PASTORIA ENERGY FACILITY 160 MW EXPANSION
DATA REQUEST
05-AFC-1
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DOCKET
05-AFC-1
DATE
RECD. AUG 01 2005

TECHNICAL AREA: AIR QUALITY
AUTHOR: WILLIAM WALTERS

AIR QUALITY PERMIT APPLICATION

BACKGROUND

The proposed project will require permits from both the San Joaquin Valley Air Pollution Control District (SJVAPCD or "District") and the United States Environmental Protection Agency (USEPA). In order to meet the 12-month siting process schedule, staff will need copies of all correspondence between the applicant and the District/USEPA in a timely manner.

DATA REQUEST

1. Please provide copies of all substantive District and USEPA correspondence regarding the PEFE permit applications, including e-mails, within one week of submittal or receipt. This request is in effect until the final Commission Decision has been recorded.

Response to Data Request 1: Copies of all substantive District and EPA correspondence regarding the PEFE permit applications, including e-mails, will be provided to the CEC staff and the Project Docket within one week of receipt (for documents received from the agencies), or within one week of submission (for documents sent to the agencies). Copies of project-related correspondence received from the District and EPA prior to the data adequacy determination have been provided informally to the CEC staff and are being docketed here as Attachment AQ-1.

EXISTING OPERATING PEF CONDITIONS OF CERTIFICATION

BACKGROUND

This project will entail many new Conditions of Certification (COCs) for the new simple cycle turbine and will require modifications be made to a few of the existing COCs that cover the entire PEF facility. Staff needs to confirm that no other COCs beyond those that staff believes need to be modified are requested to be modified.

Staff's review of the existing operating air quality COCs indicate that the following facility-wide COCs will need to be revised to incorporate the new turbine into the facility:

- AQ-20, AQ-21, AQ-24, AQ-58, AQ-67, and AQ-90

DATA REQUEST

2. Please confirm that none of the other operating air quality COCs, as they apply to any of the existing PEF emission sources, are requested to be modified; or if any

modifications are requested then please list them and provide the rationale for each requested change.

Response to Data Request 2: PEF, LLC, prefers to keep the COCs for the expansion turbine completely separate from the COCs for the rest of the Pastoria Energy Facility. AQ-20 does not need to be revised as the applicant has not requested and does not anticipate facility wide emissions limits that would include the expansion turbine. AQ-24, AQ-58, AQ-67 and AQ-90 do not need to be revised since the required ERCs for the existing facility have already been provided and we anticipate that the District will develop separate offset-related conditions for the expansion turbine.

The only COC that we anticipate may need to be amended to include the new expansion CTG is Condition AQ-21, which limits total annual HAPs from the facility. However, our intention is to work with the District to establish a separate condition for the expansion turbine on this issue as well.

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT

BACKGROUND

The Prevention of Significant Deterioration (PSD) permit review conducted by USEPA will include a review of Class 1 modeling analysis by the U.S. Forest Service (USFS) Federal Land Manager (FLM). Staff will need to work with the proper FLM contact to complete its review of the Class 1 modeling analysis and potential impacts to Angeles National Forest. Additionally, staff has questions regarding the Class 1 modeling analysis.

DATA REQUEST

3. Please provide the name(s) and contact information for the FLM personnel that will be responsible for reviewing the Class 1 modeling analysis for this project.

Response to Data Request 3: The FLM who will be responsible for reviewing the Class 1 modeling analysis for the project is:

Mike McCorison
US Forest Service
Angeles National Forest
701 North Santa Anita Avenue
Arcadia, CA 91006
626-574-5286
mmccorison@fs.fed.us

4. The AFC notes on page 5.2-48 that the Class 1 modeling analysis followed guidance provided by the FLM's Air Quality Related Values (AQRV) Work Group (FLAG) Phase

I report (USFS et. al., 2000), the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report, USFS guidance on nitrogen deposition analysis thresholds (January 2002) and particle speciation (November 2002), and additional guidance provided in personal communications with the USFS." However, the full references for the latter two documents/sources and personal correspondence are not provided. Please provide the full reference for each of the latter two documents/sources referenced; and provide the names, dates, and descriptions of the relevant guidance for the USFS personal communication references.

Response to Data Request 4: The guidance related to particle speciation was provided by John Notar of the National Park Service in an email message to Tom Andrews of Sierra Research dated November 4, 2002. The email message transmitted comments on a Class I visibility analysis for another project. The comments included the following statement:

> "Current CALPUFF guidance is to apportion the PM_{10} emissions to account for elemental carbon (EC) and organic carbon (OC). This can be done by assigning EC and OC to the turbine emissions in CALPUFF, or by adjusting the PM_{10} light extinction coefficient in CALPOST. The current guidance developed by NPS on EC and OC emissions is provided in Attachment 1."

