpha-BHC	0.10	< 0.10	mg/Kg
gamma-BHC	0.10	< 0.10	mg/Kg
beta-BHC	**0.10**	**0.24**	mg/Kg
Heptachlor	0.10	< 0.10	mg/Kg
delta-BHC	**0.10**	**1.2**	mg/Kg
Aldrin	0.10	< 0.10	mg/Kg
Heptachlor Epoxide	0.10	< 0.10	mg/Kg
gamma-Chlordane	0.10	< 0.10	mg/Kg
Endosulfan 1	0.10	< 0.10	mg/Kg
alpha-Chlordane	0.10	< 0.10	mg/Kg
Dieldrin	0.20	< 0.20	mg/Kg
DDE	0.20	< 0.20	mg/Kg
Endrin	0.20	< 0.20	mg/Kg
Endosulfan 2	0.20	< 0.20	mg/Kg
DDD	0.20	< 0.20	mg/Kg
Endrin Aldehyde	0.20	< 0.20	mg/Kg
DDT	0.20	< 0.20	mg/Kg
Endosulfan Sulfate	0.20	< 0.20	mg/Kg
Methoxychlor	1.0	<1.0	mg/Kg
Chlordane Technical	2.0	<2.0	mg/Kg
Toxaphene	**4.0**	**15**	mg/Kg
Tetrachloro-m-xylene (sur)		DIL OUT	% Recovery
Decachlorobiphenyl (sur)		DIL OUT	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

ACCULABS, INC.

Sample Log 21437
June 20, 2000

EPA 8081A

Sample Name : **S-52(2-2 1/2) (20997-002)**

Project Name : 20997
Project Number :
Sample Date : 05/13/00
Date Extracted : 06/19/00
Extr. Method : EPA 3550
QC Batch : PS000606

Date Analyzed : 06/20/00
Date Received : 06/19/00
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 21437-02

Parameter	MRL	Measured Conc.	Units
alpha-BHC	**0.0050**	**0.011**	mg/Kg
gamma-BHC	0.0050	<0.0050	mg/Kg
beta-BHC	**0.0050**	**0.044**	mg/Kg
Heptachlor	0.0050	<0.0050	mg/Kg
delta-BHC	**0.0050**	**0.16**	mg/Kg
Aldrin	0.0050	<0.0050	mg/Kg
Heptachlor Epoxide	0.0050	<0.0050	mg/Kg
gamma-Chlordane	0.0050	<0.0050	mg/Kg
Endosulfan 1	0.0050	<0.0050	mg/Kg
alpha-Chlordane	0.0050	<0.0050	mg/Kg
Dieldrin	0.010	<0.010	mg/Kg
DDE	0.010	<0.010	mg/Kg
Endrin	0.010	<0.010	mg/Kg
Endosulfan 2	0.010	<0.010	mg/Kg
DDD	0.010	<0.010	mg/Kg
Endrin Aldehyde	0.010	<0.010	mg/Kg
DDT	0.010	<0.010	mg/Kg
Endosulfan Sulfate	0.010	<0.010	mg/Kg
Methoxychlor	0.050	<0.050	mg/Kg
Chlordane Technical	0.10	<0.10	mg/Kg
Toxaphene	**0.20**	**2.0 E**	mg/Kg
Tetrachloro-m-xylene (sur)		81	% Recovery
Decachlorobiphenyl (sur)		83	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

ACCULABS, INC.

Sample Log 21437
June 20, 2000

EPA 8081A

Sample Name : **S-52(2-2 1/2) (20997-002)**

Project Name : 20997
Project Number :
Sample Date : 05/13/00
Date Extracted : 06/19/00
Extr. Method : EPA 3550
QC Batch : PS000606

Date Analyzed : 06/20/00
Date Received : 06/19/00
Dilution : 1:5
Sample Matrix : Soil
Lab Number : 21437-02

Parameter	MRL	Measured Conc.	Units
alpha-BHC	0.025	< 0.025	mg/Kg
gamma-BHC	0.025	< 0.025	mg/Kg
beta-BHC	**0.025**	**0.036**	mg/Kg
Heptachlor	0.025	< 0.025	mg/Kg
delta-BHC	**0.025**	**0.14**	mg/Kg
Aldrin	0.025	< 0.025	mg/Kg
Heptachlor Epoxide	0.025	< 0.025	mg/Kg
gamma-Chlordane	0.025	< 0.025	mg/Kg
Endosulfan 1	0.025	< 0.025	mg/Kg
alpha-Chlordane	0.025	< 0.025	mg/Kg
Dieldrin	0.050	< 0.050	mg/Kg
DDE	0.050	< 0.050	mg/Kg
Endrin	0.050	< 0.050	mg/Kg
Endosulfan 2	0.050	< 0.050	mg/Kg
DDD	0.050	< 0.050	mg/Kg
Endrin Aldehyde	0.050	< 0.050	mg/Kg
DDT	0.050	< 0.050	mg/Kg
Endosulfan Sulfate	0.050	< 0.050	mg/Kg
Methoxychlor	0.25	< 0.25	mg/Kg
Chlordane Technical	0.50	< 0.50	mg/Kg
Toxaphene	**1.0**	**2.0**	mg/Kg
Tetrachloro-m-xylene (sur)		74	% Recovery
Decachlorobiphenyl (sur)		74	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

ACCULABS, INC.

Sample Log 21437
June 20, 2000

EPA 8081A

Sample Name : **Method Blank**

Project Name : 20997
Project Number :
Sample Date : 05/13/00
Date Extracted : 06/19/00
Extr. Method : EPA 3550
QC Batch : PS000606

Date Analyzed : 06/20/00
Date Received : 06/19/00
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 21437-03

Parameter	MRL	Measured Conc.	Units
alpha-BHC	0.0050	<0.0050	mg/Kg
gamma-BHC	0.0050	<0.0050	mg/Kg
beta-BHC	0.0050	<0.0050	mg/Kg
Heptachlor	0.0050	<0.0050	mg/Kg
delta-BHC	0.0050	<0.0050	mg/Kg
Aldrin	0.0050	<0.0050	mg/Kg
Heptachlor Epoxide	0.0050	<0.0050	mg/Kg
gamma-Chlordane	0.0050	<0.0050	mg/Kg
Endosulfan 1	0.0050	<0.0050	mg/Kg
alpha-Chlordane	0.0050	<0.0050	mg/Kg
Dieldrin	0.010	<0.010	mg/Kg
DDE	0.010	<0.010	mg/Kg
Endrin	0.010	<0.010	mg/Kg
Endosulfan 2	0.010	<0.010	mg/Kg
DDD	0.010	<0.010	mg/Kg
Endrin Aldehyde	0.010	<0.010	mg/Kg
DDT	0.010	<0.010	mg/Kg
Endosulfan Sulfate	0.010	<0.010	mg/Kg
Methoxychlor	0.050	<0.050	mg/Kg
Chlordane Technical	0.10	<0.10	mg/Kg
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		87	% Recovery
Decachlorobiphenyl (sur)		85	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

ACCULABS, INC.

Acculabs Inc. - Davis

EPA 8081 QC Report

Matrix: Soil	Date Extracted: 6/19/00
QC Batch: PS000606	Date Analyzed: 6/20/00
QC Limits Set: 8/18/99	Spiked Sample ID : 21437-02 *

	Spike Conc	LCS	Matrix Spike	Matrix Spike Dup		Control Chart Limits	
Parameter	mg/kg	% Rec	% Rec	% Rec	RPD	Lower	Upper
gamma-BHC	0.050	77	117	110	6	62	117
Heptachlor	0.050	82	87	91	4	63	117
Aldrin	0.050	77	85	85	0	71	107
Dieldrin	0.100	88	151	124	20	68	117
Endrin	0.100	87	109	161	39	40	161
4,4'-DDT	0.100	66	218	157	33	43	128

	Control Chart Limits	
Surrogate Compounds	Lower	Upper
Tetrachloro-m-xylene	75	144
Decachlorobiphenyl	78	141

* Sample had a high concentration of toxaphene, which interfered with recovery for Dieldrin, Endrin, and DDT.

Tom Kwoka
Laboratory Director

C:\EXCEL\QC\Ps000606

Entech Analytical Labs, Inc.

CA ELAP # I-2346

525 Del Rey Avenue, Suite E, Sunnyvale, CA 94086 (408) 735-1550 FAX (408) 735-1554

Subcontract Chain of Custody

21437

Subcontract Lab:	Project Name:	Date Sent:	Due Date:	PO Number:
ACCULABS	20997	6/16/00	6/20/00	20997

	Sample Number:	Customer Sample Number:	Matrix:	Test:	Method:	Collect Date:	Collect Time:	Bottle Type:	Preservative:
01	20997-001	S-52(1-1½)	Solid	EPA 8081-Acculabs	EPA 8081	5/13/00		4 OZ JAR	
02	20997-002	S-52(2-2½)	Solid	EPA 8081-Acculabs	EPA 8081	5/13/00		4 OZ JAR	

Relinquished By:	Received By:	Date:	Time:
Amy Dombeck	Golden State	6/16/00	1300
Relinquished By: Golden State	Received By: [illegible]	Date: 6-17-00	Time: 1000
Relinquished By:	Received By:	Date:	Time:

Notes: 24 Hr. Rush!! Due6/20/00

Entech Analytical Labs, Inc.

CA ELAP # I-2346

525 Del Rey Avenue, Suite E, Sunnyvale, CA 94086 (408) 735-1550 FAX (408) 735-1554

Subcontract Chain of Custody

Subcontract Lab:	Project Name:	Date Sent:	Due Date:	PO Number:
ACCULABS	20997	6/16/00	6/20/00	20997

Sample Number:	Customer Sample Number:	Matrix:	Test:	Method:	Collect Date:	Collect Time:	Bottle Type:	Preservative:
20997-001	S-52(1-1½)	Solid	EPA 8081-Acculabs	EPA 8081	5/13/00		4 OZ JAR	
20997-002	S-52(2-2½)	Solid	EPA 8081-Acculabs	EPA 8081	5/13/00		4 OZ JAR	

Relinquished By:	Received By:	Date:	Time:
Amy Dombeedo	Golden State	6/16/00	1300
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:

Notes: 24 Hr. Rush!! Due6/20/00

(2)

LOWNEY ASSOCIATES
CHAIN OF CUSTODY RECORD

Send Results To: ☒ Mountain View Office, 405 Clyde Avenue, Mountain View, CA 94043, 415-967-2365 ☐ Oakland Office, 129 Filbert Street, Oakland, CA 94607, 510-267-1970

Fax Copy To: ☒ 415-967-2785 (fax) ☐ 510-267-1972 (fax)

Project Name: US Data Port 50-Acre Parcel

Job Number: 587-12F

Report To: Doug Young

Sampler (print): John McCain

Sampler (signature): John McCain

QC Requirements: ☒ Level A (standard) ☐ Level B ☐ Level C ☐ Level D

Turnaround Requirements: ☐ 10 working days ☒ 5 working days ☐ 3 working days ☐ 48 hours ☐ 24 hours ☐ 2-3 hours (RUSH)

ANALYSIS REQUESTED

00 MAY 15 12:57

Sample I.D.	Date	Time	Sample Matrix	# of Cont.	Laboratory I.D.	Organochlorine Pesticides (8080)	Mercury + Arsenic	Selenium + Lead	Chlorinated Herbicides (8151)	Organophosphorous Pesticides (8141)	N-methyl-carbamates (8318)							Remarks
S-45 (0-½')*	5-13-00		soil		005	X	X	X										
S-45 (1-1½')*					024													Hold
S-45 (2-2½')*					025													Hold
S-46 (0-½')*					006	X	X	X										
S-46 (1-1½')*					026													Hold
S-46 (2-2½')*					027													Hold
S-51 (0-½')*				2✓	007	X	X	X	X	X	X							
S-51 (1-1½')*				2✓	028	X	X	X	X	X	X							Hold
S-51 (2-2½')*				2✓	029	X	X	X	X	X	X							Hold
S-52 (0-½')*				1	008	X	X	X										
S-52 (1-1½')*				↓	030													Hold
S-52 (2-2½')*	↓		↓	↓	031													Hold

20487

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
John McCain			Leo Rodriguez	5/15/00	1230
Leo Rodriguez	5/15/00	1245			

Lab of Record: _____

PM Initials: _____

Temperature: _____

Entech Analytical Labs, Inc.

CA ELAP# 2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

July 07, 2000

Doug Young
Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043

Order:	21243	**Date Collected:**	7/5/00
Project Name:	US Data Port 55-Acre Lin/Hom Parcel	**Date Received:**	7/5/00
Project Number:	587-12F	**P.O. Number:**	
Project Notes:			

On July 05, 2000, samples were received under documentented chain of custody. Results for the following analyses are attached:

Matrix	Test	Method
Solid	EPA 8081-Acculabs	EPA 8081

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,

Michelle L. Anderson
Lab Director

ACCULABS, INC.

Sample Log 21492
July 07, 2000

Michelle Anderson
Entech Analytical Labs, Inc.
525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

Subject : 8 Soil Samples
Project Name :
Project Number : 21243

Dear Ms. Anderson,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Acculabs - Davis is certified by the State of California (# 2330), the State of Arizona (AZ0583) and the State of Nevada. If you have any questions regarding procedures or results, please call me at 530-757-0920.

Sincerely,

Tom Kwoka

1046 OLIVE DRIVE, DAVIS, CALIFORNIA 95616
TELEPHONE (530)757-0920 FAX (530)753-6091 WWW.ACCULABS.COM

ACCULABS, INC.

Sample Log 21492
July 07, 2000

Subject : 8 Soil Samples
Project Name :
Project Number : 21243

Case Narrative

Analysis: EPA 8081A

The Decachlorobiphenyl surrogate recoveries for samples SS-1 @ 1-1 1/2 and SS3 @ 0-1/2 were below laboratory control chart limits due to the coloration of the sample extract.

Troy D. Jespen for
Tom Kwoka

ACCULABS, INC.

Sample Log 21492
July 07, 2000

EPA 8081A

Sample Name : **SS-1 @ 0-1/2**

Project Name	:	Date Analyzed	: 07/06/00
Project Number	: 21243	Date Received	: 07/06/00
Sample Date	: 07/05/00	Dilution	: 1:1
Date Extracted	: 07/06/00	Sample Matrix	: Soil
Extr. Method	: EPA 3550	Lab Number	: 21492-01
QC Batch	: PS000702		

Parameter	MRL	Measured Conc.	Units
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		104	% Recovery
Decachlorobiphenyl (sur)		99	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

ACCULABS, INC.

Sample Log 21492
July 07, 2000

EPA 8081A

Sample Name : **SS-1 @ 1-1 1/2**

Project Name :
Project Number : 21243
Sample Date : 07/05/00
Date Extracted : 07/06/00
Extr. Method : EPA 3550
QC Batch : PS000702

Date Analyzed : 07/06/00
Date Received : 07/06/00
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 21492-02

Parameter	MRL	Measured Conc.	Units
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		77	% Recovery
Decachlorobiphenyl (sur)		67	% Recovery

MRL = Method Reporting Limit
Conc. = Concentration
E = Concentration exceeded calibration range.

Approved By : Troy D. Simpson for
Tom Kwoka

ACCULABS, INC.
Sample Log 21492
July 07, 2000

EPA 8081A

Sample Name : **SS2 @ 0-1/2**

Project Name	:	Date Analyzed	: 07/06/00
Project Number	: 21243	Date Received	: 07/06/00
Sample Date	: 07/05/00	Dilution	: 1:1
Date Extracted	: 07/06/00	Sample Matrix	: Soil
Extr. Method	: EPA 3550	Lab Number	: 21492-03
QC Batch	: PS000702		

Parameter	MRL	Measured Conc.	Units
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		103	% Recovery
Decachlorobiphenyl (sur)		105	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom R. Kwoka for
Tom Kwoka

ACCULABS, INC.
Sample Log 21492
July 07, 2000

EPA 8081A

Sample Name : SS2 @ 1-1 1/2

Project Name	:	Date Analyzed	: 07/06/00
Project Number	: 21243	Date Received	: 07/06/00
Sample Date	: 07/05/00	Dilution	: 1:1
Date Extracted	: 07/06/00	Sample Matrix	: Soil
Extr. Method	: EPA 3550	Lab Number	: 21492-04
QC Batch	: PS000702		

Parameter	MRL	Measured Conc.	Units
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		108	% Recovery
Decachlorobiphenyl (sur)		111	% Recovery

MRL = Method Reporting Limit
Conc. = Concentration
E = Concentration exceeded calibration range.

Approved By : Troy D. Tuppen for
Tom Kwoka

ACCULABS, INC.

Sample Log 21492
July 07, 2000

EPA 8081A

Sample Name : **SS3 @ 0-1/2**

Project Name	:	Date Analyzed	: 07/07/00
Project Number	: 21243	Date Received	: 07/06/00
Sample Date	: 07/05/00	Dilution	: 1:1
Date Extracted	: 07/06/00	Sample Matrix	: Soil
Extr. Method	: EPA 3550	Lab Number	: 21492-05
QC Batch	: PS000702		

Parameter	MRL	Measured Conc.	Units
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		108	% Recovery
Decachlorobiphenyl (sur)		77	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

ACCULABS, INC.

Sample Log 21492
July 07, 2000

EPA 8081A

Sample Name : **SS3 @ 1-1 1/2**

Project Name	:	Date Analyzed	: 07/07/00
Project Number	: 21243	Date Received	: 07/06/00
Sample Date	: 07/05/00	Dilution	: 1:1
Date Extracted	: 07/06/00	Sample Matrix	: Soil
Extr. Method	: EPA 3550	Lab Number	: 21492-06
QC Batch	: PS000702		

Parameter	MRL	Measured Conc.	Units
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		119	% Recovery
Decachlorobiphenyl (sur)		98	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Jerry D. Ferguson for
Tom Kiwoka

ACCULABS, INC.

Sample Log 21492
July 07, 2000

EPA 8081A

Sample Name : SS4 @ 0-1/2

Project Name	:	Date Analyzed	: 07/07/00
Project Number	: 21243	Date Received	: 07/06/00
Sample Date	: 07/05/00	Dilution	: 1:1
Date Extracted	: 07/06/00	Sample Matrix	: Soil
Extr. Method	: EPA 3550	Lab Number	: 21492-07
QC Batch	: PS000702		

Parameter	MRL	Measured Conc.	Units
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		105	% Recovery
Decachlorobiphenyl (sur)		97	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Troy D. Turpin for
Tom Kwoka

ACCULABS, INC.

Sample Log 21492
July 07, 2000

EPA 8081A

Sample Name : **SS4 @ 1-1 1/2**

Project Name	:	Date Analyzed	: 07/07/00
Project Number	: 21243	Date Received	: 07/06/00
Sample Date	: 07/05/00	Dilution	: 1:1
Date Extracted	: 07/06/00	Sample Matrix	: Soil
Extr. Method	: EPA 3550	Lab Number	: 21492-08
QC Batch	: PS000702		

Parameter	MRL	Measured Conc.	Units
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		100	% Recovery
Decachlorobiphenyl (sur)		80	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Larry D. Jurgens for
Tom Kwoka

ACCULABS, INC.

Sample Log 21492
July 07, 2000

EPA 8081A

Sample Name : **Method Blank**

Project Name	:	Date Analyzed	: 07/06/00
Project Number	: 21243	Date Received	: 07/06/00
Sample Date	: 07/05/00	Dilution	: 1:1
Date Extracted	: 07/06/00	Sample Matrix	: Soil
Extr. Method	: EPA 3550	Lab Number	: 21492-09
QC Batch	: PS000702		

Parameter	MRL	Measured Conc.	Units
Toxaphene	0.20	<0.20	mg/Kg
Tetrachloro-m-xylene (sur)		108	% Recovery
Decachlorobiphenyl (sur)		109	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Troy D. Jurgens for
Tom Kwoka

ACCULABS, INC.

Acculabs Inc. - Davis

EPA 8081 QC Report

Matrix: Soil	Date Extracted: 7/6/00
QC Batch: PS000702	Date Analyzed: 7/6/00
QC Limits Set: 8/18/99	Spiked Sample ID : 21492-01

Parameter	Spike Conc mg/kg	LCS % Rec	Matrix Spike % Rec	Matrix Spike Dup % Rec	RPD	Control Chart Limits Lower	Control Chart Limits Upper
gamma-BHC	0.050	108	110	64	53	62	117
Heptachlor	0.050	114	112	68	49	63	117
Aldrin	0.050	106	106	67	45	71	107
Dieldrin	0.100	117	135	75	57	68	117
Endrin	0.100	121	133	76	55	40	161
4,4'-DDT	0.100	112	93 *	32 *	#VALUE!	43	128

Surrogate Compounds	Control Chart Limits Lower	Control Chart Limits Upper
Tetrachloro-m-xylene	75	144
Decachlorobiphenyl	78	141

* Sample 21492-01 had high concentrations of DDT which interfered with matrix spike and duplicate recoveries for DDT. Also, matrix spike duplicate had a small loss of sample during the extraction process which resulted in low recoveries. LCS was within limits.

Troy A. Swyn for
Tom Kwoka
Laboratory Director

C:\EXCEL\QC\Ps000702

LOWNEY ASSOCIATES
CHAIN OF CUSTODY RECORD

SEND RESULTS TO:

☒ Mountain View Office
405 Clyde Ave
Mountain View, Ca 94043
415-967-2365
FAX COPY: ☒ 415-967-2785 (FAX)

☐ Walnut Creek Office
1600 S. Main St, Suite 125
Walnut Creek, Ca 94596
510-938-9356
FAX COPY: ☐ 510-938-9359 (FAX)

Project Name: US DataPort 55-Acre Lin/Hom Parcel

Job No.: 587-12F

Report To: Doug Young / James Kiernan

Sampler (print): James Kiernan

Sampler (signature): [signature]

QC Requirements:
☒ Level A (standard) ☐ Level B ☐ Level C ☐ Level D

Turnaround Requirements:
☐ 10 Working days
☐ 5 Working days
☐ 3 Working days
☒ 48 Hours
☐ 24 Hours
☐ 2-3 Hours (RUSH)

ANALYSIS REQUESTED

Sample I.D.	Date	Time	Lab I.D.	Sample Matrix	No. of Cont.	TPHgas/BTEX (8015/8020)	TPH as diesel (8015M)	TPH (5520) EF/BF	Halogenated VOCs (8010)	Purgeable Organics (8240)	Extractable Organics (8270)	Toxaphene Only (8081)	Remarks
SS-1 @ 0-½'	7/5/00			Soil	1							X	21243-001
SS-1 @ 1-1½'	↓			↓	↓							X	002
SS-2 @ 0-½'												X	003
SS-2 @ 1-1½'												X	004
SS-3 @ 0-½'												X	005
SS-3 @ 1-1½'												X	006
SS-4 @ 0-½'												X	007
SS-4 @ 1-1½'	↓			↓	↓							X	008

48 HR RUSH

Relinquished By: [signature] Date: 7/5/00 Time: 11:10
Relinquished By: Date: Time:
Relinquished By: Date: Time:

Received By: [signature] Date: 7/5/00 Time: 1:07
Received By: Date: Time:
Lab Of Record:

PM Initial:
Temperature:

Jul. 7. 2000 11:45AM No. 0011 P. 15/15

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

Phase II Soil and Ground Water Quality Evaluation

55-acre Lin/Hom parcel

San Jose, California

This report has been prepared for:

Calpine

620 Coolidge Drive, Suite 200, Folsom, California 95630

July 14, 2000

Project No. 587-12F

James P. Kiernan
Staff Environmental Engineer

Stason I. Foster, P.E.
Senior Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
STASON I. FOSTER
No. 051495
EXP. 6-30-02
CIVIL
STATE OF CALIFORNIA

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PHASE II SOIL AND GROUND WATER QUALITY EVALUATION

55-ACRE LIN/HOM PARCEL

SAN JOSE, CALIFORNIA

1.0 INTRODUCTION

1.1 Purpose

In this report, we present the results of the soil and ground water quality evaluation performed at the 55-acre Lin/Hom parcel located in San Jose, California (Figure 1). This work was performed for Calpine who is considering purchasing the property for com-mercial development.

1.2 Site Background

The approximately 55-acre parcel is located near the northwest intersection of Highway 237 and Coyote Creek. The site is located in an agricultural, residential, and commercial area and is bounded by McCarthy Lane to the north; Alviso-Milpitas Road to the south; agricultural, residential, and commercial property to the east; and vacant land to the west (Figure 2). This parcel currently is being used for various agricultural farming purposes.

The site is developed with several nursery/greenhouse complexes and residential structures. As discussed in our Phase I Environmental Site Assessment reports dated February 13, 2000 and April 13, 2000 (draft), underground storage tanks (USTs) (three diesel fuel tanks and one gasoline tank), and several pesticide mixing/storage areas were identified on-site (Figure 2). These areas, coupled with former agricultural use of the property, prompted the performance of this phase of work to evaluate soil and ground water quality.

1.3 Scope of Work

The scope of work performed was outlined in our agreement with you, dated April 26, 2000, and included the following tasks.

- Drilling of exploratory borings near the USTs and pesticide mixing/storage areas, and from the greenhouse/agricultural areas.
- Collection of soil and ground water samples for laboratory analysis.

2.0 SOIL AND GROUND WATER QUALITY EVALUATION

To evaluate soil and ground water quality near the former USTs, the pesticide storage and mixing areas, and within the greenhouses located on the parcel, a subsurface investigation was performed on May 9, 10, 11, and 13, 2000. Under the

supervision of Principal Environmental Engineer Stason I. Foster, Environmental Geologist John W. McCain drilled 59 borings to approximate depths between 2½ and 10 feet.

2.1 UST Areas

As shown on Figures 3, 4, and 5, one boring was drilled near each of the existing UST locations. For the diesel UST that reportedly had floated to the ground surface during a flood in approximately 1982, a boring was drilled near the former in-place location to the east of the boiler structure on the Lin property.

Ground water was encountered in three of the four borings at approximate depths of 3 to 4 feet. Soil and ground water sampling protocols are presented in Appendix A.

Soil samples collected from just above the shallow water-bearing zone and ground water grab samples (where encountered) from each boring, were selected for submittal to a state-certified analytical laboratory.

The samples were analyzed for total petroleum hydrocarbons as gasoline and diesel (TPHg and TPHd) (EPA Test Method 8015); benzene, toluene, ethylbenzene, and total xylenes (BTEX) (EPA Test Method 8020); and fuel oxygenates (EPA Test Method 8260). The ground water samples additionally were analyzed for organochlorine pesticides (EPA Test Method 8081). These analyses were selected to help evaluate possible contamination due to the presence of the USTs. The results of these analyses are presented in Tables 1 and 2. Copies of the analytical reports and chain of custody documentation are presented in Appendix A.

Table 1. Analytical Results of Selected Soil Samples – UST Area
(concentrations in parts per million)

Boring Number	Depth (feet)	TPHg	TPHd	BTEX	Fuel Oxygenates
T-1	2½ - 3	<1.0	<1.0	<0.005	<0.005
T-2	2½ - 3	<1.0	<1.0	<0.005	<0.005
T-3	9½ - 10	<1.0	<1.0	<0.005	<0.005
T-4	2½ - 3	<1.0	<1.0	<0.005	<0.005

< Indicates that the compound was not detected at or above the stated laboratory reporting limit

Table 2. Analytical Results of Selected Ground Water Samples-UST Area
(concentrations in parts per million)

Well Number	Date	TPHg	TPHd	BTEX	Fuel Oxygenates	Organochlorine Pesticides
T-1	5/11/00	<50	<50	<0.5	<5	ND
T-2	5/11/00	<50	<50	<0.5	<5	ND
T-4	5/11/00	<50	<50	<0.5	<5	ND

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
ND – Not Detected (detection limits vary)

2.2 Greenhouses and Pesticide Storage/Mixing Areas

2.2.1 Soil Quality

Fifty-five soil samples were collected at a depth of approximately ½ foot from the borings drilled near the greenhouses and the pesticide storage and mixing areas. These samples were analyzed for organochlorine pesticides (EPA Test Method 8081) and the metals mercury, arsenic, selenium, and lead. The pesticide and metals results are presented in Tables 3 and 4, respectively. Sampling locations are shown on Figure 6.

