PANOCHE ENERGY CENTER
APPLICATION FOR CERTIFICATION
DATA ADEQUACY RESPONSE
06-AFC-5

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Technical Area: Air Quality

Data Request 1 Rev: The permit application has not been deemed complete by the SJVAPCD. The permit completeness review allows 30 days from the date of receipt (8/10/06), or by 9/9/06.

Response: SJVAPCD issued a *Notice of Incomplete Application* on September 11, 2006. PEC responded in its letter dated October 3, 2006. SJVAPCD issued a *Notice of Completeness* dated October 18, 2006. This two-page *Notice of Completeness* letter follows:

San Joaquin Valley
Air Pollution Control District

OCT 18 2006

Gary Chandler
Panoche Energy Center, LLC
63 Kendrick Street
Needham, MA 02494

Re: Notice of Receipt of Complete Application
Project Number: C-1062518

Dear Mr. Chandler:

The District has received your Authority to Construct application for the installation of a 400 MW power plant, at West Panoche Road in Firebaugh, CA. Based on our preliminary review, the application appears to be complete. This means that your application contains sufficient information to proceed with our analysis. However, during processing of your application, the District may request additional information to clarify, correct, or otherwise supplement, the information on file.

Emissions from your project will exceed the public notification thresholds of District Rule 2201. Your project must therefore be public noticed for a 30-day period at the conclusion of our analysis, prior to the issuance of the final Authority to Construct. It is estimated that the project analysis will take 100 hours, and you will be charged at the weighted hourly labor rate in accordance with District Rule 3010. The current weighted labor rate is $80.87 per hour, but please note that this fee is revised annually to reflect actual costs and therefore may change. No payment is due at this time; an invoice will be sent to you upon completion of the public notice process.

The project proposal involves utilizing SOx emission reduction credits for PM10 increases at a ratio of 1.8 lb-SOx per lb-PM10. Additional Emission Reductions Credits may be required before final issuance of the Authority to Construct. Please be aware that EPA has expressed the opinion that SOx credits cannot be used to offset PM10 emissions. The District disagrees with EPA and is pursuing a reversal of EPA's opinion.

We will begin processing your application as soon as possible. In general, complete applications are processed on a first-come first-served basis.

Seyed Sadredin
Executive Director / Air Pollution Control Officer

Northern Region Office
4800 Enterprise Way
Modesto, CA 95356-8718
(209) 557-6400 • FAX (209) 557-6475

Central Region Office
1990 East Gettysburg Avenue
Fresno, CA 93726-0244
(559) 230-6000 • FAX (559) 230-6061
www.valleyair.org

Southern Region Office
2700 M Street, Suite 275
Bakersfield, CA 93301-2373
(661) 326-6900 • FAX (661) 326-6985

Letter.max

Mr. Chandler
Page 2

Please note that this letter is not a permit and does not authorize you to proceed with your project. Final approval, if appropriate, will be in the form of an "Authority to Construct" permit after application processing is complete. If you have any questions, please contact Mr. Arnaud Marjollet at (559) 230-5900.

Sincerely,

David Warner
Director of Permit Services

Arnaud Marjollet
Permit Services Manager
DW:jh

Cc: John Lague
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108

Dave Jenkins
Cinergy Services Inc.
1000 East Main Street
Plainfield, IN 46168-1782

Will Walters
Aspen Environmental Group
30423 Canwood St. Suite 215
Agoura Hills, CA 91301-4316

James Reede
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Letter.max

Technical Area: Air Quality

Data Request 2 Rev: Please provide a list of offset holders with whom you have entered, or potentially will enter, into negotiations. You may submit this information to the Energy Commission with a request for confidential status.

Response: To meet the SJVAPCD ERC policy that requires all ERCs to be secured as a condition of issuing a *Notice of Completion*, PEC has secured all the required ERCs. Following is a list of offset holders (with certificate I.D.s, quarterly and annual values) with whom PEC has entered into ERC agreements:

EMISSION REDUCTION CERTIFICATES SECURED BY PANOCHE ENERGY CENTER, LLC

Cert. No.	Holder	Type	1Q	2Q	3Q	4Q	Annual
Required		SO_x	2.627	2.627	3.821	2.866	11.94
N-74-5	J R Simplot Company	SO_x	0.78	0.78	0.78	0.78	3.120
N-268-5	J R Simplot Company	SO_x	26.765	24.655	0	72.808	124.228
Surplus		SO_x					115.038
Required		PM_{10}	20.09	20.09	29.222	21.917	91.320
S-2209-4	Complete Energy (LaPaloma)	PM_{10}	4.3705	3.7595	4.1065	4.2285	16.465
S-2210-4	Complete Energy (LaPaloma)	PM_{10}	0.452	0.4615	0.4905	0.4805	1.8845
S-2211-4	Complete Energy (LaPaloma)	PM_{10}	1.7935	1.9285	2.208	2.11	8.04
S-2212-4	Complete Energy (LaPaloma)	PM_{10}	1.691	1.811	1.5865	1.9275	7.016
S-2213-4	Complete Energy (LaPaloma)	PM_{10}	0	0.343	0.401	0.3615	1.1055
S-2227-4	Complete Energy (LaPaloma)	PM_{10}	0	0.5295	0.529	0.4755	1.544
N-268-5	J R Simplot Company	PM_{10}					55.265
Surplus		PM_{10}					0.00
Required		VOC	10.035	10.035	14.105	10.95	45.125
S-2331-1	Big West of CA	VOC	11.653	11.654	11.654	11.654	46.615
Surplus		VOC					01.490
Required		NO_x	31.987	31.987	46.526	34.895	145.400
S-2214-2	Complete Energy (LaPaloma)	NO_x	11.190	11.313	11.438	11.438	45.379
S-2362-2	Panoche Energy Center, LLC	NO_x	22.049	26.057	26.057	26.057	100.220
Surplus		NO_x					9.5495

Note: all ERC values in expressed in tons

Technical Area: Air Quality

Data Request 3 Rev: Please identify the mechanism for reduction for each potential offset identified in response to Appendix B(g)(8)(J)(ii) above.

Response: The emission reduction mechanism(s) associated with each Certificate identified above are listed below:

Cert. No.	Holder	Type	Reduction Mechanism
N-74-5	J R Simplot Company	SO_x	Add second adsorption tower to sulfuric acid process
N-268-5	J R Simplot Company	SO_x	Modification to Sulfuric Acid Adsorption process
S-2209-4	Complete Energy (LaPaloma)	PM_{10}	Shutdown of gas turbine
S-2210-4	Complete Energy (LaPaloma)	PM_{10}	Shutdown of 2 steam generators
S-2211-4	Complete Energy (LaPaloma)	PM_{10}	Shutdown of 3 steam generators
S-2212-4	Complete Energy (LaPaloma)	PM_{10}	Shutdown of 12 steam generators
S-2213-4	Complete Energy (LaPaloma)	PM_{10}	Shutdown of 2 steam generators
S-2227-4	Complete Energy (LaPaloma)	PM_{10}	Shutdown of steam generator
N-268-5	J R Simplot Company	PM_{10}	Modification to Sulfuric Acid Adsorption process
S-2333-1	Big West	VOC	Modify process to incinerate Coker exhaust in CO boiler
S-2214-2	Complete Energy (LaPaloma)	NO_x	Add Low-NOx burners and FGR to 13 steam generators
S-2217-2	Complete Energy (LaPaloma)	NO_x	Convert steam generators from oil/NG to NG only
S-2362-2	Panoche Energy Center, LLC	NO_x	Retrofit of stationary reciprocating engines with pre-combustion chambers

As part of SJVAPCD's review and as noted in the "completeness" letter dated October. 2006, these ERCs and resulting PEC Certificates are deemed fully applicable to offsetting PEC emissions.

Technical Area: Biological Resources

Data Request 4 Rev: Applicant needs to include a discussion of cumulative impacts and protected species' habitat loss from local power plant development (i.e., the existing Calpeak and Wellhead facilities, and proposed Starwood facility).

Response: The existing Calpeak and Wellhead facilities and the proposed Starwood facility are located in areas similar to the PEC that are dominated by intensive agricultural use. Potential special status species that would occur in these areas are the same as those discussed for the PEC. Suitable habitat for these protected species is low quality in these areas, and would only be used on rare occasion for foraging or movement through and area to reach higher quality suitable habitat. The Calpeak and Wellhead Facilities have resulted in the loss of approximately 7 acres of low quality habitat dominated by agriculture. Similarly, the proposed Starwood facility would result in the loss of approximately 7 acres of low quality habitat dominated by agriculture.

The cumulative biological impacts of the existing Calpeak and Wellhead facilities and the proposed Starwood and PEC facilities are less than significant.

Technical Area: Biological Resources

Data Request 5 Rev: Informal consultations by Commission staff with the California Department of Fish and Game and U.S. Fish and Wildlife Service may be needed regarding potential effects of the proposed project on state and federally protected species. Include information on who was contacted at each agency and their contact information.

Response: California Department of Fish and Game

Kevin O'Connor (559) 243-4005 x121, who suggested speaking with:

Julie Lance, Habitat Conservation Division (559) 243-4014 x222 (Received guidance on avoidance and minimization measures for San Joaquin kit fox foraging habitat)

U.S. Fish and Wildlife Service
San Joaquin Valley Division
(916) 414-6630
(Never received a return call)

Technical Area: Geological Hazards

Data Request 6 Rev: A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A) has not been provided.

Response: The PEC will conform to all applicable LORS related to geological resources. At least 30 days (or a lesser number of days mutually agreed to by the PEC and the Chief Building Official [CBO]) prior to the start of construction, the PEC will submit to the Compliance Project Manager (CPM) for approval the name(s) and license number(s) of the certified engineering geologist(s) assigned to the project. The submittal will include a statement that the CPM's approval is needed. The CPM will approve or disapprove of the engineering geologist(s) and will notify the PEC of its findings within 15 days of receipt of the submittal. If the engineering geologist(s) is subsequently replaced, the PEC will submit for approval the name(s) and license number(s) of the newly assigned individual(s) to the CPM. The CPM will approve or disapprove of the engineering geologist(s) and will notify the PEC of the findings within 15 days of receipt of the notice of personnel change.

The PEC shall include in the application for a grading permit a report of the liquefaction analysis, and a summary of how the results of this analysis were incorporated into the project grading plan, for the CBO's review and comment.

1) Within 15 days after submittal of the application(s) for grading permit(s) to the CBO, the PEC will submit a signed statement to the CPM stating that the Engineering Geology Report has been submitted to the CBO as a supplement to the plans and specifications and that the recommendations contained in the report are incorporated into the plans and specifications.

2) Within 90 days following completion of the final grading, the PEC will submit copies of the Final Engineering Geology Report to the CBO, and to the CPM on request.

Technical Area: Land Use

Data Request 7 Rev: In the Application for Certification, the applicant references Government Code section 51238 (a)(1), which discusses compatible uses on agricultural *preserves*, not lands under contracts. Government Code section 51238.1 discusses the principles of compatibility of uses on Williamson Act Contract lands. Please discuss the need, if any, for any measures necessary to make the proposed project conform with permitted land uses on contracted lands under Government Code section 51238.1.

Conveyances of real property by deed, lease, or deed of trust are considered a division of land and are subject to the Subdivision Map Act and applicable Fresno County land division ordinances. For the project to conform to the Subdivision Map act and applicable Fresno County land division ordinances, the applicant will need to prepare a tentative and final map, obtain approval of the map from Fresno County, and record the map(s) in the County Recorder's Office. Please discuss the steps you will take to prepare a tentative map of the portion of the parcel you seek to lease, including Fresno County's timeline for approval.

Response: Our approach in regards to the Williamson Act contract on the 128-acre subject parcel has changed. Our approach is now a partial cancellation on the 12.8-acre subject site.

A Notice of Nonrenewal of the Williamson Contract will be filed on Contract #367. Filing a nonrenewal of the contract is the normal process to exit a Williamson Contract and remove the restrictions from the subject property. Once the nonrenewal form is recorded, the nonrenewal period is approximately nine (9) years.

The next procedural step once the Notice of Nonrenewal has been filed, is to petition for Cancellation of the Williamson Act Contract, which requires input from the California Department of Conservation and the Land Conservation Committee and Board of Supervisor action. The petition for Cancellation must

meet legal requirements contained in Government Code Section 51280 et. Seq.

The landowner may petition for cancellation of a contract as to all or part of the subject land. In regards to the project area, 12.8-acres of the 128-acre lot will be petitioned for Cancellation of the Williamson Act Contract, the portion that the project will occupy. A petition may be found to be consistent with the limitations of the Williamson Act only after a noticed public hearing where the Board of Supervisors considers and grants tentative cancellation establishing conditions for full cancellation. In reviewing a cancellation petition, the proposed use, alternative use, any comments offered by the Director of the California Department of Conservation, and the recommendation of the Land Conservation Committee must be considered. A cancellation may be supported where the Boards find that:

1) The cancellation is for land on which a notice of nonrenewal has been served.
2) Cancellation is not likely to result in the removal of adjacent lands from agricultural use.
3) Cancellation is for an alternative use that is consistent with the adopted General Plan.
4) Cancellation will not result in discontiguous patterns of urban development.
5) That there is no proximate noncontracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or, that development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

The 5 findings will be made in the Williamson Act Contract Cancellation application when filed with Fresno County.

If cancellation is approved, a fee determined by the County Assessor and equal to 12.5% of the market value of the parcel

is paid by the applicant and forwarded to the State of California.

The project does not fall within the jurisdiction of the Subdivision Map Act, as the property will be leased, and subdivision of the land will not occur. As stated above, the land will undergo a partial cancellation of the Williamson Act contract, which does not require a subdivision of land.

The Fresno County contact for the partial cancellation will be Margie McHenry. She will confirm that there is no need to develop a parcel for cancellation. Her contact information is as follows:

Margie McHenry
Department of Public Works and Planning
Development Services Division
2220 Tulare Street, Suite B
Fresno, California 93721
(559) 262-4870 Phone
(599) 262-4166 Fax
mmchenry@co.fresno.ca.us

After a petition for cancellation is submitted to the County of Fresno, the review process is as follows:

1) Once application has been determined to be complete, a request is sent to the Department of Conservation (DOC) for review of petition for cancellation. This will generally be a 30-day review period.
2) Send memo to Assessor's Office requesting calculation of cancellation fee for the area covered by the legal description provided. The memo is sent out at the same time as the request to the DOC. The Assessor's Office generally tries to provide a cancellation valuation within 30 days of receiving the request. However, this is not a requirement, and in some cases it may take longer than 30 days.
3) Cancellation request brought to Fresno County Agricultural Land Conservation Committee (ALCC) for

recommendation. This will take place after the comments from the DOC have been received, and the Assessor's Office has provided a cancellation valuation for the property. Additionally, any required CEQA work must be completed prior to scheduling the cancellation for the ALCC. The ALCC generally meets on the first Wednesday of each month. In order to schedule an item for a given meeting, the DOC comments, CEQA determination and cancellation valuation from the Assessor's Office would need to be received no less than 30 days prior to the ALCC meeting date.

4) The Cancellation request is then brought to Board of Supervisors for consideration. After the ALCC has made a recommendation on the proposed cancellation, the project will be scheduled to go to the Board of Supervisors. If the Board of Supervisors determines that the required findings can be met, they have the option to approve cancellation of the Williamson Act contract on the subject property.

During PEC's October 16, 2006 meeting with Mr. Phil Larson, Chairperson for the County Board of Supervisors, Mr. Larson expressed his support of the Cancellation and the PEC project in general. A copy of the cancellation application is attached.

LEGAL DESCRIPTION
PREMISES BOUNDARY EASEMENT
"PROPOSED PANOCHE ENERGY CENTER"
PORTION OF
ASSESSOR'S PARCEL 027-060-78S
VICINITY OF FIREBAUGH,
FRESNO COUNTY, CALIFORNIA

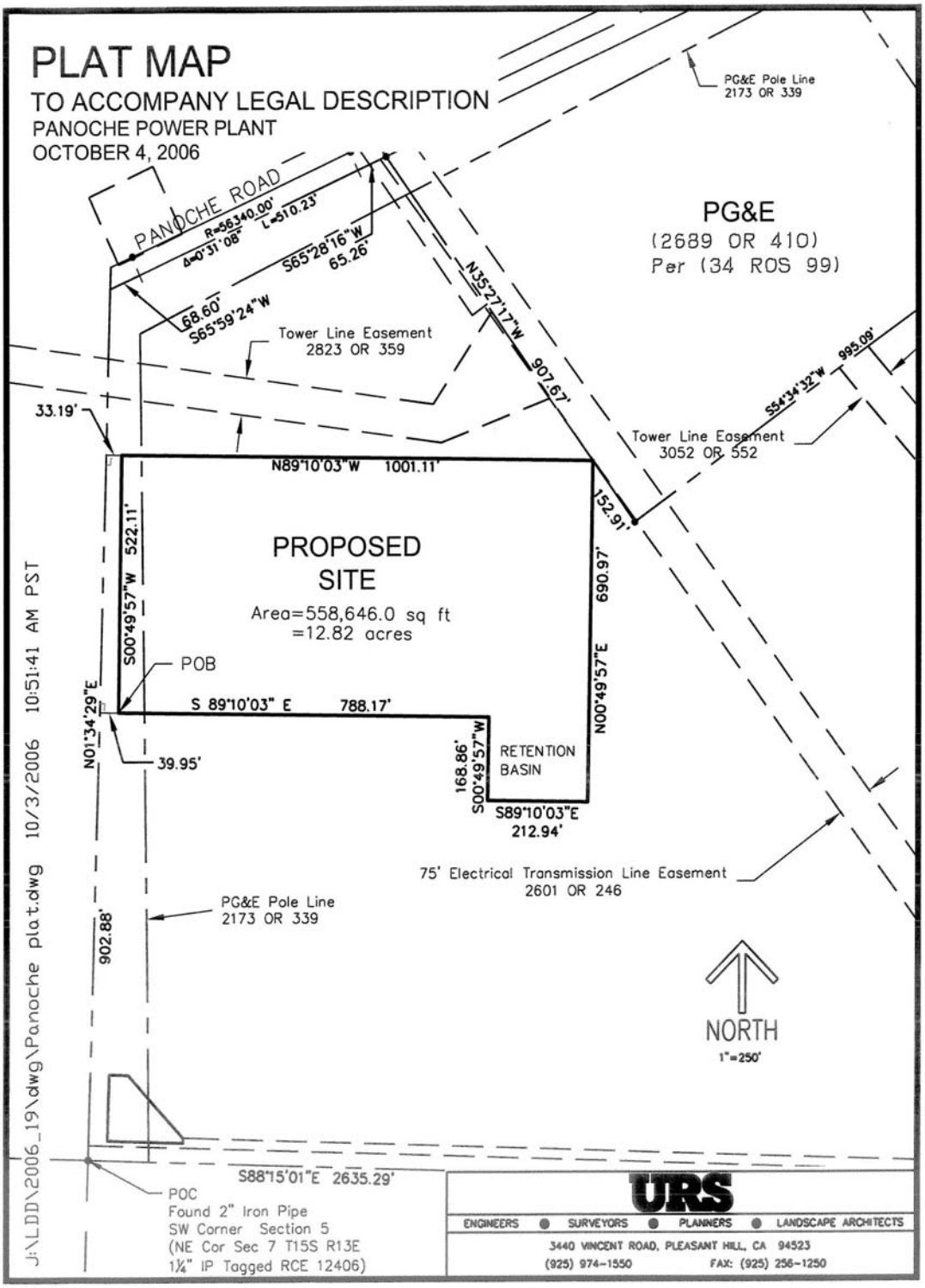
October 9, 2006

Being a portion of real property in the Southwest Quarter of Section 5 Township 15 South, Range 13 East, Mount Diablo Base and Meridian, according to the official plat thereof lying Southerly of Panoche Road, being a portion of that certain real property described in a document dated June 13, 1978 to Robert Hansen, Trustee under the Sharla M. Baker Trust as Instrument No. 89-106620 Official Records, County of Fresno, vicinity of Firebaugh, California more particularly described as follows:

COMMENCING at the Southwest Corner of said Section 5 at a found 2" iron pipe thence along the West line of said Section 5 being the Southwest Quarter thereof North 01° 34' 29" East 902.88 feet; thence leaving the West line of said Section 5 through the interior of said Southwest Quarter of Section 5 the following seven (7) courses: South 89° 10' 03" East 39.95 feet to the **POINT OF BEGINNING** of the herein described real property; North 00° 49' 57 " East 522.11 feet; South 89° 10' 03" East 1001.11 feet; South 00° 49' 57 " West 690.97 feet; North 89° 10' 03" West 212.94 feet; North 00° 49' 57" East 168.86 feet; North 89 10' 03" West 788.17 feet to the **POINT OF BEGINNING.**

Containing 558,646 square feet of land (12.82 acres), more or less.