Attachment 1 was the document referred to in the AFC as the November 2002 particle speciation guidance, and is titled, "Recommendations regarding inclusion of Elemental Carbon and Organic Carbon fraction of PM_{10} emissions in Class I visibility modeling analyses." This document is included as Attachment AQ-4a.

The January 2002 guidance on nitrogen deposition analysis thresholds is available at http://www2.nature.nps.gov/air/Permits/flag/docs/N_SDATGuidance.pdf. A copy of the guidance is included as Attachment AQ-4b.

Additional project-specific guidance was provided by Mike McCorison of the USFS in an email message to Gary Rubenstein of Sierra Research dated April 1, 2005. In this email message, Mr. McCorison:

(1) Provided a daily weighted ozone average of 56.3 ppb from 2003-2004 data collected at a site representative of San Rafael (Mr. McCorison's message did not specify the site)

(2) Suggested the use of the default background ammonia concentration for forested areas of 0.5 ppb for the San Rafael Wilderness

A copy of this email message is enclosed as Attachment AQ-4c.

STARTUP AND SHUTDOWN EMISSIONS

BACKGROUND

The requested startup and shutdown emission limits appear to be higher than necessary for a simple cycle turbine. The startup/shutdown emission limits being proposed are the same as those originally proposed and accepted for combined cycle projects, such as the San Joaquin Valley Energy Center (00-AFC-22) approved by the Commission in 2004. As a comparison, the permitted emission hourly emission limits for hours with startups/shutdowns for a somewhat smaller 7E frame turbine are 26 lbs/hour for NO_x and 42 lbs/hour for CO. This makes the requested emission limits of 80 lbs/hour for NO_x and 902 lbs/hour for CO appear overly conservative. Additionally, a shutdown duration of one hour seems excessive for a simple cycle turbine. Staff would like to know the expected maximum duration for a shutdown and needs a technical rationale for the startup/shutdown emission limits being requested.

DATA REQUEST

5. Please indicate the actual expected maximum duration for a shutdown.

Response to Data Request 5: The applicant believes that the actual expected maximum duration for a shutdown will be between 30 minutes and one hour. To develop a conservative estimate of project impacts and to ensure that a limit was selected that would not be exceeded, the maximum duration of one hour was selected.

6. Please provide technical rationale, such as shutdown emission monitoring data from similar 7F simple cycle turbines, for the proposed shutdown emission limits.

Response to Data Request 6: The applicant does not possess shutdown emission monitoring data from similar 7F simple cycle turbines. The proposed shutdown emission rates were based on limits for existing Calpine facilities and are lower than the permitted limits for the existing Pastoria CTGs.

7. Please provide technical rationale, such as startup emission monitoring data from similar 7F simple cycle turbines, for the proposed startup emission limits.

Response to Data Request 7: The applicant does not possess startup emission monitoring data from similar 7F simple cycle turbines. The proposed startup emission rates were based on limits for existing Calpine facilities and are lower than the permitted limits for the existing Pastoria CTGs.

SELECTIVE CATALYTIC REDUCTION SYSTEM

BACKGROUND

Staff is not aware of any General Electric 7F series turbines operating in simple cycle that also have a Selective Catalytic Reduction (SCR) system. The AFC does not provide adequate description of the SCR system and ancillary equipment necessary for the operation of SCR system on a 7F simple cycle turbine. Staff requires additional information to assess the SCR system and its reliability for this project.

DATA REQUEST

8. General Electric performance data for the 7FA turbine indicates a turbine exhaust temperature of over 1,100°F. Based on AFC Table 5.2-15, it appears that a dilution air system will be incorporated into the design to get the exhaust temperature into the 800°F range that is acceptable for the SCR catalyst. However, other than one note in Table 5.2-15, there is no information provided for the dilution air system. Please confirm that a dilution air system will be used and provide an engineering description of the dilution air system and the related equipment.

Response to Data Request 8: Applicant response in progress. Response to be docketed on or before August 12, 2005.

9. Staff's initial calculations indicate that approximately 30% of the total exhaust mass flow will have to be dilution air to reduce the turbine exhaust temperature from 1,100°F to 800°F; however, the exhaust flow values presented in the AFC do not seem to include the dilution air flow. Please show how the dilution air has been incorporated into the exhaust mass flow and velocity values provided in Table A-1, or correct the table and all relevant dispersion modeling runs to account for the additional dilution flow.