Table 3. Analytical Results of Selected Soil Samples – Organochlorine Pesticides
(concentrations in parts per million)

Boring Number	Depth (feet)	DDT	DDE	DDD	Dieldrin	Heptachlor Epoxide	Endo-sulfan I	Endo-sulfan II	Endrin	Toxaphene
S-1	0 - ½	0.328	1.52	<0.100	<0.100	<0.050	<0.050	<0.100	<0.100	<4.25
S-2	0 - ½	0.328	1.54	<0.100	<0.100	<0.050	<0.050	<0.100	<0.100	<4.25
S-3	0 - ½	0.363	1.83	<0.200	<0.200	<0.100	<0.100	<0.200	<0.200	<8.50
S-4	0 - ½	0.181	1.55	<0.100	<0.100	<0.050	<0.050	<0.100	<0.100	<4.25
S-5	0 - ½	0.049	0.236	<0.020	<0.020	<0.010	<0.010	<0.020	<0.020	<0.850
S-6	0 - ½	0.483	1.80	<0.200	<0.200	<0.100	<0.100	<0.200	<0.200	<8.50
S-7	0 - ½	0.142	1.10	<0.080	<0.080	<0.040	<0.040	<0.080	<0.080	<3.40
S-9	0 - ½	0.127	0.699	<0.080	<0.080	<0.040	<0.040	<0.080	<0.080	<3.40
S-10	0 - ½	0.083	0.806	<0.080	<0.080	<0.040	<0.040	<0.080	<0.080	<3.40
S-11	0 - ½	0.047	0.551	<0.040	<0.040	<0.020	<0.020	<0.040	<0.040	<1.70
S-12	0 - ½	0.121	0.865	<0.080	<0.080	<0.040	<0.040	<0.080	<0.080	<3.40
S-13	0 - ½	0.251	1.07	<0.100	<0.100	<0.050	<0.050	<0.100	<0.100	<4.25
S-14	0 - ½	0.207	1.27	<0.080	<0.080	<0.040	<0.040	<0.080	<0.080	<3.40
S-15	0 - ½	<0.2	0.379	<0.200	<0.200	<0.100	<0.100	<0.200	<0.200	<8.50
S-16	0 - ½	0.088	0.740	<0.040	<0.040	<0.020	<0.020	<0.040	<0.040	<1.70
S-17	0 - ½	0.083	0.347	<0.040	<0.040	<0.020	<0.020	<0.040	<0.040	<1.70
S-18	0 - ½	0.344	1.20	<0.080	<0.080	<0.040	<0.040	<0.080	<0.080	<3.40
S-19	0 - ½	0.163	0.914	<0.100	<0.100	<0.050	<0.050	<0.100	<0.100	<4.25

continued

Table 3. Analytical Results of Selected Soil Samples – Organochlorine Pesticides
(concentrations in parts per million)
(continued)

Boring Number	Depth (feet)	DDT	DDE	DDD	Dieldrin	Heptachlor Epoxide	Endo-sulfan I	Endo-sulfan II	Endrin	Toxaphene
S-20	0 - ½	<0.04	0.481	<0.04	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-21	0 - ½	0.066	<0.04	<0.04	<0.04	0.498	<0.02	<0.04	<0.04	<1.7
S-22	0 - ½	0.115	0.635	<0.04	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-23	0 - ½	0.305	3.09	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	<8.5
S-24	0 - ½	8.66	1.1	1.27	<0.4	0.389	1.75	<0.4	<0.4	<17
S-25	0 - ½	<0.1	1.01	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<4.25
S-26	0 - ½	<0.2	1.73	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	<8.5
S-27	0 - ½	<0.16	0.949	<0.16	<0.16	<0.04	<0.04	<0.16	<0.16	<3.4
S-28	0 - ½	0.323	1.62	<0.08	<0.08	<0.04	<0.04	<0.08	<0.08	<3.4
S-29	0 - ½	0.023	0.141	0.0094	<0.008	<0.004	<0.004	<0.008	<0.008	<0.34
S-30	0 - ½	0.092	1.02	0.064	<0.08	<0.04	<0.04	<0.08	<0.08	<3.4
S-31	0 - ½	1.78	<0.2	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	<8.5
S-32	0 - ½	0.045	0.398	<0.04	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-33	0 - ½	0.117	0.454	<0.04	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-34	0 - ½	0.092	0.74	0.044	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-35	0 - ½	0.084	0.644	<0.04	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-36	0 - ½	<0.04	0.642	<0.04	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-37	0 - ½	0.134	0.476	0.049	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-38	0 - ½	0.067	0.304	0.035	<0.004	<0.002	<0.002	<0.004	<0.004	<0.17
S-39	0 - ½	0.0049	0.018	0.013	<0.004	<0.002	<0.002	<0.004	<0.004	<0.17
S-40	0 - ½	0.11	1.63	0.052	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-41	0 - ½	0.393	1.87	0.038	0.019	<0.002	<0.002	<0.004	<0.004	<0.17
S-42	0 - ½	0.175	1.73	0.076	<0.04	<0.02	<0.02	<0.04	<0.04	<1.7
S-43	0 - ½	0.137	1.384	0.039	0.0083	<0.002	<0.002	<0.004	<0.004	<0.17
S-44	0 - ½	0.035	0.205	0.02	<0.004	<0.002	<0.002	<0.004	<0.004	<0.17
S-45	0 - ½	0.308	1.05	0.036	<0.004	<0.002	<0.002	<0.004	<0.004	<0.17
S-46	0 - ½	0.085	0.39	0.0097	<0.004	<0.002	<0.002	<0.004	<0.004	<0.17
S-47	0 - ½	0.013	0.106	<0.008	<0.008	<0.004	<0.004	<0.008	<0.008	<0.34
S-48	0 - ½	<0.5	1.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.1	<5.0
S-50	0 - ½	0.504	1.45	0.138	<0.1	<0.05	<0.05	<0.1	<0.1	<4.2
S-51	0 - ½	0.271	1.02	0.03	0.017	<0.002	<0.002	<0.004	<0.004	<0.17
S-52*	0 - ½	0.098	0.023	0.014	<0.004	<0.002	<0.002	<0.004	<0.004	12.0
S-53	0 - ½	0.504	1.27	0.085	0.011	<0.002	<0.002	<0.004	<0.004	<0.17
S-54	0 - ½	<0.004	1.51	<0.004	0.01	<0.002	<0.002	0.128	0.062	<0.17
S-55	0 - ½	0.224	1.85	0.056	0.014	<0.002	<0.002	<0.004	<0.004	<0.17
S-56	0 - ½	0.026	0.427	0.035	<0.004	<0.002	<0.002	<0.004	<0.004	<0.17
S-57	0 - ½	0.23	1.99	0.083	0.016	<0.002	<0.002	<0.004	<0.004	<0.17
T-3	9½ -10	<0.004	<0.004	<0.004	<0.004	<0.002	<0.002	<0.004	<0.004	<0.17
T-4	2½ - 3	<0.004	<0.004	<0.004	<0.004	<0.002	<0.002	<0.004	<0.004	<0.17
PRG	--	12.0	12.0	17.0	0.15	0.27	5,300	5,300	260	2.20
TTLC	--	1.0	1.0	1.0	8.0	4.7	NE	NE	0.200	5.0

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
PRG Preliminary Remediation Goal for industrial site use–EPA Region 9, 1999
TTLC Total Threshold Limit Concentration
NE Not Established
* Soil Sample S-52 also contained Alpha-BHC (0.13 ppm), Beta-BHC (0.23 ppm), and Delta-BHC (1.40 ppm)

Table 4. Analytical Results of Selected Soil Samples – Metals
(concentrations in parts per million)

Boring Number	Depth (feet)	Arsenic	Lead	Mercury	Selenium
S-1	0 - ½	32	85	<0.05	<25
S-2	0 - ½	35	87	0.06	<25
S-3	0 - ½	28	85	0.06	<25
S-4	0 - ½	57	140	0.08	<25
S-5	0 - ½	39	110	0.06	<25
S-6	0 - ½	48	140	0.06	<25
S-7	0 - ½	36	110	<0.05	<25
S-9	0 - ½	37	91	0.07	<25
S-10	0 - ½	42	110	0.07	<25
S-11	0 - ½	57	150	0.06	<25
S-12	0 - ½	55	160	<0.05	<25
S-13	0 - ½	42	120	0.1	<25
S-14	0 - ½	56	140	0.11	<25
S-15	0 - ½	19	41	0.07	<25
S-16	0 - ½	58	150	0.08	<25
S-17	0 - ½	50	120	<0.05	<25
S-18	0 - ½	34	79	0.08	<25
S-19	0 - ½	35	89	<0.05	<25
S-20	0 - ½	48	120	0.12	<25
S-21	0 - ½	36	85	0.05	<25
S-22	0 - ½	34	85	0.05	<25
S-23	0 - ½	59	150	0.11	<25
S-24	0 - ½	32	90	<0.05	<25
S-25	0 - ½	50	120	0.13	<25
S-26	0 - ½	49	110	0.12	<25
S-27	0 - ½	51	130	0.13	<25
S-28	0 - ½	49	140	0.1	<25
S-29	0 - ½	51	130	<0.05	<25
S-30	0 - ½	55	120	0.08	<25
S-31	0 - ½	34	88	0.05	<25
S-32	0 - ½	36	76	0.06	<25
S-33	0 - ½	42	130	<0.05	<25
S-34	0 - ½	48	140	0.1	<25
S-35	0 - ½	51	130	0.06	<25
S-36	0 - ½	47	140	<0.05	<25
S-37	0 - ½	56	160	0.07	<25
S-38	0 - ½	42	100	0.05	<25
S-39	0 - ½	28	64	0.07	<25
S-40	0 - ½	43	160	0.12	<25
S-41	0 - ½	46	140	<0.05	<25
S-42	0 - ½	52	170	0.09	<25
S-43	0 - ½	55	180	0.11	<25
S-44	0 - ½	43	130	<0.05	<25

continued

Table 4. Analytical Results of Selected Soil Samples – Metals
(concentrations in parts per million)
(continued)

Boring Number	Depth (feet)	Arsenic	Lead	Mercury	Selenium
S-45	0 - ½	55	180	0.06	<25
S-46	0 - ½	65	170	0.07	<25
S-47	0 - ½	11	<5.0	<0.05	<25
S-48	0 - ½	50	130	<0.05	<25
S-50	0 - ½	53	180	0.09	<25
S-51	0 - ½	46	120	0.06	<25
S-52	0 - ½	67	310	0.6	<25
S-53	0 - ½	45	140	<0.05	<25
S-54	0 - ½	58	140	0.06	<25
S-55	0 - ½	39	94	<0.05	<25
S-56	0 - ½	51	130	0.54	<25
S-57	0 - ½	42	94	<0.05	<25
PRG	--	2.7	1,000	610	10,000
TTLC	--	500	1,000	20	100

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
TTLC Total Threshold Limit Concentration
PRG Preliminary Remediation Goal for industrial site use–EPA Region 9, 1999

In addition, 19 of the shallow soil samples were analyzed for organophosphorous pesticides (EPA Test Method 8141), N-methyl carbamates (EPA Test Method 8318) and chlorinated herbicides (EPA Test Method 8151). The results of these analyses are shown in Table 5. The only two organophosphorous pesticides detected in the samples were chlorpyrifos and parathion. The only chlorinated herbicide detected in the samples was pentachlorophenol. No N-methyl carbamates were detected in any of the samples and therefore not shown in Table 5.

Table 5. Analytical Results of Selected Soil Samples - Organophosphorous Pesticides and Chlorinated Herbicides
(concentrations in parts per million)

Boring Number	Depth (feet)	Chlorpyrifos (Dursban)	Parathion	Pentachlorophenol (PCP)
S-1	0 - ½	<0.03	<0.04	<0.01
S-2	0 - ½	<0.03	<0.04	<0.01
S-4	0 - ½	<0.03	<0.04	<0.01
S-5	0 - ½	<0.03	<0.04	<0.01
S-6	0 - ½	<0.03	<0.04	<0.01
S-10	0 - ½	<0.03	<0.04	<0.01
S-11	0 - ½	<0.03	<0.04	<0.01

continued

Table 5. Analytical Results of Selected Soil Samples - Organophosphorous Pesticides and Chlorinated Herbicides
(concentrations in parts per million)
(continued)

Boring Number	Depth (feet)	Chlorpyrifos (Dursban)	Parathion	Pentachlorophenol (PCP)
S-13	0 - ½	<0.03	<0.04	<0.01
S-14	0 - ½	<0.03	<0.04	<0.01
S-20	0 - ½	<0.03	<0.04	<0.01
S-21	0 - ½	<0.03	<0.04	<0.01
S-23	0 - ½	<0.03	<0.04	<0.01
S-24	0 - ½	0.100	0.06	0.42
S-25	0 - ½	<0.03	<0.04	<0.01
S-29	0 - ½	<0.03	<0.04	<0.01
S-30	0 - ½	<0.03	<0.04	<0.01
S-39	0 - ½	<0.03	<0.04	<0.01
S-47	0 - ½	<0.03	0.06	<0.01
S-51	0 - ½	<0.03	<0.04	<0.01
PRG	--	2,600	5,300	11.0

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
PRG Preliminary Remediation Goal for industrial site use–EPA Region 9, 1999

2.2.2 Ground Water Quality

To evaluate ground water quality, ground water grab samples were collected from six borings drilled near the pesticide storage and mixing areas (S-24, S-29, S-47, S-50, S-51, and S-53) (Figure 6). The ground water samples were analyzed for organochlorine pesticides and the metals mercury, arsenic, selenium, and lead. The results of the metals analysis are presented in Table 6.

Table 6. Analytical Results of Selected Ground Water Samples- Pesticide Storage and Mixing Areas
(concentrations in parts per billion)

Boring Number	Date	Arsenic	Lead	Mercury	Selenium	Organochlorine Pesticides
S-24	5/10/00	<5.0	<15	<0.2	<15	ND*
S-29	5/11/00	<5.0	30	<0.2	<15	ND
S-47	5/11/00	<5.0	<15	<0.2	<15	ND
S-50	5/11/00	<5.0	<15	<0.2	<15	ND
S-51	5/13/00	14	26	<0.2	<15	ND
S-53	5/13/00	<5.0	30	<0.2	<15	ND
MCL	--	50	15**	2.0	50	

< Indicates that the compound was not detected at or above the stated laboratory reporting limit
MCL Drinking water Maximum Contaminant Levels–California DHS, March 12, 1999
ND Not Detected (detection limits vary)
* All non-detect except for Endosulfan I at 0.3 ppb.
** Lead Action Level for drinking water

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 Soil Quality – Pesticides and Metals

The laboratory analyses of soil samples detected various pesticides. The main pesticide detected was DDT and the related compounds DDD and DDE. The sum of these three compounds is commonly referred to as total DDT. Total DDT levels up to 11.03 ppm were detected in one sample; however, in most samples, the total DDT levels ranged from about 0.5 to 2.5 ppm. In about half the samples, the total DDT concentrations were greater than the 1.0 ppm Total Threshold Limit Concentration (TTLC). The TTLC is the level above which a solid waste is considered hazardous per Title 22 of the California Code of Regulations.

None of the total DDT levels detected exceed the preliminary remediation goal (PRG) of 12.0 ppm for industrial site use. The PRGs are risk-based concentrations developed by EPA Region 9 for use as screening levels in determining if further evaluation is warranted, in prioritizing areas of concern, in establishing initial cleanup goals, and in estimation of potential health risks. The PRGs are chemical concentrations that correspond to fixed levels of risk (either a cancer risk of one in one million [10^{-6}] or a non-carcinogenic hazard quotient of one, whichever occurs at a lower concentration).

Since the DDT levels detected do not exceed the PRGs, the concentrations detected do not appear to pose a significant threat to human health in a commercial or industrial setting. If property use were to be changed to a residential setting, additional work likely would be required. Since the site is planned for commercial use and will be largely capped by buildings and associated concrete drives and parking areas, risk to human health and the environment will be significantly reduced.

Heptachlor epoxide was detected in two of the samples at 0.498 and 0.389 ppm. Although above the PRG (0.27 ppm), this compound does not appear to be a significant concern since it was only infrequently detected; thus, significant exposure is unlikely to occur. The levels detected also are well below the TTLC of 4.7 ppm.

Toxaphene was detected in only one sample (S-52). However, the concentration detected (12.0 ppm) is well above the PRG (2.2 ppm) and TTLC (5.0 ppm). Since this sample was collected from a pesticide storage/mixing area and exceeds both the PRG and TTLC, we recommend that additional sampling be performed in this vicinity to evaluate the vertical and horizontal extent of toxaphene-impacted soil.

Lead and arsenic concentrations detected in soil are higher than typical background levels which are commonly less than 50 ppm and less than 10 ppm, respectively. However, the levels detected are well below their respective TTLC values of 1,000 and 500 ppm. As with the residual pesticides, the metal concentrations detected do not appear to pose a significant threat to human health in a commercial/industrial setting.

Due to the presence of residual pesticides and elevated levels of metals, a construction worker health and safety plan should be developed for the earthwork portion of the proposed development.

We also recommend that further testing for arsenic, lead, and organochlorine pesticides be completed on selected deeper soil samples. This additional testing will help confirm that concentrations of target constituents do not increase with depth. Based on our experience, a reduction in concentrations would be expected in the upper few feet of soil.

If on-site soil is to be off-hauled, additional characterization should be performed prior to transport. Total DDT concentrations in the upper ½ foot of soil appear to exceed California's hazardous waste criteria (TTLC of 1.0 ppm). Since off-site disposal of this soil could be costly, we recommend that the planned development be designed to minimize the amount of soil to be exported.

Only two organophosphorous pesticides (chlorpyrifos and parathion) were detected in the soil samples collected. The only chlorinated herbicide detected was pentachlorophenol. The concentrations detected for each of these compounds were well below their respective PRGs for industrial site use. No N-methyl carbamates were detected in any of the soil samples.

3.2 Soil Quality – Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected in the soil samples collected near the existing USTs. We recommend that the USTs be removed in accordance with applicable regulations prior to site development. Although additional soil and ground water sampling will be required as part of the UST removal process, the data collected to date does not indicate that the USTs have significantly impacted the site.

3.3 Ground Water Quality

During this investigation, ground water grab samples were collected from nine borings advanced near the USTs and pesticide storage/mixing areas at the site. No significant levels of petroleum hydrocarbons or pesticides were detected in the ground water samples analyzed.

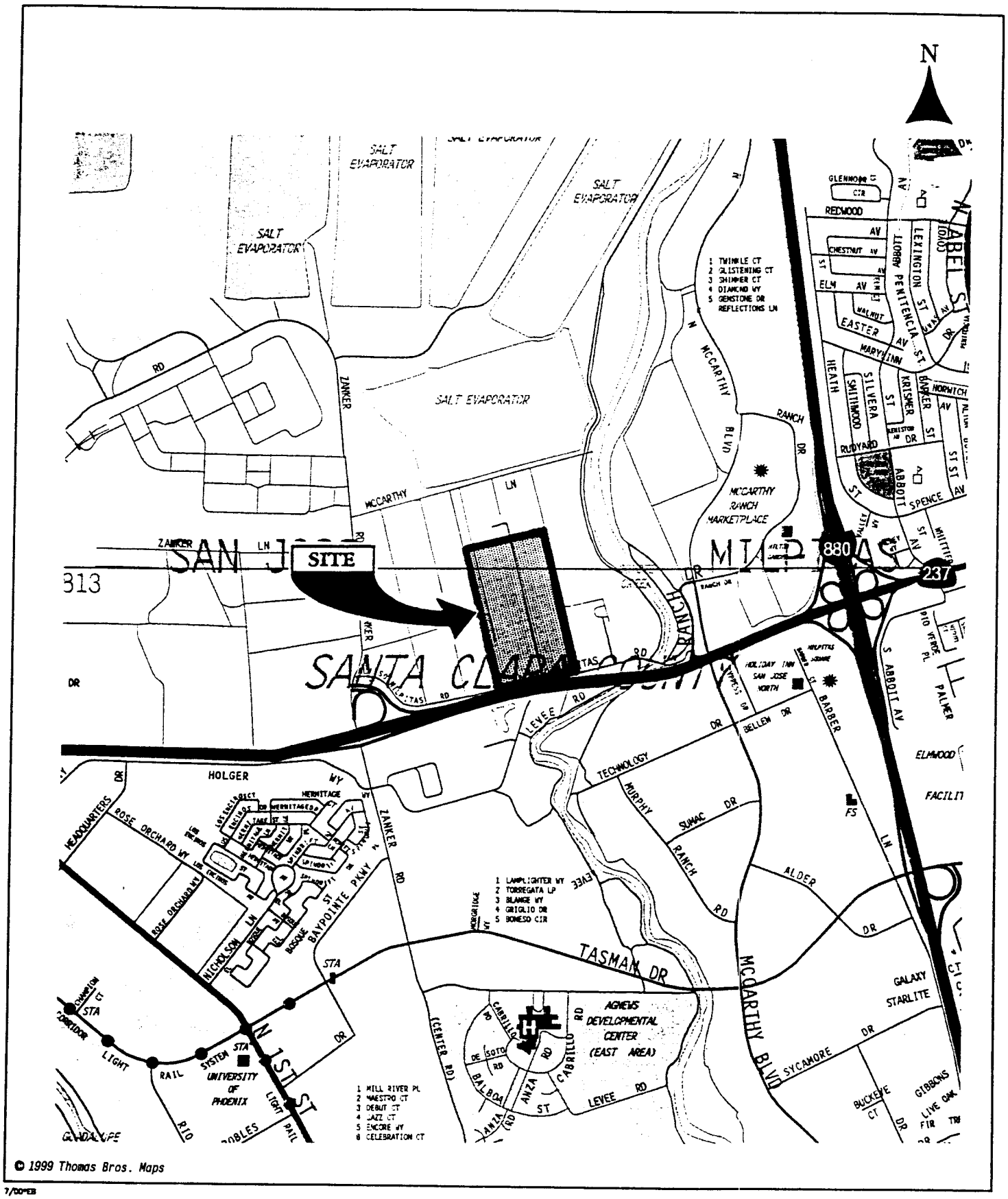
Metal concentrations detected in the ground water samples did not exceed the drinking water maximum contaminant levels (MCLs). Although no MCL has been established for lead, there is an action level of 15 ppb for drinking water at the consumer tap. Lead levels were found to exceed this level in three samples. Since shallow on-site ground water is not proposed as a drinking water source, the lead levels detected do not appear to be a significant concern and may be due to sediments contained in the ground water grab samples.

4.0 LIMITATIONS

This report was prepared for the use of Calpine in evaluating soil and ground water quality at the 55-acre Lin/Hom parcel at the time of this study. We make no warranty, expressed or implied, except that our services have been performed in accordance with environmental principles generally accepted at this time and location. The chemical and other data presented in this report can change over time and are applicable only to the time this study was performed. We are not responsible for the data presented by others.

The accuracy and reliability of geo- or hydrochemical studies are a reflection of the number and type of samples taken and extent of the analyses conducted, and are thus inherently limited and dependent upon the resources expended. Chemical analyses were performed for specific parameters during this investigation, as detailed in the scope of services. Please note that additional constituents not analyzed for during this evaluation may be present in soil and ground water at the site. Our sampling and analytical plan was designed using accepted environmental principles and our judgment for the performance of a soil and ground water quality evaluation and was based on the degree of investigation approved by you. It is possible to obtain a greater degree of certainty, if desired, by implementing a more rigorous soil and ground water sampling program or evaluating the risk posed by the contaminants detected, if any.