This description is based on record information. The Basis of Bearings are NAD 1983, Epoch 2004.50, California Coordinate System, Zone 4 and are based upon a GPS Survey constrained to NGS monuments: AC6117 (HPGN D CA 06 NC) survey disk in bridge abutment and GU4142 (Z 1444) stainless steel rod.


PLAT MAP
TO ACCOMPANY LEGAL DESCRIPTION
PANOCHE POWER PLANT
OCTOBER 4, 2006
PANOCHE ROAD
R=5634.00'
Δ=0°31'08"
L=510.23'
S65°28'16"W
65.26'
68.60'
S65°59'24"W
PG&E Pole Line
2173 OR 339
PG&E
(2689 OR 410)
Per (34 ROS 99)
N35°27'17"W
907.67'
Tower Line Easement
2823 OR 359
S54°34'32"W
995.09'
Tower Line Easement
3052 OR 552
33.19'
N89°10'03"W 1001.11'
152.91'
PROPOSED
SITE
Area=558,646.0 sq ft
=12.82 acres
S00°49'57"W 522.11'
690.97'
N00°49'57"E
POB
S 89°10'03" E 788.17'
N01°34'29"E
39.95'
168.86'
S00°49'57"W
RETENTION
BASIN
S89°10'03"E
212.94'
75' Electrical Transmission Line Easement
2601 OR 246
PG&E Pole Line
2173 OR 339
902.88'
NORTH
1"=250'
S88°15'01"E 2635.29'
POC
Found 2" Iron Pipe
SW Corner Section 5
(NE Cor Sec 7 T15S R13E
1¼" IP Tagged RCE 12406)
J:\LDD\2006_19\dwg\Panoche plat.dwg 10/3/2006 10:51:41 AM PST
URS
ENGINEERS • SURVEYORS • PLANNERS • LANDSCAPE ARCHITECTS
3440 VINCENT ROAD, PLEASANT HILL, CA 94523
(925) 974-1550 FAX: (925) 256-1250

Fresno County Department of Public Works and Planning

Mailing Address:
Department of Public Works & Planning
Development Services Division
2220 Tulare Street, 6th Floor, Fresno, CA 93721

Location:
Southwest corner of Tulare & "M" Street, Suite B
Courtyard Level
Fresno Phone: (559) 262-4022

WILLIAMSON ACT APPLICATION

Ag Contract: 367

APN: 027-060-78S

APN: _____

APN: _____

APN: _____

_____ Nonrenewal (check below if Partial)

_____ Declaration for Building Permits

_X_ Partial Nonrenewal

Location of Property: Street Address 45499 W PANOCHE, FIREBAUGH, CA 93622

SOUTH side of W. PANOCHE RD

between S BRANNAN AVE and S FAIRFAX AVE

*Owner(s) (Print or Type)	Address	City	Zip	Phone

Representative (Print or Type)	Address	City	Zip	Phone

Please attach the following:

__X__ A copy of your grant deed or current ownership documentation.
__X__ A complete legal description with the areas which will be affected.
_____ A notarized Statement of Intended Use if applying for a Declaration for Building Permit
_____ *A list of Trustees w/ individual names and titles if applicable.

I/We, _____ (print), declare that I/we own, or represent the owner, of the above described property and that the application and attached documents are in all respects true and correct to the best of my knowledge.

Signature _____ Date _____

OFFICE USE ONLY

Date Received: _____ Received by: _____

____ Deed or current ownership information ____ Legal Description (current) ____ Statement of Intent

G:\4360Devs&Pln\PLANNING\AG\Form Template\WA App.doc

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Fresno County Department of Public Works and Planning

MAILING ADDRESS:
Department of Public Works and Planning
Development Services Division
2220 Tulare Street, 6th Floor
Fresno, CA 93721

LOCATION:
Southwest corner of Tulare & "M" Streets, Suite A
Street Level
Fresno Phone: (559) 262-4055
Toll Free Phone: 1-800-742-1011

APPLICATION FOR:

- ☐ Amendment Application
- ☐ Amendment to Text
- ☐ Conditional Use Permit
- ☐ Director Review and Approval
- ☐ Site Plan Review/Occupancy Permit
- ☐ Variance/Minor Variance
- ☐ No Shoot/Dog Leash Law Boundary
- ☐ Other _____
- ☒ ALCC/RLCC WILLIAMSON ACT CANCELLATION
- ☐ Pre-Application (Check Type)
  - ☐ General Plan Amendment
  - ☐ Specific Plan Amendment
  - ☐ Specific Plan
- ☐ Determination of Merger
- ☐ Agreements

DESCRIPTION OF PROPOSED USE OR REQUEST:
PARTIAL WILLIAMSON ACT CONTRACT CANCELLATION ON 128-ACRE TRACT OF LAND. THE WILLIAMSON ACT CONTRACT WILL BE CANCELLED ON 128 ACRES

PLEASE TYPE OR PRINT IN BLACK INK. Answer all questions completely. Attach required site plans, forms, statements and deeds as specified on the Pre-Application Review.

LOCATION OF PROPERTY: 45499 W PANOCHE / SOUTH side of W PANOCHE
between S BRANNAN AVE and S. FAIRFAX AVE
Street address 45499 W PANOCHE FIREBAUGH CA 93622

APN 027-060-78S Parcel size 128 ACRES Sec-Twp / Rg. SW 5 - 15 S / 13E

LEGAL DESCRIPTION: (Attach Copy of Deed)

I, _____ (signature), declare that I am the owner, or authorized representative of the owner, of the above described property and that the application and attached documents are in all respects true and correct to the best of my knowledge. The foregoing declaration is made under penalty of perjury.

Owner (Print or Type)	Address	City	Zip	Phone
Applicant (Print or Type)	Address	City	Zip	Phone
Representative (Print or Type)	Address	City	Zip	Phone

OFFICE USE ONLY

Application Type / No.: _____ Fee: _____ PLU _____
Application Type / No.: _____ Fee: _____ PLU _____
Application Type / No.: _____ Fee: _____ PLU _____
Application Type / No.: _____ Fee: _____ PLU _____
Initial Study No.: _____ Fee: _____ PLU _____
Environmental Review: Fee: _____ PLU _____
Health Department Review: Fee: _____ PLU _____
Received by: _____
This permit is sought under Ordinance Section: _____
Related applications: _____
Drafting verification: Zone District: _____
APN# _____ - _____ - _____
APN# _____ - _____ - _____
APN# _____ - _____ - _____
Sec. Twp. Rg. _____ - _____ / _____
Parcel Size

WHEN VALIDATED
THIS APPLICATION IS YOUR RECEIPT

GREEN – DEPARTMENT COPY WHITE – APPLICANT COPY CANARY

F-8 (R05-03)

1.max

Mr. Marcus Magness (as applicant on behalf of the owner) filed an application for Partial Cancellation on 12.8 of the 128 acres of land under Contract 367. The subject parcel is designated Agriculture under the Fresno County General Plan, zoned AE-20 (Exclusive Agriculture), and is located southeast of the intersection of W. Panoche Road and Davidson Avenue, approximately 2 miles east of Interstate 5.

The subject property is owned by PAO Investments. The project is owned by Panoche Energy Center, LLC. The tract of land that includes the subject site is 128 acres, with the project area encompassing 12.8 acres. A Williamson Act contract covers the 128-acre lot.

In accordance with the California Energy Commission's (CEC) Rules of Practice and Procedure and Power Plant Certification, an Application for Certification (AFC) has been prepared for the Panoche Energy Center. The AFC process is comparable to the California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) requirements. The AFC is designated to address the specific impacts and require mitigation for impacts that power producing facilities create. The regulating body is the CEC, and the AFC is done in lieu of the EIR.

CEQA Section 15271 statutorily allows the AFC to be used to address CEQA compliance for a Williamson Act cancellation, provided it adequately addresses the issue. The CEC will evaluate the AFC and require it to adequately address this Williamson Act cancellation.

The landowner may petition for cancellation of a contract as to all or part of the subject land. In regards to the project area, 12.8-acres of the 128-acre lot will be petitioned for Cancellation of the Williamson Act Contract. A petition may be found to be consistent with the limitations of the Williamson Act only after a noticed public hearing where the Board of Supervisors considers and grants tentative cancellation establishing conditions for full cancellation. In reviewing a cancellation petition, the proposed use, alternative use, any comments offered by the Director of the California Department

of Conservation, and the recommendation of the Land Conservation Committee must be considered. A cancellation may be supported where the Boards finds that:

- The cancellation is for land on which a notice of non-renewal has been served. The applicant will submit a Notice of Non-Renewal for the 12-acre area to the County Recorder.
- Cancellation is not likely to result in the removal of adjacent lands from agricultural use.

The subject parcel is located within an unincorporated portion of western Fresno County, and does not lie within any other jurisdictions. The 128-acre parcel is bounded by existing agricultural uses in all directions. Agriculture is the primary use, encompassing approximately 96% of all land within a 3-mile radius with the same percent representing the amount of land covered under Williamson Act contracts.

The proposed location of the Panoche Energy Center is ideal for power generation due to the existing infrastructure installed by the existing Pacific Gas & Electric facility and the existing high-power natural gas power line, both located on the parcel. The same 128-acre parcel of land owned by PAO Investments, along W. Panoche Road, has two other existing power generation facilities, operated by CalPeak Power and Wellhead Power. In addition, Starwood Power is proposing another power generation facility along W. Panoche Road on the PAO land. The reason for this concentration of power generation uses is the aforementioned need to build in close proximity to the PG&E substation and the high-power natural gas line. This existing infrastructure allows for efficient interconnection, which minimizes impacts, specifically environmental impacts, while providing efficient peaking power.

Therefore, the approval of this cancellation would not induce further Williamson Act cancellations. The ideal location for a natural gas power generation facility is an aberration within the area, and the concentration of existing and proposed power

generation facilities will not preclude or conflict with adjacent agricultural uses.

Spin-off development based on the construction of the PEC, and the other existing and proposed power generating facilities along W. Panoche Road will not occur. The character of the area, rural and agriculturally based, will not be altered by the presence of the power plants.

- Cancellation is for an alternative use that is consistent with the adopted General Plan. The subject 12.8-acre lease is designated Agriculture in the Fresno County General Plan and is zoned for Exclusive Agriculture (AE-20). The General Plan identifies one of its policies of the County to allow certain uses by discretionary permit in areas designated Agriculture. Policy LU-A.3 and Table LU-3 are as follows:

  - Policy LU-A.3 - The County may allow by discretionary permit in areas designated Agriculture, special agricultural uses and agriculturally-related activities, including value-added processing facilities, and certain non-agricultural uses listed in Table LU-3. Approval of these and similar uses in areas designated Agriculture shall be subject to the following criteria:

    - The use shall provide a needed service to the surrounding agricultural area which cannot be provided more efficiently within urban areas or which requires location in a non-urban area because of unusual site requirements or operational characteristics.

    - The use should not be sited on productive agricultural lands if less productive land is available in the vicinity.

    - The operational or physical characteristics of the use shall not have a detrimental impact on water resources or the use or management of surrounding

properties within at least one-quarter (1/4) mile radius.

The PEC will provide necessary energy supplies to the area. The location of a power generation facility within an urban environment has the potential to impact sensitive receptors such as schools and hospitals in addition to greater land use conflicts with residences. Less productive agricultural lands were not available during the site selection investigation. The water resources in the PEC area will not be detrimentally impacted by the project since water use by the PEC will utilize low quality groundwater, which is not a practical water source for agriculture in the area.

Table LU-3 (Applicable Policy from Table LU-3), Mineral extraction and oil and gas development pursuant to the policies in Section OS-C, Mineral Resources, of the Open Space and Conservation.

The General Plan and zoning code allow for an energy production facility with an unclassified conditional use permit. However, since this project is under the regulating power of the California Energy Commission, the CEC does not require the issuance of a discretionary permit for this project.

1) Cancellation will not result in discontiguous patterns of urban development. The subject property is not located near an urban area. Additionally, the development pattern of the power producing facilities has been concentrated exclusively within the same subject parcel and along W. Panoche Road because the proposed location of the Panoche Energy Center is ideal for power generation. This is due to the existing infrastructure installed by the existing Pacific Gas & Electric facility and the existing high-power natural gas power lines on the property. Additionally, the construction of the PEC serves the public interest through creating and providing power. Although PG&E is a publicly traded corporation thus making it a private entity, the company is a public utility that provides power service to the public with oversight from the California Public Utilities Commission (CPUC). This relationship makes the

company a quasi-public entity that serves a public interest. The CPUC approved PG&E's long-term resource plan in 2004. The CPUC authorized PG&E to "plan for and procure the resources necessary to provide reliable service to their customer loads for the planning period 2005 through 2014." The construction of the PEC allows PG&E to fulfill its needs in providing power to the public, thus providing a service that is in the public interest.

2) That there is no proximate noncontracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or, that development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land. The nearest non Williamson Act contracted land exists 1.5 miles from the subject site, but is not in close proximity to the PG&E substation and high-power natural gas lines making it unfeasible for the proposed use. Within a 3-mile radius of the subject site, approximately 96% of all land is under Williamson Act contracts. This 96% represents approximately 14,380 acres of land. In order for an alternate land to be feasible, close proximity to the PG&E substation is essential. The PG&E substation has existing infrastructure that minimizes impacts, specifically environmental impacts, and allows for peak power production. As stated in Finding 4, contiguous urban pattern is not applicable for this project.

Technical Area: Land Use

Data Request 8 Rev: Please state the irrigation systems and any special cultivation practices on the site.

Response: The irrigation system for the 128 acre parcel is a drip irrigation system. There are no special cultivation practices on the parcel, as the trees are currently producing fruit.

Technical Area: Land Use

Data Request 9 Rev: Please provide a discussion of the impacts of removing the project-related acreage from agriculture production.

Response: The agricultural produced crop on the 128-subject parcel is a pomegranate orchard. The subject site is 12.8 acres, with a temporary Laydown Area of 8-acres, both in pomegranate production.

According to the United States Department of Agriculture (USDA), 5,006 acres were dedicated to pomegranate production nationally in 2002. The removal of the 12.8-acres represents ¼ of 1% reduction of pomegranate land nationally. When the temporary laydown area's 8-acres are added, the amount of acreage removed increases to just over 2/5 of 1%, 20.8 acre, of pomegranate lands nationally. The temporary laydown area will be out of production for the course of construction, but will be re-planted after construction finishes.

According to the Agricultural Marketing Resource Center (AGMC), the average production per acre annually is 5.5 metric tons. The PEC has a 20-year lease with an estimated 3-year re-planting phase, creating a loss of production period spanning 23 years. The loss of the 12.8 acre PEC site spread over 23-years is 1,622 metric tons. The annual loss will be 70 metric tons, this 70 metric tons represents 2/5 of 1% of the annual 17,000 metric tons of pomegranates produced in California. The temporary laydown area of 8-acres will be out of production for an estimated 5 years (approximately 2 years for construction and 3 years for re-planting). The production loss of these 8 acres over 5 years will be 220 metric tons. The 44 metric tons out of production annually represents ¼ of 1% of the annual 17,000 metric tons produced in California. The sites combined, 114 metric tons will be out of production annually and when spread over 5 years, the total is 570 metric tons.

Monetarily, a pomegranate orchard yields approximately $2,500 per acre. The financial loss of the 12.8-acre site, spread over 28 years, is $736,000, with $32,000 lost annually. The

temporary laydown site will lose $20,000 per year, with a $100,000 loss during the 5-year out of production period. The 5-year combined total for both sites is $260,000, or $52,000 annually. The lease of the land to the PEC offsets this financial impact.

The Governor's Office of Planning and Research in a California Land Conservation (Williamson) Act Technical Advisory Document from 2003, provides Fresno County contains 1.5 million lands under Williamson Act contract. The removal of the proposed 12.8 acres from a Williamson Act contract will result in an insignificant loss of protected lands.

The amount of orchard production in Fresno County is 465,412 acres, according to City-Dat.com. Orchard lands are lands used solely for the purpose of commercial agricultural production. The removal of the proposed 12.8-acre site from orchard production will result in an insignificant loss of orchard lands.

Technical Area: Land Use

Data Request 10 Rev: Please see comments for Appendix B(g)(3)(B).

Response: Conformance with Government Code Section 51238.1 will be achieved when the partial cancellation on the 12.8 acre site is approved. Additional details of the PEC's conformance with the Williamson Act are included in Data Response 7.

Technical Area: Land Use

Data Request 11 Rev: Please see comments for Appendix B(g)(3)(B).

Response: A discussion of the agencies involved in the Williamson Act cancellation is included in Data Response 7.

Technical Area: Land Use

Data Request 12 Rev: Please see comments for Appendix B(g)(3)(B).

Response: The PEC will conform with the Williamson Act requirements when the partial cancellation is approved. Additional information is included in Data Response 7.

Technical Area: Land Use

Data Request 13 Rev: Please see comments for Appendix B(g)(3)(B) regarding possible communication with Fresno County on Williamson Act Contract cancellation.

Response: The PEC will include the cancellation of the PEC site from the Williamson Act Contract. A schedule for this cancellation is included in Data Response 7. In addition, a Fresno County contact person for the Williamson Act cancellation process is provided therein.