Response to Data Request 9: The exhaust lb/hr values provided in Table A-1 do not include the dilution air, but the exhaust volume and velocity values do include dilution air. A revised version of Table A-1 has been prepared to clarify exhaust flow with and without dilution air, and is provided as Attachment AQ-9.

10. Please describe the turbine startup and shutdown sequencing with respect to the dilution air system and describe the control measures that will ensure that damaging exhaust temperatures will not reach the SCR catalyst.

Response to Data Request 10: Applicant response in progress. Response to be docketed on or before August 12, 2005.

11. Please provide:

a. The SCR vendor name,

b. SCR vendor specifications for the SCR system, and,

c. Vendor guarantees for the proposed 2.5 ppm NO_x limit and proposed 10 ppm ammonia slip limit.

Response to Data Request 11: Applicant response in progress. Response to be docketed on or before August 12, 2005.

12. Please identify, to the best of your knowledge, if there are any operating GE 7FA simple cycle turbines that have SCR catalysts and provide their permitted NO_x emission limits.

Response to Data Request 12: Applicant response in progress. Response to be docketed on or before August 12, 2005.

CONSTRUCTION EMISSION CALCULATIONS

BACKGROUND

The construction emission calculation uses equipment fuel use assumptions that are not referenced. In order for staff to complete its analysis of the construction emission impacts it needs to understand all of the assumptions used in the emission calculations.

DATA REQUEST

13. Please provide references for the fuel use assumptions presented in the Combustion Emission Ranking Table provided in Attachment D of the Air Quality Technical Report.

Response to Data Request 13: The fuel use assumptions for the on road construction equipment and the small portable welding machine are the same as the fuel use assumptions used in the TID Walnut Energy Center case where the construction emission estimates and underlying assumptions were thoroughly reviewed by the CEC staff.

The fuel use assumptions for the off road construction equipment were taken from the Caterpillar Performance Handbook Edition 35, October 2004.

More details are provided in Attachment AQ-13.

OPERATING EMISSIONS

BACKGROUND

The operating emissions presented in the AFC tables are not consistent and some emission values were not presented. Additionally, staff is not certain that the operating assumptions used provide the worst-case daily emissions. Staff needs to confirm the correct emission values for all pollutants under all operating scenarios.

DATA REQUEST

14. The daily CO and VOC emission values presented in Table 5.2-20 and 5.2-35 are inconsistent. Please identify the correct emission values.

Response to Data Request 14: The daily VOC and annual CO emission values presented in Table 5.2-35 of the AFC are not correct. Note that the daily and annual VOC emission rates in Tables 5.2-20 and 5.2-35 were updated and corrected in our May 24, 2005 filing with the SJVAPCD, a copy of which was sent to the CEC Staff on the same day. Annual NO_x emissions in that table were corrected in our June 14, 2005 filing with the SJVAPCD, which was also sent to the CEC Staff concurrently. The most recent corrected versions of Tables 5.2-20 and 5.2-35 are provided in Attachment AQ-14.

15. Please provide the total hourly, daily, and annual ammonia emission limits, based on the ammonia concentration limit, for the existing PEF facilities.

Response to Data Request 15: As shown in Table A-4 of the AFC Air Quality Technical Report, maximum ammonia emissions from each of the existing CTGs at PEF are 24.06 lb/hr and 105.4 tons/yr. Therefore, total hourly, daily and annual ammonia emissions for three units, based on the permit limit of 10 ppmvd @ 15% O_2, are:

- 72.2 lb/hr
- 1732.3 lb/day
- 316.1 tons/yr

16. The daily worst-case emission calculations assume only one startup/shutdown cycle. Using the hourly startup/shutdown emission rates shown in Table 5.2-19, several other worst case scenarios can be envisioned for this simple cycle turbine depending on actual dispatch. For example, if the turbines were dispatched for the daily demand peak from 9 AM to 5 PM and again during the evening peak of 8 PM to 10 PM, the calculated CO emissions would be significantly higher than those currently calculated for the worst-case day. Please confirm that the proposed worst-case daily emission limits are maximum values that can be complied with even if the facility were to undergo multiple daily startup/shutdown cycles.

Response to Data Request 16: The daily worst-case emission calculations assume one two-hour startup/ shutdown cycle. Although as a worst case a startup might take two hours, most startups would be expected to be completed in under one hour and/or with lower hourly startup/shutdown emission rates than the maximum allowable rates shown in Table 5.2-19. The applicant expects that under routine conditions, the proposed worst-case daily limits are adequate to allow multiple startup/shutdown cycles in a single day.