* * * * * * * * * * * * * *



7/00-EB

VICINITY MAP

55-ACRE LIN/HOM PROPERTY

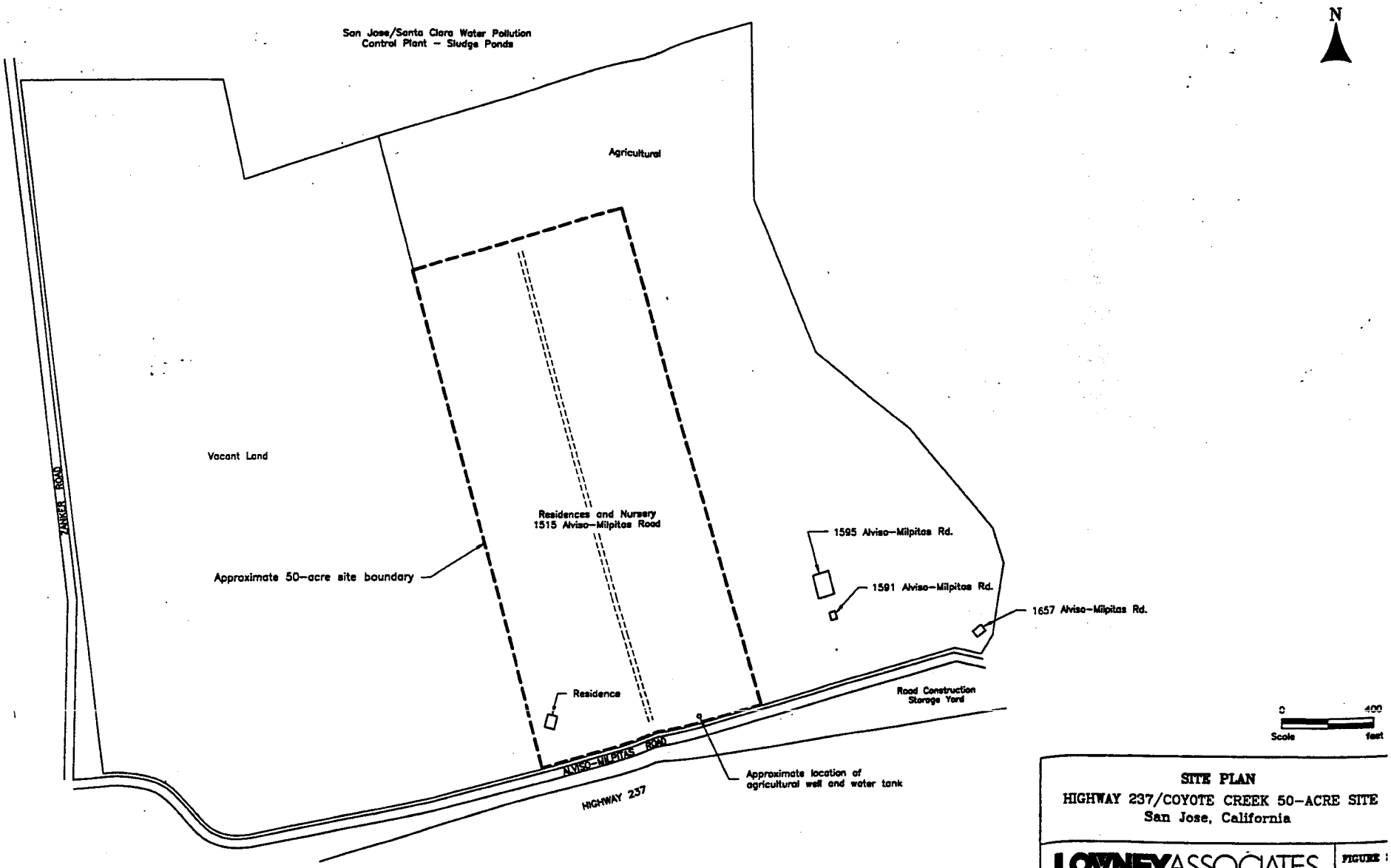
San Jose, California

LOVNEY ASSOCIATES

Environmental/Geotechnical/Engineering Services

FIGURE 1

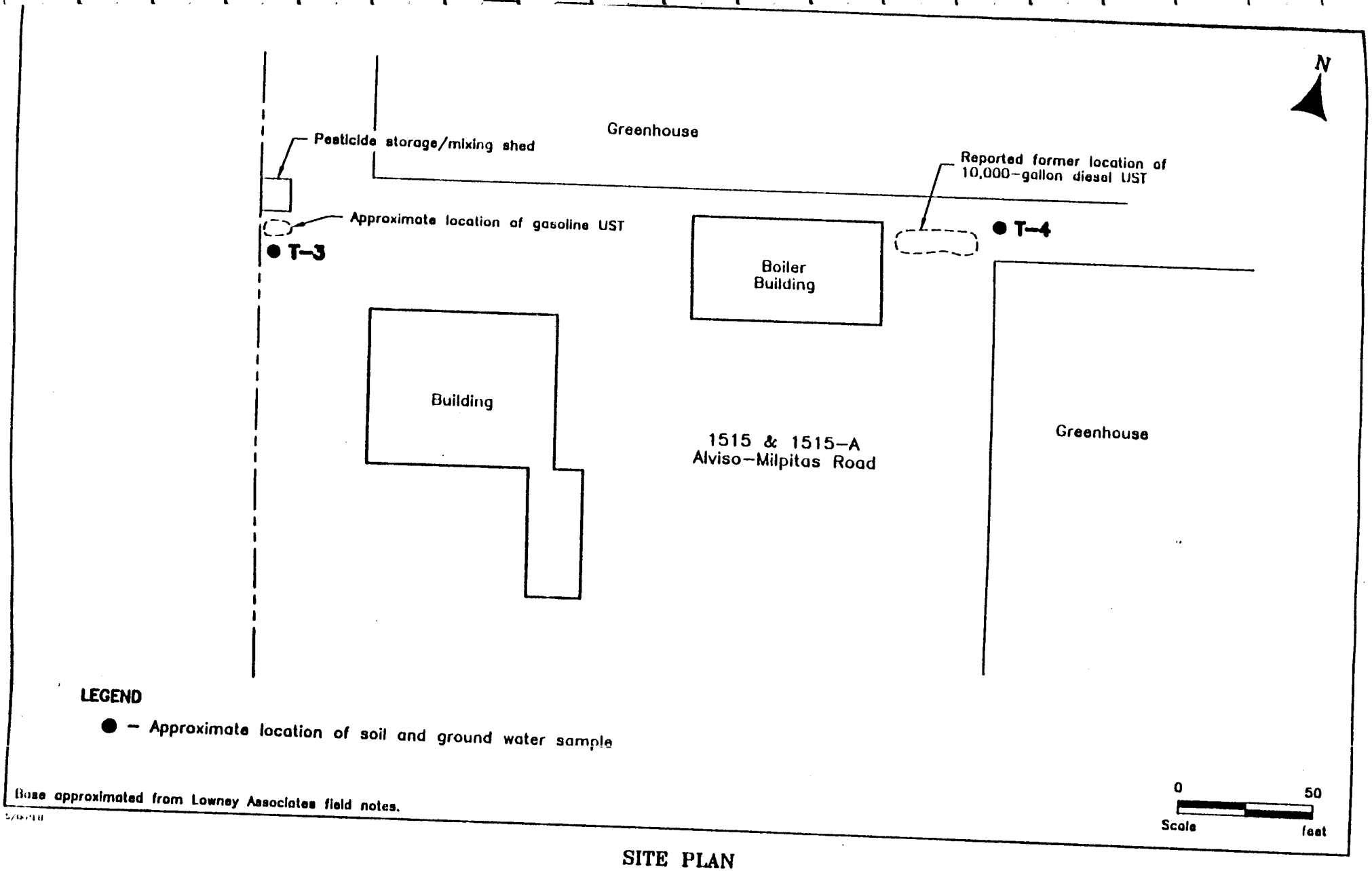
587-12F



SITE PLAN
HIGHWAY 237/COYOTE CREEK 50–ACRE SITE
San Jose, California

LOVNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

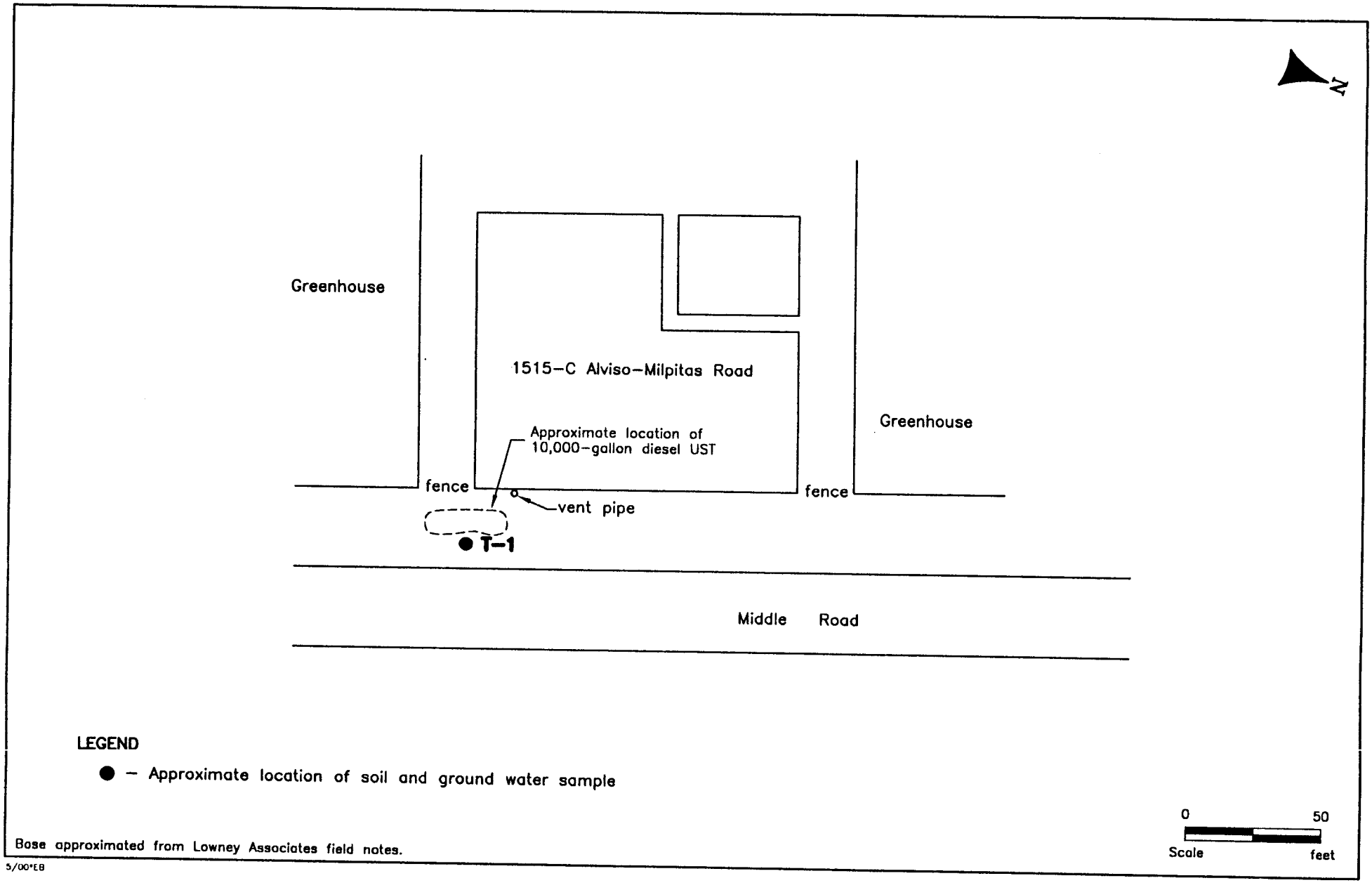
FIGURE 1
587–12(



SITE PLAN
55-ACRE LIN/HOM PROPERTY
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 3
587-12F

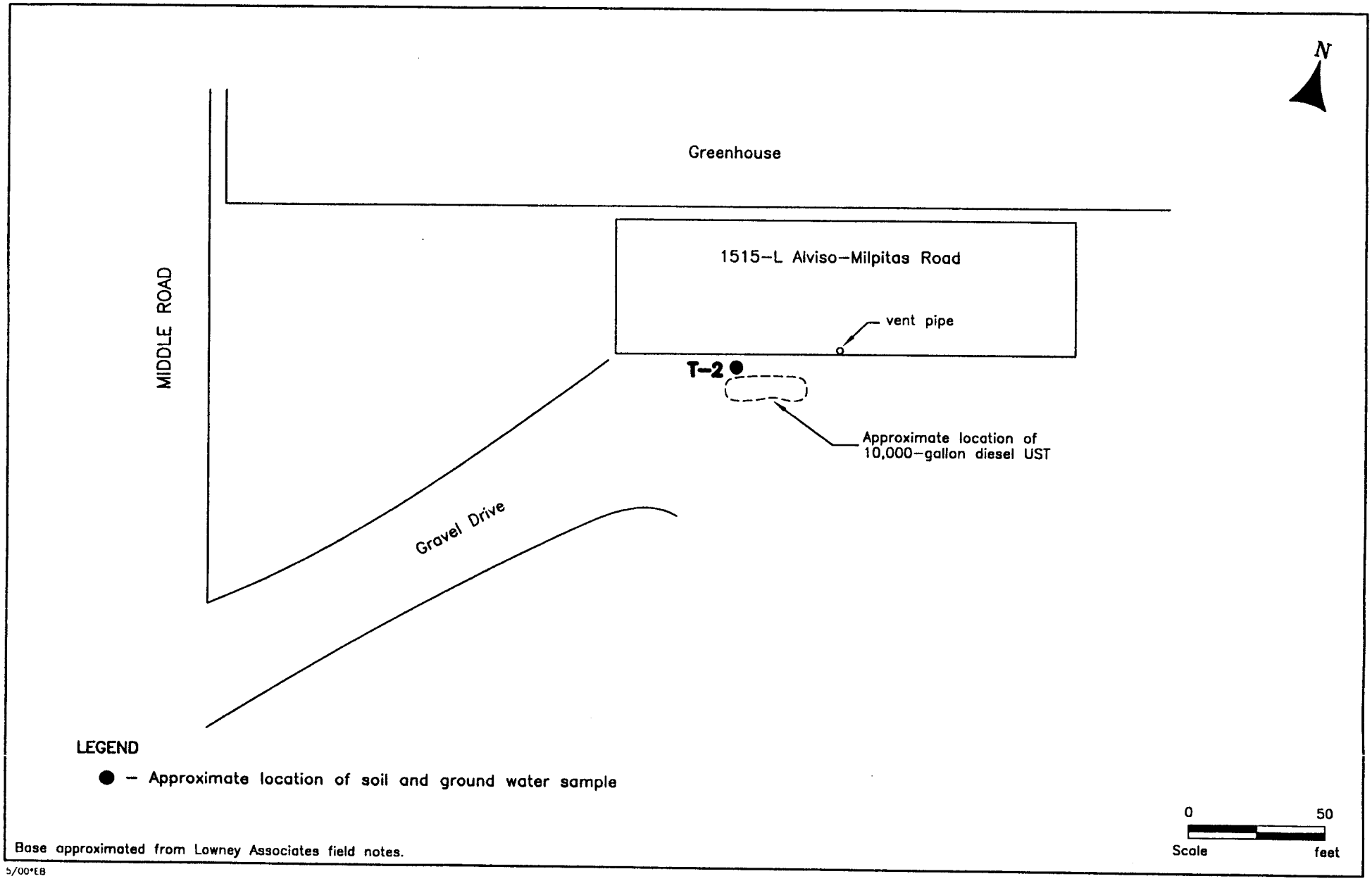


SITE PLAN

55-ACRE LIN/HOM PROPERTY
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 4
587-12F

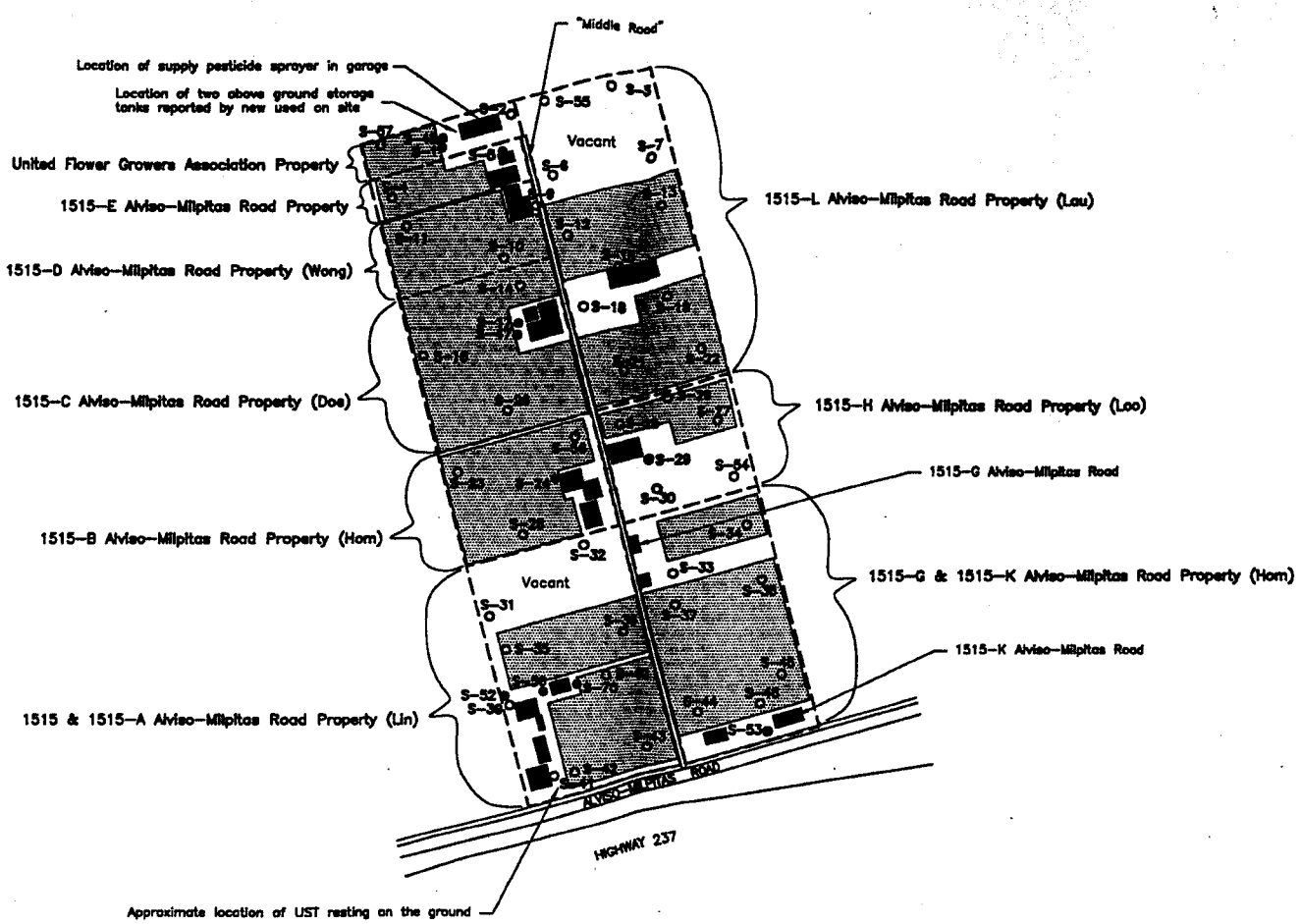


SITE PLAN

55-ACRE LIN/HOM PROPERTY
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 5
587-12F



LEGEND

- O – Approximate location of greenhouse area/former agricultural area soil sample
- ● – Approximate location of pesticide mixing/storage area soil sample and ground water sample (if applicable)
- ▒ – Approximate location of on-site greenhouse/nursery
- ■ – Approximate location of on-site structures

Base by Unknown.

SITE PLAN
55-ACRE LIN/HOM PROPERTY
San Jose, California

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE 6
587-12F

APPENDIX A

SAMPLING PROTOCOL AND ANALYTICAL RESULTS

Soil Borings: Fifty-nine soil borings were drilled to depths of approximately 2½ to 10 feet. The borings were drilled using a Geoprobe (macro-core), a hand auger and slide hammer, or a macro-core hand sampler.

Soil Sampling: Soil samples for laboratory analysis were collected in acetate or brass liners. The ends of the liners were covered in aluminum foil or Teflon film, fitted with plastic end caps, taped, and labeled with a unique identification number. The samples were then placed in an ice-chilled cooler, and transported to a state-certified analytical laboratory with chain of custody documentation.

Ground Water Sampling: Borings S-29, S-47, and S-50 were converted into "temporary" wells with the installation of 1-inch I.D. flush-threaded, Schedule 40 PVC casing. The casing in the lower portion of the well had 0.02-inch factory machined slots. Ground water grab samples were collected from the temporary wells with a Teflon bailer. Samples were collected in appropriate sampled bottles, labeled, and immediately placed into an ice-chilled chest for delivery to a state-certified analytical laboratory for analysis.

A Teflon bailer was used to collect the samples from borings S-24, S-51, and S-53 that were completed to ground water depth. Samples were collected in appropriate sample bottles, labeled, and immediately placed into an ice-chilled chest for delivery to a state-certified analytical laboratory for analysis.

Equipment Decontamination: All drilling and sampling equipment was cleaned in a solution of laboratory grade detergent and distilled water or steam cleaned before use at each sampling point.

Analytical Results: The chilled samples were delivered to a state-certified analytical laboratory. Chain of custody documentation was maintained for all samples. Attached are copies of the analytical results and the chain of custody forms.

Appendix 8.14

SAN JOSE / SANTA CLARA WATER POLLUTION CONTROL PLANT

Wastewater Discharge Permit Application

For WPCP Use Only

COMPANY NAME:_____**CITY:**_____

Date received: _____, Amount Paid: $_____, Receipt #_____, SIC:_____

In accordance with the Municipal Code, no Critical User shall connect, discharge, cause, allow, or permit any discharge, into the Sanitary Sewer System except in accordance with a Wastewater Discharge Permit issued by the Director. Critical User means a discharger whose wastewater contains priority pollutants, or who discharges any waste other than sanitary sewage which has the potential to cause interference, or who discharges in excess of 100,000 gallons per day. A completed permit application and appropriate fee is required to be submitted to this office by all Critical Users.

Municipal Code requires that permit applications, and any other reports required by the Director shall be signed by an Executive Officer of the business filing the application. Such Executive Officer shall be at least of the level of Vice President, General Partner, President, or an individual responsible for the overall operation of the facility applying for the Permit, or meet the Federal requirements for NPDES applications as contained in Title 40 of the Code of Federal Regulations.

A. CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person of persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations."

CERTIFIED BY*:*

_____

Name *Title*

_____

Signature *Date*

PREPARED BY*:*

_____

Name *Title*

_____

Signature *Date*

B. COMPANY INFORMATION

Company Name: Los Esteros Critical Energy Facility

Doing Business As (dba) (if different from above): Calpine c*Power

Business/Mailing Address: 6601 Koll Center Parkway, Suite 100 Pleasanton, CA ZIP: 94566

Discharge Address: 1515 Alviso-Milpitas Road San Jose, CA ZIP: 95134

Telephone Number:_____ Fax Number:_____

Date Current Operation began:_____ Date Pretreatment Operation began: _____

Assessor's Parcel Number (APN): 15-31-002
Total Land Area : 666,470 sq. ft.

Size of Facility (Please estimate sizes of areas that comprise the facility):
Date of Construction of the Facility began: _____
Manufacturing / Assembly Area _____ sq ft
Wastewater Treatment Area _____ sq ft
TOTAL FLOOR AREA _____ sq ft

INDIVIDUALS RESPONSIBLE FOR WASTEWATER

1) Name: Bob McCaffrey Title: Plant Manager

Work Phone: 831 761 5355 ext.13 Emergency Phone: 408 640 4673

2) Name: _____ Title: _____

Work Phone: _____ ext._____ Emergency Phone:_____

3) Alternate Contact on site:_____ Title: _____

Work Phone: _____ ext._____ Emergency Phone:_____

NATURE OF BUSINESS

Description of activity, product(s) or service(s): Generation of electricity through the conversion of natural gas.

Description of Process(s): Combustion turbine electricity generation, water treatment, NOx suppression injection, and cooling water circulation and evaporation.

SIC NO.:4911

PERSONNEL SCHEDULE

(Under "No.", enter number of employees on site. Under "Hours", enter times the shift starts and ends.)

	OFFICE		First Shift		Second Shift		Third Shift	
	No.	Hours	No.	Hours	No.	Hours	No.	Hours
WEEKDAYS	*5*	*0800-1700*	*2*	*0600-1800*	*2*	*1800-0600*		
SATURDAYS			*2*	*0600-1800*	*2*	*0600-1800*		

SUNDAYS			*2*	*0600-1800*	*2*	*0600-1800*		

C. WATER USAGE AND DISCHARGE

INFLUENT FLOWS

(Identify all sources of water to your facility)

Water Account Number or Well Number	Primary Use	Flow in Gallons per Day (GPD) Ave.	Max.
	Title 22 water from South Bay Recycling Facility	499,036	814,288
	Potable water in trucks from Contract Suppliers	2,880	2,880

TOTAL INFLUENT FLOW: 501,916 817,168

DISCHARGE FLOWS

(Wastewater Discharged to the Sanitary Sewer)

	Ave.	Max.
Sanitary Usage	2,880	2,880
Microfiltration Backwash	23,764	38,776
Cooling Tower Blowdown	23,040	139,680
Reverse Osmosis Concentrate	86,400	79,920
EDI Waste	34,560	31,680
Process Drains	7,200	7,200
Total Discharge to the Sanitary Sewer	**177,844**	**300,136**

EVAPORATIVE LOSS

	Ave.	Max
Cooling Tower Evaporation	44,640	279,360
Cooling Tower Drift	72	72
Evaporation from Turbine	311,040	288,000
Total Evaporative Loss Flow	**355,752**	**567,432**

NON-DISCHARGING PROCESSES

	Disposal Method (if any)
Recirculated Cooling Water	
Chiller Condensate	
Irrigation/Landscaping	
Other:	
Other:	

Discharge to Storm Sewer other than rain water: Source: None GPD: _____

Is Storm Drain discharge regulated by an NPDES permit? Yes If yes, give Permit No. in section "H".

D. ENVIRONMENTAL CONTROL PERMITS

List all other environmental control permits issued to this facility.

Name of Permit	***Permit No.***
EPA – Generator I.D. Number	Required, Not yet issued.
County of Santa Clara – Environmental Health Permit	Required, Not yet issued
County of Santa Clara – Hazardous Waste Generator Permit	Required, Not yet issued
Bay Area Air Quality Management District – Permit to Operate	Required, Not yet issued
Regional Water Quality Control Board NPDES permit	Required, Not yet issued
Local Hazardous Materials Storage Permit (Fire Dept.)	Required, Not yet issued
Radioactive Materials License	
Biohazard Waste Generation Registration	
Other:	

E. BUILDING AND PLUMBING LAYOUT, FLOW DIAGRAMS

Preliminary sketch of process water flow is attached.

(1) **Plumbing Layout:** On a separate sheet, draw to scale the building and plumbing layout of your facility (or provide blueprint showing same). Identify the location of sewer lines, wastewater process connections, water meters, storm drains, and any sampling points. Identify street locations. **Not yet available.**

(2) **Pretreatment System:** On a separate sheet, sketch your pretreatment system(s), if applicable. Show the routing of process waters from each wastewater-generating process to the treatment system that will address it. For example: high-pH rinses to pH-adjust, heavy metals wastestream to precipitation system, or kitchen wastes to a grease interceptor. Provide a list of treatment chemistry used. Show the flow of treated water from the treatment system to the sanitary sewer. Indicate all monitoring equipment, pH recorders, flow meters, ORP meters, sampling sumps, etc. **Not yet available.**

(3) **Block Flow Diagram:** On a separate sheet, draw a simple block diagram showing the flow of water, materials, and chemicals from start to final discharge point for each activity that generates wastewater. Identify all unit processes (blocks) and number these to correspond to numbers identifying processes on the building and plumbing layout. **Not yet available.**

F. WASTEWATER CHARACTERISTICS

(From the following list of wastewater characteristics, check those that apply to the wastewater generated in this facility **prior** to pretreatment.) **Check all that apply.**

_____	Flammable	_____	Particles Larger Than 3/4"
_____	Toxic Substances	X_____	Suspended Solids
_____	Acidic, pH < 5.0	_____	High Biological Oxygen Demand (BOD)
_____	Caustic, pH > 12.5	_____	Ammonia
X_____	Heavy Metals	X_____	Grease/Oil/Fats
X_____	Solvents	X_____	Temperature > 150 degrees F
_____	Solid or Viscous Matter	Other (specify)	
X_____	Petroleum Products	_____	_____

G. PRETREATMENT

(Check the pretreatment methods used in your facility. Indicate rated flow for each pretreatment method checked.)

		Capacity			Capacity
____	Clarifier or Interceptor	_____	____	Biological Treatment	_____
X____	pH Adjustment	_____	____	Air Stripper/Scrubber	_____
____	Ion Exchange	_____	____	Chemical Precipitation	_____
X____	Grease or Oil Separation	Not yet determined	____	Cyanide Destruction	_____
____	Electrolytic Recovery	_____	____	Chromium Reduction	_____
____	Wastestream Segregation (Including solvents)		____	Ozonation	_____
____	Filtration: ( ) Screen ( )Bag ( )Filter Press				
____	Other:_____				_____
____	Other:_____				_____

Describe each pretreatment system checked above. (e.g. design capacity, physical size, loading rate, etc.). If no pretreatment exists, please explain. (Attach additional sheets if necessary.)
To be determined during detailed design. Normal practices include oil separation integral to the lift station design. Cooling tower pH control will impact pH of cooling tower blowdown.

Explain how compliance with local ordinance is verified (e.g. In-house testing, certified outside lab, etc.):
Certified outside lab for all except pH. pH by in house testing.

If wastewater is treated and/or discharged in batches, complete the following for each of these wastestreams*:*

Number of batches discharged per month / week / day ... (circle one): _____

Average volume per batch: _____ gallons

Other comments on batch treatment:

Does your facility have a grease trap or interceptor? Yes: X____No:_____

If yes, what is the size of the grease removal device? To be determined

What is the maintenance frequency of this equipment? To be determined

Who is the grease waste hauler used for disposal of these wastes? Evergreen Environmental

- COMPLETE THIS SECTION FOR EACH TYPE OF WASTE **NOT** DISCHARGED TO THE SANITARY OR STORM SEWERS. USE A SEPARATE FORM FOR EACH TYPE OF WASTE (e.g. Spent Silver Bearing Solutions, Mercury Wastes, Solvents, Medical Wastes, etc.).
- **Do not include wastes sent to sanitary landfill such as trash and garbage.**

H. NON-DISCHARGED WASTE STREAM(s)

Identify the waste (e.g. spent chemical, treatment sludge, medical waste, etc.) and the process that generates the waste. Waste Oil

Physical state of the waste (liquid, sludge, slurry, etc.): Liquid

Brief characterization of waste (list hazardous ingredients and attach supporting MSDS or lab analysis):
Petroleum byproduct classified as hazardous under California Statute

Rate of waste generation in terms of quantity per day, week, month, or quarter: 175 gals every 90 days

ON-SITE STORAGE

Method of Storage: Tank
Typical Volume Stored: 350 gals. Typical Length of Time in Storage: 90 days

Is Storage Site Secondarily Contained? ***(X) Yes*** ***( ) No***
Are there provisions for Surface Drainage Collection? (X) Yes ( ) No
(If you answered "yes" to either question above, please describe provisions for secondary containment and/or surface drainage collection.) Waste oil tank is surrounded by secondary containment. Site rainwater is collected in a
storm water detention basin.

TRANSPORTATION

Name of Waste Hauler: Evergreen Environmental Services EPA No. CAD982413262
Address: PO Box 49065 San Jose, CA 95161-9065 800-972-5284
Street City State Zip Phone No.

DISPOSAL

Name of Waste Hauler: Evergreen Environmental Services EPA No. CAD982413262
Address: PO Box 49065 San Jose, CA 95161-9065 800-972-52845284
Street City State Zip Phone No.