Technical Area: Paleontological Resources

Data Request 14 Rev: A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A) has not been provided.

Response: The PEC will comply with all LORS related to Paleontological Resources. In the event that fossils are uncovered during construction of the PEC, work within the vicinity will halt and a paleontologist will examine the find and assess its significance criteria discussed in Section 5.8.2.4 of the AFC. If a fossil specimen is discovered, and the paleontologist determines that the specimen will need to be curated, the University of California at Berkley Museum of Paleontology, or other CEC-approved public repository or museum that meets the standards and requirements for the curation of paleontological resources, will provide for the curation of such specimens.

Technical Area: Project Overview

Data Request 15 Rev: Socioeconomics, Appendix B(g)(1).

Response: IMPLAN Professional Version 2.0.1025 was used to create an input/output model assessing the secondary economic impacts (indirect and induced impacts) resulting from the construction and operation of the PEC. Indirect effects represent the impacts (e.g., change in employment) caused by the iteration of industries purchasing from industries resulting from direct final demand changes. Induced effects represent the impacts (e.g., change in employment) on all industries caused by the expenditures of new household income generated by the direct and indirect effects of direct final demand changes.

Construction Impacts

Construction activity would result in secondary economic and employment impacts (indirect and induced impacts) that would occur within Fresno County. The affected area, Fresno County, was determined based on 1) confirmation with the Building and Construction Trades Council of Fresno, Madera, Tulare, and Kings County that an adequate and available labor force exists in Fresno County to supply the construction needs of the project, and 2) goods and services that are expected to be purchased locally are available and will be purchased within Fresno County.

Indirect and induced income and spending effects occur due to purchase of goods and services by firms involved with construction. Indirect employment effects and induced employment result from construction workers spending their income in their local area, and typically lag behind direct effects by 6 to 12 months. The modeling input was based on estimated initial capital cost of $275 million for project construction, estimated expenditures of $1.5 million for locally (Fresno County) purchased materials, and an average of 151 construction workers with a combined payroll of $27 million. The resulting indirect and induced effects of construction occurring within Fresno County would be an additional 234 jobs, approximately $8.3 million in labor income, and

approximately $23.4 million in output. IMPLAN Pro Sector 451 (Other Maintenance and Repair Construction) was used for this analysis, and economic estimates were based on 2005 dollars.

Operation Impacts

Similarly, the PEC operation would result in indirect and induced economic impacts occurring within project region. In modeling for PEC operation, it was determined that while the permanent workers are expected to be hired from within Fresno County, normal operation and maintenance (O&M) expenditures may be made within Fresno, Madera, Tulare, and Kings Counties. As result, the economic modeling was based upon a region consisting of these counties. Also, unlike construction indirect and induced impacts, operational indirect and induced impacts represent permanent increases in area jobs, income, and spending. Similar to the construction impacts however, these impacts would lag behind direct effects by 6 to 12 months.

The modeling input was based on estimated annual O&M budget of about $15 million, $970,000 for locally purchased materials, and the employment of 12 permanent employees averaging approximately $85,000 per year. The resulting indirect and induced effects of the PEC operation occurring in Fresno County would be an additional 36 jobs, and approximately $1.4 million in labor income and approximately $4 million in output within the four county areas. Fuel costs were not included in the IMPLAN modeling, since natural gas prices are variable and unknown, and the effects of the purchase would not likely occur within the Fresno County area. IMPLAN Pro Sector 30 (Power Generation and Supply) was used for this analysis, and economic estimates were based on 2005 dollars.

Technical Area: Project Overview

Data Request 16 Rev: Transmission Systems Engineering, Appendix B (h)(1), (h)(2), (h)(3), and (h)(4).

Water resources, Appendix B (g)(14)(A)(i), (g)(14)(C), (g)(14)(C)(iii), (g)(14)(E)(i), (g)(14)(h)(4).

Response: **Panoche Data Adequacy Transmission System Engineering**

System Impact Study

A system impact study for Panoche Energy Center was completed on March 30, 2006 and attached to the AFC submittal. PEC took exception to the need for the project to re-conductor 37.4 miles the Los Banos – Westley 230 kV line. PG&E and CAISO agreed that a restudy was warranted and the study is currently underway.

The preliminary study will be complete on November 20, 2006 and the final study report will be issued to PEC on December 10, 2006 along with a preliminary approval letter for interconnection.

PEC believes that there will not be a need to re-conductor Los Banos Westley line. However, if this work must be performed as a result of the re-study, the project will take all necessary actions to perform the appropriate surveys and permitting activities for this linear. The following information was provided by PG&E:

"This has to be engineered but an upgrade in conductor on a lattice steel tower line will typically result in the need to raise, modify and/or strengthen the existing towers in addition to the wire replacement. The wire replacement will typically involve the replacement of the hardware and insulators."

Drawing of take off structures

Attached are two sketches illustrating the heights and other dimensions of the two typical 230 kV dead-end structures.

The dead end for the PG&E Substation will be 40 feet high and 50 feet wide with 18 foot phase spacing for the 230 kV circuit.

The dead end for the Generator dead end will be 55 feet high and 50 feet wide with 15 foot phase spacing for the 230 kV circuit.

The PG&E study assumed the installation of 795 kcmil ACSS for the dead end to dead end installation.

PG&E will not require the installation of static/lightning wire for the overhead into the substation.

ROW way required for the overhead circuit with this design would be 75 feet assuming a 300 foot span, average 18 foot phase spacing for 795 ACSS.

Provide Updated single line diagram

PEC interconnect 1 line shows the PG&E substation. 3.6.1 shows the overall interconnection and 3.4.7 shows the detail of the PEC side of the bus.

Provide a schedule for the CAISO Preliminary Approval Letter for interconnection of the proposed project to the CAISO control grid.

An approval letter was obtained for this project in July 2005. The PEC system impact re-study is underway. It began September 21, 2006. Per Mr. Ed Fishback of CAISO:

> "The ISO has received the $10,000 deposit and written notice to continue the Panoche Energy Center System Impact Re-Study today. The re-study shall take no longer than sixty (60) Calendar Days (due by November 20, 2006) to share applicable study results with PG&E for review and comment, and will incorporate comments into the study report. The ISO will issue a final study report to Panoche Energy Center, LLC within eighty (80) Calendar Days, due December 10, 2006."

It is expected that CAISO will issue a *Preliminary Approval Letter* at that time.

Contact person at CAISO

Ed Fishback
Project Manager
California ISO
151 Blue Ravine Road
Folsom, CA 95630
Phone (916) 608-5836
Cell (916) 802-6401
Fax (916) 351-2264

Panoche Data Adequacy Water Resources

The PEC has initiated the drilling and installation of three new monitoring wells at the Panoche Energy Center (PEC) site in western Fresno County, California. PEC's objective is to assess the groundwater quality parameters in up to three hydrogeologic zones below site. Two well casings will be installed within a boring that has been drilled total depth of 1,510 feet below ground surface (bgs). The shallowest completion (in the un-confined upper aquifer) will be installed within a second borehole to be drilled adjacent to the first hole.

Geologic and hydrogeologic data associated with the pilot hole are preliminary in nature because the monitoring wells are not yet installed. A Well Installation Report summarizing all work conducted during the installation of the monitoring wells will be prepared following construction. The post-construction report will include documentation collected during well drilling and installation including pipe tallies, grout records, penetration rate logs, geophysical logs, and the lithologic log. Detailed Record Drawings of the monitoring wells will also be included in the Well Installation Report.

Geologic and hydrogeologic cross-sections incorporating site specific data are provided (See Attachment). Please refer to Data Adequacy Response #28.

Lithologic Logging

The pilot holes were was drilled using direct rotary mud drilling methods. Cuttings from the pilot hole were lithologically logged on a daily basis at approximately 10-foot intervals to identify the portions of the aquifers with the greatest potential for groundwater production. A preliminary lithologic log is included (See Attachment).

Fine-grained (clays and silts) and coarse-grained (sands and gravels) sediments typical of alluvial fan settings were encountered within the pilot hole. Distinctive blue clay cuttings associated with the Corcoran Clay (E-Clay) were first encountered at a depth of approximately 645 feet bgs in the pilot hole. The thickness of the Corcoran Clay was hard to identify based on cuttings. Portions of the drilled cuttings from each interval were secured in specially designed chip trays suitable for review and archiving. Drilled cuttings from selected intervals of the borehole were submitted for sieve analysis by a geotechnical laboratory to determine the appropriate well screen slot size and filter pack grain size.

Geophysical Logging

A resistivity and spontaneous potential (SP) electric log was run for the pilot hole from ground surface to about 1,500 feet bgs. Natural gamma and temperature logs were run with the electric log. Final designs of the wells are based on interpretation of the lithologic and geophysical logs for the pilot hole. Additional geophysical logs could not be completed due to obstruction of the pilot hole with the Corcoran Clay zone at a depth of about 760 feet bgs.

Electric Log

The electric log consists of a spontaneous potential (SP) log, a short-normal (16-inch spacing) resistivity log, and a long-normal (64-inch spacing) resistivity log, which were recorded simultaneously. The SP log measured naturally occurring electrical signals and is used mainly for lithologic correlations or for differentiating non-permeable strata in a clay-sand

sequence. The SP log can also be used to calculate estimated water quality. The short-normal and long-normal resistivity logs are measured as the reciprocal of a formation's electrical conductivity. The increase or decrease of a formation's resistivity is partially controlled by its porosity. Because groundwater is an electrical conductor, its presence in the interconnected pores reduces the overall formation resistivity. Typically, silt and clay units will have lower resistivity values in comparison to sand and gravel units. The short-normal resistivity log measures the resistivity of the formation near the borehole, while the long-normal resistivity log measures the resistivity at a greater distance from the borehole. The long-normal and short-normal logs measure similar resistivities in non-permeable clay zones, although the two logs may also be similar in highly permeable zones where drilling fluid invasion is extensive.

The electric log for the pilot hole indicates predominantly medium-grained sediments (gravels and sands) to about 330 feet bgs with resistivities exceeding 15 ohms per meter (ohms/m). Groundwater within the semi-confined aquifer is estimated to be approximately 150 feet bgs based on the change in resistivity at that depth. Predominantly fine-grained sediments (clay and silt) with interbeds of coarser sediments (resistivity between 5 and 25 ohms/m) from 330 to 470 feet bgs. From about 470 to 770 feet bgs, the long and short normal resistivities are less than 10 ohms/m, indicating clay and silt, probably corresponding to the Corcoran Clay. Medium grained sediments (gravels and sands) with interbeded with fine-grained sediments (clay and silts) occur from approximately 770 to 1,440 feet bgs based on, resistivites ranging from 10 to 50 ohms/m. From about 1,440 feet bgs to the bottom of the logged interval, the long and short normal resistivities are less than 5 ohm/m, indicating clay and silt deposits.

Gamma-Ray Log

The gamma-ray log measures the naturally occurring gamma emissions from the decay of unstable elements in the formation surrounding the borehole. One of the most significant and the most abundant radioactive elements is potassium-40. As

potassium-40 decays, it emits electromagnetic radiation, which the gamma-ray probe detects and records. The greater the counting rate, the higher the amount of potassiuim-40 in the formation. Minerals such as feldspar, biotite, and several clay minerals contain potassium-40. Consequently, an increase in clay content in the strata typically results in an elevated gamma-ray response. However, in many portions of California, arkosic (feldspar-rich, poorly weathered) sand formations are present, which also have high gamma-ray emissions.

The gamma-ray log for the pilot hole shows a fairly consistent gamma count from ground surface to about 470 feet bgs, at which depth the gamma count increases significantly. The sudden increase in gamma counts at 470 feet bgs correlates well with the electric log, and indicates an increase in clay content, probably related to the Corcoran Clay.

Temperature Survey Log

The temperature survey provides a relative indication of the ambient groundwater temperature. Changes in temperature can in some cases be related to influx of formation water that exists in the aquifer.

Based on the temperature survey log, ambient temperatures within the pilot hole ranged from 80 to 86 degrees Fahrenheit. No significant influxes or outflows were apparent based on the temperature survey.

Monitoring Wells

The geologic characteristics identified in the lithologic log and geophysical logs of the pilot hole indicate that the formations between about 170 feet and 470 feet bgs and between 770 and 1,350 feet bgs have the greatest potential for groundwater production. From approximately 1,350 feet bgs, groundwater production would be expected to be negligible due to the thick clay deposits.

Twenty-foot screen intervals will be used for each of the three 2-inch-diameter monitoring wells installed. The semi-confined aquifer well will be screened from approximately 440 to 460 ft

bgs. The upper confined aquifer monitoring well will be screened from approximately 1,100 to 1,120 feet bgs. The lower confined aquifer monitoring well will be screened from approximately 1,320 to 1,340 feet bgs.

Based on the preliminary data, production wells at the site would likely be screened from 1,000 to 1,350 feet bgs. Production well design will be incorporate data developed from monitoring wells to be installed at the site.

Estimated water quality is based on SP log calculations for bicarbonate type water because groundwater in the subbasin is generally of the sulfate or bicarbonate type. Water quality ranges from 495-769 parts per million (ppm) total dissolved solids (TDS) in the 170 to 470 foot interval. TDS concentration increase below about 770 feet bgs and are estimated to be about 1,667 ppm TDS between 1,295 and 1,360 feet bgs.

Groundwater Sampling

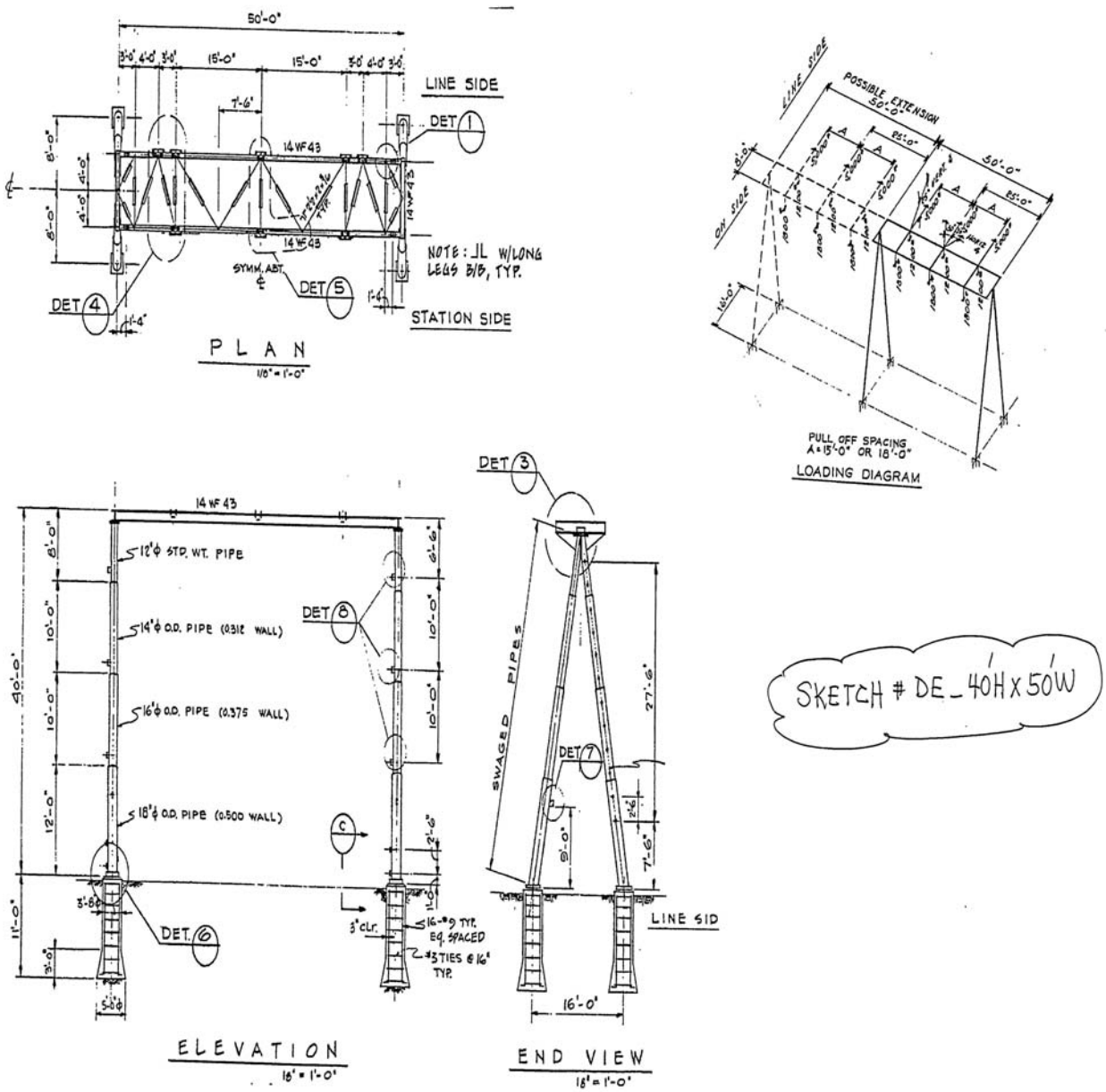
Groundwater samples will be collected following development of the wells. Relatively shallow groundwater may be collected using a submersible pump. Samples will be recovered by air-lift pumping or bailer as appropriate if static water levels are too deep to use a submersible pump. Temperature, conductivity, pH, and qualitative sediment content of the discharge water will be monitored periodically to assure that representative groundwater samples are obtained. Samples will be collected and provided to a California-certified analytical laboratory for testing. The groundwater samples will be analyzed for a suite of parameters that include:

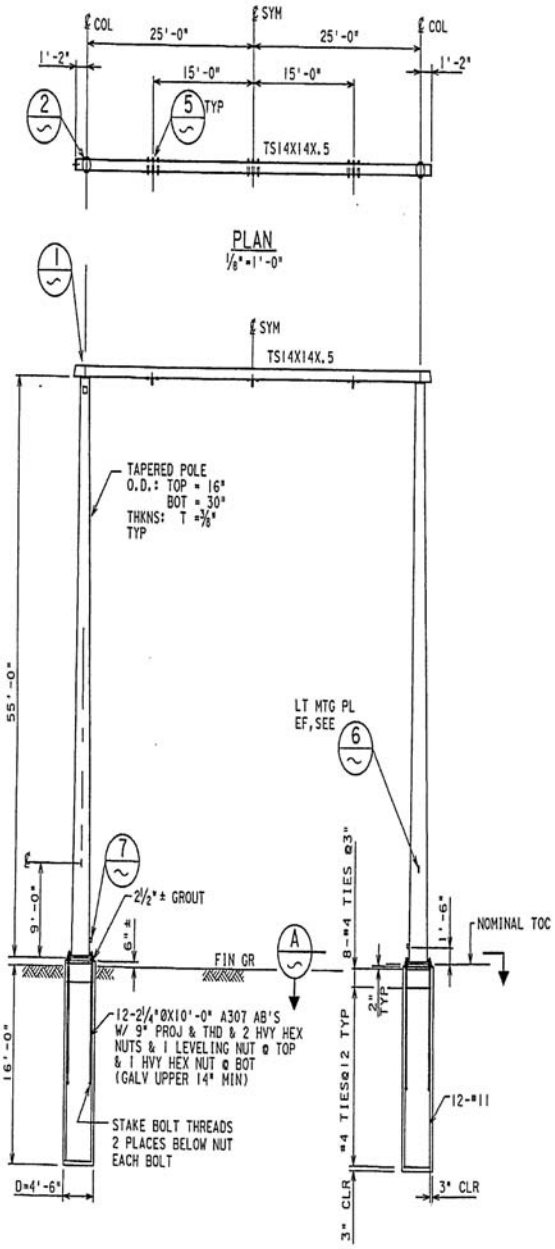
Although a screened interval of 1,000 to 1,350 feet bgs is considered optimal for this location, groundwater quality results from the two confined-aquifer monitoring wells might alter the screened interval and or the water might require treatment or blending to address some elevated analyte concentrations (such as TDS).