Method of Disposal (e.g. recycled, land disposal, incineration, etc.): Recycle

H. NON-DISCHARGED WASTE STREAM(s) Continued

Identify the waste (e.g. spent chemical, treatment sludge, medical waste, etc.) and the process that generates the waste. Parts Cleaner Fluid (Safety-Kleen)

Physical state of the waste (liquid, sludge, slurry, etc.): Liquid

Brief characterization of waste (list hazardous ingredients and attach supporting MSDS or lab analysis):
EPA waste codes D001, D018, D039, D040

Rate of waste generation in terms of quantity per day, week, month, or quarter: 10 gals per quarter

ON-SITE STORAGE

Method of Storage: Tank
Typical Volume Stored: 20 gals. Typical Length of Time in Storage: 90 days

Is Storage Site Secondarily Contained? ***(X) Yes*** ***( ) No***
Are there provisions for Surface Drainage Collection? (X) Yes ( ) No
(If you answered "yes" to either question above, please describe provisions for secondary containment and/or surface drainage collection.) Waste oil tank is surrounded by secondary containment. Site rainwater is collected in a storm water detention basin.

TRANSPORTATION

Name of Waste Hauler: Safety-Kleen EPA No. CA0053044053
Address: PO Box 11393 Columbia, SC 29211-1393 408 294 8778
Street City State Zip Phone No.

DISPOSAL

Name of Waste Hauler: Safety-Kleen EPA No. CA0053044053
Address: PO Box 11393 Columbia, SC 29211-1393 408 294 8778
Street City State Zip Phone No.

Method of Disposal (e.g. recycled, land disposal, incineration, etc.): Recycle

I. SAMPLING AND MONITORING

After pretreatment (if used), can wastewater streams be sampled prior to mixing with other waste streams? ☒ YES ☐ NO ☐ Not Applicable

If "NO" please explain: _____

Provide a written description of each sampling/monitoring location including the name of the room it is in, which wall (North/South/East/West), and what equipment it is located near.
Will be provided when available.

Describe the wastewater discharge monitoring practices for your facility. Include the type of analytical tests and/or methods to be used, the frequency of testing, and the name of the person(s) who will perform the tests. Attach analytical data if available. Enclose a copy of any logs, check lists, forms, etc., which are maintained.
Please see attached "LECEF Discharge Monitoring Practices"

List sampling and monitoring equipment in place at your facility:
Will be provided when available.

J. SPILL PREVENTION AND CHEMICAL MANAGEMENT PLAN

NOTE: In lieu of completing this section you may submit a copy of your facility's approved Hazardous Materials Management Plan (HMMP).

Describe your facility's procedures for assuring that concentrated or prohibited chemicals do not spill or leak into the wastewater. (e.g. segregation controls, hard plumbing, etc.) Provide extra sheets if necessary.
Spill Prevention, Containment and Countermeasure Plan will be provided when available.

Do you maintain a spill log? Yes: X No: _____

Does your plan include notifying the POTW in the event of a spill, bypass or an upset? (Required by Law)
Yes: X No: _____

Describe your facility's Employee Training Program for Chemical Handling:
LECEF will conduct training on Spill Prevention and Chemical Management at intervals frequent enough to assure adequate understanding of the Spill Prevention and Chemical Management Plan for the facility. This training will include equipment maintenance and operation to prevent spills, chemical handling, and spill reporting.

Describe your facility's Emergency Response Procedures in the event of a spill: Will be provided when available.

Describe your facility's disposal procedures for miscellaneous floor water: All floor and process drains are sent through an oil / water separator prior to their arrival at the process waste water sump and eventual discharge to the POTW.

K. QUANTITIES OF CHEMICALS STORED & USED

(Usage in pounds or gallons per month.)

See attached table "Chemical Inventory".

Stored	Used	Acids
		Hydrochloric (Muriatic)
		Hydrofluoric
		Nitric
		Sulfuric
		Other (specify)
		Alkalis
		Ammonia
		Calcium Hydroxide (Lime)
		Sodium Hydroxide (Caustic Soda)
		Magnesium Hydroxide
		Other (specify)
		Metals & Compounds
		Antimony
		Barium
		Beryllium
		Cadmium
		Chromium
		Copper
		Lead
		Manganese
		Mercury
		Nickel
		Selenium
		Silver
		Zinc
		Other (specify)

Stored	Used	Solvents
		Acetone
		Alcohols
		Chlorinated Hydrocarbons
		Ketones
		Petroleum Solvents
		Toluene
		Xylene
		Other (specify)
		Organic Compounds
		Aldehydes
		Algaecides
		Formaldehydes
		Herbicides
		Pesticides
		Phenols
		Surfactants
		Other (specify)
		Misc. Chemicals
		Boron
		Chlorine
		Cyanides
		Dyes
		Fluorides
		Peroxides
		Sulfides
		Other (specify)

TRADE CHEMICALS

List other chemicals stored or used, including over-the-counter chemicals (e.g. Jasco paint stripper, pesticides, motor oil, etc.) in pounds or gallons per month **for which chemical compositions are unknown or proprietary.** Include an MSDS for each item listed where possible. **See attached table "Chemical Inventory".**

Stored	Used	Trade Name	Distributor (Name & Address)

L. TOXIC SUBSTANCES/POLLUTANTS (EPA Priority Pollutants)

(From the following list of Total Toxic Organic (TTO) pollutants, check all those which are either used in your facility, generated in your facility, or are stored in your premises.)

_____ Acenaphthene
_____ Acrolein
_____ Acrylonitrile
_____ Aldrin/Dieldrin
_____ Benzene
_____ Benzidine
_____ Carbon Tetrachloride
_____ Chloronated benzenes
_____ Chloroalkyl ethanes
_____ Chlorinated ethanes
_____ Chloroalkyl ethers
_____ Chlorinated naphthalene
_____ Chlorinated phenols
_____ Chloroform
_____ 2-chlorophenol
_____ DDT and metabolites
_____ Dichlorobenzenes
_____ Dichlorobenzidine
_____ Dichloroethylenes
_____ 2,4 – dichlorophenol
_____ Dichloropropane & dichloropropene
_____ 2,4-dimethylphenol
_____ Dinitrotoluene
_____ Diphenylhydrazine*
_____ Enosulfan and metabolites
_____ Endrin and metabolites
_____ Ethylbenzene
_____ Fluoranthene
_____ Haloethers
_____ Halomethanes
_____ Heptachlor and metabolites
_____ Hexachlorobutadiene
_____ Hexachlorocyclohexane
_____ Hexachlorocyclopentadiene
_____ Isophorone
_____ Naphthalene
_____ Nitrobenzene*
_____ Nitrophenols
_____ Nitrosamines
_____ Pentachlorophenol
_____ Phenol
_____ Phthalate esters
_____ Polychlorinated biphenyls (PCBs)
_____ Polynumclear aromatic hydrocarbons
_____ 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
_____ Tetrachloroethylene
_____ Toluene
_____ Toxaphene
_____ Trichloroethylene
_____ Vinyl chloride

LOCAL LIMITS FOR INTERFERING SUBSTANCES

Toxic Substance	Maximum Allowable Concentrations in Wastewater
Antimony	5.0 mg/l
Arsenic	1.0 mg/l
Beryllium	0.75 mg/l
Cadmium	0.7 mg/l
Chromium, Total	1.0 mg/l
Copper	2.7 mg/l
Cyanides	0.5 mg/l
Lead	0.4 mg/l
Manganese	35.0 mg/l
Mercury	0.010 mg/l
Nickel	2.6 mg/l
Phenol & derivatives	30.0 mg/l
Selenium	2.0 mg/l
Silver	0.7 mg/l
TTO	2.13 mg/l
Xylene	1.5 mg/l
Zinc	2.6 mg/l

M. PERMIT CLASSIFICATIONS AND FEES

THIS WASTEWATER DISCHARGE PERMIT APPLICATION MUST BE SUBMITTED TO SOURCE CONTROL AT THE WATER POLLUTION CONTROL PLANT ACCOMPANIED BY THE APPROPRIATE FEE.

The following Permit classifications have been established for new Permits or for the renewal of existing Permits:

GROUP 1 - DISCHARGE PERMIT APPLICATION - FEE: $1,400

Any Critical User/Industrial User which typically uses copper or nickel as part of its operational process and which discharges Industrial Wastes into the Sanitary Sewer System containing nickel in excess of 0.005 mg/l or copper in excess of 0.05 mg/l, and whose discharge contains in excess of 0.04 pounds per day (ppd) nickel or 0.09 ppd copper. *See San Jose Municipal Code Chapter 15.14.285 for more details.*

GROUP 2 - DISCHARGE PERMIT APPLICATION - FEE: $1,050
All industrial Critical Users, other than Group 1 and Group 3 Dischargers.

GROUP 3 - DISCHARGE PERMIT APPLICATION - FEE: $560
All Critical Users/Industrial Users, other than a Group 1 Discharger, which does not typically use copper or nickel as part of its operational process, and whose average Process Flow is less than one thousand (1,000) gallon per day.

PERMIT APPLICATION FOR GROUP RECLASSIFICATION OR REVISION OF MAXIMUM EQUIVALENT CONCENTRATION LIMIT (MECL) - FEE: $560

WASTEWATER DISCHARGE PERMIT APPLICATION - FEE: $1,050
All non-industrial Critical Users.

I. SAMPLING AND MONITORING

LECEF Discharge Monitoring Practices

All wastewater pretreatment and monitoring equipment shall be properly operated and maintained in proper working condition.

Where pretreatment does not exist, all industrial wastewater shall be plumbed in such a way that a sample may be obtained after the process which generates the regulated waste stream, but prior to connection to the sanitary sewer system and prior to the introduction of any non-regulated or dilution flows.

If sampling performed for self-monitoring indicates a violation, the San Jose/Santa Clara Water Pollution Control Plant must be notified within 24 hours of the permittee becoming aware of the violation. The sampling shall be repeated, to document correction of the violation. The results must be submitted to the San Jose/Santa Clara Water Pollution Control Plant within 30 days. Testing shall be performed by a laboratory certified by the California Department of Health Services.

All self-monitoring information shall be reported on the standard Self-Monitoring Reporting form, which may be obtained by contacting the San Jose/Santa Clara Water Pollution Control Plant. Reports shall be mailed or delivered to the following address, on or before the reporting deadline(s) specified by the industrial wastewater discharge permit, and shall be addressed to the Source Control Inspector assigned to the LECEF facility.

San Jose/Santa Clara Water Pollution Control Plant
Environmental Services Building
4245 Zanker Road
San Jose, CA 95134

The following shall be submitted with each Self-Monitoring Report:

Average daily flow in gallons/day	
Maximum daily flow in gallons/day	
Results of composite samples for:	Chromium – Total Copper Zinc
Results of grab samples for:	Oil and Grease pH TTOs – analyzed using EPA methods: 601/602 or certification that TTOs are not used or that a Solvent Management Plan is being implemented and/or submit certification that no Toxic Organic Compounds are being stored, used or generated with each Self-Monitoring Report.

Copies of daily flowmeter totalizer readings

Verification of effluent flowmeter calibration shall be submitted annually from the date of initial calibration.

Documentation of calculations for reported water use values.

Copies of self-monitoring analytical results, detection limits, documentation of the method used, and chain of custody, shall be submitted with the permittee's Self-Monitoring Report.

If any pollutant that is required to be monitored more frequently than required by the permit, using collection and analytical methods specified in 40 CFR 136, the result of this monitoring shall be included in the Self-Monitoring Report pursuant to 40 CFR 403.12(g)(5).

Documentation of the laboratory's quality assurance/quality control (QA/QC) shall be provided with the self-monitoring test results when required by the SJ/SC WPCP.

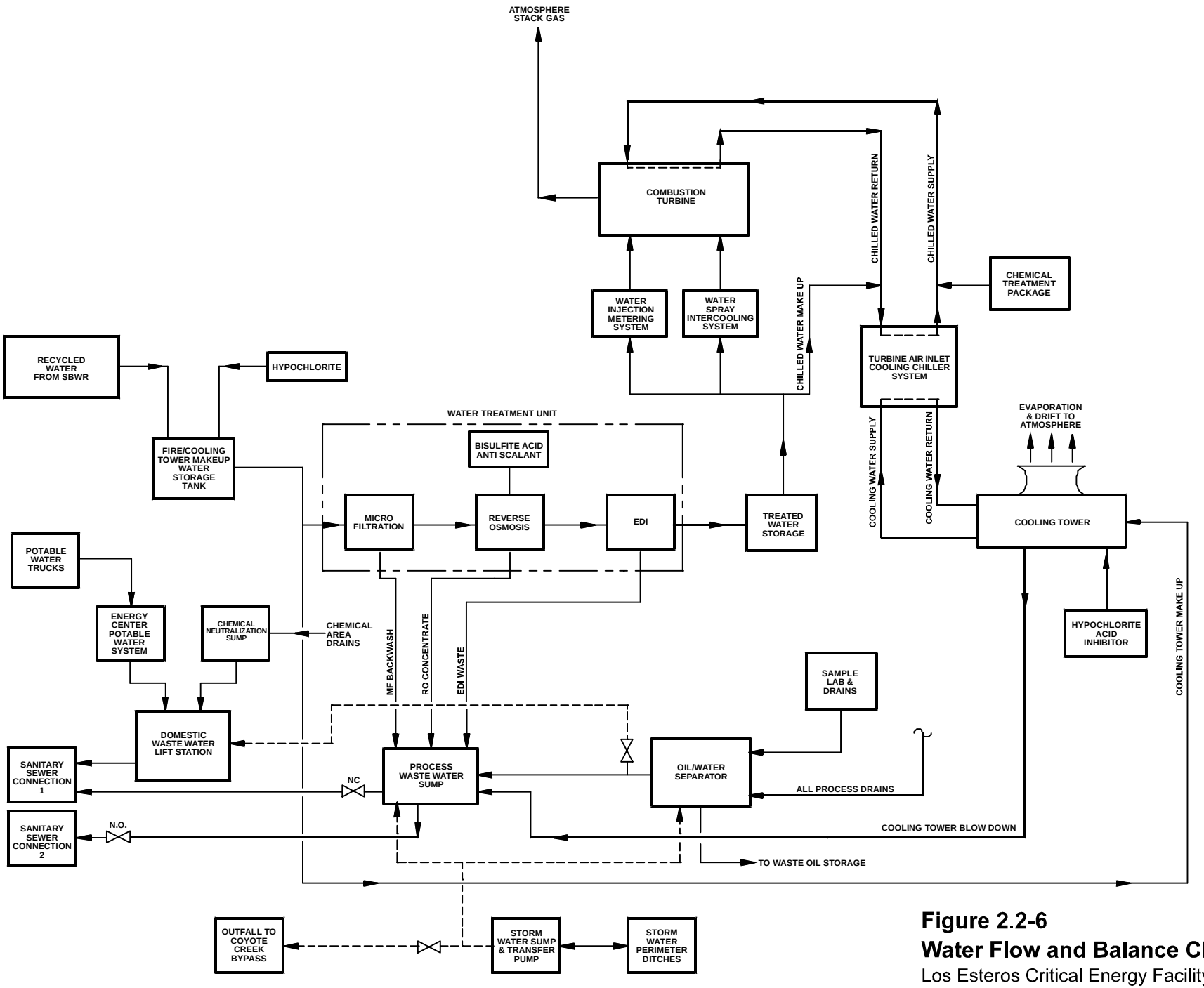


Figure 2.2-6
Water Flow and Balance Chart
Los Esteros Critical Energy Facility

CH2MHILL

E062001004SAC exhibit03

July 17, 2001

John Mukhar
City of San Jose
Environmental Services Department
4245 Zanker Road

San Jose, CA 95134

Subject: Draft Wastewater Discharge Permit Application for Los Esteros Critical Energy Facility

Dear Mr. Mukhar:

Attached please findthe draft Wastewater Discharge Permit Application for the Los Esteros Critical Energy Facility (formerly North San Jose Energy Center) to be located at 1515 Alviso-Milpitas Road. As the facility is still in the design phase, this application will be finalized when more information regarding the layout of the facility is available. The application fee will be submitted with the final application. Please phone me at (925) 890-8025 if you have any questions.

Sincerely,

Todd Stewart
Product Development Manager
Calpine c* Power

cc: California Energy Commission

Appendix 10.0

APPENDIX 10A

Civil Engineering Design Criteria

This appendix summarizes the codes, standards, criteria and practices that will be generally used in the design and construction of civil engineering systems. More specific project information will be developed during execution of the project to support detailed design, engineering, material procurement specification and construction specifications as required by the California Energy Commission. Typical foundation drawings for large equipment are included as Figures 10A-1 through 10A-8.

10A2 Codes and Standards

The design of civil engineering systems for the project will be in accordance with the laws and regulations of the federal government, the State of California, the County of Santa Clara, the City of San Jose and industry standards. The current issue or edition of the documents at the time of filing of this Application for Certification (AFC) will apply, unless otherwise noted. In cases where conflicts between the cited documents exist, requirements of the more conservative document will be used.

10A2.1 Civil Engineering Codes and Standards

The following codes and standards have been identified as applicable, in whole or in part, to civil engineering design and construction of power plants.

- American Association of State Highway and Transportation Officials (AASHTO) - Standards and Specifications
- American Concrete Institute (ACI) - Standards and Recommended Practices
- American Institute of Steel Construction (AISC) - Standards and Specifications
- American National Standards Institute (ANSI) - Standards
- American Society of Testing and Materials (ASTM) - Standards, Specifications and Recommended Practices
- American Water Works association (AWWA) - Standards and Specifications
- American Welding Society (AWS) - Codes and Standards
- Asphalt Institute (AI) - Asphalt Handbook
- California Energy Commission - Recommended Seismic Design Criteria for Non-Nuclear Generating Facilities in California, 1989
- Concrete Reinforcing Steel Institute (CRSI) - Standards
- Factory Mutual (FM) - Standards

- National Fire Protection Association (NFPA) - Standards
- International Conference of Building Officials (ICBO) - Uniform Building Code (UBC), 1997
- Steel Structures Painting Council (SSPC) - Standards and Specifications

10A2.2 Engineering Geology Codes, Standards and Certifications

Engineering geology activities will conform to the applicable federal, state and local laws, regulations, ordinances and industry codes and standards.

10A2.2.1 Federal

None are applicable.

10A2.2.2 State

The Warren-Alquist Act, PRC, Section 25000 et seq. and the California Energy Commission (CEC) Code of Regulations (CCR), Siting Regulations, Title 20 CCR, Chapter 2, require that Application for Certification (AFC) address the geologic and seismic aspects of the project.

The California Environmental Quality Act (CEQA), PRC 21000 et seq. and the CEQA Guidelines require that potentially significant effects, including geologic hazards, be identified and a determination made as to whether they can be substantially reduced.

10A2.2.3 City

California State Planning Law, Government Code Section 65302, requires each city and county to adopt a general plan, consisting of nine mandatory elements, to guide its physical development. Section 65302(f) requires that a seismic safety element be included in the general plan.

The project development activities will require certification by a Professional Geotechnical Engineer and a Professional Engineering Geologist during and following construction, in accordance with the Uniform Building Code (UBC), Chapter 70. The Professional Geotechnical Engineer and the Professional Engineering Geologist will certify the placement of earthen fills and the adequacy of the site for structural improvements, as follows:

- Both the Professional Geotechnical Engineer and the Professional Engineer will address UBC Chapter 70, Sections 7006 (Grading Plans), 7009 (Cuts), 7012 (Terraces), 7013 (Erosion Control), and 7015 (Final Report).
- The Professional Geotechnical Engineer will also address UBC Chapter 70, Sections 7011 (Cuts) and 7012 (Terraces).

Additionally, the Professional Engineering Geologist will present findings and conclusions pursuant to PRC, Section 25523 (a) and (c); and 20 CCR, Section 1752 (b) and (c).

10A2.3 Storm Drainage Codes, Standards and Certifications

Storm drainage design activities will conform to the applicable federal, state and local laws, regulations, ordinances and industry codes and standards. The design of all storm drainage will be performed by, or under the direct supervision of a licensed civil engineer.

10A2.2.1 Federal

All finish floors shall be higher than the 100-year flood plain elevation as established by the Federal Emergency Management Agency.

10A2.2.2 State

None are applicable.

10A2.2.3 Local

Both the City of San Jose and the Santa Clara Valley Water District have specific design requirements for storm water management design that will be met by this project.

APPENDIX 10B

Structural Engineering Design Criteria

10B1 Introduction

The purpose of this appendix is to summarize the codes and standards and standard design criteria and practices that will be used in the design and construction of the structural engineering portions of the project. These criteria form the basis of the design for the structural components and systems of the Los Esteros Critical Energy Facility (LECEF). More specific design information will be developed during detailed design to support equipment procurement and construction specifications. Section B2 summarizes the applicable codes and standards and Section B3 includes the general criteria for natural phenomena, design loads, architectural features, concrete, steel, and seismic design. Section B4 describes the structural design methodology for structures and equipment. Section B5 describes the hazard mitigation for LECEF.

10B2 Design Codes and Standards

The design and specification of work shall be in accordance with all applicable laws and regulations of the federal government, the state of California, and with the applicable local codes and ordinances. A summary of the codes and industry standards to be used in the design and construction follows.

- Specifications for materials will generally follow the standard specifications of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI).
- Field and laboratory testing procedures for materials will follow standard ASTM specifications.
- Design and placement of structural concrete will follow the recommended practices and the latest version of the American Concrete Institute (ACI), the International Conference of Building Officials, Uniform Building Code, 1997 Edition (UBC 1997), and the Concrete Reinforcing Steel Institute (CRSI).
- Design, fabrication, and erection of structural steel will follow the recommended practices and the latest version of the American Institute of Steel Construction Code (AISC) and UBC 1997.
- Steel components for metal wall panels and roof decking will conform to the American Iron and Steel Institute (AISI) Specification for the Design of Light Gage Cold-Formed Structural Members.
- Welding procedures and qualifications for welders will follow the recommended practices and codes of the American Welding Society (AWS).

- Preparation of metal surfaces for coating systems will follow the specifications and standard practices of the Steel Structures Painting Council (SSPC), National Association for Corrosion Engineers (NACE), and the specific instructions of the coatings manufacturer.
- Fabrication and erection of grating will follow applicable standards of the National Association of Architectural Metals Manufacturers (NAAMM).
- Design and erection of masonry materials will follow the recommended practices and codes of the latest revision of the ACI Concrete Masonry Structures Design and Construction Manual and UBC 1997.
- Plumbing will conform to the Uniform Plumbing Code, 1994 Edition (UPC).
- Design will conform to the requirements of the Federal and California Occupational Safety and Health Administration (OSHA and CALOSHA).
- Design of roof coverings will conform to the requirements of the National Fire Protection Association (NFPA) and Factory Mutual (FM).

Other recognized standards will be used where required to serve as guidelines for the design, fabrication, and construction.

The following laws, ordinances, codes, and standards have been identified as applying to structural design and construction. In cases where conflicts between cited codes (or standards) exist, the requirements of the more conservative code will be met.

10B2.1 Federal

- Title 29 Code of Federal Regulations, Part 1910, Occupational Safety and Health Standards.
- Walsh-Healy Public Contracts Act (P.L. 50-204.10).

10B2.2 State

- Business and Professions Code Section 6704, et seq.; Section 6730 and 6736. Requires state registration to practice as a Civil Engineer or Structural Engineer in California.
- Labor Code Section 6500, et seq. Requires a permit for construction of trenches or excavations 5 feet or deeper where personnel have to descend. This also applies to construction or demolition of any building, structure, false work, or scaffolding which is more than three stories high or equivalent.
- Title 24 California Code of Regulations (CCR). Adopts current edition of UBC as minimum legal building standards.
- State of California Department of Transportation, Standard Specifications.
- Title 8 CCR Sections 1500, et seq.; Sections 2300, et seq.; and Sections 3200, et seq. Describes general construction safety orders, industrial safety orders, and work safety requirements and procedures.

- Regulations of the following state agencies as applicable.
  - Department of Labor and Industry Regulations.
  - Bureau of Fire Protection.
  - Department of Public Health.
  - Water and Power Resources.
- Title 8 CCR Section 450, et seq. and Section 750, et seq. Adapts American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASMEB and PVC) and other requirements for unfired and fired boilers.

10B2.3 Industry Codes and Standards

- California Energy Commission, "Recommended Seismic Design Criteria for Non-Nuclear Power Generating Facilities in California", June 1989.
- International Conference of Building Officials, "Uniform Building Code" (UBC), 1997 Edition.
- Structural Engineers Association of California, "Recommended Lateral Force Requirements and Tentative Commentary," 1988 Recommendation and Commentary.
- Applied Technology Council, "Tentative Provision for the Development of Seismic Regulations for Buildings," (ATC-3-06), Amended December 1982.
- American Institute of Steel Construction (AISC).
  - Specification for Structural Steel Buildings-Allowable Stress Design and Plastic Design, June 1, 1989.
  - "Code of Standard Practice for Steel Buildings and Bridges."
  - "Allowable Stress Design Specifications for Structural Joints Using ASTM A325 or A490 Bolts."
  - Manual of Steel Construction Allowable Stress Design, 9th Edition.
- American Iron and Steel Institute (AISI) "Specification for the Design of Cold-Formed Steel Structural Members," August 19, 1986, Edition Cold-Formed Steel Design Manual Parts I-VII."
- American Welding Society (AWS) "Structural Welding Code-Steel Twelfth Edition" (AWS D1.1-92).
- American Concrete Institute (ACI).
- "Building Code Requirements for Reinforced Concrete" (ACI 318/318R-95).
- "Building Code Requirement for Structural Plain Concrete" (ACI 318.1/318.1R-95).
  - "Code Requirements for Nuclear Safety Related Structures," Appendix B (Steel Embedments only) (ACI 349-90), except that anchor bolts will be embedded to develop their yield strength.

  - ACI 530-92 "Building Code Requirements for Concrete Masonry Structures"
  - ACI 212.3R-91—Chemical Admixtures for Concrete.
  - ACI 302.IR-89—Guide for Concrete Floor and Slab Construction.
  - ACI 350R-89—Environmental Engineering Concrete Structures
- Structural and Miscellaneous Steel.
  - ASTM A569/A569M-91a Specifications for Steel Carbon (0.15 maximum percent) Hot-Rolled Sheet and Strip, Commercial Quality.
  - ASME/ANSI STS-1-1986—Steel stacks, except for circumferential stiffening which shall be in accordance with British Standard 4076—1978 and except that seismic design shall be in accordance with UBC 1997.
- American Society for Testing and Materials (ASTM). The following codes and standards shall be included as a minimum.
  - ASTM A36/A36M-96—Standard Specification for Carbon Structural Steel.
  - ASTM A53-96—Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
  - ASTM A276 96—Specification for Stainless Steel Bars and Shapes.
  - ASTM A500-93—Specification for Cold-formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  - ASTM B695-91—Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
  - ASTM A307-94—Specification for Carbon Steel Bolts and Studs.
  - ASTM A123 - 89a—Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
  - ASTM A153-95—Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - ASTM A82-A-95—Specification for Steel Wire, Plain, for Concrete Reinforcement.
  - ASTM A185-94—Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
  - ASTM A 615/A615 M-96-Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- Masonry Institute of America, "Reinforced Masonry Engineering Handbook."
- American Water Works Association (AWWA).
  - "Standards for Welding Steel Tanks," (AWWA D100-84).

  - "Standards for Prestressed Concrete Pressure Pipe, Steel Cylinder Type for Water and Other Liquids" (AWWA C301-84).
  - "Standards for Reinforced Concrete Water Pipe—Noncylinder Type, Not Prestressed"(AWWA C302-87).
- American Association of State Highway and Transportation Officials—(GDHS-2), "A Policy on Geometric Design of Highways and Streets."
- Heating, Ventilating, and Air Conditioning Guide by American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE).
- Uniform Plumbing Code (UPC), 1994 Edition.
- International Association of Plumbing and Mechanical Officials.
- National Fire Protection Association Standards (NFPA).
- Steel Structures Painting Council Standards (SSPC).
- American Society of Nondestructive Testing (SNT-TC-1A).
- International Standard Organization (ISO) 3945-85 "Mechanical Vibration of Large Rotating Machines with Speed Range from 10 to 200 revs/sec—Measurement and Evaluation of Vibration Severity In Situ."

The codes and industry standards used for design, fabrication, and construction will be the codes and industry standards, including all addenda, in effect as stated in equipment and construction purchase or contract documents. Where no other standard or code governs, the UBC will be used.

10B3 Structural Design Criteria

10B3.1 Natural Phenomena

10B3.1.1 Datum

The finished grade of the facility will be approximately 10 to 15 ft. msl.

10B3.1.2 Wind Speed

The design wind speed will be 80 miles per hour based on UBC 1997 edition for a 50-year recurrence interval. This design wind speed will be used to determine wind loads for all structures as discussed in Subsection 10B3.2.3 Wind Loads.

10B3.1.3 Temperature

The design basis temperatures for civil and structural systems will be as follows:

Maximum	100 Degrees, F
Minimum	25 Degrees, F

10B3.1.4 Frost Penetration

The site is located in an area free of frost penetration. Bottom elevation of all foundations for structures and equipment, however, will be maintained at a minimum of 1" below the finished grade.

10B3.1.5 Seismicity

The plant site is located in Seismic Zone 4, as determined from Figure No. 16-2, "Seismic Zone Map of the United States", of UBC 1997.

10B3.1.6 Snow

The plant site is located in a zero ground snow load area, as determined from Figure No. A-16-1 of UBC 1997.

10B3.2 Design Loads

Design loads for all structures will be determined according to the criteria described below, unless the applicable building code requires more severe design conditions.

10B3.2.1 Dead Loads

Dead loads will consist of the weights of the structure and all equipment of a permanent or semi-permanent nature including tanks, bins, wall panels, partitions, roofing, piping, drains, electrical trays, bus ducts, and the contents of tanks and bins measured at full operating capacity. The contents of tanks and bins shall not be considered as effective in resisting column uplift due to wind forces but shall be considered effective for seismic forces.

10B3.2.2 Live Loads

Live loads will consist of uniform live loads and equipment live loads. Uniform live loads are assumed unit loads which are sufficient to provide for movable and transitory loads, such as the weight of people, portable equipment and tools, planking and small equipment, or parts which may be moved over or placed on floors during maintenance operations. These uniform live loads shall not be applied to floor areas which will be permanently occupied by equipment.

Equipment live loads are calculated loads based upon the actual weight and size of the equipment and parts to be placed on floors during dismantling and maintenance, or to be temporarily placed on or moved over floors during installation.

Uniform live loads will be in accordance with ASCE Standard 7, but will not be less than the following:

a. Roofs 20 psf

All roof areas will be designed for wind loads as indicated in Subsection B3.2.3, Wind Loads. Ponding loading effect due to roof deck and framing deflections will be investigated in accordance with AISC Specification Article K2. All roof areas will be designed for a minimum of 20 psf live load in addition to calculated dead loads.

b. Floors and Platforms (Steel grating and checkered plate) 100 psf

In addition, a uniform load of 50 psf will be used to account for piping and cable tray, except where the piping and cable tray loads exceed 50 psf, the actual loads will be used. Pipe hanger loads for the major piping systems will be specifically determined and located. Piping expansion and dynamic loads will be considered on an individual basis for their effect on the structural systems. Loads imposed on perimeter beams around pipe chase areas will also be considered on an individual basis.

c. Floors (Elevated Concrete Floors) 100 psf

In addition, elevated concrete slabs will be designed to support an alternate concentrated load of 2 kips in lieu of the uniform loads, whichever governs. The concentrated load will be treated as a uniformly distributed load acting over an area of 2.5 square feet, and will be located in a manner to produce the maximum stress conditions in the slab.

d. Control Room Floor 150 psf

e. Stairs, Landings and Walkways 100 psf

In addition, a concentrated load of 2 kips will be applied concurrently to the supporting beams for the walkways to maximize the stresses in the members, but the reactions from the concentrated loads will not be carried to the columns.

f. Pipe Racks 100 psf

Where the piping and cable tray loads exceed the design uniform load, the actual loads will be used. In addition, a concentrated load of 15 kips will be applied concurrently to the supporting beams for the walkways to maximize the stresses in the members, but the reactions from the concentrated loads will not be carried to the columns.

g. Hand Railings

Hand railings will be designed for either a uniform horizontal force of 50 plf applied simultaneously with a uniform vertical live load of 100 plf or a 200 pound concentrated load applied at any point and in any direction, whichever governs.

h. Slabs on Grade 250 psf

Consideration will be given to designing appropriate areas of the ground floor for support of heavy equipment such as construction and maintenance cranes.

i. Truck Loading Surcharge Adjacent to Structures 250 psf

j. Truck Support Structures AASHTO-HS-20-44

k. Special Loading Conditions Actual loadings

Laydown loads from equipment components during maintenance and floor areas where trucks, forklifts or other transports will have access, will be considered in the design live load.

Live loads may be reduced in accordance with the provisions of UBC Section 1606.

Posting of the floor load capacity signs for all roofs, elevated floors, platforms and walkways will be in compliance with the OSHA Occupational Safety and Health Standard,

Walking and Working Surfaces, Subpart D. Floor load capacity for slabs on grade will not be posted.

10B3.2.3 Wind Loads

Wind loads for all structures will be based on UBC 1997. Basic wind speed shall be 80 miles per hour and wind stagnation pressure (qs) of 16.4 psf. A step function of pressure with height under Exposure C conditions will be used. The Importance Factor shall equal 1.0. Height brackets and velocity pressures will be as follows.

Height Aboveground Feet	Velocity Pressure pounds-force per square foot
Grade to 20	18.5
20 to 40	21.5
40 to 60	23.5
60 to 100	26.4
100 to 160	29.4
160 to 200	30.7

The above velocity pressures are average values for the indicated height brackets. The design wind pressures will be determined by multiplying the velocity pressures by the appropriate pressure coefficients given in UBC Table No. 16-H using Method 1.

If wind design governs, the detailing requirements and limitations in the UBC 1997 seismic provisions will also be followed.

10B3.2.4 Steel Stack

The steel stack and supports shall be capable of enduring specified normal and abnormal design operating conditions in combination with high wind or seismic event for the design life of the facility. Effects of wind will include along-wind and across-wind response. The design will address the design considerations, meet the requirements, and utilize the design methods of Steel Stacks, ASME/ANSI STS-1-1986, and AISC Manual of Steel Construction Allowable Stress Design, Ninth Edition, except that increased allowable stresses for wind will not be used. Design values for yield strength and modulus of elasticity of the stack material will depend on the composition of the material and the maximum temperature of the metal at design operating conditions, and will be as prescribed by the ASME Pressure Vessel Code, Section VIII, Division 2, Part AM. Seismic loads shall be in accordance with UBC 1997.

10B3.2.5 Seismic Loads

Seismic loads will be determined in accordance with the requirements specified in Section 10B3.6 Seismic Design Criteria.

10B3.2.6 Construction Loads

The integrity of the structures will be maintained without use of temporary framing struts or ties and cable bracing insofar as possible. However, construction or crane access considerations may dictate the use of temporary structural systems.

10B3.2.7 Earth Pressures

Earth pressures will be in accordance with the recommendations contained in the project-specific "Final Geotechnical Investigation and Foundation Report".

10B3.2.8 Groundwater Pressures

Hydrostatic pressures due to groundwater or temporary water loads will be considered.

10B3.2.9 Special Considerations for Structures and Loads During Construction

For temporary structures, or permanent structures left temporarily incomplete to facilitate equipment installations, or temporary loads imposed on permanent structures during construction, the allowable stresses may be increased by 33 percent.

Structural backfill may be placed against walls, retaining walls, and similar structures when the concrete strength attains 80 percent of the design compressive strength (f'c), as determined by sample cylinder tests. Restrictions on structural backfill, if any, will be shown on the engineering design drawings.

Metal decking used as forms for elevated concrete slabs, will be evaluated to adequately support the weight of concrete plus a uniform construction load of 50 psf, without an increase in allowable stresses.

10B3.2.10 Load Combinations

At a minimum, the following load combinations will be considered. Applicable code prescribed load combinations will also be considered.

- Dead load
- Dead load plus live load plus all loads associated with normal operation of the equipment, e.g., temperature and pressure loads, piping loads, normal torque loads, impact loads, etc.
- Dead load plus live load plus all loads associated with normal operation plus wind load
- Dead load plus live load plus all loads associated with normal operation plus seismic load
- Dead load plus construction loads
- Dead load plus live load plus emergency loads
- Dead load plus wind load
- Dead load plus seismic load

Every building component shall be provided with the strength adequate to resist the most critical effect resulting from the following combination of loads.

- Dead plus floor live plus roof live
- Dead plus floor live plus wind
- Dead plus floor live plus seismic
- Dead plus floor live plus wind plus roof live/2
- Dead plus floor live plus roof live plus wind/2
- Dead plus floor live plus roof live plus seismic

Note: Use live load only where required by UBC 1997 in combination with seismic.

10B3.2.11 Allowable Stresses

Each load combination shall not exceed the allowable stress permitted by the appropriate code for that combination.

The 1997 UBC/1998 CBC allows a 33 percent stress increase for seismic and wind design in Section 1612.3.2l which specifies loading combinations to be used for the design of structures and portions thereof when using the allowable stress design method. These combinations are permitted a one-third increase in allowable stresses for all combinations including wind or seismic. The design of steel structures will utilize these combinations along with the special seismic load combinations specified in Section 1612.4. Section 1612.3.1, which does not allow a 33 percent stress increase for seismic and wind design of structures, specifies loading combinations to be used for the design of structures and portions thereof, will not be used. Therefore, the load combinations of section B3.2.11.2 (steel design) will comply with the UBC/CBC design requirements. Additionally, welded, bolted, or other intermittent connection such as inserts for anchorage of nonstructural components will not use the 1/3 increase in allowable stress when considering wind and seismic forces.

10B3.2.11.1 Concrete Structures

For reinforced concrete structures and equipment supports, using the strength method, the load factors and load combinations will be in accordance with UBC Section 1909.

The required strength (U) shall be at least equal to the following.

- U = 1.4 Dead + 1.7 Live
- U = 0.75 (1.4 Dead + 1.7 Live + 1.7 Wind)
- U = 0.9 Dead + 1.3 Wind
- U = 1.4 (Dead + Live + Seismic)
- U = 0.9 Dead + 1.4 Seismic
- U = 1.4 Dead + 1.7 Live + 1.7 Earth Pressure
- U = 0.9 Dead + 1.7 Earth Pressure

10B3.2.11.2 Steel Structures

The required strength (S) based on the elastic design methods and the allowable stresses (Fs) defined in Part 1 of the AISC Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings is as follows.

- S = Dead + Live + (Roof Live Load)
- S = Dead + Live + (Wind or Earthquake/1.4)
- S = Dead + Live + Earthquake/1.4
- S = 0.9 Dead + Earthquake/1.4

Frame members and connections will conform to the additional requirements of UBC Sections 1633 and 2213.

10B3.3 Architecture

General design criteria for the architectural systems are as follows:

10B3.3.1 Architecture—Engineered Buildings

General design criteria for materials and installation of architectural systems or components will be as follows:

- **Interior Walls.** Where durability is required, interior walls may be constructed of concrete block masonry, structurally designed and reinforced as required. In offices, shops, etc., metal studs with gypsum board will usually be used to form interior partitions. Insulation for sound control will be used where required by design.
- **Fire Exits.** Fire exits will be provided at outside walls as required by code. Exit signs will be provided. Fire doors will bear an Underwriters' Laboratories certification level for class of opening and rating for door, frame, and hardware. Doors will conform to wood or hollow metal door requirements and have fillers adequate to meet the fire rating.
- **Large Access Exterior Doors.** Large access exterior doors will be rolling steel type with weather seals and windlocks. Components will be formed from galvanized steel, factory primed, and field painted. Doors will be motor-operated with override manual operation.
- **Painting.** Exterior steel material that is not galvanized or factory finished will be painted. Painted color will match or harmonize with the color of the exterior face of the wall panels.
- **Color Schemes.** Color schemes will be selected for overall compatibility.

10B3.3.2 Architecture—Prefabricated Metal Buildings

Prefabricated metal buildings (packaged to include exterior doors, wall louvers, windows, and related enclosure components) will be furnished as follows:

- **Building Enclosure.** Building enclosures will be of manufacturer's standard modular rigid frame construction with tapered or uniform depth rafters rigidly connected at ends to pinned-base tapered or uniform depth columns. Purlins and girts will be cold-formed "C" or "Z" sections conforming to "Specifications for Design of Cold-Formed Steel Structural Members" of American Iron and Steel Institute. All other members will be of ASTM A36 hot rolled shapes conforming to "Specification for Design, Fabrication and Erection of Structural Steel for Buildings" of American Institute of Steel Construction. Roof slopes will be approximately 1-inch rise per 12 inches of run. Metal roof coverings will be of prefinished standing seam panels of 24-gauge minimum.

- **Steel.** Cold-formed components will conform to ASTMA570, Grade E, 42,000 psi minimum yield for material thicknesses equal to or less than 0.23 inch, or to ASTMA375, 50,000 pounds per square inch (psi) minimum yield for high tensile strength purlin or girt sections with material thicknesses equal to or less than 0.23 inch. Roof covering and wallcovering will conform to ASTM A446, Grade A, galvanized 33,000 psi minimum yield. All cold-formed components will be manufactured by precision roll or break forming.

10B3.4 Concrete

Reinforced concrete structures will be designed in accordance with UBC 1997 and ACI 318-95, Building Code Requirements for Reinforced Concrete.

10B3.4.1 Materials

The materials described below will be specified and used as a basis for design.

- **Reinforcing Steel.** Reinforcing steel shall meet the requirements of ASTM A615 Grade-60. Welded wire fabric for concrete will conform to ASTM A 185.
- **Cement.** Cement used in all concrete mixes will be Portland cement meeting the requirements of ASTM C150.
- **Aggregates.** Fine aggregates will be clean natural sand. Coarse aggregates will be crushed gravel or stone. All aggregates shall meet the requirements of ASTM C33.
- **Admixtures.** Plasticizers and retarders will be used to control setting time and to obtain optimum workability. Air entrainment of 4 to 6 percent by volume will be used in all concrete mixes. Calcium chloride will not be permitted. Interior slabs to be trowel finished may use less air entrainment.
- **Water.** Clean water of potable quality shall be used in all concrete.

10B3.4.2 Design

The system of concrete and steel reinforcing strength combinations will be used as follows:

- Concrete strength—See table in Subsection 10B3.4.3
- Reinforcing strength—60,000 psi, Grade 60

10B3.4.3 Mixes

The design compressive strength (f'c) of concrete and grout, as measured at 28 days, will be as follows:

Electrical ductbank encasement and lean concrete backfill (Class L-1)	2000 psi
Structural concrete (Class S-1)	3000 psi
Structural concrete (Class S-2)	4000 psi
Grout (Class G-1)	5000 psi

10B3.4.4 Concrete Tests

Quality control testing of concrete will be performed by an independent laboratory and will consist of the following:

- Preliminary Review. Before concrete mixes are designed, the source and quality of materials will be determined and the following reports will be submitted.
  - The type, brand, manufacturer, composition, and method of handling (sack or bulk) of cement.
  - The type, source, and composition of fly ash.
  - The classification, brand, manufacturer, and active chemical ingredients of all admixtures.
  - The source of coarse aggregates and test reports to verify compliance with ASTM 33.
  - The source of fine aggregates and test reports to verify compliance with ASTM C33.
  - The results of tests to determine compliance of admixtures with appropriate ASTM requirements.
- Design Mix Tests. Concrete will be proportioned to provide an average compressive strength as prescribed in UBC 1997 Section 1905.3. Documentation that proposed concrete proportions will produce an average compressive strength equal to or greater than required average compressive strength will be established based on trial mixtures in accordance with UBC Section 1905.3.3
- Field Control Tests. Field control tests will include the following:
  - **Aggregate gradation.** Each 500 tons of fine aggregate and each 1,000 tons of coarse aggregate will be sampled and tested in accordance with ASTM D75 and C136.
  - **Slump.** A slump test will be made from each of the first three batches mixed each day. An additional test will be made for each 50 cubic yards placed in any one day.
  - **Air content.** An air content test will be made from one of the first three batches mixed each day and from each batch of concrete from which compression test cylinders are made. Air content tests will be in accordance with ASTM C231.
  - **Compression tests.** One set of four concrete test cylinders will be made each day from each class of concrete being placed. Additional sets will be made depending on the amount of concrete placed each day. For each additional 100 cubic yards of each class, or major fraction thereof, placed in any one day, four additional sets of cylinders will be made. One cylinder of each set will be tested at an age of seven days, two cylinders of each set will be tested at 28 days, and one cylinder shall be stored until otherwise directed. Compression tests will be in accordance with ASTM-C39.

10B3.4.5 Reinforcing Steel Test

Mill test reports certifying that reinforcing steel is in accordance with ASTM and project specifications will be required.

10B3.5 Steel and Other Metals

10B3.5.1 Structural Steel

Steel framed structures will be designed in accordance with the UBC 1997 and the AISC Specification for the Structural Steel Building, Allowable Stress Design and Plastic Design, June 1, 1989. In addition, steel framed structures will be designed in accordance with the criteria discussed in the following subsections.

10B3.5.1.1 Materials

Structural steel shapes, plates, and appurtenances for general use will conform to ASTM A36 or A572. Structural steel required for heavy framing members may consider the use of ASTM A441. Structural steel required for tubes will conform to ASTM A500, Grade B. Connection bolts will conform to ASTM A325. Connections will conform to AISC Specification for Structural Joints, November 13, 1985 edition. Welding electrodes will be as specified by the AWS. All structural steel will be shop primed after fabrication. Exterior structural steel may be hot dipped galvanized in lieu of prime painted.

10B3.5.1.2 Tests

Mill test reports or reports of tests made by the fabricator will be required certifying that all material is in conformance with the applicable ASTM specification. In addition, the fabricator will provide an affidavit stating that all steel specified has been provided at yield stresses in accordance with the drawings and the specification.

10B3.5.1.3 Design

All steel framed structures will be designed as “rigid frame” (AISC Specification Type 1) or “simple” space frames (AISC Specification Type 2), utilizing single span beam systems, vertical diagonal bracing at main column lines, and horizontal bracing at the roof and major floor levels. The use of Type 1 rigid frames will generally be limited to one-story, open garage, warehouse or shed-type structures, or to prefabricated metal buildings.

Suspended concrete slabs will be considered as providing horizontal stability by diaphragm action after setup and curing. Deflections of the support steel will be controlled to prohibit “ponding” of the fresh concrete as it is placed. Metal roof decks attached with welding washers or fasteners may be considered to provide a structure with lateral force diaphragm action. Grating floors will not be considered as providing horizontal rigidity.

Connections will be in accordance with AISC standard connection design for field bolted connections. Connections will be designed with bolts for bearing type joints with threads in shear plane except where connections are required to be slip-critical. Larger diameter bolts may be used to develop larger capacity connections or elsewhere as determined by the engineer.

10B3.6 Seismic Design Criteria

This section provides the general criteria and procedures that will be used for seismic design of structures, equipment, and components.

LECEF is located in Seismic Zone 4 according to the UBC, 1997 edition. The seismic performance objectives for this facility are as follows:

- Resist minor levels of earthquake ground motion without damage.
- Resist moderate levels of earthquake ground motion without structural damage, but possibly experience some nonstructural damage.
- Resist major levels of earthquake ground motion without collapse, but possibly with some structural as well as nonstructural damage.

To achieve these objectives and to meet the requirements of the CEC and local codes, the facility will be designed in accordance with the 1997 edition of the UBC. All structures, equipment internals, and components will be separated from adjoining structures.

10B.3.6.1 Buildings and Structures

The seismic zone used for this site will be Zone 4 as determined from UBC 1997 Figure No. 16-2 titled "Seismic Zone Map of the United States," using an Importance Factor of 1.00. Seismic loading will be used in the design of structures only when it is greater than the computed wind loads.

Non-building structures are to be designed in accordance with UBC 1997 Section 1634. These are typically regular structures as defined in the UBC, so the static lateral force procedure will be applicable. In the event that dynamic analysis will be required based on discussions with the CBO, the affected structures will be evaluated in accordance with the requirements of the UBC.

Buildings and structures defined by UBC 1997 Section 1629.8.3 will be designed using the static lateral force procedure of Section 1630.

Buildings and structures defined by UBC 1997 Section 1629.8.4 will be designed using the dynamic lateral force procedure of Section 1631. The ground motion representation will use the response spectrum indicated in UBC Figure 16-3.

Lateral forces on elements of structures and nonstructural components will be determined from the greater of UBC 1632.2 requirements, or UBC 1634.5 requirement for equipment supported laterally at or below grade.

Steel framed structures will comply with the requirements of UBC Chapter 22, Section 2213 including the requirements of Section 2213.5.1

Water storage tanks will meet the seismic design requirements of AWWA D100, Section 13, and UBC 1634.

10B4 Structural Design Methodology

This section describes the structural aspects of the design of the proposed facility. Each major structural component of the plant is addressed by defining the design criteria and analytical techniques that will be employed.

10B4.1 Structures

10B4.1.1 Combustion Turbine Foundations

The combustion turbine foundations will be designed to support the turbine and generator components.

The foundation will be designed to resist the loadings furnished by the manufacturer and will be constructed of reinforced concrete.

10B4.1.1.1 Foundation Loads

Foundation loads will be furnished by the combustion turbine manufacturer and will be superimposed with loads for the foundation itself. Typical loading data supplied by the manufacturer include the following:

- Dead loads
- Live loads
- Wind loads from project specific criteria
- Seismic loads from project specific criteria
- Hydrostatic loads
- Temperature and pressure loads
- Emergency loads such as turbine accident loads

A typical combustion turbine foundation is indicated on Figure 10B4.1-1 and 10B4.1-2.

10B4.1.1.2 Induced Forces

The combustion turbine and associated equipment will be securely anchored to the foundation using cast-in-place steel anchor bolts or sleeved through-bolts designed to resist the equipment forces.

10B4.1.1.3 Structural System

Refer to Figure 10B4.1-1, 10B4.1-2 and 10B4.1-3 for information regarding the specific structural system.

10B4.1.1.4 Structural Criteria

The foundation will be designed and constructed as a monolithic reinforced concrete structure using the criteria from Section 10B3.4 Concrete. The foundation system will likely be a pile supported rigid mat.

The foundation design will address the following considerations:

- Soil bearing capacities and earth pressures
- Allowable settlements
- Equipment, structure, and environmental loads
- Natural frequencies of rotating equipment

- Access and maintenance
- Equipment performance criteria
- Dynamic effects of the rotating machinery

Environmental loading will be determined in accordance with, Section 10B3.1 Natural Phenomena. Wind loads will be determined using the velocity pressures specified in Subsection 10B3.2.3 Wind Loads.

Seismic loading to the foundation from the combustion turbine will be calculated using equivalent lateral forces applied at the center-of-gravity of the equipment in accordance with the criteria specified in Section 10B3.6 Seismic Design Criteria for rigid equipment.

Load combinations and their respective strength factors for the foundation design will be as indicated in Subsection 10B3.2.10 Load Combinations and Subsection 10B3.2.11 Allowable Stresses.

10B4.1.1.5 Analytical Techniques

The combustion turbine foundation will be designed using static analysis techniques assuming a rigid mat. The mat will be sized such that the allowable settlement and bearing pressure criteria developed from a detailed subsurface investigation will not be exceeded. The foundation will be analyzed as a combined footing assuming a linear soil pressure distribution. The mat will be proportioned such that the resultant of the soil pressure coincides as nearly as possible with the resultant of the vertical loading. The factors of safety against overturning and sliding will be 1.5 and 1.1, respectively.

The combustion turbine foundation will be checked for dynamic response of the operating combustion turbine. Manual calculations and simple computer models based on the fundamental principles of dynamic behavior of structures will be used to determine the natural frequencies of the support system. Where soil-structure interaction effects are important, low strain soil properties will be used to calculate soil springs using the procedures from Vibrations of Soils and Foundation by Richard, Hall, and Woods or a similar procedure. The concrete foundation will be analyzed as a rigid body on soil springs with the equipment modeled as a rigid mass located at its center of gravity and rigidly attached to the foundation. The foundation will be proportioned such that the principal natural frequencies will be at least 10 percent removed from the equipment operating speed.

Should the resulting foundation design prove to be uneconomical, the dynamic behavior of the foundation will be evaluated and compared to ISO 3945 Criteria for Vibration Severity. The resultant vibration level will be within the “Good” range of this standard.

A procedure for the dynamic analysis of large fan foundations supported by soil or piers, may be used to evaluate the dynamic behavior of the turbine foundations.

10B4.1.2 Exhaust Duct and CO/SCR Foundation

The exhaust duct and CO/SCR foundation will be designed to support the exhaust duct and CO/SCR catalyst structures and associated equipment.

The foundation will be designed to resist the loadings furnished by the manufacturer and will be constructed of reinforced concrete.

10B4.1.2.1 Foundation Loads

Foundation loads will be furnished by the exhaust duct manufacturer and will be superimposed with loads for the foundation itself. Typical loading data supplied by the manufacturer include the following:

- Dead loads
- Live loads
- Wind loads
- Seismic loads
- Hydrostatic loads
- Temperature and pressure loads

The exhaust duct and CO/SCR foundation will be designed to resist a superimposed uniform live load of 250 psf over the area not otherwise occupied by equipment.

A typical exhaust duct and CO/SCR foundation is indicated on Figures 10B4.1-4 and 10B4.1-5.

10B4.1.2.2 Induced Forces

The exhaust duct and CO/SCR and associated equipment will be securely anchored to the foundation using cast-in-place steel anchor bolts designed to resist the equipment forces.

10B4.1.2.3 Structural System

Refer to Figures 10B4.1-4 and 10B4.1-5 for information regarding the specific structural system.

10B4.1.2.4 Structural Criteria

The foundation will be designed and constructed as a monolithic reinforced concrete structure using the criteria from Section B3.4 Concrete. The foundation system will be a reinforced concrete rigid mat.

The foundation design will address the following considerations:

- Soil bearing capacities and earth pressures
- Allowable settlements
- Equipment, structure, and environmental loads
- Access and maintenance
- Equipment performance criteria

Environmental loading will be determined in accordance with Section 10B3.1 Natural Phenomena. Wind loads will be determined using the velocity pressures specified in Subsection 10B3.2.3 Wind Loads.

Seismic loading to the foundation will be supplied by the exhaust duct manufacturer and will reflect the structural system used by the exhaust duct to resist lateral loading.

Load combinations and their respective allowable strengths will be as indicated in Subsection 10B3.2.10 Load Combinations and Subsection 10B3.2.11 Allowable Stresses.

10B4.1.2.5 Analytical Techniques

The exhaust duct and CO/SCR foundation will be designed using static analysis techniques assuming a rigid mat. The mat will be sized such that the allowable settlement and bearing pressure criteria developed from a detailed subsurface investigation will not be exceeded. The foundation will be analyzed assuming a linear soil pressure distribution. The mat will be proportioned such that the resultant of the soil pressure coincides as nearly as possible with the resultant of the vertical loading. The factors of safety against overturning and sliding will be 1.5 and 1.1, respectively.

10B4.1.3 Stack and Foundation

The stacks will be carbon steel stacks supported on a reinforced concrete mat foundation. The height of the stacks will be approximately 144 feet and each will be 18 feet in diameter.

10B4.1.3.1 Foundation Loads

Foundation loads will be determined using project specific design criteria.

The design of the stack and foundation will include the following loads:

- Dead loads
- Live loads
- Wind loads
- Seismic loads
- Temperature and pressure loads

A typical steel stack foundation is indicated on Figure 10B4.1-6. Foundation loading magnitudes cannot be determined until specific stack design is completed.

10B4.1.3.2 Induced Forces

The stack will be securely anchored to the foundation using cast-in-place steel anchor bolts designed to resist the foundation and stack induced forces.

10B4.1.3.3 Structural System

The steel stack will resist lateral loading as a fixed base cantilevered structure.

10B4.1.3.4 Structural Criteria

The predominate forces acting on the stack will result from wind or seismic loading. The stack will be designed as indicated in Appendix B, Subsection B3.2.4 Steel Stacks.

Seismic loads will be determined in accordance with UBC Section 1634 Nonbuilding Structures. The fundamental period will be determined using UBC equations and will be calculated by both considering and ignoring the structural contribution of any lining material. The lower period will be used in the development of the seismic forces.