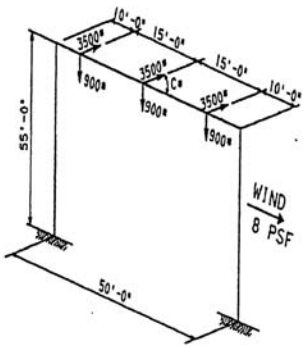
Aquifer Testing

Well yields within the Westside Subbasin of the San Joaquin Valley Groundwater Basin average 1,100 gallons per minute and average from 600 to 1,800 feet in depth (DWR, 2006). Lithologic and geophysical logging of the pilot hole indicates that geologic and hydrogeologic properties of the semi-confined and confined aquifer are consistent with the surrounding area and the aquifers should be capable of producing average groundwater yields. Future PEC production wells are expected to generate drawdowns comparable to those that agricultural wells in the area are capable of producing.

The monitoring wells currently being installed are designed to provide water quality and potentiometric surface (head) data. However, limited aquifer testing may be possible within the semi-confined aquifer above the Corcoran Clay and underlying confined aquifer. The inside diameter of the casings will be too small to accept submersible pumps suitable for pumping tests of the magnitude required to simulate drawdown of the future production wells.


50'-0"
LINE SIDE
DET 1
14 WF 43
NOTE: JL W/LONG LEGS B/B, TYP.
SYMM. ABT. ℄
DET 5
DET 4
STATION SIDE
PLAN
1/8" = 1'-0"
POSSIBLE EXTENSION 50'-0"
LINE SIDE
ON SIDE
PULL OFF SPACING A = 15'-0" OR 18'-0"
LOADING DIAGRAM
14 WF 43
12"ϕ STD. WT. PIPE
14"ϕ O.D. PIPE (0.312 WALL)
16"ϕ O.D. PIPE (0.375 WALL)
18"ϕ O.D. PIPE (0.500 WALL)
DET 8
DET 6
3" CLR.
#3 TIES @ 16" TYP.
ELEVATION
1/8" = 1'-0"
DET 3
SWAGED PIPES
DET 7
LINE SID
16'-0"
END VIEW
1/8" = 1'-0"
SKETCH # DE_40'H x 50'W





HORIZ. PULL MAY BE FROM EITHER SIDE
HORIZ. ANGLE "C" CAN VARY FROM 60° TO 120°

LOADING DIAGRAM
NTS

SKETCH # DE_55'H x 50'W

Note 1. Phase spacing can be changed from 15' shown to 18' or 20' as needed

Technical Area: Project Overview

Data Request 17 Rev: Please provide a full-page color photographic reproduction depicting a representative above ground section of the transmission line route prior to construction.

Response: Please see the attached figure.

Technical Area: Reliability

Data Request 18 Rev: Describe the maturation period expected for the new GE LMS100 gas turbine generator.

Response: The GE LMS100 will be mature by the end of the startup/commissioning period. As with all technologies, assistance will be available from GE during the startup/commissioning period as well as during plant operations. Any difficulties with the turbine generator will be resolved with assistance from GE. During project startup, any difficulties will be reported to the CPM during the monthly compliance reports, and, during operation, any difficulties will be reported to the CPM in the quarterly compliance reports.

Technical Area: Socioeconomics

Data Request 19 Rev: Please provide an economic impact analysis using an economic model (e.g., IMPLAN or another) in order to show construction and operational secondary (indirect and induced) income and employment impacts.

Response: IMPLAN Professional Version 2.0.1025 was used to create an input/output model assessing the secondary economic impacts (indirect and induced impacts) resulting from the construction and operation of the PEC. Indirect effects represent the impacts (e.g., change in employment) caused by the iteration of industries purchasing from industries resulting from direct final demand changes. Induced effects represent the impacts (e.g., change in employment) on all industries caused by the expenditures of new household income generated by the direct and indirect effects of direct final demand changes.

Construction Impacts

Construction activity would result in secondary economic and employment impacts (indirect and induced impacts) that would occur within Fresno County. The affected area, Fresno County, was determined based on 1) confirmation with the Building and Construction Trades Council of Fresno, Madera, Tulare, and Kings County that an adequate and available labor force exists in Fresno County to supply the construction needs of the project, and 2) goods and services that are expected to be purchased locally are available and will be purchased within Fresno County.

Indirect and induced income and spending effects occur due to purchase of goods and services by firms involved with construction. Indirect employment effects and induced employment result from construction workers spending their income in their local area, and typically lag behind direct effects by 6 to 12 months. The modeling input was based on estimated initial capital cost of $275 million for project construction, estimated expenditures of $1.5 million for locally (Fresno County) purchased materials, and an average of 151 construction workers with a combined payroll of $27 million.

The resulting indirect and induced effects of construction occurring within Fresno County would be an additional 231 jobs, approximately $7.7 million in labor income, and approximately $2.3 million in output. IMPLAN Pro Sector 411 (Other New Construction, Power Plants) was used for this analysis, and economic estimates were based on 2005 dollars.

The estimated cost percentages for construction materials and supplies are as follows:

- 15% - Tools, supplies, construction equipment
- 20% - Construction Labor and supervision
- 65% - Equipment (CTGs and all the BOP permanent equipment and materials)

Locally purchased materials would include structural steel, rebar, concrete, weld rod, nuts and bolts, etc.

Operation Impacts

Similarly, the PEC operation would result in indirect and induced economic impacts occurring within project region. In modeling for PEC operation, it was determined that while the permanent workers are expected to be hired from within Fresno County, normal operation and maintenance (O&M) expenditures may be made within Fresno, Madera, Tulare, and Kings Counties. As result, the economic modeling was based upon a region consisting of these counties. Also, unlike construction indirect and induced impacts, operational indirect and induced impacts represent permanent increases in area jobs, income, and spending. Similar to the construction impacts however, these impacts would lag behind direct effects by 6 to 12 months.

The modeling input was based on estimated annual O&M budget of about $15 million, $970,000 for locally purchased materials, and the employment of 12 permanent employees averaging approximately $85,000 per year. The resulting indirect and induced effects of the PEC operation occurring in Fresno County would be an additional 36 jobs, and

approximately $1.4 million in labor income and approximately $4 million in output within the four county areas. Fuel costs were not included in the IMPLAN modeling, since natural gas prices are variable and unknown, and the effects of the purchase would not likely occur within the Fresno County area. IMPLAN Pro Sector 30 (Power Generation and Supply) was used for this analysis, and economic estimates were based on 2005 dollars.

Technical Area: Socioeconomics

Data Request 20 Rev: Please provide an estimate of expenditures for locally purchased materials for the operation phase of the project.

Response: The estimate for expenditures of locally purchased materials during the operation phase is $970,000 per year.

Technical Area: Transmission System Eng.

Data Request 21 Rev: Provide detail drawings for the take off structures which required in interconnecting the 230 kV transmission lines from the proposed power plant to the existing Panoche Substation. Resubmit Single Line Diagrams (Figure 3.6-1) for the Panoche Substation with all equipment ratings including breakers, disconnect switches, buses, and etc.

Verify the conductor type and size for the generation-tie line: 795 ACSS, 795 ACSR, 975 ACSS, or others.

Please provide the re-evaluation of the System Impact Study noted on Page 3-36 of the AFC. The Study should analyze the system impact with and without the project during peak and off-peak system conditions, which will demonstrate conformance or non-conformance with the utility reliability and planning criteria with the following provisions:

- Identify major assumptions in the base cases, including imports to the system, major generation and load changes in the system, and queue generation.
- Analyze system for N-0, important N-1, and critical N-2 contingency conditions, and provide a list of criteria violations in a table showing the loadings before and after adding the new generation.
- Short circuit studies (Optional – Data requests will follow).
- Analyze system for Transient Stability and Post-transient voltage conditions under critical N-1 and N-2 contingencies, and provide related plots, switching data and a list for voltage violations in the studies (Optional – Data requests will follow).
- Provide a list of contingencies evaluated for each study.
- List mitigation measures considered (required) and those selected (Optional – Data requests will follow) for all criteria violations.
- Provide electronic copies of *.sav and *.drw PSLF files (Optional – Data requests will follow).

- Provide power flow diagrams (MW, % loading & P.U. voltage) for base cases with and without the project. Power flow diagrams must also be provided for all N-0, N-1, and N-2 studies where overloads or voltage violations appear.

Response: Panoche Data Adequacy Transmission System Engineering

System Impact Study

A system impact study for Panoche Energy Center was completed on March 30, 2006 and attached to the AFC submittal. PEC took exception to the need for the project to reconductor 37.4 miles the Los Banos – Westley 230 kV line. PG&E and CAISO agreed that a restudy was warranted and the study is currently underway.

The preliminary study will be complete on November 20, 2006 and the final study report will be issued to PEC on December 10, 2006 along with a preliminary approval letter from CAISO for interconnection.

PEC believes that there will not be a need to reconductor Los Banos Westley line. However, if this work must be performed as a result of the re-study, the project will take all necessary actions to perform the appropriate surveys and permitting activities for this linear. The following information was provided by PG&E:

"This has to be engineered but an upgrade in conductor on a lattice steel tower line will typically result in the need to raise, modify and/or strengthen the existing towers in addition to the wire replacement. The wire replacement will typically involve the replacement of the hardware and insulators."

Drawing of take off structures

Attached are the two sketches illustrating the heights and other dimensions of the two typical 230 kV dead-end structures.

The dead end for the PG&E Substation will be 40 feet high and 50 feet wide with 18 foot phase spacing for the 230 kV circuit.

The dead end for the Generator dead end will be 55 feet high and 50 feet wide with 15 foot phase spacing for the 230 kV circuit.

The PG&E study assumed the installation of 795 kcmil ACSS for the dead end to dead end installation.

PG&E will not require the installation of static/lightning wire for the overhead into the substation.

ROW way required for the overhead circuit with this design would be 75 feet assuming a 300 foot span, average 18 foot phase spacing for 795 ACSS.

Provide Updated single line diagram

PEC interconnect 1 line shows the PG&E substation. 3.6.1 shows the overall interconnection and 3.4.7 shows the detail of the PEC side of the bus.

Provide a schedule for the CAISO Preliminary Approval Letter for interconnection of the proposed project to the CAISO control grid.

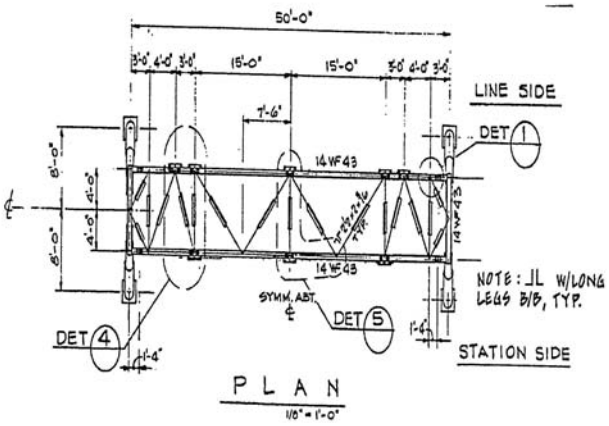
An approval letter was obtained for this project in July 2005. The PEC system impact re-study is underway. It began September 21, 2006. Per Mr. Ed Fishback of CAISO:

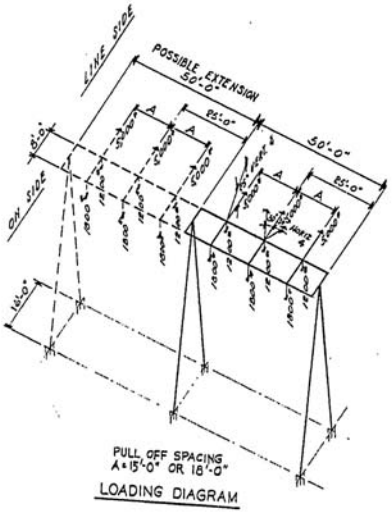
The ISO has received the $10,000 deposit and written notice to continue the Panoche Energy Center System Impact Re-Study today. The re-study shall take no longer than sixty (60) Calendar Days (due by November 20, 2006) to share applicable study results with PG&E for review and comment, and will incorporate comments into the study report. The ISO will issue a final study report to Panoche Energy Center, LLC within eighty (80) Calendar Days, due December 10, 2006.

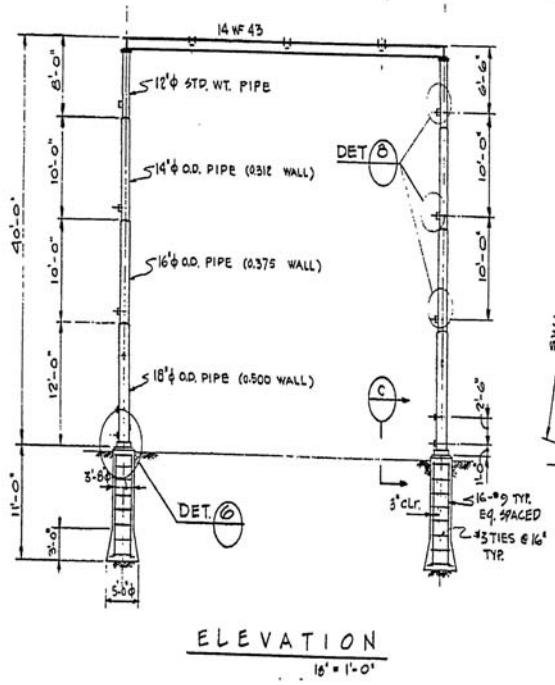
It is expected that CAISO will issue a Preliminary Approval Letter at that time.

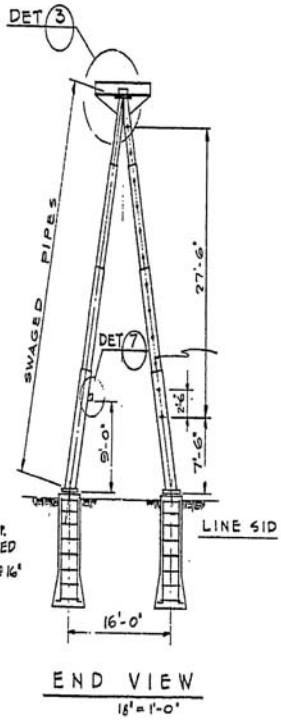
Contact person at CAISO

Ed Fishback
Project Manager
California ISO
151 Blue Ravine Road
Folsom, CA 95630
Phone (916) 608-5836
Cell (916) 802-6401
Fax (916) 351-2264

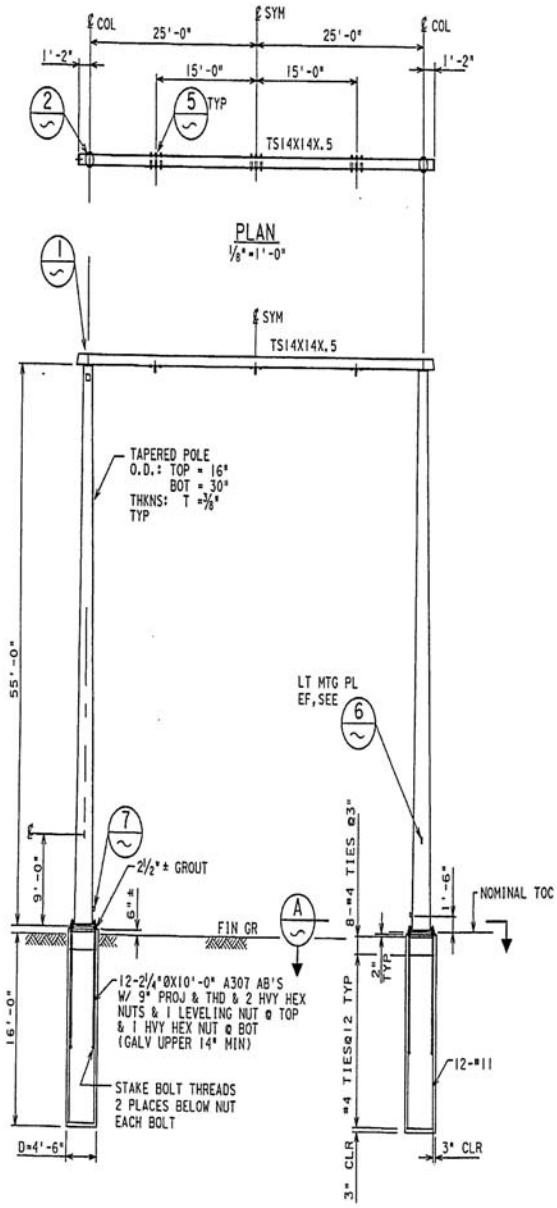


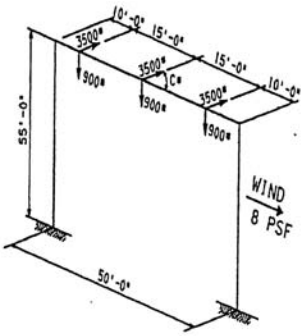






SKETCH # DE_40'H x 50'W





HORIZ. PULL MAY BE FROM EITHER SIDE
HORIZ. ANGLE "C" CAN VARY FROM 60° TO 120°

LOADING DIAGRAM
NTS

SKETCH # DE_55'Hx50'W

Note 1. phase spacing can be changed from 15' shown to 18' or 20' as needed

Technical Area: Transmission System Eng.

Data Request 22 Rev: Please provide the required table.

Response:

DESIGN AND CONSTRUCTION LORS

LORS	Applicability	Compliance
Go-128, CPUC, "Rules for Underground Electric Line Construction"	CPUC rule covers required clearances, grounding techniques, maintenance, and inspection requirements.	3.6.2: 3.9.3: 3.11.3
Title 8 CCR, Section 2700 et seq. "High Voltage Electrical Safety Orders"	Establishes essential requirements and minimum standards for installation, operation, and maintenance of electrical installation and equipment to provide practical safety and freedom from danger.	3.9.3: 3.11.3
GO-52, CPUC, "Construction and Operation of Power and Communication Lines"	Applies to the design of facilities to provide or mitigate inductive interference.	3.6.4.3: 3.11.3
General Order 95 (GO-95) CPUC, "Rules for Overhead Electric Line Construction"	Applies to the design of overhead electric line construction.	3.6.2: 3.9.3:3.11.3

ELECTRIC AND MAGNETIC FIELD LORS

LORS	Applicability	Compliance
Decision 93-11-013, CPUC	CPUC position on EMF reduction.	3.6.4.3 3.11.3
GO-131-D, CPUC, "Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities in California"	CPUC construction application requirements, including requirements related to EMF reduction.	3.6.2: 3.6.4.3: 3.11.3
ANSI/IEEE 544-1994, "Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines"	Standard Procedure for measuring EMF from an electric line that is in service.	3.6.4.3

HAZARDOUS SHOCK LORS

LORS	Applicability	Compliance
8 CCR 2700 et seq. "High Voltage Electrical Safety Orders"	Establishes essential requirements and minimum standards for installation, operation, and maintenance of electrical equipment to provide practical safety and freedom from danger.	3.11.3
ANSI/IEEE 80, "IEEE Guide for Safety in AC Substation Grounding"	Presents guidelines for assuring safety through proper grounding of AC outdoor substations.	3.6.2 3.11.3
NESC, ANSI C2, Section 9, Article 92, Paragraph E; Article 93, Paragraph C	Covers grounding methods for electrical supply and communications facilities.	3.6.2: 3.11.3

COMMUNICATIONS INTERFERENCE LORS

LORS	Applicability	Compliance
47 CFR 15.25, "Operating Requirements, Incidental Radiation"	Prohibits operations of any device emitting incidental radiation that causes interference to communications; the regulation also requires mitigation for any device that causes interference.	3.6.4.3: 3.9.3: 3.11.3
GO-52, CPUC	Covers all aspects of the construction, operation, and maintenance of power and communication lines, and specifically applies to the prevention or mitigation of inductive interference.	3.6.2; 3.6.3 3.6.4; 3.9.3 3.11.3
CEC staff, Radio Interference and Television Interference (RI-TVI) Criteria (Kern River Cogeneration) Project 82-AFC-2, Final Decision, Compliance Plan 13-7	Prescribes the CEC's RI-TVI mitigation requirements, developed and adopted by the CEC in past citing cases.	3.6.4.3

Technical Area: Transmission System Eng.

Data Request 23 Rev: Provide a schedule for the CAISO Preliminary Approval Letter for interconnection of the proposed project to the CAISO control grid.

Response: As noted in the response to Data Request 21, PEC expects the CAISO Preliminary Approval Letter to be issued by December 10, 2007.

Technical Area: Transmission System Eng.

Data Request 24 Rev: Please provide the appropriate discussion.

Response: Transmission LORS for the PEC

DESIGN AND CONSTRUCTION LORS

GO-128,CPUC, "Rules for Underground Electric Line Construction"

All proposed transmission facilities will be designed and constructed in accordance with all applicable elements contained in GO-128, CPUC. Sections 3.6.2, 3.9.3 and 3.11.3 describe the proposed design, operation and maintenance and safety and reliability elements of the transmission system. Operation and maintenance will be compliant with all requirements contained in GO-128, CPUC.

Title 8 CCR, Section 2700 et seq. "High Voltage Electrical Safety Orders"

Requirements contained in Title 8 CCR, Section 2700 et seq. will be adhered to in the design, construction, operation and maintenance of the electrical systems for the PEC. Sections 3.6.2, 3.9.3 and 3.11.3 describe the design, operation and safety and maintenance and reliability of the proposed transmission system of the PEC.

GO-52, CPUC, Construction and Operations of Power and Communication Lines"

The design and construction of the transmission facility of the PEC will be performed so as to meet or exceed the requirements of GO-52, CPUC. Section 3.6.2 describes the proposed design of the transmission facilities and sections 3.9.3 and 3.11.3 describes the operations and safety and reliability components of the transmission system. The operation of the PEC transmission system will also be compliant with GO-52, CPUC.

GO-95, CPUC, "Rules for Overhead Electric Line Construction"

The design and construction of the PEC transmission system will be carried out in compliance with GO-95, CPUC. Sections 3.6.2, 3.9.3 and 3.11.3 describe the design, operation and maintenance and safety and reliability components of the proposed PEC transmission system and all of these elements will meet or exceed the applicable section of GO-95, CPUC.

ANSI/IEEE 693, "IEEE Recommended Practices for Seismic Design of Substations"

The design and construction of the PEC substation will be carried out in compliance with ANSI/IEEE 693, "IEEE Recommended Practices for Seismic Design of Substations" for zone 4 defined by the Uniform Building Code. AFC Section 3.2.2 describes the seismic conditions for the project.

IEEE 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"

The design and construction of the PEC substation will be carried out in compliance with IEEE 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations." The substation will be provided with security fencing as indicated in AFC Section 3.11.1.1.

IEEE 998, "Direct Lightning Stroke Shielding of Substations"

The design and construction of the PEC substation will be carried out in compliance with IEEE 998, "Direct Lightning Stroke Shielding of Substations."

IEEE 980, "Containment of Oil Spills for Substations"

The design, construction, operation, and maintenance of the PEC substation will be carried out in compliance with IEEE 980, "Containment of Oil Spills for Substations" consistent with the requirements of PG&E in the power purchase agreement.

ELECTRIC AND MAGNETIC FIELD LORS

Decision 93-11-013, CPUC, CPUC position on EMF reduction

The CPUC Decision 93-11-013 created the California EMF Program. The EMF Program's charge is to support research and provide education about whether exposure to EMF generated by the use of electricity can affect human health. Additionally, its goal is to foster a rational and fair approach to dealing with the potential hazards, if any, of exposure to EMF through research, policy analysis, education, and technical assistance. Since Decision 93-11-013 and its resulting EMF Program are focused on science and health, not on regulatory development.

PEC does not presently, nor does it foresee, any applicable compliance obligations for EMF-related LORS under this CPUC Decision.

Additional information on PEC and EMF are contained in Sections 3.6.4.3 and 3.11.3.

GO-131-D, CPUC, Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities in California

Section X of GO-131-D, entitled Potential Exposure to Magnetic Fields (EMF), requires a description of "the measures taken to reduce the potential exposure to EMF." PEC AFC Sections 3.6.2, 3.6.3 and 3.6.4 provide design and other specifications that demonstrate measures to reduce EMF exposure. This is for both the construction phase and the operational phase.

Given the PEC facility design and technology described in Section 3, and as required by PG&E in the power purchase agreement, the PEC will be compliant with GO-131-D EMF rules.

ANSI/IEEE 544-1994, Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines

Where required to do so and at its discretion otherwise, the PEC will follow the ANSI/IEEE 544-1994 standard procedures for the measurement of power frequency electric and magnetic fields from its AC power lines.

HAZARDOUS SHOCK LORS

8 CCR 2700 et seq. "High Voltage Electrical Safety Orders"

The transmission interconnection will be designed and constructed in conformance with CPUC GO95 and Title 8 California Code of Regulations (CCR) 2700 requirements. Therefore, hazardous shocks are unlikely to occur as a result of Project construction or operation.

ANSI/IEEE 80, "IEEE Guide for Safety in AC Substation Grounding"

The transmission line will have shield or ground wires in place. The location of the shield wires in relation to conductors shall be in accordance with best industry practices and will comply with ANSI/IEEE80. The shield wire shall be extra high strength galvanized steel or copper-clad steel as determined by the location and the detailed design.

NESC, ANSI C2, Section 9, Article 92, Paragraph E; Article 93, Paragraph C

The preliminary design and all detailed design for grounding methods for electrical supply and communications facilities will comply with this code as appropriate. The take-off or the dead-end structures will be H or A-frame type. They will be 65 feet high with additional 15-foot lightning masts. The power conductor will be attached 50 feet from the ground and the shield wire will be attached at a height of 65 feet.

COMMUNICATION AND INTERFERENCE LORS

47 CFR 15.25, "Operating Requirements, Incidental Radiation"

Corona may result in radio and television reception interference, audible noise, light, and production of ozone. A

transmission line's field effects are the voltages and currents that may be induced in nearby conduction objects. The project design, operations and maintenance activities will comply with 47CFR 15.25 to minimize the effect of any device emitting incidental radiation that causes interference to communications.

GO-52, CPUC

The construction, operation, and maintenance of power and communication lines will comply with GO52 in order to prevent or mitigate any possible inductive interference.

CEC staff, Radio Interference and Television Interference (RI-TVI) Criteria (Kern River Cogeneration) Project 82-AFC-2, Final Decision, Compliance Plan 13-7

Corona-generated radio interference is most likely to affect the amplitude modulation (AM) broadcast band (535 to 1,605 kilohertz); frequency modulation (FM) radio is rarely affected. Only AM receivers located very near to transmission lines have the potential to be affected by interference. The CEC's RI-TVI mitigation requirements, developed and adopted by the CEC in past citing cases, will be adhered to in the construction, operation and maintenance of the power lines.

Technical Area: Transmission System Eng.

Data Request 25 Rev: Please provide the contact person information for the CAISO.

Response: Contact person at CAISO

Ed Fishback
Project Manager
California ISO
151 Blue Ravine Road
Folsom, CA 95630
Phone (916) 608-5836
Cell (916) 802-6401
Fax (916) 351-2264

Technical Area: Transmission System Eng.

Data Request 26 Rev: Provide a schedule for the CAISO Preliminary Approval Letter for interconnection of the proposed project to the CAISO control grid.

Response: Please refer to Data Request 21 and 23.

Technical Area: Water Resources

Data Request 27 Rev: Because a permit application that contains required information has not been submitted, it is not possible to conduct analyses on the feasibility of deep well injection. Please provide a permit application with a letter from the approving agencies (U.S. Environmental Protection Agency, Regional Water Quality Control Board, and the CA Division of Oil and Gas) stating that the permit application is complete, or provide all of the information required by the agencies for the project's waste discharge (deep well injection).

Response: The Underground Inspection Control Permit Application dated September, 2006, was docketed at the CEC on September 23, 2006.

The Underground Inspection Control Permit has been deemed Data Adequate. The letter is attached.

The responses from the Regional Water Board and California Division of Oil, Gas, and Geothermal Resources are also attached.

Cindy,

The Panoche Energy Center's Class I wells could encounter oil or gas, or affect future development of these resources. Since a Class I well is the jurisdiction of the EPA, we will not issue an exploratory well permit. However, this office will review the proposals to drill and relay any concerns to the EPA.

Glenn W. Muggelberg
Division of Oil, Gas and Geothermal Resources
466 N. 5th Street
Coalinga, California 93210
(559) 935-2941

This e-mail responds to your question regarding Regional Water Board regulatory involvement in the discharge of waste into deep, brackish water-bearing formations via deep well injection.

The Regional Water Board defers the direct regulatory oversight of these discharge to the U. S. Environmental Protection Agency, which typically provides copies of correspondence regarding draft permits, adopted permits, injection tests, etc. to the Regional Water Board.

Jo Anne Kipps
Senior Engineer
Central Valley Water Board
(559) 445-5035
jkipps@waterboards.ca.gov

Technical Area: Water Resources

Data Request 28 Rev: No site specific water chemistry data was presented in the AFC. Please obtain site specific groundwater data for this project. This will require obtaining groundwater sample(s) at the site and conducting laboratory analyses of these samples. Samples should be collected from the water bearing zone that is proposed for project water supply well field development and the data presented to CEC.

No site specific groundwater data is presented that shows the ability of the project to supply the quantities of water that are required for the proposed project. Site specific aquifier and well field design testing should be conducted to ensure aquifier characteristics that were inferred from historical well sampling, construction, and drilling that occurred at distances from the proposed project are also present at the proposed project site.

Please provide at a minimum two (2) geologic and hydrologic cross sections at 90 degree angles across the site, forming a fence diagram. Please include all surface and groundwater features. Please include existing well, groundwater, and other data, as well as the proposed groundwater production wells.

Please provide at a minimum two (2) geological cross-sections that cross the Project Site at 90 degrees, forming a fence diagram, representing the target waste injection zone as well as water bearing zones above and below. Please include fault lines and other structural features. Incorporate the proposed waste injection well field into this design.

Response: The PEC has initiated the drilling and installation of three monitoring wells at the Panoche Energy Center (PEC) site in western Fresno County, California. PEC's objective is to assess the groundwater quality parameters in three hydrogeologic zones below site. Two well casings have been installed within a boring that has been drilled total depth of 1,510 feet below ground surface (bgs). The shallowest completion was installed within a second borehole drilled adjacent to the first hole.

Geologic and hydrogeologic data associated with the pilot hole are preliminary in nature because the monitoring wells were recently installed. A Well Installation Report summarizing all work conducted during the installation of the monitoring wells will be prepared following construction. The post-construction report will include documentation collected during well drilling and installation including pipe tallies, grout records, penetration rate logs, geophysical logs, and the lithologic log. Detailed Record Drawings of the monitoring wells will also be included in the Well Installation Report.

Geologic and hydrogeologic cross-sections incorporating site-specific data are provided (See Attachment A).

Lithologic Logging

The pilot hole was pilot hole was drilled using direct rotary mud drilling methods. Cuttings from the pilot hole were lithologically logged on a daily basis at approximately 10-foot intervals to identify the portions of the aquifers with the greatest potential for groundwater production. A preliminary lithologic field log is included (See Attachment A).

Fine-grained (clays and silts) and coarse-grained (sands and gravels) sediments typical of alluvial fan settings were encountered within the pilot hole. Distinctive blue clay cuttings associated with the Corcoran Clay (E-Clay) were first encountered at a depth of approximately 645 feet bgs in the pilot hole. The thickness of the Corcoran Clay was hard to identify based on cuttings. Portions of the drilled cuttings from each interval were secured in specially designed chip trays suitable for review and archiving.

Drilled cuttings from selected intervals of the borehole were submitted for sieve analysis by a geotechnical laboratory. Sieve analyses of drilled sediments are useful for the selection of appropriate filter pack when designing a production well. The analysis involves passing a sediment sample through a series of calibrated screens to quantify sorting and grain size. The appropriate grain size for the filter pack sand is determined based in part on the particle size analysis data.

Geophysical Logging

Geophysical logging was conducted after the exploratory boring was drilled to its total depth of 1,510 feet bgs. Geophysical logs help to characterize subsurface hydrogeologic conditions that cannot be readily determined from drilled cuttings.

A resistivity and spontaneous potential (SP) electric log was run for the pilot hole from ground surface to about 1,500 feet bgs. Natural gamma and temperature logs were run with the electric log. Final designs of the wells are based on interpretation of the lithologic and geophysical logs for the pilot hole. Additional geophysical logs could not be completed due to obstruction of the pilot hole with the Corcoran Clay zone at a depth of about 760 feet bgs. A general description and interpretation of each geophysical log is presented below.

Electric Log

The electric log consists of a spontaneous potential (SP) log, a short-normal (16-inch spacing) resistivity log, and a long-normal (64-inch spacing) resistivity log, which were recorded simultaneously. The SP log measured naturally occurring electrical signals and is used mainly for lithologic correlations or for differentiating non-permeable strata in a clay-sand sequence. The SP log can also be used to calculate estimated water quality. The short-normal and long-normal resistivity logs are measured as the reciprocal of a formation's electrical conductivity. The increase or decrease of a formation's resistivity is partially controlled by its porosity. Because groundwater is an electrical conductor, its presence in the interconnected pores reduces the overall formation resistivity. Typically, silt and clay units will have lower resistivity values in comparison to sand and gravel units. The short-normal resistivity log measures the resistivity of the formation near the borehole, while the long-normal resistivity log measures the resistivity at a greater distance from the borehole. The long-normal and short-normal logs measure similar resistivities in non-permeable clay zones, although the two logs may also be

similar in highly permeable zones where drilling fluid invasion is extensive.

The electric log for the pilot hole indicates predominantly medium-grained sediments (gravels and sands) to about 330 feet bgs with resistivities exceeding 15 ohmmeters^2 per meter (ohmmeters^2/m). Groundwater within the semi-confined aquifer is estimated to be approximately 150 feet bgs based on the change in resistivity at that depth. Predominantly fine-grained sediments (clay and silt) with interbeds of coarser sediments (resistivity between 5 and 25 ohmmeters^2/m) from 330 to 470 feet bgs. From about 470 to 770 feet bgs, the long and short normal resistivities are less than 10 ohmmeters^2/m, indicating clay and silt, probably corresponding to the Corcoran Clay. Medium grained sediments (gravels and sands) with interbeded with fine-grained sediments (clay and silts) occur from approximately 770 to 1,440 feet bgs based on, resistivites ranging from 10 to 50 ohmmeters^2/m. From about 1,440 feet bgs to the bottom of the logged interval, the long and short normal resistivities are less than 5 ohmmeters^2/m, indicating clay and silt deposits.

Gamma-Ray Log

The gamma-ray log measures the naturally occurring gamma emissions from the decay of unstable elements in the formation surrounding the borehole. One of the most significant and the most abundant radioactive elements is potassium-40. As potassium-40 decays, it emits electromagnetic radiation, which the gamma-ray probe detects and records. The greater the counting rate, the higher the amount of potassiuim-40 in the formation. Minerals such as feldspar, biotite, and several clay minerals contain potassium-40. Consequently, an increase in clay content in the strata typically results in an elevated gamma-ray response. However, in many portions of California, arkosic (feldspar-rich, poorly weathered) sand formations are present, which also have high gamma-ray emissions.

The gamma-ray log for the pilot hole shows a fairly consistent gamma count from ground surface to about 470 feet bgs, at which depth the gamma count increases significantly. The

sudden increase in gamma counts at 470 feet bgs correlates well with the electric log, and indicates an increase in clay content, probably related to the Corcoran Clay.

Temperature Survey Log

The temperature survey provides a relative indication of the ambient groundwater temperature. Changes in temperature can in some cases be related to influx of formation water that exists in the aquifer.

Based on the temperature survey log, ambient temperatures within the pilot hole ranged from 80 to 86 degrees Fahrenheit. No significant influxes or outflows were apparent based on the temperature survey.

Monitoring Wells

The geologic characteristics identified in the lithologic log and geophysical logs of the pilot hole indicate that the formations between about 170 and 470 feet bgs and between 770 and 1,350 feet bgs have the greatest potential for groundwater production. From approximately 1,350 to 1,510 feet bgs, groundwater production would be expected to be negligible due to thick clay deposits.

Twenty-foot screen intervals were used for each of the three 2-inch-diameter monitoring wells installed. The semi-confined aquifer well (MW-3) is screened from approximately 440 to 460 ft bgs. The upper confined aquifer monitoring well (MW-2) is screened from approximately 1,100 to 1,120 feet bgs. The lower confined aquifer monitoring well (MW-1) is screened from approximately 1,302 to 1,322 feet bgs. A deeper screened interval of 1,320 to 1,340 feet bgs was intended for the lower confined aquifer monitoring well but was not feasible due to a twisted off drag bit within the borehole at a depth of approximately 1,325 feet bgs. The installed screened interval is at a higher elevation within the target sand zone for the original specification.