The allowable longitudinal stress, F, for the design of the stack shell will be determined from the following equations from ASME/ANSI STS-1-1986.

F = 1/8 Et/r/FS for t/r < 8Fp/E

F = [Fy - Ks (Fy - Fp)] / FS for t/r > 8Fp/E

< 20Fy/E

F = Fy/FS for t/r > 20Fy/E

where

E	=	Steel modulus of elasticity,
t	=	Shell plate thickness with corrosion allowance,
r	=	Shell radius,
FS	=	Factor of safety equal to 1.5,
Fy	=	Steel yield stress, and
Fp	=	Steel proportional limit equal to 0.70 Fy.

$$Ks = \left[\frac{\frac{20Fy}{E} - \frac{t}{r}}{\frac{20Fy}{E} - \frac{8Fp}{E}} \right]^2$$

The minimum shell thickness will be 1/4-inch plus 1/16-inch corrosion allowance. The corrosion allowance will be considered in the generation of seismic loads but not in the resistance to seismic or wind loads. Allowable stresses for stiffeners, platform members, and other details will be in accordance with the American Institute of Steel Construction Allowable Stress Design, Ninth Edition. Allowable stresses for the shell will not be increased for wind or seismic loadings.

The stack will be supported using an octagonal or circular shaped reinforced mat footing. The foundation will be designed and constructed as a monolithic reinforced concrete structure using the criteria from Appendix G and Appendix B, Section B3.4 Concrete. The foundation system will likely be a soil supported or pile supported rigid mat.

The foundation design will address the following considerations:

- Soil bearing capacities and earth pressures
- Allowable settlements
- Structure and environmental loads

Load combinations and their respective allowable strengths will be as indicated in Subsection 10B3.2.10 Load Combinations and Subsection 10B3.2.11 Allowable Stresses.

10B4.1.3.5 Analytical Techniques

Moments, shears, and axial forces will be calculated using static analysis procedures on a cantilevered member. Longitudinal stresses resulting from axial loads and flexure will be combined and compared to a single allowable stress.

The stack foundation will be designed using static analysis techniques assuming a rigid mat. The mat will be sized such that the allowable settlement and bearing pressure criteria developed from a detailed subsurface investigation will not be exceeded. The foundation will be analyzed assuming a linear soil pressure distribution. The mat will be proportioned to resist the vertical gravity loads concurrent with the controlling lateral loads while maintaining a minimum 2.5 factor of safety against overturning. The factor of safety against sliding will be a minimum of 1.5.

10B4.1.4 Buildings

The various plant site buildings will provide support, enclosure, protection, and access to the systems contained within its boundaries.

10B4.1.4.1 Foundation Loads

Foundation loads will be determined from the analysis and design of the superstructure and from the support of the equipment contained within the structure. The following loads will be considered.

- Dead loads
- Live loads
- Equipment and piping loads
- Wind loads
- Seismic loads

10B4.1.4.2 Induced Forces

Each building and associated major equipment will be securely anchored to the foundation using cast-in-place steel anchor bolts designed to resist any induced forces.

10B4.1.4.3 Structural System

The buildings will be designed as AISC Type 1 rigid frames or as Type 2 simple braced frame. For the purpose of resisting seismic lateral loads, the structure will be classified as a regular structure with a concentric braced frame, ordinary moment resisting frame, or special moment resisting frame in accordance with the definitions of Chapters 16 and 22 of the UBC.

10B4.1.4.4 Structural Criteria

The building steel frames will be designed and constructed using the materials and criteria set forth in Section 10B3.5 Steel and Other Metals.

Environmental loading will be determined in accordance with Section 10B3.1 Natural Phenomena. Wind loads will be determined using the velocity pressures specified in Subsection 10B3.2.3 Wind Loads.

Seismic loading for the buildings will be calculated using equivalent lateral forces applied to the structure in accordance with the procedures of UBC Chapter 16.

The building foundations will be designed and constructed using reinforced concrete according to the criteria set forth in Section 10B3.4 Concrete. The foundation system will likely be comprised of shallow soil supported spread footings to resist the column loads and an isolated slab on grade floor system or mat foundation.

The foundation design will address the following considerations:

- Soil bearing capacities and earth pressures
- Allowable settlements
- Equipment, structure, and environmental loads
- Access and maintenance
- Equipment performance criteria

Load combinations and their respective allowable stresses will be as indicated in Subsection 10B3.2.10 Load Combinations and Subsection 10B3.2.11 Allowable Stresses.

10B4.1.4.5 Analytical Techniques

The building foundations will be designed using static analysis techniques assuming rigid spread footings or rigid mat. Spread footings or the mat will be sized such that the allowable settlement and bearing pressure criteria developed from a detailed subsurface investigation will not be exceeded assuming a linear soil pressure distribution. The footings will be proportioned such that the resultant of the soil pressure coincides as nearly as possible with the resultant of the vertical loading. The factors of safety against overturning and sliding will be 1.5 and 1.1, respectively.

10B4.2 Tanks

10B4.2.1 Vertical, Cylindrical Field Erected Water Storage Tanks

The vertical, cylindrical, field erected water storage tanks will generally be of carbon steel construction with a protective interior coating.

The tank roof will be of the self-supported dome or cone type. The tank bottom will be ground supported, flat bottomed, with a slope of 1 percent. The tank will be provided with ladders, landing platforms, and handrails as required to provide access to all working areas. Vents, manholes, overflow piping, and grounding lugs will also be provided as necessary.

The typical foundation will consist of a circular ringwall. The interior of the ring will be comprised of compacted backfill with a layer of compacted sand to serve as a bearing surface for the tank bottom.

10B4.2.1.1 Foundation Loads

Foundation loads will be determined using project specific design criteria.

The design of the tank and foundation will include the following loads:

- Dead loads
- Live loads
- Wind loads
- Seismic loads
- Hydrodynamic loads

A typical field erected tank foundation is presented on Figure 10B4.2-1. Foundation loading magnitudes from the tank will not exceed bearing allowables of the soil.

10B4.2.1.2 Induced Forces

The storage tanks will be securely anchored to the foundation using cast-in-place steel anchor bolts designed to resist all induced forces in accordance with AWWA D100-84.

10B4.2.1.3 Structural System

The storage tanks will resist lateral loading through shear in the tank walls. Overturning will be resisted by anchor bolts connecting the tank wall to the foundation. Refer to Figure 10B4.2-1 for information regarding the specific structural system.

10B4.2.1.4 Structural Criteria

The foundation will be designed and constructed as a reinforced concrete ringwall using the criteria from Section 10B3.4 Concrete. The tank structures will be designed and constructed using the criteria established in AWWA D100-84.

Environmental loadings will be determined in accordance with Section 10B3.1 Natural Phenomena. Wind loads will be determined using the velocity pressures specified in Subsection 10B3.2.3 Wind Loads multiplied by the appropriate pressure coefficient from Table No. 16-H of UBC.

Seismic loads will be determined in accordance with Section 10B3.6 Seismic Design Criteria and AWWA D100-84, Section 13.

The seismic overturning moment will be determined from AWWA D100-84, Section 13.3.3.1 for a Seismic Zone 4. The structure coefficient will be determined from Table 16-P. The value of C1 will be determined from Section 13.3.3.1. The site amplification factor, S, will be determined from Table 17.

Load combinations and their respective allowable strengths will be as indicated in Subsection 10B3.2.10 Load Combinations, Subsection 10B3.2.11 Allowable Stresses, and Section 3 of AWWA D100-84.

Design loads will be applied at the center of gravity of the tank. The design of the tank foundation will include the moment resulting from lateral displacement (hydrodynamics) of the tank contents in accordance with AWWA D100-84, Section 13.3.3.2.

Piping connections will be designed with a minimum 2 inches of flexibility in all directions as specified in AWWA D100-84, Section 13.5.

10B4.2.1.5 Analytical Techniques

The tank foundation will be designed using static analysis techniques of a circular ringwall. The ringwall will be proportioned to resist the dead load of the tank and the overturning moment determined from AWWA D100-84. The ringwall will also be proportioned to resist maximum anchor bolt uplift force. Circumferential reinforcing steel hoops will be provided in the ringwall to develop the hoop stress produced by lateral soil pressure within the ringwall. The ringwall will be proportioned to resist the vertical gravity loads concurrent with the controlling lateral loads while maintaining a minimum 1.5 factor of safety against overturning. The factor of safety against sliding will be a minimum of 1.1.

The tank structure will be designed and proportioned such that during the application of any load, or combination of loads, the maximum stresses as stipulated in AWWA D100-84 will not be exceeded.

10B4.2.2 Horizontal, Cylindrical, Shop Fabricated Storage Tanks

The horizontal, cylindrical, shop fabricated tanks will be of carbon steel construction. The tanks will be provided with ladders, landing platforms, and handrails as required to provide access to all working areas. Each tank will be provided with a fill connection, fill drain, overflow, vent connections, manholes, and grounding lugs as necessary.

The foundations will be designed to resist the loadings imposed by the tanks and will be constructed of reinforced concrete.

10B4.2.2.1 Foundation Loads

Foundation loads will be furnished by the tank manufacturer and will be superimposed with loads for the foundation itself.

Typical loadings supplied by the manufacturer include the following:

- Dead loads
- Live loads
- Wind loads
- Seismic loads
- Temperature and pressure loads
- Hydrodynamic loads

10B4.2.2.2 Induced Forces

The tanks will be securely anchored to the foundation using cast-in-place steel anchor bolts designed to resist all induced forces.

10B4.2.2.3 Structural System

The tanks will be supported by integral legs or saddle supports designed to resist gravity and environmental loadings.

10B4.2.2.4 Structural Criteria

The foundation will be designed and constructed as a monolithic reinforced concrete structure using the criteria from Section 10B3.4 Concrete. The foundation will likely be a soil supported rigid mat.

Environmental loadings will be determined in accordance with Section 10B3.1 Natural Phenomena. Wind loads will be determined using the velocity pressures specified in Subsection 10B3.2.3 Wind Loads multiplied by the appropriate pressure coefficient from Table No. 16-H of UBC.

Seismic loading will be calculated using equivalent lateral forces applied at the center of gravity of the tank or tank component in accordance with the criteria specified in Section 10B3.6 Seismic Design Criteria.

Load combinations and their respective allowable strengths will be as indicated in Subsection 10B3.2.10 Load Combinations and Subsection 10B3.2.11 Allowable Stresses.

10B4.2.2.5 Analytical Techniques

The tank foundations will be designed using static analysis techniques assuming a rigid mat. The mat will be sized such that the allowable settlement and bearing pressure criteria developed from a detailed subsurface investigation will not be exceeded. The foundation

will be analyzed assuming a linear soil pressure distribution. The mat will be proportioned such that the resultant of the soil pressure coincides as nearly as possible with the resultant of the vertical loading. The factors of safety against overturning and sliding will be 1.5 and 1.1, respectively.

The tanks will be designed by a tank manufacturer in accordance with the ASME code, ANSI code, and the ASTM standards. Gravity and lateral loadings will be transferred to the foundation by integral legs or a saddle support system.

10B4.3 Equipment

10B4.3.1 Combustion Turbines

The combustion turbines and accessories will be designed to resist all design loads. The combustion turbines will be constructed of carbon and alloy steels as required by the manufacturer's standards and shall meet all applicable codes and standards.

The foundations will be designed to resist the loadings furnished by the manufacturer and will be constructed of reinforced concrete.

10B4.3.1.1 Equipment Loads

Equipment loads will be determined by the manufacturer based on project performance criteria. Typical loadings used for design include the following:

- Dead loads
- Live loads
- Operating loads
- Construction loads
- Wind loads
- Seismic loads
- Temperature and pressure loads
- Emergency loads such as turbine accident loads

10B4.3.1.2 Induced Forces

The combustion turbine and associated equipment will utilize steel anchor bolts, fasteners, welds, and other equipment anchorage devices to resist equipment induced forces.

10B4.3.1.3 Structural Criteria

The combustion turbine and generator and accessories will be designed to resist project specific design loads and UBC specified loads.

Environmental loading will be determined in accordance with Section 10B3.1 Natural Phenomena. Wind loads will be determined using the velocity pressures specified in Subsection 10B3.2.3 Wind Loads multiplied by the appropriate pressure coefficient from Table No. 16-H of UBC.

The seismic loading and design of the combustion turbine and accessories will be in accordance with project specific criteria and UBC. Seismic loading will be calculated using equivalent lateral forces applied at the center of gravity of the equipment or component in accordance with the criteria specified in Section 10B3.6 Seismic Design Criteria.

The inlet air filtration equipment and inlet air duct support structures shall be designed to resist the loading specified in UBC Chapter 16. For the purposes of resisting seismic lateral loads, the inlet air duct support structure will be classified as regular or irregular in accordance with the criteria established in UBC Chapter 16. The procedures for the analysis of regular and irregular structures will be as specified in UBC Chapter 16 and Subsection 10B3.6.1 Buildings and Structures.

Lateral forces on elements of structural and nonstructural components will be determined in accordance with UBC Section 1632, with Z equal to 0.4, I equal to 1.0, and ap and Rp in accordance with UBC Table 16-O. These seismic forces will be combined with forces due to normal operating loads.

Lateral forces on equipment will be determined in accordance with UBC Section 1632 with Z equal to 0.4, I equal to 1.0, and ap and Rp in accordance with UBC Table 16-O. Equipment bases, foundations, support frames, and structural members used to transfer the equipment seismic forces to the main lateral load resisting system will be designed for the same seismic load as the equipment.

Load combinations will be as indicated in Subsection 10B3.2.10 Load Combinations. These load combinations are in addition to those normally used in design and those specified in applicable codes and standards. For all load combinations, including seismic, the stresses in the structural supporting members and connections will remain in the elastic range.

10B4.3.1.4 Analytical Techniques

The combustion turbine and auxiliary equipment will be designed and constructed in accordance with applicable requirements of codes and standards referenced in Appendix 10. Stamps will be affixed to denote conformance to the appropriate codes.

10B4.3.2 Exhaust Ducting and CO/SCR Catalyst

The exhaust ducting and CO/SCR catalyst and accessories will be provided with platforms, stairways, and handrails as required to provide access for operations and maintenance.

The exhaust ducting and CO/SCR catalyst and components will be designed to resist all design loads. The exhaust ducting and CO/SCR catalyst and components will be constructed of carbon and alloy steels as required by the manufacturer's standards and shall meet all applicable codes and standards.

The foundation will be designed to resist the loadings furnished by the manufacturer and will be constructed of reinforced concrete.

10B4.3.2.1 Equipment Loads

Equipment loads will be determined by the manufacturer and will be based on project performance criteria and applicable codes and standards. Typical loading used for design include the following:

- Dead loads
- Live loads
- Operating loads
- Construction loads
- Wind loads

- Seismic loads
- Hydrostatic loads
- Temperature and pressure loads

10B4.3.2.2 Induced Forces

The exhaust ducting and CO/SCR catalyst and associated equipment will utilize steel anchor bolts, fasteners, welds, and other equipment anchorage devices to resist equipment induced forces.

10B4.3.2.3 Structural Criteria

The exhaust ducting and CO/SCR catalyst and associated equipment will be designed to resist project specific design loads and UBC specified loads.

Environmental loading will be determined in accordance with Appendix B, Section B3.1 Natural Phenomena. Wind loads will be determined using the velocity pressures specified in Subsection 10B3.2.3 Wind Loads multiplied by the pressure coefficients from Table No. 16-H of UBC.

The seismic loading and design of the exhaust ducting and CO/SCR catalyst and associated equipment will be in accordance with project specific criteria and the UBC. Seismic loading will be calculated using equivalent lateral forces applied at the center of gravity of the equipment or component in accordance with the criteria specified in Section 10B3.6 Seismic Design Criteria. The exhaust ducting and CO/SCR catalyst support structure will be designed to resist, at a minimum, the lateral forces specified in UBC Section 1634, Non-building structures and the applicable criteria of Section 10B3.6 Seismic Design Criteria.

For the purpose of resisting lateral seismic forces, the exhaust ducting and CO/SCR catalyst support structure will be classified as regular or irregular in accordance with the criteria established in UBC Chapter 16. The procedures for the analysis of regular and irregular structures will be as specified in UBC Chapter 16 and, Subsection 10B3.6.1 Buildings and Structures.

Lateral forces on elements of structural and nonstructural components will be determined in accordance with UBC Section 1632 with Z equal to 0.4, I equal to 1.0 and ap and Rp in accordance with UBC Table 16-O.

Lateral forces on equipment will be determined in accordance with UBC Section 1632 with Z equal to 0.4, I equal to 1.0, and ap and Rp in accordance with UBC Table16-O. Equipment bases, foundations, support frames, and structural members used to transfer the equipment seismic forces to the main lateral load resisting system will be designed for the same seismic load as the equipment.

Load combinations will be as indicated in Subsection 10B3.2.10 Load Combinations. These load combinations are in addition to those normally used in design and those specified in applicable codes and standards. For all load combinations, including seismic, the stresses in the structural supporting members and connections shall remain in the elastic range.

10B4.3.2.4 Analytical Techniques

The exhaust ducting and CO/SCR catalyst and associated equipment will be designed and constructed in accordance with applicable requirements of codes and

standards referenced in Appendix 10B and Appendix 10C. Stamps will be affixed to denote conformance to the appropriate codes.

10B4.3.3 Power Transformers

The power transformers, transformer equipment, material, and accessories will conform to the applicable standards of ANSI C57.12, NEMA TR1, ANSI/IEEE C59.94 and 98, and project specific criteria. The power transformer will be designed, fabricated, and tested in accordance with ANSI C57.12 series, NEMA TR 1, and project specific criteria.

The foundation will be designed to resist the loading furnished by the manufacturer and will be constructed of reinforced concrete.

10B4.3.3.1 Foundation Loads

Foundation loads will be furnished by the power transformer manufacturer and will be superimposed with loads for the foundation itself. Typical loadings supplied by the manufacturer include the following:

- Dead loads
- Live loads
- Wind loads
- Seismic loads

A typical transformer foundation is indicated on Figure 10B4.3-1.

10B4.3.3.2 Induced Forces

The power transformers, transformer equipment, and accessories will utilize steel anchor bolts, fasteners, welds, and other equipment anchorage devices to resist equipment induced forces.

10B4.3.3.3 Structural System

The transformer will be regarded as a rigid body for foundation design purposes.

10B4.3.3.4 Structural Criteria

The power transformers, transformer equipment, and accessories will be designed to resist project specific design loads, UBC specified loads, and loads from applicable codes and standards.

The foundation will be designed and constructed as a monolithic reinforced concrete structure using the criteria from Appendix 10.1A, Section 10.1A3.1 Foundations and Section 10B3.4 Concrete. The foundation will likely be a soil supported rigid mat. The foundations will incorporate an interconnected integral containment basin capable of holding 110 percent of the transformer coolant contents prior to passage through an oil/water separator.

Environmental loading will be determined in accordance with Section 10B3.1 Natural Phenomena. Wind loads will be determined using the velocity pressures specified in Subsection 10B3.2.3 Wind Loads, multiplied by the appropriate pressure coefficients from UBC Table No.16-H.

The seismic loading and design of the power transformers, transformer equipment, accessories, and foundations will be in accordance with project specific criteria and UBC

Chapter 16. Loading will be approximated using equivalent lateral forces applied to the center of gravity of the equipment or component using the criteria specified in Section 10B3.6 Seismic Design Criteria.

Lateral forces on equipment will be determined in accordance with UBC Section 1632 with Z equal to 0.4, I equal to 1.0, and ap and Rp in accordance with UBC Table16-O. Equipment bases, foundations, support frames, and structural members used to transfer the equipment seismic forces to the foundation system will be designed for the same seismic load as the equipment. Load combinations will be as indicated in Subsection 10B3.2.10 Load Combinations. These load combinations are in addition to those normally used in design and those specified in applicable codes and standards. For all load combinations, including seismic, the stresses in the structural supporting members and connections will remain in the elastic range. Structural allowable strengths will be as indicated in Subsection 10B3.2.11 Allowable Stresses.

10B4.3.3.5 Analytical Techniques

The power transformers, transformer equipment, and accessories will be designed and constructed in accordance with applicable requirements of codes and standards referenced in Appendix 10D, Electrical Engineering Design Criteria.

The power transformer foundation will be designed using static analysis techniques assuming a rigid mat. The mat will be sized such that the allowable settlements and bearing pressure or pile loading criteria developed from a detailed subsurface investigation will not be exceeded. The foundation will be analyzed assuming a linear soil pressure distribution. The mat will be proportioned such that the resultant of the soil pressure coincides as nearly as possible with the resultant of the vertical loading. The factors of safety against overturning and sliding will be 1.5 and 1.1, respectively.

10B4.3.4 Miscellaneous Equipment

Where possible, all miscellaneous equipment will be designed to project specific criteria. This miscellaneous equipment includes, but is not limited to, motor control centers, batteries, low voltage power and lighting systems, isolated bus ducts, pumps, lube oil cooling units, fire detection and protection systems, and switchgear. Standardized components such as motors, pumps, small fans, and other similar products that represent manufacturers' standard stock items will not be designed to meet project specific seismic loading criteria.

Miscellaneous equipment will meet all applicable codes and standards as well as the individual manufacturer's standards.

All equipment foundations and supports will be designed to resist project specific loading and the loading furnished by the equipment manufacturer.

10B4.3.4.1 Foundation Loads

Foundation loads will be furnished by the equipment manufacturers and will be superimposed with loads for the foundation itself. Typical loadings supplied by the manufacturer include the following:

- Dead loads

- Live loads
- Wind loads
- Seismic loads
- Temperature and pressure loads (as applicable)

10B4.3.4.2 Induced Forces

All miscellaneous equipment will utilize steel anchor bolts, fasteners, welds, and other equipment anchorage devices to resist equipment induced forces.

10B4.3.4.3 Structural System

Each individual piece of equipment will have its own unique structural system, and it is the responsibility of each manufacturer to assure its adequacy.

10B4.3.4.4 Structural Criteria

All miscellaneous equipment will be designed to resist project specific and UBC specified loads where possible and loads from applicable codes and standards.

The seismic loading and design of miscellaneous equipment will be in accordance with project specific criteria and UBC Chapter 16, if possible.

Seismic loading will be calculated using equivalent lateral forces applied to the center of gravity of the equipment or component in accordance with the criteria specified in, Section 10B3.6 Seismic Design Criteria.

Lateral forces on equipment will be determined in accordance with UBC Section 1632 with Z equal to 0.4, I equal to 1.0, and a_p and R_p in accordance with UBC Table 16-O. Equipment bases, foundations, support frames, and structural members used to transfer the equipment seismic forces to the main lateral load resisting system will be designed for the same seismic load as the equipment.

Load combinations will be as indicated in Subsection 10B3.2.10 Load Combinations. These load combinations are in addition to those normally used in design and those specified in applicable codes and standards. For all load combinations, including seismic, the stresses in the structural supporting members and connections shall remain in the elastic range. Structural allowable strengths will be as indicated in Subsection 10B3.2.11 Allowable Stresses.

10B4.3.4.5 Analytical Techniques

All miscellaneous equipment and accessories will be designed and constructed in accordance with applicable requirements of codes and standards.

All structural supports required for the miscellaneous equipment will be designed using static analysis techniques.

10B5 Hazard Mitigation

LECEF will be designed to mitigate natural and environmental hazards caused by seismic and meteorological events. This section addresses the structural design criteria used to mitigate such hazards.

10B5.1 Seismic Hazard Mitigation Criteria

Section 8.15 provides the description of the regional seismicity and the seismic risk associated with each of the major faults considering historical magnitude and probability of occurrence. The geologic hazards associated with these faults, when considered in concert with the results and recommendations of the future geologic investigation to be provided in Appendix 10G (at a future date) will be consistent with the design capabilities provided for the facility. The seismic design criteria are implemented through meeting the requirements of Seismic Zone 4 of the UBC.

Specific design features that will be incorporated into the plant to mitigate the identified seismic hazards include the following:

- Appropriate analysis techniques will be employed to calculate structure specific seismic loads.
- Plant structures, equipment, piping, and other components will be designed to resist the project specific seismic loads.
- All equipment will be positively anchored to its supporting structure. Nominal uplift capacity will be provided in the absence of calculated overturning forces.
- Anchorages will be designed to resist the project specific seismic loadings.
- Foundation systems will be selected and designed to minimize the effects of soil liquefaction.
- Adjacent structures will be seismically isolated from one another.
- Structural elements will be designed to comply with special detailing requirements intended to provide ductility.
- Connections for steel structures will have a minimum load carrying capability without regard to the calculated load.
- Lateral and vertical displacements of structures and elements of structures will be limited to specified values.
- The foregoing design features are intended to provide the following degrees of safety for structures and equipment.
- Resist minor earthquakes without damage. Plant remains operational.
- Resist moderate earthquakes without structural damage but with some nonstructural damage. Plant remains operational or is returned to service following visual inspection and/or minor repairs.
- Resist major earthquakes without collapse but with some structural and nonstructural damage. Plant is returned to service following visual inspection and/or minor repairs.

10B5.2 Meteorological and Climatic Hazard Mitigation

Meteorological and climatic data will form the design basis for LECEF. Portions of the data and the design bases that pertain to structural engineering have been provided in this Appendix.

Specific design features that will be incorporated into the plant to mitigate meteorological and climatic hazards include the following:

- Structures and cladding will be designed to resist the wind forces.
- Sensitive structures will be designed for wind induced vibrational excitation.
- Roofs will be sloped and equipped with drains to prevent accumulation of rainfall.
- Plant mechanical and electrical equipment will be placed on elevated equipment bases when required.
- The plant site will be graded to convey runoff away from structures and equipment.

The foregoing design features will be incorporated in accordance with applicable codes and standards identified in this Appendix.

The degree of safety offered by these features is consistent with the requirements of the applicable codes and standards and the economic benefits these features provide.

APPENDIX 10C

Mechanical Engineering Design Criteria

10C1 Introduction

This appendix summarizes the codes, standards, criteria and practices that will be generally used in the design and construction of mechanical engineering systems for the project. More specific project information will be developed prior to construction of the project to support detailed design, engineering, material procurement specification and construction specifications as required by the California Energy Commission.

10C2 Codes and Standards

The design of the mechanical systems and components will be in accordance with the laws and regulations of the federal government, state of California, and industry standards. The current issue or revision of the documents, at the time of the filing of this AFC will apply, unless otherwise noted. If there are conflicts between the cited documents, the more conservative requirements shall apply.

The following codes and standards are applicable to the mechanical aspects of the power facility.

- Uniform Building Code
- Uniform Mechanical Code
- Uniform Plumbing Code
- ASME Boiler and Pressure Vessel Code
- ASME/ANSI 1331.1 Power Piping Code
- ASME Performance Test Codes
- ASME Standard TDP-1
- ANSI B16.5, B16.34, and B133.8
- American Gear Manufacturers Association (AFMA)
- Air Moving and Conditioning Association (AMCA)
- American Petroleum Institute (API) – except for electrical requirements
- American Society for Testing and Materials (ASTM)
- American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
- American Welding Society (AWS)
- Cooling Tower Institute (CTI)Heat Exchange Institute (HEI)
- Manufacturing Standardization Society (MSS) of the Valve and Fitting Industry
- National Fire Protection Association (NFPA)

10C3 Mechanical Engineering General Design Criteria

10C3.1 General

The systems, equipment, materials, and their installation that will be designed in accordance with the applicable codes; industry standards; and local, state, and federal regulations, as well as the design criteria; manufacturing processes and procedures; and material selection, testing, welding, and finishing procedures specified in this section.

Detailed equipment design will be performed by the equipment vendors in accordance with the performance and general design requirements specified by Bechtel. Equipment vendors will be responsible for using construction materials suited for the intended use.

Asbestos will not be used in the materials and equipment supplied. Flanges manufactured in the People's Republic of China will be prohibited from use on any mechanical equipment. Where feasible, materials will be selected to withstand the design operating conditions, including expected ambient conditions, for the design life of the plant. It is anticipated that some materials will require replacement during the life of the plant due to corrosion, erosion, etc.

10C3.2 Pumps

Pumps will be sized in accordance with industry standards. Where feasible, pumps will be sized for maximum efficiency at the normal operating point. Pumps will be designed to be free from excessive vibration throughout the operating range.

10C3.3 Tanks

Large outdoor storage tanks will not be insulated.

Overflow connections and lines will be provided. Maintenance drain connections will be provided for complete tank drainage.

Manholes, where provided, will be at least 18 in. in diameter and hinged to facilitate removal. Storage tanks will have ladders and cleanout doors as required to facilitate access/maintenance. Provisions will be included for proper tank ventilation during internal maintenance.

10C3.4 Heat Exchangers

Heat exchangers will be provided as components of mechanical equipment packages and may be shell-and-tube or plate type. Heat exchangers will be designed in accordance with Tubular Exchanger Manufacturers Association (TEMA) or manufacturer's standards. Fouling factors will be specified in accordance with TEMA.

10C3.5 Pressure Vessels

Pressure vessels will include the following features/appurtenances:

- Process, vent, and drain connections for startup, operation, and maintenance
- Materials compatible with the fluid being handled

- A minimum of one manhole and one air ventilation opening (e.g., handhole) where required for maintenance or cleaning access
- For vessels requiring insulation, shop-installed insulation clips spaced not greater than 18 in. on center
- Relief valves in accordance with the applicable codes

10C3.6 Piping and Piping Supports

Stainless steel pipe may be Schedule 5S or 10S where design pressure permits. Underground piping may be high density polyethylene (HDPE) where permitted by code, operating conditions, and fluid properties. In general, water system piping will be HDPE where embedded or underground and carbon steel where above ground.

Threaded joints will not be used in piping used for lubricating oil, and CTG natural gas service. Natural gas piping components will not use synthetic lubricants. Victaulic, or equal, couplings will be used for low energy aboveground piping, where feasible.

Piping systems will have high point vents and low point drains. Drains with restricting orifices or traps with startup and blowdown drains and strainers/crud traps will be installed in low points of steam lines where condensate can collect during normal operation.

Hose and process tubing connections to portable components and systems will be compatible with the respective equipment suppliers' standard connections for each service.

Stainless steel piping will be used for the lubricating oil system.

10C3.7 Valves

10C3.7.1 General Requirements

Valves will be arranged for convenient operation from floor level where possible and, if required, will have extension spindles, chain operators, or gearing. Hand-actuated valves will be operable by one person.

Valves will be arranged to close when the handwheel is rotated in a clockwise direction when looking at the handwheel from the operating position. The direction of rotation to close the valve will be clearly marked on the face of each handwheel.

The stops that limit the travel of each valve in the open or closed position will be arranged on the exterior of the valve body. Valves will be fitted with an indicator to show whether they are open or closed; however, only critical valves will be remotely monitored for position.

Valve materials will be suitable for operation at the maximum working pressure and temperature of the piping to which they are connected. Steel valves will have cast or forged steel spindles. Seats and faces will be of low friction, wear-resistant materials. Valves in throttling service will be selected with design characteristics and of materials that will resist erosion of the valve seats when the valves are operated partly closed.

Valves operating at less than atmospheric pressure will include means to prevent air in-leakage. No provision will be made to repack valve glands under pressure.

10C3.7.2 Drain and Vent Valves and Traps

Drains and vents in 900 pound class or higher piping and 500º F or higher service will be double valved.

Drain traps will include air cock and easing mechanism. Internal parts will be constructed from corrosion-resistant materials and will be renewable.

Trap bodies and covers will be cast or forged steel and will be suitable for operating at the maximum working pressure and temperature of the piping to which they are connected. Traps will be piped to drain collection tank or sumps and returned to the cycle if convenient.

10C3.7.3 Low Pressure Water Valves

LP water valves will be the butterfly type of cast iron construction. Cast iron valves will have cast iron bodies, covers, gates (discs), and bridges; the spindles, seats, and faces will be bronze. Fire protection valves will be UL-approved butterfly valves meeting NFPA requirements.

10C3.7.4 Instrument Air Valves

Instrument air valves will be the ball type of bronze construction, with valve face and seat of approved wear-resistant alloy.

10C3.7.5 Nonreturn Valves

Nonreturn valves in vertical positions will have bypass and drain valves. Bodies will have removable access covers to enable the internal parts to be examined or renewed without removing the valve from the pipeline.

10C3.7.6 Motor-Actuated Valves

Motor-actuated valves will be fitted with both hand and motor operating gear. The hand and motor actuation mechanisms will be interlocked so that the hand mechanism is disconnected before the motor is started.

Motor actuators will include torque switches to stop the motor automatically when the valve gate has reached the "full open" or "full closed" position.

The motor actuator will be placed in a position relative to the valve that prevents leakage of liquid, steam, or corrosive gas from valve joints onto the motor or control equipment.

10C3.7.7 Safety and Relief Valves

Safety valves and/or relief valves will be provided as required by code for pressure vessels, heaters, and boilers. Safety and relief valves will be installed vertically. Piping systems that can be over-pressurized by a higher pressure source will also be protected by pressure relief valves. Equipment or parts of equipment that can be over-pressurized by thermal expansion of the contained liquid will have thermal relief valves. HRSG safety valves will be flanged.

10C3.7.8 Instrument Root Valves

Instrument root valves will be specified for operation at the working pressure and temperature of the piping to which they are connected. Test points and sample lines in systems that are 600 pound class or higher service will be double valved.

10C3.8 Heating, Ventilating, and Air Conditioning

HVAC system design will be based on site ambient conditions specified in Section 1.0.

Except for the HVAC systems serving the control room and administration areas, the systems will not be designed to provide comfort levels for extended human occupancy.

Air conditioning will include both heating and cooling of the inlet filtered air. Air velocities in ducts and from louvers and grills will be low enough not to cause unacceptable noise levels in areas where personnel are normally located.

Fans and motors will be mounted on anti-vibration bases to isolate the units from the building structure. Exposed fan outlets and inlets will be fitted with guards. Wire guards will be specified for belt-driven fans and arranged to enclose the pulleys and belts.

Air filters will be housed in a manner that facilitates removal. The filter frames will be specified to pass the air being handled through the filter without leakage.

Ductwork, filter frames, and fan casings will be constructed of mild steel sheets stiffened with mild steel flanges and galvanized. Ductwork will be the sectional bolted type and will be adequately supported. Duct joints will be leaktight.

Grills and louvers will be of adjustable metal construction.

10C3.9 Thermal Insulation and Cladding

Parts of the project requiring insulation to reduce heat loss or afford personnel safety will be thermally insulated. Minimum insulation thickness for hot surfaces near personnel will be designed to limit the outside lagging surface temperature to a maximum of 140 °F, based on 80 °F ambient temperature and 1 mph/hr air velocity. Other insulation minimums will be designed to limit the heat loss to approximately 80 Btu/hr-ft^2 based on an 80 °F ambient condition and an air velocity of 20 mph/hr.

The thermal insulation will have as its main constituent calcium silicate, foam glass, fiber glass, or mineral wool, and will consist of pre-formed slabs or blankets, where feasible. Asbestos materials will be prohibited. An aluminum jacket or suitable coating will be provided on the outside surface of the insulation. Where a hard-setting compound is used as an outer coating, it will be nonabsorbent and noncracking. Thermal insulation will be chemically inert even when saturated with water. Insulation system materials, including jacketing, will have a flame spread rating of 25 or less when tested in accordance with ASTM E 84.

Insulation at valves, pipe joints, or other points to which access may be required for maintenance will be specified to be removable with a minimum of disturbance to the pipe insulation. At each flanged joint, the molded material will terminate on the pipe at a

distance from the flange equal to the overall length of the flange bolts to permit their removal without damaging the molded insulation.

Above ground insulated piping will be clad with pebbled or corrugated aluminum of not less than 30 mil thickness and frame reinforced. At the joints, the sheets will be sufficiently overlapped and corrugated to prevent moisture from penetrating the insulation.

Design temperature limits for thermal insulation will be based on system operating temperature during normal operation.

Outdoor and underground insulation, if required, will be moisture resistant.

10C3.10 Testing

Hydrostatic testing, including pressure testing at 1.5 times the design pressure, will be specified and performed for pressure boundary components where an in-service test is not feasible or permitted by code.

10C3.11 Welding

Welders and welding procedures will be certified in accordance with the requirements of the applicable codes and standards before performing any welding. Bechtel will maintain indexed records of welder qualifications and weld procedures.

10C3.12 Painting

Except as otherwise specified, equipment will receive the respective manufacturer's standard shop finish. Finish colors will be selected from among the paint manufacturer's standard colors.

Finish painting of uninsulated piping will be limited to that required by OSHA for safety or for protection from the elements.

Piping to be insulated will not be painted.

10C3.13 Lubrication

The types of lubrication specified for facility equipment will be suited to the operating conditions and will comply with the recommendations of the equipment manufacturers.

The initial startup charge of flushing oil will be provided by the equipment manufacturer and will be the manufacturer's standard lubricant for the intended service. Subsequently, such flushing oil will be sampled and analyzed to determine whether it can also be used for normal operation or must be replaced in accordance with the equipment supplier's recommendations.

Rotating equipment will be splash lubricated, force lubricated, or self-lubricated. Oil cups will be provided as necessary. Where automatic lubricators are fitted to equipment, provision for emergency hand lubrication will also be specified. Where applicable, equipment will be designed to be manually lubricated while in operation without the removal of protective guards. Lubrication filling and drain points will be readily accessible.

APPENDIX 10D

Electrical Engineering Design Criteria

10D1 Introduction

This appendix summarizes the codes, standards, criteria, and practices that will be generally used in the design and construction of electrical engineering systems for the facility. More specific project information will be developed prior to construction of the project to support detailed design, engineering, material procurement, and construction specifications as required by the California Energy Commission.

10D2 Codes and Standards

The design of the electrical systems and components will be in accordance with the laws and regulations of the federal government, State of California and industry standards. The current issue or revision of the documents at the time of the filing of this AFC will apply, unless otherwise noted. If there are conflicts between the cited documents, the more conservative requirement shall apply.

The following codes and standards are applicable to the electrical aspects of the power facility.

- American National Standards Institute (ANSI)
- American Society for Testing and Materials (ASTM)
- Anti-Friction Bearing Manufacturers Association (AFBMA)
- Insulated Cable Engineers Association (ICEA)
- Institute of Electrical and Electronics Engineers (IEEE)
- Illuminating Engineering Society (IES)
- National Electrical Code (NEC)
- National Electrical Manufacturers Association (NEMA)
- National Electrical Safety Code (NESC)
- National Fire Protection Association (NFPA)
- Underwriters Laboratories, Inc. (UL)

10D3 Switchyard and Transformers

10D3.1 Switchyard

The switchyard will be air-insulated. The switchyard will consist of SF6 circuit breakers for the transformers and lines to the utility substation, with disconnect switches on each side of the breakers. Each line will be equipped with the appropriate instrument transformers for protection and metering. Instrument transformers will also be used for generator synchronizing. Surge arresters will be provided for the outgoing lines in the area of the takeoff towers.

The switchyard will be located on the north end of the site and will require two underground feeds for the connection with the PG&E Los Esteros Substation. The SF6 breakers may be of either the dead or live tank design with two bushing current transformers on each bushing. Disconnect switches shall be vertical. Switches will be located on each side of the breakers to isolate the breaker, and one switch will be located at each line termination or transformer connection for isolation of the lines or transformer for maintenance. Instrument transformers (current and capacitive voltage transformers) will be included for protection. Separate instrument transformers will be used for metering.

Aluminum alloy tubular bus will be used. Cable connections between the tube bus and equipment will be ACSR cable. Tube and cables will meet all electrical and mechanical design requirements.

The switchyard design will meet the requirements of the National Electrical Safety Code—ANSI C2.

A grounding grid will be provided to control step and touch potentials in accordance with IEEE Standard 80, Safety in Substation Grounding. All equipment, structures and fencing will be connected to the grounding grid of buried conductors and ground rods, as required. The substation ground grid will be tied to the plant ground grid.

Lightning protection will be provided by shield wires and/or lightning masts. The lightning protection system will be designed in accordance with IEEE 998 guidelines.

All faults shall be detected, isolated, and cleared in a safe and coordinated manner as soon as practical to insure the safety of Equipment, Personnel, and the Public. Protective relaying will meet IEEE requirements and will be coordinated with the utilities requirements.

Each bus will be provided with a redundant high impedance differential relay system. Each outgoing line will be provided with redundant high speed relay systems with transfer trip capability. Each circuit breaker will be provided with independent breaker failure relay protection schemes. Breaker failure protection will be accomplished by fault detector relays and timing relays for each breaker. Each high voltage breaker will have 2 redundant trip coils.

Interface with the utility supervisory control and data acquisition (SCADA) system will be provided. Interface will be at the interface terminal box and RTU. Communication between the facility switchyard and the substation to which it is connected will be included. Remote Terminal Units (RTUs) will allow interface and remote control of the switchyard by the CA ISO.

Revenue metering will be provided on the 115 kV outgoing lines recording net power to or from the switchyard (bidirectional). Meters and the metering panel will be provided.

10D3.2 Transformers

Each generator will be connected to the 115kV switchyard through a separate main 13.8 kV to 115 kV step-up transformer. The step-up transformers will be designed in accordance with ANSI standards C57.12.00, C57.12.90, and C57.116. The main transformers will be two-winding, delta-wye, OA/FA/FA. The neutral point of the HV winding will be solidly grounded. Each main step-up transformer will have metal oxide surge arrestors adjacent to

the HV terminals and will have manual de-energized ("no-load") tap changers located in the HV windings.

Facility power will be supplied through unit auxiliary transformers connected to the 115 kV bussing. Two two-winding, delta-wye 13.8 kV to 4.16 kV transformers will be provided.

APPENDIX 10E

Control Engineering Design Criteria

10E1 Introduction

This appendix summarizes the codes, standards, criteria and practices that will be generally used in the design and installation for 10F.1 instrumentation and controls for the Facility. More specific project information will be developed prior to construction of MEC to support detailed design, engineering, material procurement specification and construction specifications as required by the California Energy Commission.

10E2 Codes and Standards

The design specification of all work will be in accordance with the laws and regulations of the federal government and the state of California. A summary of general codes and industry standards applicable to design and construction follows.

- American National Standards Institute (ANSI)
- American Society of Mechanical Engineers (ASME)
- The Institute of Electrical and Electronics Engineers (IEEE)
- Instrument Society of America (ISA)
- National Electrical Manufacturers Association (NEMA)
- National Electrical Safety Code (NESC)
- National Fire Protection Association (NFPA)
- American Society for Testing and Materials (ASTM)

10E3 Control Systems Design Criteria

10E3.1 General Requirements

Pneumatic signal levels, where used, will be 3–15 psig for pneumatic transmitter outputs, controller outputs, electric-to-pneumatic converter outputs, and valve positioner inputs.

The primary sensor full-scale signal level, other than thermocouples, will be between 10 mV and 125 V.

10E3.2 Pressure Instruments

In general, pressure instruments will have linear scales with units of measurement in pounds per square inch gauge.

Pressure gauges will have either a blowout disk or a blowout back and an acrylic or shatterproof glass face.

Pressure gauges on process piping will be resistant to plant atmospheres.

Siphons will be installed on pressure gauges in steam service as required by the system design. Steam pressure sensing transmitters or gauges mounted above the steam line will be protected by a loop seal.

Pressure test points will have isolation valves and caps or plugs. Pressure devices on pulsating services will have pulsation dampers.

10E3.3 Temperature Instruments

In general, temperature instruments will have scales with temperature units in degrees Fahrenheit. Exceptions to this are electrical machinery RTDs and transformer winding temperatures, which are in degrees Celsius.

Dial thermometers will have 4-1/2- or 5-inch-in-diameter (minimum) dials and white faces with black scale markings and will be every-angle type and bimetal actuated. Dial thermometers will be resistant to plant atmospheres.

Temperature elements and dial thermometers will be protected by thermowells except when measuring gas or air temperatures at atmospheric pressure. Temperature test points will have thermowells and caps or plugs.

RTDs will be either 100 ohm platinum or 10 ohm copper, ungrounded, three-wire circuits (R_{100}/R_0-1.385). The element will be spring-loaded, mounted in a thermowell, and connected to a cast iron head assembly.

Thermocouples will be single-element, grounded, spring-loaded, Chromel-Constantan (ANSI Type E) for general service. Thermocouple heads will be the cast type with an internal grounding screw.

10E3.4 Level Instruments

Reflex-glass or magnetic level gauges will be used. Level gauges for high-pressure service will have suitable personnel protection.

Gauge glasses used in conjunction with level instruments will cover a range that is covered by the instrument. Level gauges will be selected so that the normal vessel level is approximately at gauge center.

A single remote water level indicating system will be provided for each HRSG drum.

10E3.5 Flow Instruments

Flow transmitters will be the differential pressure type with the range matching the primary element. In general, linear scales and charts will be used for flow indication and recording.

The flow element for feedwater flow to each HRSG will be laboratory calibrated venturi flow nozzles.

In general, feedwater flow meters will be temperature compensated when the water temperature is greater than approximately 250°F, critical steam flow meters will be temperature and/or pressure compensated, and airflow measurements will be temperature compensated.

10E3.6 Control Valves

Control valves in throttling service will generally be the globe-body cage type with body materials, pressure rating, and valve trims suitable for the service involved. Other style valve bodies (e.g., butterfly, eccentric disk) may also be used when suitable for the intended service.

Valves will be designed to fail in a safe position.

Control valve body size will not be more than two sizes smaller than line size, unless the smaller size is specifically reviewed for stresses in the piping.

Control valves in 600 class service and below will be flanged where economical. Where flanged valves are used, minimum flange rating will be ANSI 300 Class.

Critical service valves will be defined as ANSI 900 Class and higher valves in sizes larger than 2 inches.

Severe service valves will be defined as valves requiring anticavitation trim, low noise trim, or flashing service, with differential pressures greater than 100 psid.

In general, control valves will be specified for a noise level no greater than 90 dBA when measured 3 feet downstream and 3 feet away from the pipe surface.

Valve actuators will use positioners and the highest pressure, smallest size actuator, and will be the pneumatic-spring diaphragm or piston type. Actuators will be sized to shut off against at least 110 percent of the maximum shutoff pressure and designed to function with instrument air pressure ranging from 60 to 125 psig.

Handwheels will be furnished only on those valves that can be manually set and controlled during system operation (to maintain plant operation) and do not have manual bypasses.

Control valve accessories, excluding controllers, will be mounted on the valve actuator unless severe vibration is expected.

Solenoid valves supplied with the control valves will have Class H coils. The coil enclosure will normally be a minimum of NEMA 4 but will be suitable for the area of installation. Terminations will typically be by pigtail wires.

Valve position switches (with input to the DCS for display) will be provided for MOVs and open/close pneumatic valves. Automatic combined recirculation flow control and check valves (provided by the pump manufacturer) will be used for pump minimum-flow recirculation control. These valves will be the modulating type.

10E3.7 Instrument Tubing and Installation

Tubing used to connect instruments to the process line will be 3/8- or 1/2-inch-outside-diameter copper or stainless steel as necessary for the process conditions.

Instrument tubing fittings will be the compression type. One manufacturer will be selected for use and will be standardized as much as practical throughout the plant.

Differential pressure (flow) instruments will be fitted with three-valve manifolds; two-valve manifolds will be specified for other instruments as appropriate.

Instrument installation will be designed to correctly sense the process variable. Taps on process lines will be located so that sensing lines do not trap air in liquid service or liquid in gas service. Taps on process lines will be fitted with a shutoff (root or gauge valve) close to the process line. Root and gauge valves will be main-line class valves.

Instrument tubing will be supported in both horizontal and vertical runs as necessary. Expansion loops will be provided in tubing runs subject to high temperatures. The instrument tubing support design will allow for movement of the main process line.

10E3.8 Pressure and Temperature Switches

Field-mounted pressure and temperature switches will have either NEMA Type 4 housings or housings suitable for the environment.

In general, switches will be applied such that the actuation point is within the center one-third of the instrument range.

10E3.9 Field-Mounted Instruments

Field-mounted instruments will be of a design suitable for the area in which they are located. They will be mounted in areas accessible for maintenance and relatively free of vibration and will not block walkways or prevent maintenance of other equipment. Freeze protection will be provided.

Field-mounted instruments will be grouped on racks. Supports for individual instruments will be prefabricated, off-the-shelf, 2-inch pipestand. Instrument racks and individual supports will be mounted to concrete floors, to platforms, or on support steel in locations not subject to excessive vibration.

Individual field instrument sensing lines will be sloped or pitched in such a manner and be of such length, routing, and configuration that signal response is not adversely affected.

Local control loops will generally use a locally mounted indicating controller (pressure, temperature, flow, etc.).

Liquid level controllers will generally be the nonindicating, displacement type with external cages.

10E3.10 Instrument Air System

Branch headers will have a shutoff valve at the takeoff from the main header. The branch headers will be sized for the air usage of the instruments served, but will be no smaller than 3/8 inch. Each instrument air user will have a shutoff valve and filter at the instrument.

APPENDIX 10F

Chemical Engineering Design Criteria

10F1 Introduction

This appendix summarizes the codes, standards, criteria and practices that will be generally used in the design and installation for chemical engineering systems for the Facility. More specific project information will be developed prior to construction of the project to support detailed design, engineering, material procurement specification and construction specifications as required by the California Energy Commission.

10F2 Design Codes and Standards

The design and specification of all work will be in accordance with the laws and regulations of the federal government and the state of California. Industry codes and standards partially unique to chemical engineering design to be used in design and construction are summarized below.

- ANSI—American National Standards Institute
  - ANSI B31.1—Power Piping Code
- ASME—American Society of Mechanical Engineers
  - ASME—Performance Test Code 31, Ion Exchange Equipment
- ASTM—American Society for Testing and Materials.
  - ASTM D859-94—Referee Method B for Silica as SiO_2
  - ASTM D888-96—Referee Method A for Dissolved Oxygen
  - ASTM D513-96—Referee Method D for CO_2
- OSHA—Occupational Safety and Health Administration
- SSPC—Steel Structures Painting Council Standards
  - SSPC SP3—Power Tool Cleaning
  - SSPC SP7—Brush-Off Blast Cleaning
  - SSPC SP1—Solvent Cleaning
  - SSPC SP6—Commercial Blast Cleaning
  - SSPC SP5—White Metal Blast Cleaning
- UL—Underwriters Laboratories
- AWWA—American Waterworks Association
  - WWA 2540-95—Method C for TDS

Other recognized standards will be used as required to serve as design, fabrication, and construction guidelines when not in conflict with the above listed standards.

The codes and industry standards used for design, fabrication, and construction will be the codes and industry standards, including all addenda, in effect as stated in equipment and construction purchase or contract documents.

10F3 General Criteria

10F3.1 Design Water Quality

10F3.1.1 Circulating Water Recycled water from South Bay Water Recycling Agency (SBWRA) will supply the project with circulating water makeup. Data from the SBWRA indicate that the effluent from the SBWRA has the characteristics defined in Section 8.14, Water Resources.

10F3.1.2 Service Water

Recycled water from South Bay Water Recycling Agency (SBWRA) will be used to supply the project with all general service water requirements such as sanitary, and fire fighting water, as well as process needs..

A typical water analysis range for this water is presented in Section 8.14.

10F3.1.3 Water Treatment

Recycled water will be supplied to the Water Treatment System . The high quality effluent from the Water Treatment System will serve as injection water to the gas turbine NOx reduction system. In addition, treated water will be used also to supply water for turbine power augmentation, turbine water wash, and various uses during unit startup.

Treated water will be the highest quality practical. Minimum quality requirements will be as follows.

- Total dissolved solids—0.1mg/l
- Silica as SiO_2—0.02 mg/l
- Specific conductance at demineralizer effluent—0.2 µS/cm
- pH—6.5 to 7.5

10F3.1.4 Construction Water

Water for use during construction will be supplied from water trucked to the site.

10F3.1.5 Fire Protection Water

The source of water for fire protection will be dedicated portion of the fire/service water storage tank and the cooling tower basin.

10F3.2 Chemical Conditioning

10F3.2.1 Circulating Water System Chemical Conditioning

Circulating water chemical conditioning will consist of chemicals to minimize corrosion and to control the formation of mineral scale and biofouling. Corrosion and scaling will be controlled by the use of sulfuric acid for alkalinity adjustment in conjunction with inhibitors, as required, for scale and corrosion control. Chlorination utilizing sodium

hypochlorite will be used to minimize biofouling of the condenser tubes and the cooling tower.

10F3.3 Chemical Storage

10F3.3.1 Storage Capacity

Chemical storage tanks will, in general, be sized to store a minimum of 1.5 times the normal bulk shipment. The minimum acceptable volume of the SCR aqueous ammonia storage tank will provide at least 3 days storage.

10F3.3.2 Containment

Chemical storage tanks containing corrosive or hazardous fluids will be surrounded by curbing. Curbing and drain piping design will allow a full tank capacity spill without overflowing the curbing. For multiple tanks located within the same curbed area, the largest single tank will be used to size the curbing and drain piping.

10F3.3.3 Closed Drains

Waste piping for volatile liquids and wastes with offensive odors will use closed drains to control noxious fumes and vapors.

10F3.3.4 Coatings

Tanks, piping, and curbing for chemical storage applications will be provided with a protective coating system. The specific requirements for selection of an appropriate coating will be identified prior to equipment and construction contract procurements.

10F3.4 Wastewater Treatment

Any plant process wastewaters will be collected in the plant wastewater collection system for offsite discharge. Plant effluent to be discharged offsite will meet all applicable criteria of federal, state, and local permits.

Sanitary wastewater will be collected, treated and removed off-site for disposal at a wastewater treatment plant.

APPENDIX 10G

Geologic and Foundation Criteria

10G1 Introduction

This appendix includes the results of the preliminary subsurface investigation, laboratory testing program and geotechnical assessment for the Los Esteros Critical Energy Facility (LECEF) project to support the Application for Certification (AFC).

This appendix contains a description of the site conditions, field and laboratory testing phases of the investigation, together with the ground water, and foundation related subsurface conditions. Preliminary engineering design properties derived from the results of the investigation are discussed. Soil related hazards addressed include soil liquefaction, hydrocompaction (or collapsible soils), and expansive soils. Preliminary foundation and earthwork considerations are addressed based on the results of the site investigation, observations by geotechnical personnel on site and established geotechnical engineering practices. Additional subsurface investigation is planned to obtain more detailed data for foundation engineering systems.

Information contained in this appendix reflects the codes, standards, criteria and practices generally used in the design and construction of site and foundation engineering systems for the Facility. More specific project information will be developed during execution of the project to support detailed design, engineering, material procurement specification and construction specifications.

10G2 Scope of Work

The scope of geotechnical services for the preparation of this appendix included:

- Developing a boring location plan and specifications for a field and laboratory investigation
- Selecting a drilling and testing subcontractor and technically monitoring the work in the field
- Assigning laboratory tests for representative soil samples
- Preparing boring logs
- Determining current ground water levels
- Preparing this appendix to include an assessment of soils-related hazards, a summary of preliminary foundation and earthwork considerations, and preliminary guidelines for inspection and monitoring of geotechnical aspects of construction

10G3 Site Conditions

The site is located north of Highway 237 and west of Coyote Creek in San Jose, California. The site is bounded by Alviso-Milpitas Road to the south, the Coyote Creek levee to the east, water-recycling sludge ponds to the north, and the San Jose/Santa Clara Water Pollution Control Plant to the west.

The site topography is relatively flat, except for the southeast corner where the levee meets the Alviso-Milpitas Road embankment. The slopes for the levee were at approximately 2 to 1 (horizontal to vertical). Elevations above sea level range from 10 to about 15 feet.

Currently the property is occupied by existing agricultural farming fields and greenhouses. Greenhouses and one-story buildings are located in the southwest corner of the site, and a single-family home occupies the southeast corner.

10G4 Subsurface Investigation

Subsurface exploration was performed on July 5, 6, 10, and 11, 2000, and August 10, 2000, using conventional, truck-mounted drilling and CPT equipment to investigate, sample, and log subsurface soils. The subsurface investigation was performed by Lowney Associates of Mountain View, California, a qualified geotechnical firm in the Bay Area. Technical direction of all field operations was provided by a Geotechnical Engineer. The Geotechnical Engineer prepared the boring logs and selected representative soil samples for laboratory testing. The investigation was conducted in accordance with a specification prepared for this project and followed the American Society for Testing and Materials (ASTM) and other applicable standards.