Static water levels are approximately 362 to 380 feet bgs for the confined aquifer monitoring wells (MW-1 and MW-2

respectively) and 180 feet bgs for the semi-confined aquifer monitoring well (MW-3)

Based on the preliminary data, production wells at the site would likely be screened from 1,000 to 1,350 feet bgs. Production well design will incorporate data developed from monitoring wells installed at the site.

Estimated water quality is based on SP log calculations for bicarbonate type water because groundwater in the subbasin is generally of the sulfate or bicarbonate type. Water quality ranges from 495 to 769 parts per million (ppm) total dissolved solids (TDS) in the 170 to 470 foot bgs interval. TDS concentration increase below about 770 feet bgs and are estimated to be about 1,667 ppm TDS between 1,295 and 1,360 feet bgs.

Groundwater Sampling

Groundwater samples were collected from MW-1 and MW-2 following development of the wells. Samples were collected during air lift pumping of the wells due to the deep static water levels.

A groundwater sample will be collected from MW-3 following development of the well on Friday October 27, 2006. Pre-development depth to water is approximately 180 feet bgs. Relatively shallow groundwater may be collected using a submersible pump. Samples will be recovered by air-lift pumping or bailer as appropriate if static water levels are too deep to use a submersible pump.

Temperature, conductivity, pH, and qualitative sediment content of the discharge water was be monitored periodically to assure that representative groundwater samples were obtained. Samples were provided to a California-certified analytical laboratory for testing. The groundwater samples will be analyzed for a suite of parameters that include: general water quality, water chemistry (e.g., total alkalinity, hardness, cations, and anions).

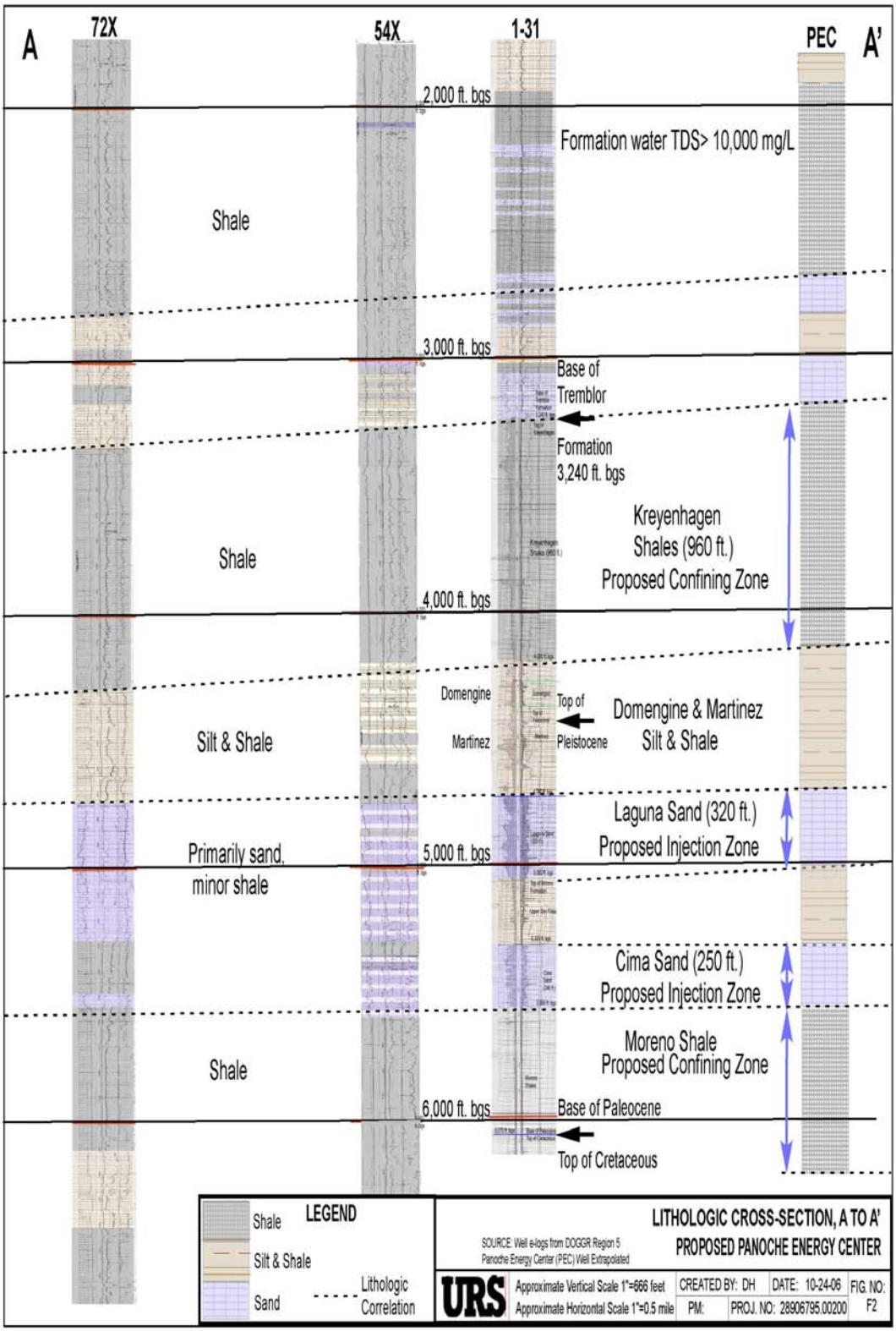
Although a screened interval of 1,000 to 1,350 feet bgs is considered optimal for this location, groundwater quality results from the two confined-aquifer monitoring wells might alter the screened interval and or the water might require treatment or blending to address some elevated analyte concentrations (such as TDS).

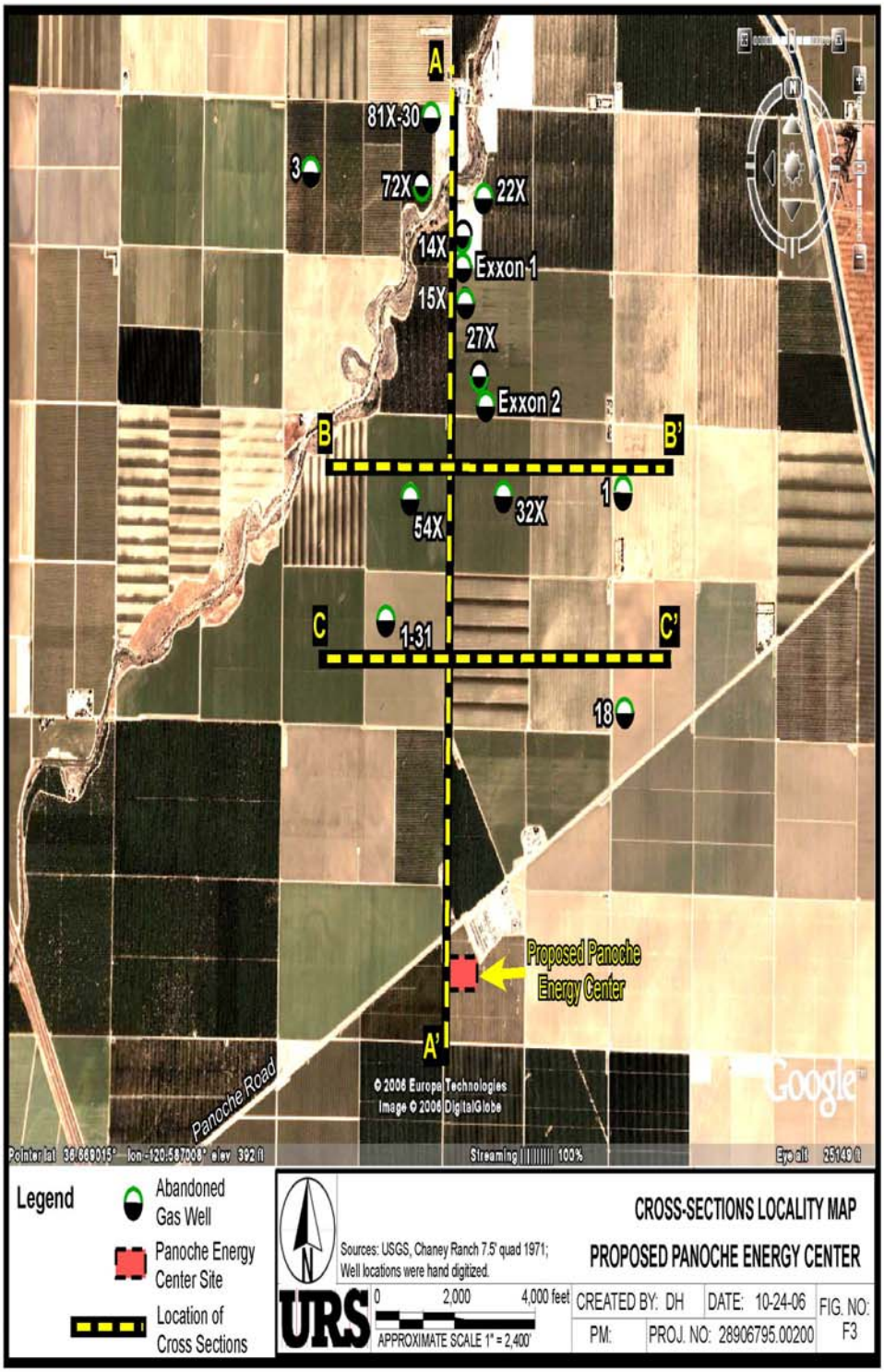
Aquifer Testing

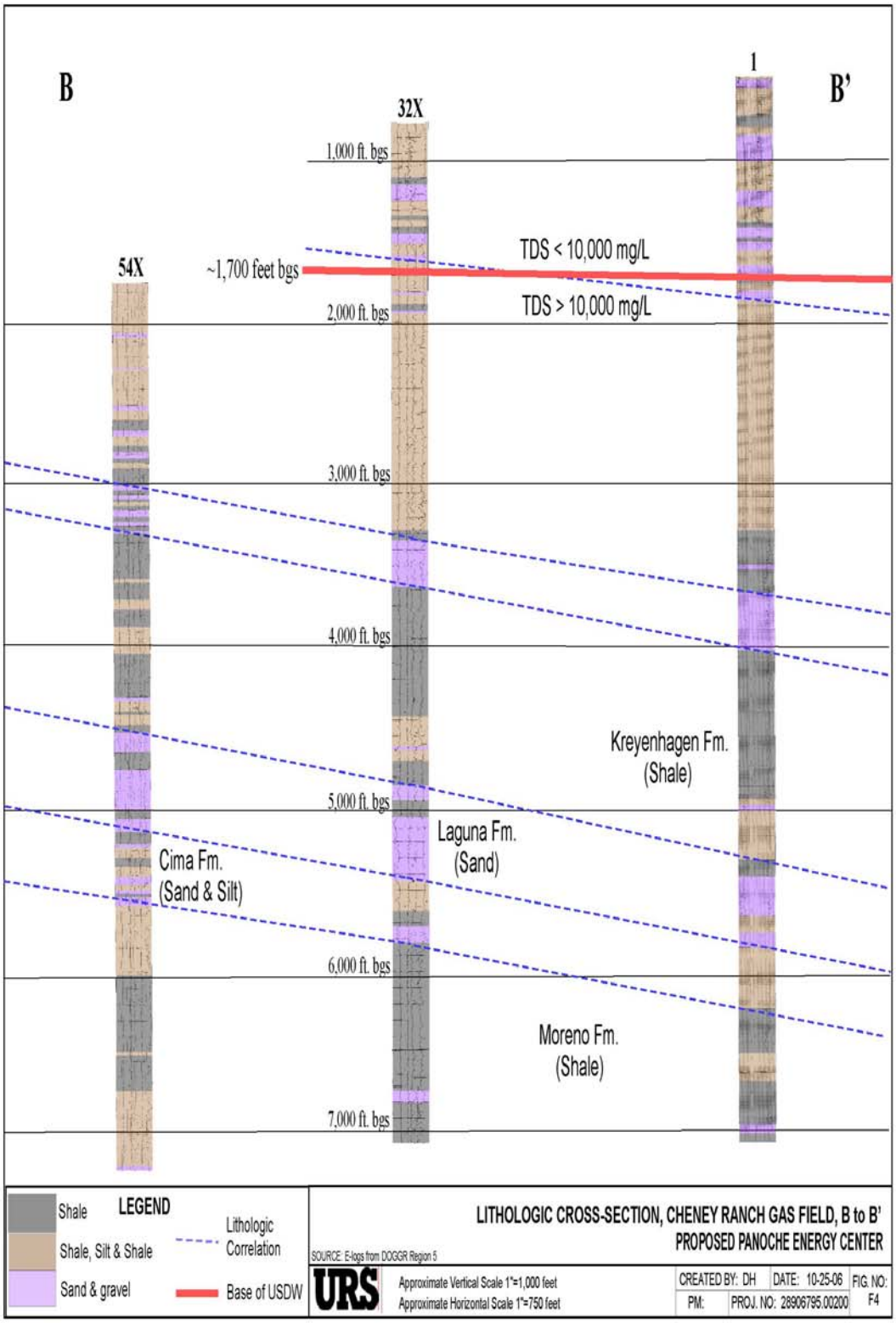
The monitoring wells at the PEC are designed to provide water quality/chemistry data and potentiometric surface (head) data. The inside diameter of the casings are too small to accept submersible pumps suitable for pumping tests of the magnitude required to simulate drawdown of the future production wells.

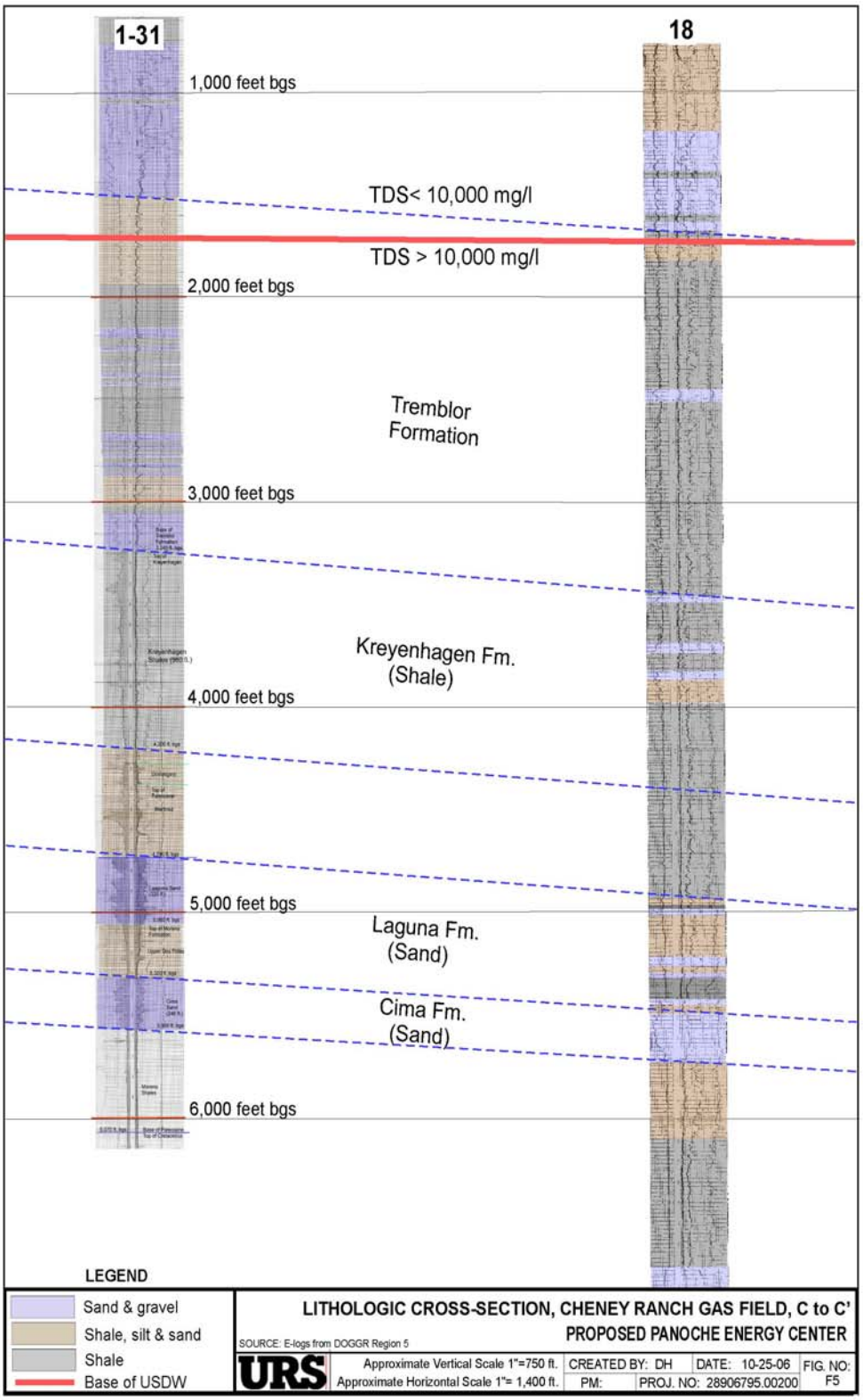
Well yields within the Westside Subbasin of the San Joaquin Valley Groundwater Basin average 1,100 gallons per minute and average from 600 to 1,800 feet in depth (DWR, 2006). Lithologic and geophysical logging of the pilot hole indicates that geologic and hydrogeologic properties of the semi-confined and confined aquifer are consistent with the surrounding area and the aquifers should be capable of producing average groundwater yields.