Five exploratory soil borings were drilled at selected locations to depths ranging from 25 to 60 feet. Twelve CPT soundings were advanced to depths ranging from approximately 30 to 100 feet. A representative bulk sample of the surface soil was obtained for pavement design. In addition, two ground water monitoring wells were installed to track the depth of ground water. The approximate locations of the borings are shown on Figure 10G4-1. The boring logs are provided in Figures 10G4-2 through 10G4-6. All borings were drilled using rotary wash methods and a bentonite drilling fluid to maintain a positive pressure and stable borehole. All drillholes were 4-7/8 inches in diameter. The soils encountered were continuously logged in the field and described in accordance with the Unified Soil Classification System (ASTM D2488). Borings were permitted and backfilled in accordance with Santa Clara Valley Water District guidelines.

Representative soil samples were obtained from the borings at selected depths. Standard Penetration Test (SPT) soil samples were obtained in accordance with ASTM D1586 in the borings by driving a 2-inch OD split-barrel sampler 18 inches with a 140-pound hammer falling freely through a distance of 30 inches. In addition, 2.5-inch I.D. samples were obtained using a Modified California Sampler driven into the soil with the 140-pound hammer previously described. The standard penetration resistance value (N-value) is defined as the number of blows required to drive the split-barrel sampler a total distance of 12 inches, the count being started after a penetration of 6 inches. When the sampler could not be driven the required 12 inches, the standard penetration resistance was shown as the

number of blows over the inches actually penetrated. Field tests included an evaluation of the undrained shear strength of soil samples using a Torvane device, and the unconfined compressive strength of the soil samples using a pocket penetrometer device. At the end of each day of drilling the collected soil samples were transported to the testing laboratory by the Geotechnical Engineer.

10G5 Field Electrical Resistivity Survey

To evaluate the corrosion potential of the subsurface soils at the site, five in-situ resistivity tests were performed using the Wenner four-point method in accordance with ASTM G57. Four samples collected were tested for pH, soluble sulfate, and chloride content.

10G6 Laboratory Testing Program

Laboratory tests were performed to determine physical, chemical and engineering characteristics of the subsurface soils. These tests included natural moisture content (ASTM D2216), in place dry density determinations (ASTM D2937), Plasticity Index determination (ASTM D4318), grain size analyses (ASTM D1140), R-value resistance test (California Test Method No. 301), pH, sulfate, and chloride content tests. All testing was assigned by the Geotechnical Engineer.

10G7 Site Subsurface Conditions

10G7.1 Physiography and Geology

The site physiography and geology are discussed in detail in Section 8.15 of the AFC.

The boreholes drilled at the site encountered surficial soils generally consisting of soft to very stiff silty clays and clayey silts to depths ranging from 14 to more than 30 feet. Plasticity Index (PI) tests performed on representative samples of the surficial soils resulted in PIs of 9 to 13, indicating a low expansion potential. Below the surficial soils, the borings encountered interbedded strata of medium stiff to very stiff silty clays and silts, and medium dense to very dense sands and gravels to 100 feet, the maximum depth explored.

10G7.2 Seismology

The site seismology is included in Section 8.15.1.3 of the AFC. The site is located in Seismic Zone 4 and in close proximity to various seismic sources (see Section 8.15.1.3).

10G7.3 Ground Water

Free ground water was encountered in three exploratory borings during a January 2000 field investigation at depths ranging from 14 to 19 feet. Monitoring wells installed at the site during a July 2000 field investigation did not encounter free ground water during drilling to a maximum depth of 20 feet. However, ground water was recorded at a depth of 7 and 10.5 feet for monitoring wells MW-21 and MW-22 one day after completion of drilling, respectively.

Water levels, although monitored in any open boreholes at the beginning of each day or after period of inactivity and noted on the borehole logs, may not be accurate since all drillholes were advanced using a bentonite drilling fluid. The ground water level in the wells will continue to be monitored.

10G7.4 Soil Profile Type

Based on the 1998 California Building Code (Reference 1), the Soil Profile Type can be classified as a Type S_D (Stiff Soil Profile).

10G8 Assessment Of Soil-Related Hazards

10G8.1 Liquefaction

Soil liquefaction is a process by which loose, saturated, granular deposits lose a significant portion of their shear strength due to pore water pressure buildup resulting from cyclic loading, such as that caused by an earthquake.

Sand layers were encountered in the CPTs generally at a depth of 24 feet or greater. However, based on the CPT data, the potential for liquefaction in these sand layers is considered low.

Sand was generally not encountered in the borings, except for Boring EB-5 which encountered medium dense sand at a depth of 23 feet. A confirmation CPT boring was performed to obtain additional data for liquefaction analysis. This CPT boring encountered sands at depths ranging from approximately 29.5 to 36 feet.

Additional liquefaction analysis was performed for the sand encountered at the bottom of Boring EB-5, based on the Seed and Idriss method. This theoretical analysis indicated that liquefaction of the soil strata in Boring EB-5 could occur and ground surface settlements might be expected during a Magnitude 7.5 earthquake occurring on the Hayward Fault. This method of analysis does not, however, take into account the capping action of the clay stratum overlying these sands. Considering this 20-foot thick cap of non-liquefiable clayey soils, there is a relatively low probability that the sand strata encountered would be vented to the surface during a seismic event, and the probability of substantial ground settlement due to soil liquefaction would be reduced. Liquefaction-induced settlements of less than ½-inch would occur due to post-liquefaction consolidation of the subject sand layer.

10G8.2 Expansive Soils

Soil expansion is a phenomenon by which clayey soils expand in volume as a result of an increase in moisture content, and shrink in volume upon drying. Expansive soils are usually identified with index tests, such as percentage of clay particles and liquid limit. It is generally accepted that soils with liquid limits larger than about 50 percent, i.e., soils that classify as high plasticity clays (CH) or high plasticity silts (MH), may be susceptible to volume change when subjected to moisture variations. Based on the characteristics of the soils encountered at the site, the potential for soil expansion has not been identified to be a concern.

10G8.3 Collapsible Soils

Soil collapse (hydrocompaction) is a phenomenon that results in relatively rapid settlement of soil deposits due to addition of water. This generally occurs in soils having a loose particle structure cemented together with soluble minerals or with small quantities of clay. Water infiltration into such soils can break down the interparticle cementation, resulting in collapse of the soil structure. Collapsible soils are usually identified with index tests, such as dry density and liquid limit, and consolidation tests where soil collapse potential is measured after inundation under load. Based on the available data, the potential for soil collapse at the site has not been identified to be a concern.

10G8.4 Differential Compaction

If near-surface soils vary in composition both vertically and laterally, strong earthquake shaking can cause non-uniform compaction of soil strata, resulting in movement of near-surface soils. Because the subsurface soils encountered at the site are generally stiff, cohesive, and do not appear to change in thickness or consistency abruptly over short distances, the probability of significant differential compaction at the site is considered to be low.

10G8.5 Lateral Spreading

Lateral spreading typically occurs as a form of horizontal displacement of relatively flat-lying alluvial material toward an open or "free" face such as an open body of water, channel, or excavation. In soils this movement is generally due to failure along a weak plane, and may often be associated with liquefaction. As cracks develop within the wakened material, blocks of soil displace laterally towards the open face. Cracking and lateral movement may gradually propagate away from the face as blocks continue to break free.

Based on the subsurface information for the site and the low potential for liquefaction, the potential for impacts to the planned structures at the site due to lateral spreading during a seismic event is low.

10G9 Preliminary Foundation Considerations

10G9.1 General Foundation Design Criteria

For satisfactory performance, the foundation of any structure must satisfy two independent design criteria. First, it must have an acceptable factor of safety against bearing failure in the foundation soils under maximum design load. Second, settlements during the life of the structure must not be of a magnitude that will cause structural damage, endanger piping connections or impair the operational efficiency of the facility. Selection of the foundation type to satisfy these criteria depends on the nature and magnitude of dead and live loads, the base area of the structure and the settlement tolerances. Where more than one foundation type satisfies these criteria, then cost, scheduling, material availability and local practice will probably influence or determine the final selection of the type of foundation.

An evaluation of the information collected from the SPT borings, laboratory testing, and visual observations made during the site investigation indicate that no adverse foundation related subsurface and ground water conditions were encountered that would preclude the

construction and operation of the proposed plant. Thus, the site can be considered suitable for development of the proposed plant, pursuant to the foundation and earthwork considerations discussed in this appendix.

10G9.2 Selection of Foundation Type

Various foundation systems may be used to support the structures and equipment at the LECEF as follows:

- Conventional continuous and/or isolated spread footings bearing on natural, undisturbed soil or compacted fill can be used for structures that can accommodate post-construction settlements on the order of 1-inch, and differential settlements between adjacent foundation elements on the order of ¾-inch.
- Mat foundations and grade beams can be used to support equipment that are sensitive to differential settlements.
- Pile-supported foundations can be used to support heavy equipment and settlement-sensitive structures.

Additional subsurface investigation is planned to obtain more detailed data for foundation engineering systems to determine the correct and most economical foundation type.

10G9.3 Deep Foundations

As indicated above, it may be necessary to support the heavy equipment and settlement sensitive foundations on deep foundations. The consolidation characteristics of this layer under foundation loads of up to 3,000 pounds per square foot (psf) could result in unacceptable settlement of the foundation. Pile type, depth, and capacities will be developed following the additional subsurface investigation. In all cases, pile capacities will be confirmed through a load test program prior to production installation.

10G9.4 Shallow Foundations

Equipment and structures that are not sensitive to settlements can be supported by mat foundations or spread footings. Shallow foundation construction will require the earthwork measures discussed in Section 10G9.0. Footings constructed in this manner would be capable of supporting maximum allowable bearing pressures of 2,000 psf for dead loads, 3,000 psf for combined dead and live loads, and 4,000 psf for all loads including wind and seismic. These allowable bearing pressures are based upon factors of safety of 3.0, 2.0, and 1.5 for dead, dead plus live, and seismic loads, respectively.

Settlements of footings are expected to be limited to 1 inch, and differential settlement between neighboring foundations to ¾ inch.

All footings should have a minimum width of 18 inches and should extend at least 18 inches below grade.

10G9.5 Corrosion Potential and Ground Aggressiveness

Based on field resistivity tests, it appears that the corrosion potential to buried metallic improvements may be characterized as severely to very severely corrosive. Corrosion protection will be incorporated into the project as needed.

Sulfate exposure to Portland cement concrete may be considered negligible for the native subsurface materials sampled. No special precautions would be necessary based on the UBC.

10G10 Preliminary Earthwork Considerations

10G10.1 Site Preparation

After removal of all existing structures, trees, and debris from the site construction areas, the subgrade preparation should include the complete removal of all vegetation and topsoil. The majority of the vegetation on site consists of grasses and weeds with a maximum root depth of 3 to 6 inches. Topsoil can be stockpiled and may be reused in remote areas of the site where no future construction is expected.

10G10.2 Subgrade Preparation

After the site has been properly cleared, stripped, and necessary excavations have been made, exposed surface soils in those areas to receive fill, slabs-on-grade, or pavements should be scarified to a depth of 6 inches, moisture conditioned, and compacted in accordance with the recommendations for fill presented in the "Compaction" section below. In existing agricultural fields, the scarified depth may need to be increased to 12 inches. The finished compacted subgrade should be firm and non-yielding under the weight of compaction equipment.

10G10.3 Temporary Excavations

It is anticipated that confined temporary excavations at the site will be required during construction for the installation of the circulation water pipes and the cooling tower forebay. All excavations should be sloped in accordance with OSHA requirements. Sheet piling could also be used to support any excavation. The need for internal supports in the excavation will be determined based on the final depth of the excavation. Temporary excavations greater than 6 feet below existing grades may potentially be impacted by shallow ground water, depending on how long excavations are left open. Excavations will most likely remain dry if they are excavated and backfilled on the same day. Excavations left open will likely accumulate groundwater, which should be removed prior to backfilling. Contractors completing excavations on site should anticipate the need for local dewatering.

10G10.4 Permanent Slopes

At this time no permanent slopes are planned for the site.

10G10.5 Backfill Requirements

All on-site soils below the stripped layer having an organic content of less than 3 percent by weight are suitable for use as fill at the site. In general, fill should not contain rocks or lumps larger than 6 inches in greatest dimension, with no more than 15 percent larger than 2½ inches. Imported and non-expansive fill material should be inorganic and should have a PI of 15 or less. Import should have sufficient binder to prevent caving of the foundation and utility trenches.

All fill, as well as scarified surface soils in those areas to receive fill or slabs-on-grade, should be compacted to at least 90 percent relative compaction as determined by ASTM Test Designation D1557, latest edition. Fill greater than 5 feet in thickness should be compacted to at least 95 percent compaction for the portion below the upper 5 feet. Fill should be placed in lifts no greater than 8 inches in uncompacted thickness at a moisture content near the laboratory optimum. Each successive lift should be firm and non-yielding under the weight of construction equipment.

In pavement areas, the upper 6 inches of subgrade and full depth of aggregate base should be compacted to at least 95 percent relative compaction. Aggregate base and all import soils should be compacted at a moisture content near the laboratory optimum.

Fill placed behind retaining structures may be compacted to 90 percent relative compaction using light compaction equipment. Pipe bedding can be compacted in 8-inch lifts to 90 percent relative compaction as determined by ASTM D1557.

10G11 Inspection and Monitoring

A California-registered Geotechnical Engineer or Engineering Geologist should monitor geotechnical aspects of foundation construction and/or installation, and fill placement. At a minimum the Geotechnical Engineer/Engineering Geologist should monitor the following activities:

- All surfaces to receive fill should be inspected prior to fill placement to verify that no pockets of loose/soft or otherwise unsuitable material were left in place and that the subgrade is suitable for structural fill placement.
- All fill placement operations should be monitored by an independent testing agency. Field compaction control testing should be performed regularly and in accordance with the applicable specification to be issued by the Geotechnical Engineer.
- All pile load testing and initial stages of production pile installation must be witnessed by the Geotechnical Engineer.
- Settlement monitoring of significant foundations and equipment is recommended on at least a quarterly basis during construction and the first year of operation, and then semi-annually for the next two years.

10G12 Site Design Criteria

10G12.1 General

The Facility will be located near the northern limits of the City of San Jose, California. The approximate 20-acre site is relatively flat, and is accessible from Zanker Road.

10G12.2 Datum

The site grade varies between El. 10 to 15 ft. msl.

10G13 Foundation Design Criteria

10G13.1 General

Reinforced concrete structures (spread footings, mats and deep foundations) will be designed consistent with Appendix 10B.

Allowable soil bearing pressures for foundation design will be in accordance with this Appendix.

10G13.2 Ground Water Pressures

Hydrostatic pressures due to ground water or temporary water loads will be considered.

10G13.3 Factors of Safety

The factor of safety for structures, tanks and equipment supports with respect to overturning, sliding, and uplift due to wind and buoyancy will be as defined in Appendix 10B, Structural Engineering Design Criteria.

10G13.4 Load Factors and Load Combinations

For reinforced concrete structures and equipment supports, using the strength method, the load factors and load combinations will be in accordance with Appendix 10B, Structural Engineering Design Criteria.

10G14 References

1998 California Building Code.

Lowney Associates, “Final Geotechnical Investigation, U.S. Dataport Site, San Jose, California,” Report 587-12H, September 11, 2000.

PRIMARY DIVISIONS			SOIL TYPE	SECONDARY DIVISIONS
COARSE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVELS (MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE)	CLEAN GRAVELS (Less than 5% Fines)	GW	Well graded gravels, gravel–sand mixtures, little or no fines
			GP	Poorly graded gravels or gravel–sand mixtures, little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel–sand–silt mixtures, plastic fines
			GC	Clayey gravels, gravel–sand–clay mixtures, plastic fines
	SANDS (MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE)	CLEAN SANDS (Less than 5% Fines)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES	SM	Silty sands, sand–silt–mixtures, non–plastic fines
			SC	Clayey sands, sand–clay mixtures, plastic fines
FINE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS (LIQUID LIMIT IS LESS THAN 50 %)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS (LIQUID LIMIT IS GREATER THAN 50 %)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils

DEFINITION OF TERMS

U.S. STANDARD SIEVE SIZE: 200, 40, 10, 4 — CLEAR SQUARE SIEVE OPENINGS: 3/4", 3", 12"

SILTS AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

GRAIN SIZES

TERZAGHI SPLIT SPOON STANDARD PENETRATION — MODIFIED CALIFORNIA — D&M UNDERWATER SAMPLER — SHELBY TUBE — NO RECOVERY

SAMPLERS

SAND AND GRAVEL	BLOWS/FOOT*
VERY LOOSE	0–4
LOOSE	4–10
MEDIUM DENSE	10–30
DENSE	30–50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH+	BLOWS/FOOT*
VERY SOFT	0–1/4	0–2
SOFT	1/4–1/2	2–4
MEDIUM STIFF	1/2–1	4–8
STIFF	1–2	8–16
VERY STIFF	2–4	16–32
HARD	OVER 4	OVER 32

CONSISTENCY

*Number of blows of 140 pound hammer falling 30 inches to drive a 2–inch O.D. (1–3/8 inch I.D.) split spoon (ASTM D–1586).
+Unconfined compressive strength in tons/sq.ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D–1586), pocket penetrometer, torvane, or visual observation.

KEY TO EXPLORATORY BORING LOGS

Unified Soil Classification System (ASTM D–2487)

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE A–1

FIGURE 10G4-1
KEY TO EXPLORATORY BORING LOGS
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_08 (7/11/01)

CH2MHILL

EXPLORATORY BORING: EB-4

DRILL RIG: FAILING
BORING TYPE: 4-7/8" ROTARY WASH
LOGGED BY: JGH
START DATE: 7-5-00 FINISH DATE: 7-5-00

PROJECT NO: 587-12H
PROJECT: U.S. DATAPORT
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 35.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

MATERIAL DESCRIPTION AND REMARKS

SURFACE ELEVATION:

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
	0		**SANDY CLAY (SC)** medium stiff, brown, fine sand, low plasticity	SC					
			SILTY CLAY (CL) stiff, moist, brown, trace fine sand, low plasticity	CL	12				
					13		25	96	
	5				20		26	102	
					22		25	99	
	10								
			SILTY CLAY (CL) very stiff, moist, gray with brown mottles, moderate plasticity	CL	36		27	96	
	15								
					56		22	108	
	20								
			SILTY CLAY (CL) stiff, moist, brown, some fine sand, low plasticity	CL	41		25	105	
	25								
					35		21	110	
	30		*Continued Next Page*						

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
FREE GROUNDWATER WAS NOT DETERMINED

Northing: 1,981,640
Easting: 6,145,260

LA CORP GDT 8/25/00 MV* FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EB-4
587-12H

FIGURE 10G4-2
EXPLORATORY BORING EB-4
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_09 (7/11/01)

CH2MHILL

EXPLORATORY BORING: EB-4 Cont'd

DRILL RIG: FAILING	PROJECT NO: 587-12H
BORING TYPE: 4-7/8" ROTARY WASH	PROJECT: U.S. DATAPORT
LOGGED BY: JGH	LOCATION: SAN JOSE, CA
START DATE: 7-5-00 FINISH DATE: 7-5-00	COMPLETION DEPTH: 35.0 FT.

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Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf) 1.0 2.0 3.0 4.0
	30		**SILTY CLAY (CL)** stiff to very stiff, moist, brown, some fine sand, low plasticity	CL	60		18	112		
	35		Bottom of Boring at 35 feet							
	40									
	45									
	50									
	55									
	60									

GROUND WATER OBSERVATIONS:
FREE GROUNDWATER WAS NOT DETERMINED

Northing: 1,981,640
Easting: 6,145,260

LA CORP.GDT 8/25/00 MV* FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EB-4
587-12H

FIGURE 10G4-2
EXPLORATORY BORING EB-4
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_10 (7/11/01)

CH2MHILL

EXPLORATORY BORING: EB-5

DRILL RIG: FAILING
BORING TYPE: 4-7/8" ROTARY WASH
LOGGED BY: JGH
START DATE: 7-5-00 FINISH DATE: 7-5-00

PROJECT NO: 587-12H
PROJECT: U.S. DATAPORT
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 25.0 FT.

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SURFACE ELEVATION:

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
	0	**SILTY CLAY (CL)** stiff, very moist, brown, some fine sand, low plasticity	CL	26	X	19	107	
		SANDY SILT (ML) medium stiff to stiff, moist, brown, fine sand, low plasticity	ML	10	X	19	97	
	5	**SILTY CLAY (CL)** medium stiff, moist, grayish brown, moderate plasticity	CL	26	X	27	101	
				24	X	24	98	
	10							
		SILTY CLAY (CL) very stiff, moist, brown with black specks, low plasticity	CL	44	X	19	106	
	15							
		CLAYEY SILT WITH SAND (ML) very stiff, moist, brown with gray mottles, fine sand, low plasticity	ML	19	X	24	103	
	20							
		SAND (SP) medium dense, wet, brown, fine sand	SP	28	X	22		6
	25	Bottom of Boring at 25 feet						
	30							

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
FREE GROUNDWATER WAS NOT DETERMINED

Northing: 1,981,454
Easting: 6,146,097

LA CORP GDT 8/25/00 MV* FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EB-5
587-12H

FIGURE 10G4-3
EXPLORATORY BORING EB-5
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_11 (7/11/01)

CH2MHILL

EXPLORATORY BORING: EB-6

Sheet 1 of 1

DRILL RIG: FAILING	PROJECT NO: 587-12H
BORING TYPE: 4-7/8" ROTARY WASH	PROJECT: U.S. DATAPORT
LOGGED BY: JGH	LOCATION: SAN JOSE, CA
START DATE: 7-5-00 FINISH DATE: 7-5-00	COMPLETION DEPTH: 30.0 FT.

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ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS SURFACE ELEVATION:	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
	0		gravel access road with aggregate base						
			SILTY CLAY (CL) stiff, moist, gray, trace fine sand, moderate plasticity, Plasticity Index = 9, Liquid Limit = 28		18		22	88	
	5		medium stiff		5		30	93	
			very stiff	CL	28		21	106	
	10								
					57		25	102	
	15								
			SILTY CLAY (CL) very stiff, moist, gray with brown mottles and white streaks, low plasticity		35		23	105	
	20								
				CL	36		24	103	
	25		very stiff						
					73				
	30		Bottom of Boring at 30 feet						

Undrained Shear Strength (ksf)

○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression

1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
FREE GROUNDWATER WAS NOT DETERMINED

Northing: 1,980,856
Easting: 6,145,756

LA CORP.GDT 8/25/00 MV* FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EB-6
587-12H

FIGURE 10G4-4
EXPLORATORY BORING EB-6
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_12 (7/11/01)

CH2MHILL

EXPLORATORY BORING: EB-7

DRILL RIG: FAILING
BORING TYPE: 4-7/8" ROTARY WASH
LOGGED BY: JGH
START DATE: 7-6-00 FINISH DATE: 7-6-00

PROJECT NO: 587-12H
PROJECT: U.S. DATAPORT
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 60.0 FT.

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SURFACE ELEVATION:

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
	0	**SILT (ML)** stiff, moist, brown, with some fine sand, low plasticity	ML	15		16			
				8		26		85	
	5	**SILTY CLAY (CL)** stiff, moist, gray, moderate plasticity	CL	28		24	98		
				21		23	102		
	10								
				50		19	104		
	15	**SILTY CLAY (CL)** stiff to very stiff, moist, brown with gray mottles and black specs, moderate plasticity	CL	29		24	100		
	20								
		increasing fine sand		22		24	103		
	25								
				63		17	118		
	30								

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression; 1.0 2.0 3.0 4.0

Continued Next Page

GROUND WATER OBSERVATIONS:
FREE GROUNDWATER WAS NOT DETERMINED

Northing: 1,980,620
Easting: 6,146,320

LA CORP GDT 8/25/00 MV* FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EB-7
587-12H

FIGURE 10G4-5
EXPLORATORY BORING EB-7
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_13 (7/11/01)

CH2MHILL

EXPLORATORY BORING: EB-7 Cont'd

DRILL RIG: FAILING
BORING TYPE: 4-7/8" ROTARY WASH
LOGGED BY: JGH
START DATE: 7-6-00 FINISH DATE: 7-6-00

PROJECT NO: 587-12H
PROJECT: U.S. DATAPORT
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 60.0 FT.

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ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
	35		**SILTY CLAY (CL)** stiff to very stiff, moist, brown with gray mottles and black specs, moderate plasticity increasing fine subrounded gravel	CL	38		23	107	
	40		**SANDY CLAY (CL)** medium stiff, wet, brown, fine sand, moderate plasticity	CL	21		24	105	
	45		**SILTY CLAY (CL)** stiff, moist, gray with orangish brown mottles, moderate plasticity	CL	26		28	97	
	50		some fine sand	CL	23		21	109	
	55		trace fine gravel	CL	31		28	96	
	60		**SILTY CLAY (CL)** stiff, moist, bluish-gray to grayish brown mottled, moderate plasticity	CL	44		32	94	
			Bottom of Boring at 60 feet						

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
FREE GROUNDWATER WAS NOT DETERMINED

Northing: 1,980,620
Easting: 6,146,320

LA CORP GDT 8/25/00 MV* FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EB-7
587-12H

FIGURE 10G4-5
EXPLORATORY BORING EB-7
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_14 (7/11/01)

CH2MHILL

EXPLORATORY BORING: EB-8

DRILL RIG: FAILING
BORING TYPE: 4-7/8" ROTARY WASH
LOGGED BY: JGH
START DATE: 7-5-00 FINISH DATE: 7-5-00

PROJECT NO: 587-12H
PROJECT: U.S. DATAPORT
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 35.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

Undrained Shear Strength (ksf): ○ Pocket Penetrometer; △ Torvane; ● Unconfined Compression; ▲ U-U Triaxial Compression

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
			SURFACE ELEVATION:						
	0		Gravel access road with aggregate base						
			SANDY CLAY (CL) medium stiff to stiff, wet, brown, fine sand, low plasticity	CL	6		20	118	
	5				3		33	90	
			SILTY CLAY (CL) very stiff, moist, grayish brown, moderate plasticity	CL	32		21	108	
	10		color grades to brown		35		23	107	
	15		some fine sand		13		23	101	
	20				20		24	99	
	25				30		18	113	
	30		*Continued Next Page*						

GROUND WATER OBSERVATIONS:
FREE GROUNDWATER WAS NOT DETERMINED

Northing: 1,979,680
Easting: 6,146,120

LA CORP GDT 8/25/00 MV* FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EB-8
587-12H

FIGURE 10G4-6
EXPLORATORY BORING EB-8
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

D072001001RDD_15 (7/11/01)

CH2MHILL

EXPLORATORY BORING: EB-8 Cont'd

DRILL RIG: FAILING
BORING TYPE: 4-7/8" ROTARY WASH
LOGGED BY: JGH
START DATE: 7-5-00 FINISH DATE: 7-5-00

PROJECT NO: 587-12H
PROJECT: U.S. DATAPORT
LOCATION: SAN JOSE, CA
COMPLETION DEPTH: 35.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf) ○ Pocket Penetrometer △ Torvane ● Unconfined Compression ▲ U-U Triaxial Compression (1.0 2.0 3.0 4.0)
	30		**SILTY CLAY (CL)** stiff, moist, grayish brown, moderate plasticity increasing fine sand	CL	24		19	111		△ ○
	35		Bottom of Boring at 35 feet							
	40									
	45									
	50									
	55									
	60									

GROUND WATER OBSERVATIONS:
FREE GROUNDWATER WAS NOT DETERMINED

Northing: 1,979,680
Easting: 6,146,120

LA CORP GDT 8/25/00 MV* FLL

LOWNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

EB-8
587-12H

FIGURE 10G4-6
EXPLORATORY BORING EB-8
APPLICATION FOR CERTIFICATION FOR
LOS ESTEROS CRITICAL ENERGY FACILITY

CH2MHILL

D072001001RDD_16 (7/11/01)