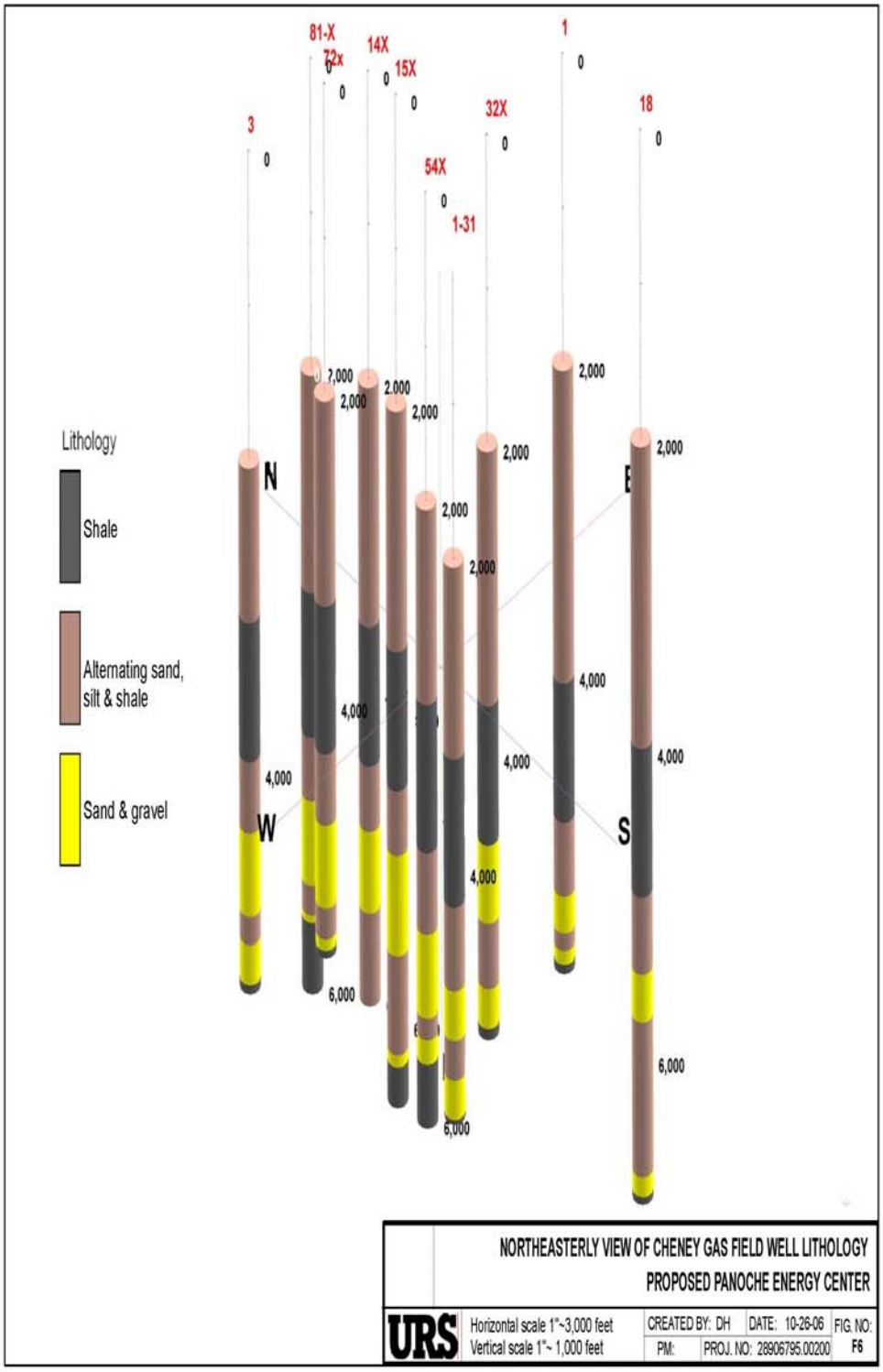
Future PEC production wells are expected to generate drawdowns comparable to those that agricultural wells in the area are capable of producing. No site-specify geologic or hydrogeologic data have been identified that indicate the PEC production well would substantially impact other groundwater users surrounding the site. Drawdown effects of the production well are further addressed in the response to Data Request 32.

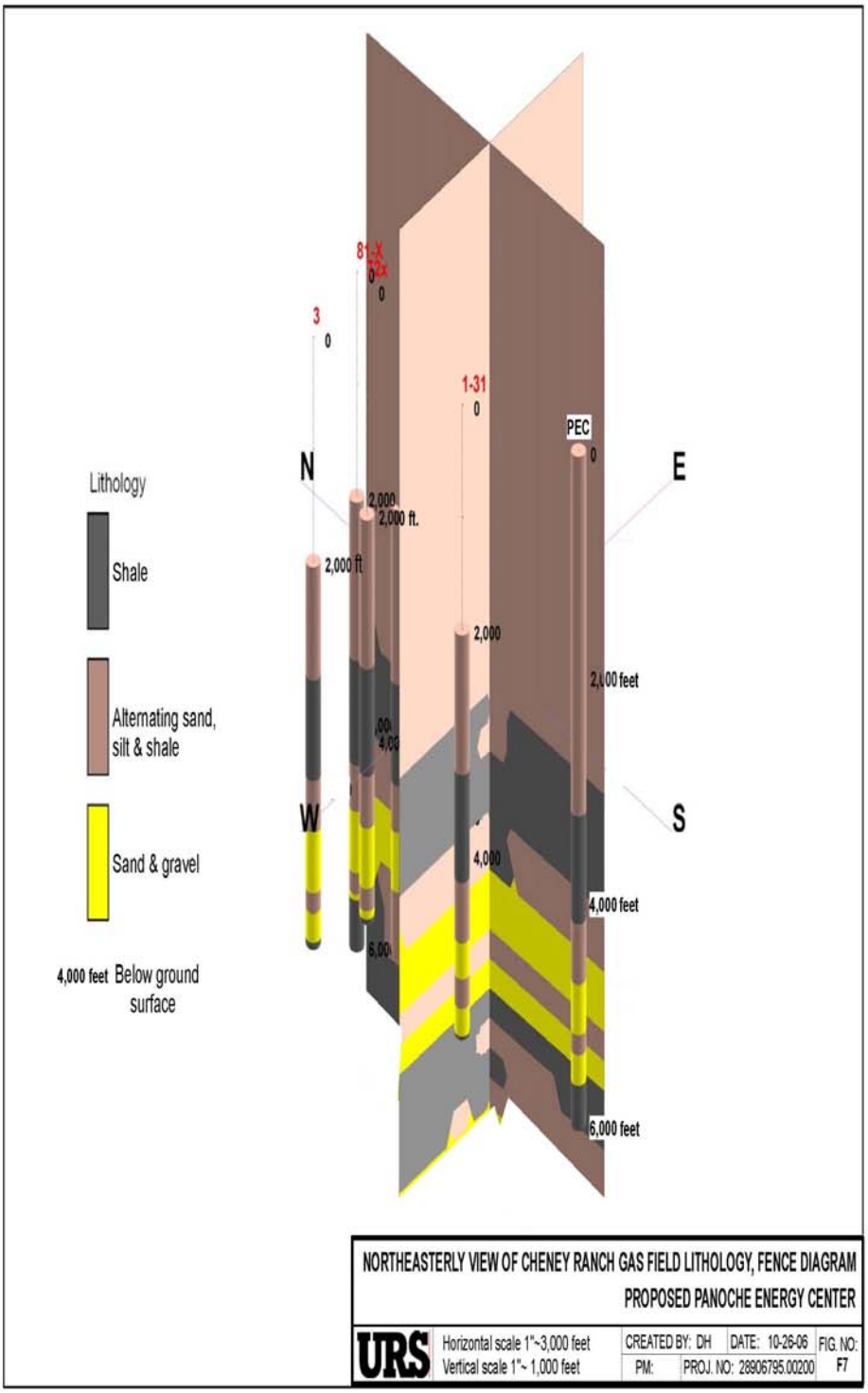

A
72X
54X
1-31
PEC
A'
2,000 ft. bgs
Formation water TDS> 10,000 mg/L
Shale
3,000 ft. bgs
Base of Tremblor Formation 3,240 ft. bgs
Shale
Kreyenhagen Shales (960 ft.) Proposed Confining Zone
4,000 ft. bgs
Domengine
Martinez
Top of Pleistocene
Domengine & Martinez Silt & Shale
Silt & Shale
Laguna Sand (320 ft.) Proposed Injection Zone
Primarily sand, minor shale
5,000 ft. bgs
Cima Sand (250 ft.) Proposed Injection Zone
Shale
Moreno Shale Proposed Confining Zone
6,000 ft. bgs
Base of Paleocene
Top of Cretaceous
LEGEND
Shale
Silt & Shale
Sand
Lithologic Correlation
SOURCE: Well e-logs from DOGGR Region 5
Panoche Energy Center (PEC) Well Extrapolated
LITHOLOGIC CROSS-SECTION, A TO A'
PROPOSED PANOCHE ENERGY CENTER
URS
Approximate Vertical Scale 1"=666 feet
Approximate Horizontal Scale 1"=0.5 mile
CREATED BY: DH
DATE: 10-24-06
PM:
PROJ. NO: 28906795.00200
FIG. NO: F2

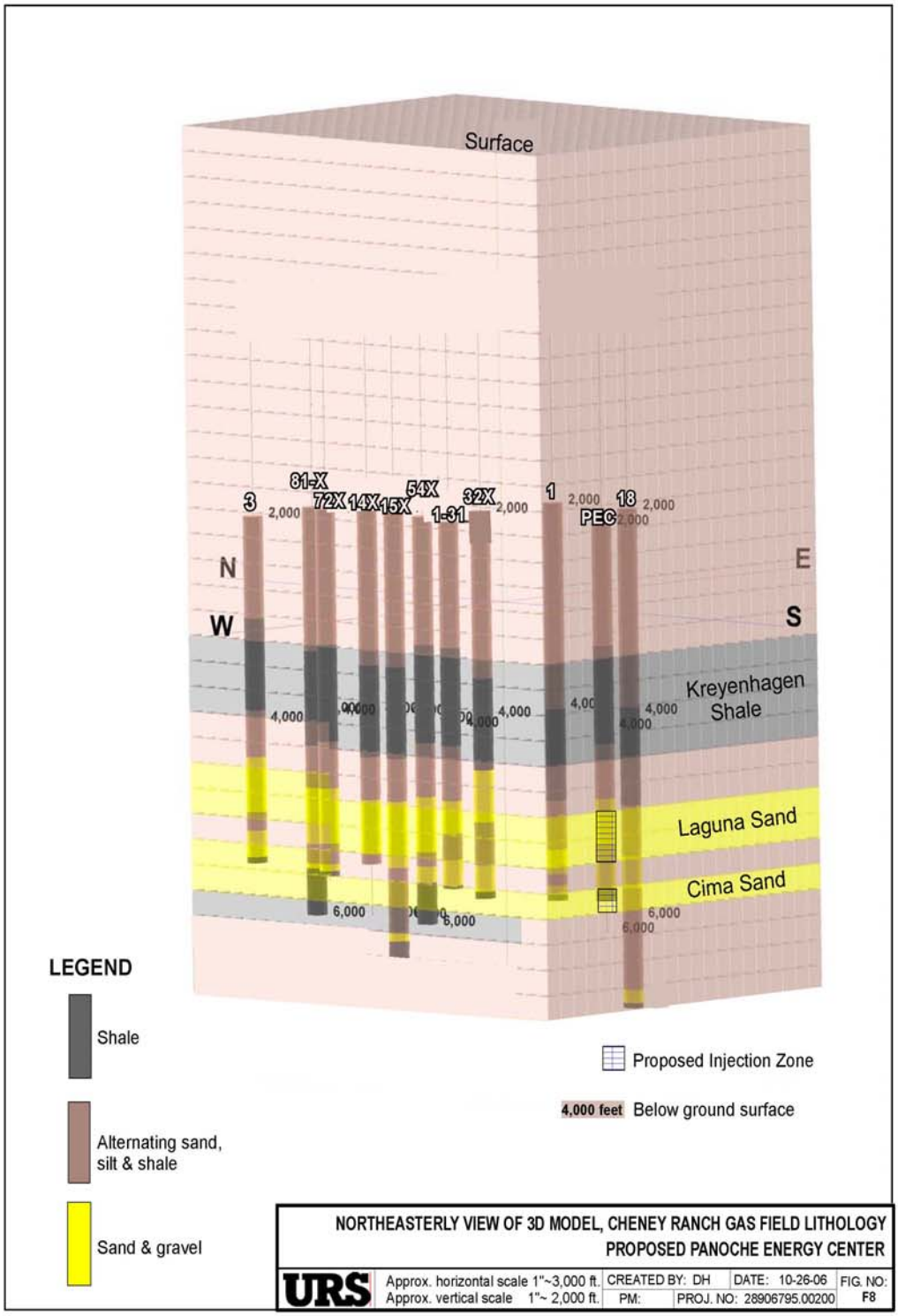

A
81X-30
3
72X
22X
14X
Exxon 1
15X
27X
Exxon 2
B
B'
1
54X
32X
C
1-31
C'
18
Proposed Panoche Energy Center
A'
Panoche Road
© 2006 Europa Technologies
Image © 2006 DigitalGlobe
Google
Legend
Abandoned Gas Well
Panoche Energy Center Site
Location of Cross Sections
Sources: USGS, Chaney Ranch 7.5' quad 1971; Well locations were hand digitized.
CROSS-SECTIONS LOCALITY MAP
PROPOSED PANOCHE ENERGY CENTER
URS
0 2,000 4,000 feet
APPROXIMATE SCALE 1" = 2,400'
CREATED BY: DH
DATE: 10-24-06
PM:
PROJ. NO: 28906795.00200
FIG. NO: F3

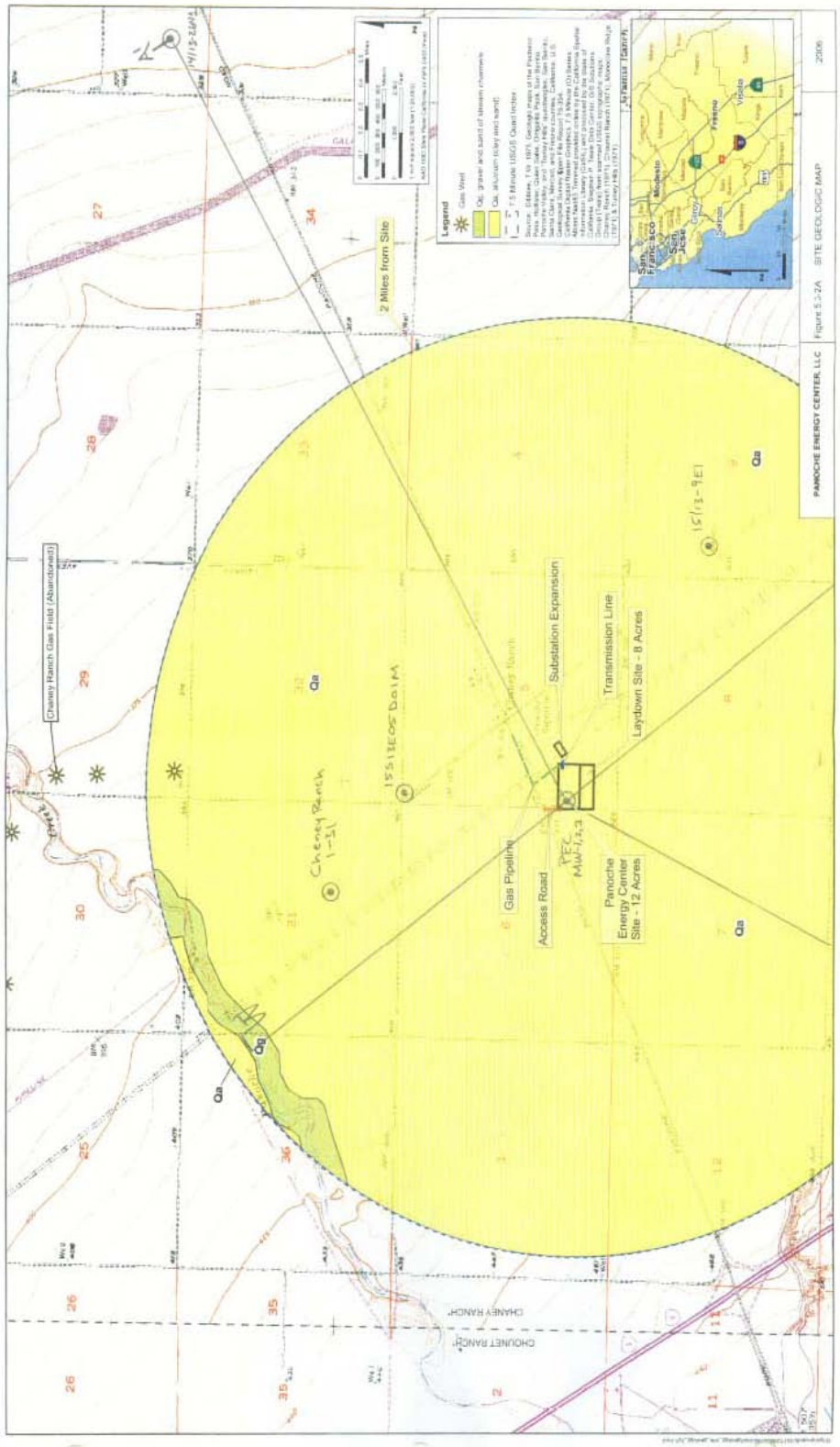

B
B'
54X
32X
1
1,000 ft. bgs
~1,700 feet bgs
TDS < 10,000 mg/L
TDS > 10,000 mg/L
2,000 ft. bgs
3,000 ft. bgs
4,000 ft. bgs
5,000 ft. bgs
6,000 ft. bgs
7,000 ft. bgs
Kreyenhagen Fm.
(Shale)
Laguna Fm.
(Sand)
Cima Fm.
(Sand & Silt)
Moreno Fm.
(Shale)
LEGEND
Shale
Shale, Silt & Shale
Sand & gravel
Lithologic Correlation
Base of USDW
LITHOLOGIC CROSS-SECTION, CHENEY RANCH GAS FIELD, B to B'
PROPOSED PANOCHE ENERGY CENTER
SOURCE: E-logs from DOGGR Region 5
URS
Approximate Vertical Scale 1"=1,000 feet
Approximate Horizontal Scale 1"=750 feet
CREATED BY: DH
DATE: 10-25-06
PM:
PROJ. NO: 28906795.00200
FIG. NO: F4


1-31
18
1,000 feet bgs
TDS< 10,000 mg/l
TDS > 10,000 mg/l
2,000 feet bgs
Tremblor Formation
3,000 feet bgs
Kreyenhagen Fm. (Shale)
4,000 feet bgs
5,000 feet bgs
Laguna Fm. (Sand)
Cima Fm. (Sand)
6,000 feet bgs
LEGEND
Sand & gravel
Shale, silt & sand
Shale
Base of USDW
LITHOLOGIC CROSS-SECTION, CHENEY RANCH GAS FIELD, C to C'
PROPOSED PANOCHE ENERGY CENTER
SOURCE: E-logs from DOGGR Region 5
URS
Approximate Vertical Scale 1"=750 ft.
Approximate Horizontal Scale 1"= 1,400 ft.
CREATED BY: DH
DATE: 10-25-06
PM:
PROJ. NO: 28906795.00200
FIG. NO: F5

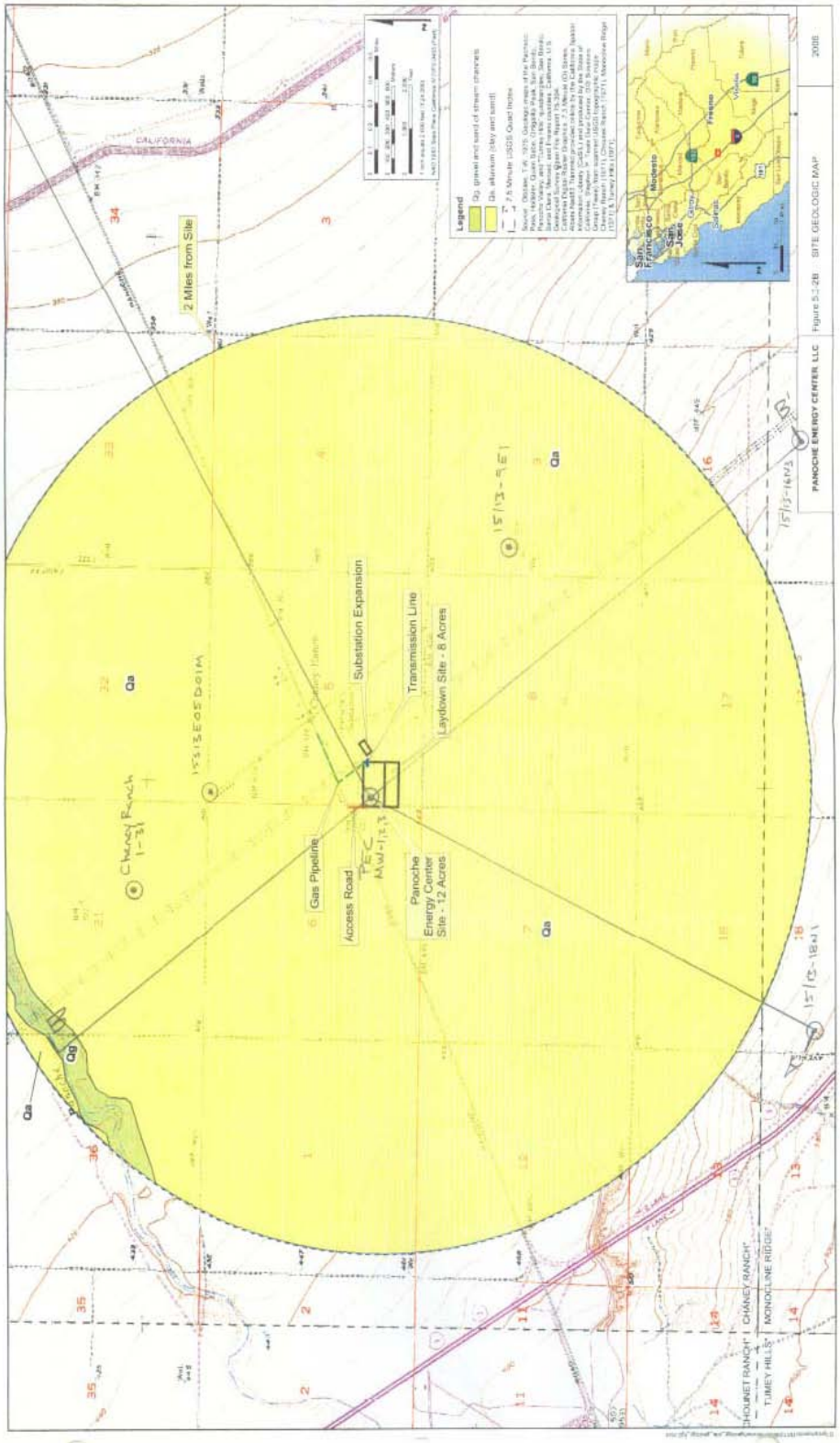

Lithology
Shale
Alternating sand, silt & shale
Sand & gravel
3
81-X
72x
14X
15X
54X
1-31
32X
1
18
N
W
E
S
0
2,000
4,000
6,000
NORTHEASTERLY VIEW OF CHENEY GAS FIELD WELL LITHOLOGY
PROPOSED PANOCHE ENERGY CENTER
URS
Horizontal scale 1"~3,000 feet
Vertical scale 1"~ 1,000 feet
CREATED BY: DH
DATE: 10-26-06
FIG. NO:
PM:
PROJ. NO: 28906795.00200
F6


Lithology
Shale
Alternating sand, silt & shale
Sand & gravel
4,000 feet Below ground surface
N
E
S
W
3
0
1-31
0
PEC
0
2,000 ft.
2,000 ft
2,000
2,000 feet
4,000 feet
6,000 feet
NORTHEASTERLY VIEW OF CHENEY RANCH GAS FIELD LITHOLOGY, FENCE DIAGRAM
PROPOSED PANOCHE ENERGY CENTER
URS
Horizontal scale 1"~3,000 feet
Vertical scale 1"~ 1,000 feet
CREATED BY: DH
DATE: 10-26-06
FIG. NO: F7
PM:
PROJ. NO: 28906795.00200

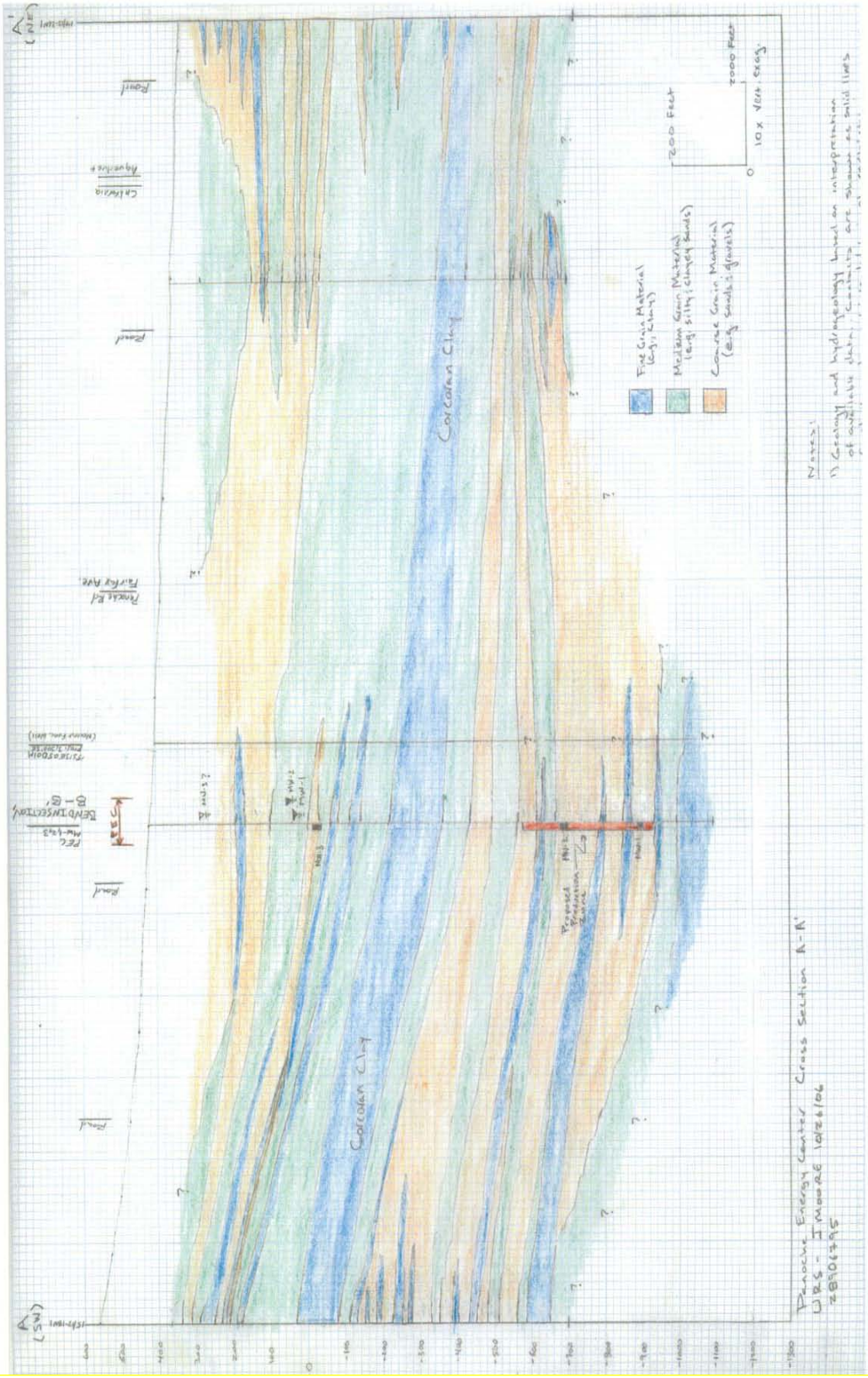

Surface
3
81-X
72X
14X
15X
54X
1-31
32X
1
PEC
18
2,000
N
W
E
S
Kreyenhagen Shale
Laguna Sand
Cima Sand
4,000
6,000
LEGEND
Shale
Alternating sand, silt & shale
Sand & gravel
Proposed Injection Zone
4,000 feet Below ground surface
NORTHEASTERLY VIEW OF 3D MODEL, CHENEY RANCH GAS FIELD LITHOLOGY
PROPOSED PANOCHE ENERGY CENTER
URS
Approx. horizontal scale 1"~3,000 ft.
Approx. vertical scale 1"~ 2,000 ft.
CREATED BY: DH
DATE: 10-26-06
PM:
PROJ. NO: 28906795.00200
FIG. NO: F8

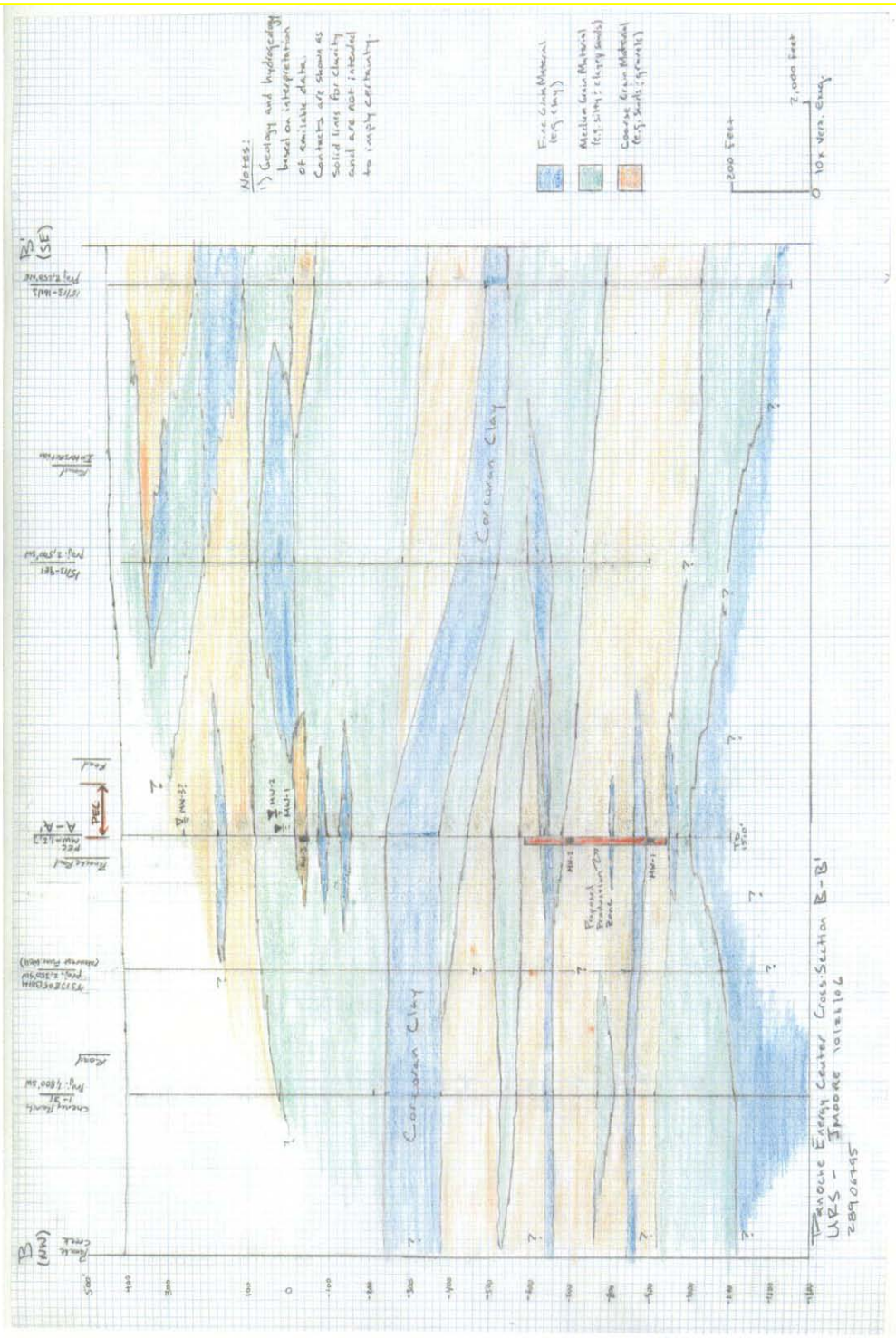


PEC Geo Map A.max



PEC Geo Map B.max


Panoche Energy Center Cross Section A-A'
UBS - J Moore 10/26/06
#B06795
Corcoran Clay
Corcoran Clay
Fine Grain Material (e.g. Clays)
Medium Grain Material (e.g. Silts; Clayey Sands)
Coarse Grain Material (e.g. Sands & Gravels)
200 Feet
10x Vert. Exag.
2000 Feet
Notes:
1) Geology and hydrogeology based on interpretation of available data. Contacts are shown as solid lines
Proposed Injection Zone
Proposed Monitoring Zone
Proposed Monitoring Zone
Proposed Monitoring


Notes:
1) Geology and hydrogeology based on interpretation of available data. Contacts are shown as solid lines for clarity and are not intended to imply certainty
Fine Grain Material (e.g. Clay)
Medium Grain Material (e.g. Silt; Clayey Sands)
Coarse Grain Material (e.g. Sands; Gravels)
200 feet
2,000 feet
10x Vert. Exag.
Corcoran Clay
Corcoran Clay
Proposed Production Zone
MW-2
MW-1
PEC
A-A'
B (NW)
B' (SE)
Panoche Energy Center Cross-Section B-B'
URS - Moore
28906495

BB.max

Technical Area: Water Resources

Data Request 29 Rev: See Below.

Response: A discussion of the site specific groundwater data is included in Data Response 28.

Technical Area: Water Resources

Data Request 30 Rev: See Below.

Response: Please refer to Data Request 28.

Technical Area: Water Resources

Data Request 31 Rev: SEE BELOW.

Response: Please refer to Data Requests 28 and 32.

Technical Area: Water Resources

Data Request 32 Rev: Please show the relationship between the proposed water supply production well field, nearby wells, surface water bodies, draw-down and groundwater cone of depression from proposed pumping, and how aquifers above and below the proposed water production target zone will be affected. This should be done graphically as well as numerically. Modeling and aquifer testing could be used to assist in this effort.

Response: Please refer to Data Request 28. In addition, Section 5.5.1.7 of the AFC describes the current and proposed pumping of the Westlands Sub-basin.

During preparation of the AFC, the closest functional water supply well to the PEC was determined to be approximately 4,000 feet north of the site. The well is part of an irrigation system and appears to be completed within both the semi-confined and confined aquifers. The property owner stated that the well is not active, but would likely be used if surface water deliveries from the Westlands Water District were not available (e.g., under drought conditions). A groundwater sample could not be recovered using the well because the property owner denied an access request for the well; the rate structure for electric power supply to the well and disposal of the water generated during sampling made cooperation by the property owner untenable.

Groundwater withdrawal at the PEC will produce groundwater drawdown within the confined aquifer under the site and adjacent properties. Drawdown is expected to decrease at increased distances from the PEC. Conservative preliminary estimates of drawdown at a point 4,000 feet from the PEC (the distance to the closest identified functional water supply well) indicate that drawdown within the confined aquifer would be on the order of 3.0 feet after one year and 4.2 feet after 20 years of operation at 5,000 hours per year. Drawdown of this magnitude would result in a negligible increase in the dynamic head and associated increase in pumping cost. The estimated drawdown is considered to be conservative because a relatively

low hydraulic conductivity (50 feet per day) was assumed for the confined aquifer.

Drawdown was estimated using a Theis nonequilibrium drawdown model based on site-specific (e.g., potentiometric surface data) and published geohydrologic parameters for the groundwater subbasin. The model assumes the aquifer is homogeneous and isotropic. Site-specific depths to groundwater within the confined aquifer underlying the PEC range from about 362 to 380 feet bgs. The confined aquifer thickness was assumed to be 800 to 1,350 feet bgs based on the lithologic and geophysical logs for the monitoring wells. The confined aquifer is separated from the overlying semi-confined aquifer by the Corcoran Clay (E-clay). The low permeability confining unit is at least 100 feet thick underlying the PEC. The pumping rate was assumed to be a continuous 730 gallons per minute (gpm) which is consistent with the intermittent operational requirement of up to 1,260 gpm.

Published geohydrologic parameters assumed in the analytical model include a storage coefficient of 0.001 (McClelland, 1962; Williamson et al., 1989) and various hydraulic conductivities (Williamson, 1989). Drawdown was estimated using hydraulic conductivities ranging from 4.2 feet per day to 200 feet per day. Estimated drawdowns calculated using a conservative value of 50 feet per day are provided. Actual hydraulic conductivities of the confined aquifer are expected to be higher resulting in less drawdown. Transmissivity was calculated by multiplying the aquifer thickness by the hydraulic conductivity.

Technical Area: Water Resources

Data Request 33 Rev: For permitting of the Deep Well Injection, please provide the Regional Board and CA Division of Oil and Gas contact information.

Please provide a schedule for permits with permit task (such as Prepare Draft Permit), milestone (such as Submit Draft Permit to EPA), and length of time between each task and milestone. For deep well injection, please include all agencies that will review and approve the permit, including EPA, Regional Board, and CA Division of Oil and Gas.

Response: Ms. Jo Anne Kipps, P.E.
Senior Water Resource Control Engineer
Calif. Regional Water Quality Control Board
Central Valley Region
1685 E. Street
Fresno, CA 93706
(559) 445-5035

Mr. Glenn Muggelberg
DOGGR
District 5
466 N. Fifth Street
Coalinga, CA 93210-1793
(559) 935-2941

The UIC Application was submitted to the EPA on September 15, 2006. We have received our completeness review as determined by the enclosed letter from EPA, stating that our UIC Application has been deemed data adequate. The anticipated time for issuance of the permit is 9 months.

Once the EPA Permit is issued, an exploratory well permit can be issued by the DOGGR. PEC will submit the exploratory well permit application once the final EPA permit has been issued. The DOGGR permit will require 30 days to issue and will be issued following issuance of the EPA UIC permit.

A permit from the Fresno County Community Health Department will also be required prior to drilling of the injection wells. The Community Health Department has stated that their permit requires approximately two weeks for review and issuance.

Cindy,

The Panoche Energy Center's Class I wells could encounter oil or gas, or affect future development of these resources. Since a Class I well is the jurisdiction of the EPA, we will not issue an exploratory well permit. However, this office will review the proposals to drill and relay any concerns to the EPA.

Glenn W. Muggelberg
Division of Oil, Gas and Geothermal Resources
466 N. 5th Street
Coalinga, California 93210
(559) 935-2941

This e-mail responds to your question regarding Regional Water Board regulatory involvement in the discharge of waste into deep, brackish water-bearing formations via deep well injection.

The Regional Water Board defers the direct regulatory oversight of these discharge to the U. S. Environmental Protection Agency, which typically provides copies of correspondence regarding draft permits, adopted permits, injection tests, etc. to the Regional Water Board.

Jo Anne Kipps
Senior Engineer
Central Valley Water Board
(559) 445-5035
jkipps@waterboards.ca.gov