17. a. Please confirm that the facility will be able to comply with the proposed normal operating hourly emission limits even during rapid load changes which are likely to occur to this peaking turbine; and,

b. Also please confirm that no emission excursion language, as has been requested in other recent projects, will be requested to be added to the permit conditions.

Response to Data Request 17: The applicant believes that there may be transient load conditions, such as rapid load changes, which may result in short-term elevated NO_x emissions from the expansion turbine. The applicant proposes the inclusion of the following NO_x emissions excursion language in the conditions of certification:

> Compliance with the NO_x emission limitations shall not be required during short-term excursions limited to a cumulative total of 10 hours per calendar year. Short-term excursions are defined as 15-minute periods designated by the owner/operator and approved by the APCO that are the direct result of transient load conditions, not to exceed four consecutive 15-minute periods, when the 15-minute average NO_x concentration exceeds 2.5 ppmvd @ 15% O_2. The maximum 3-hour average NO_x concentration for periods that include short-term excursions shall not exceed 30 ppmvd @ 15% O_2.

18. The daily emission estimates for NO_2 and CO, as shown in Tables 5.2-20 and A-2, appear to include different startup/shutdown emission rates than those used for the hourly and annual emission estimates. Please confirm that the daily emission estimates should be calculated using the hourly startup emission rates multiplied by the assumed maximum daily number of hours in startup/shutdown mode.

Response to Data Request 18: The daily NO_x and CO emissions shown in Tables 5.2-20 and A-2 are proposed to be limited to the same levels as those applicable to each of the existing Pastoria CTGs. This approach results in daily limits that are slightly lower than the limits that would be calculated using hourly emission rates. As mentioned above in Data Response 14, the annual NO_x limit shown in those tables was calculated incorrectly and was corrected in our June 14, 2005 filing with the SJVAPCD (provided concurrently to the CEC Staff). The correct annual NO_x emissions limit is shown in Table 5.2-20 in Attachment AQ-14.

AIR QUALITY REGULATION COMPLIANCE TABLE

BACKGROUND

The air quality regulation compliance table (Table 5.2-14) references non-existent sections within the air quality section and needs to be corrected.

DATA REQUEST

19. Please correct Table 5.2-14 so that it references the appropriate regulation compliance sections.

Response to Data Request 19: The corrected version of Table 5.2-14 is provided in Attachment AQ-19.

DISPERSION MODELING - METEOROLOGICAL DATA AND OZONE FILE DATA

BACKGROUND

The meteorological data used in the near-field modeling analysis is not consistent between the ISCST3/CTSCREEN and NO_x_OLM modeling runs. Additionally, the NO_x_OLM modeling used an ozone input data file that is over 8 years old. Staff needs additional information to prove that the meteorological and ozone data used in the modeling analysis was approved by the SJVACPD, and the rationale for using different meteorological years for the different models.

DATA REQUEST

20. Please explain why 1963 Bakersfield meteorological data was used for the operating emissions health risk assessment modeling runs and most of the construction emissions modeling runs while 1964 Bakersfield meteorological data was used for the construction NO_x_OLM modeling runs.

Response to Data Request 20: The 1963 Bakersfield meteorological data were used for the health risk assessment runs because the use of that data set had been requested by the District staff for the original Pastoria proceeding. The same meteorological data set was used for most of the construction emissions modeling runs to be consistent. The 1964 Bakersfield meteorological data set was used for the ISC_OLM runs for construction NO_2 impacts to be consistent with previous modeling performed for short-term NO_2 impacts for the existing Pastoria project. All of these prior analyses have been reviewed and approved by the CEC Staff.

21. Considering that two years of SJVAPCD approved Bakersfield meteorological data was available, please explain why both years were not used in the modeling analysis?

Response to Data Request 21: Neither the District nor the CEC Staff requested nor required the use of two years of Bakersfield meteorological data in the original Pastoria licensing and permitting proceeding, so only a single year of meteorological data was used in the expansion turbine modeling analysis to be consistent with the previously approved analyses.

22. Please provide rationale why the 1996 Arvin ozone data file was used in the NO_x_OLM modeling analysis.

Response to Data Request 22: The 1996 Arvin ozone data file was used in the NO_x_OLM modeling analysis to be consistent with previous modeling performed for short-term NO_2 impacts for the existing Pastoria project that was approved by the District and CEC Staff. This ozone data set is expected to produce conservatively high one-hour NO_2 results because the maximum one-hour ozone reading at Arvin in 1996 is the highest ozone value during the period 1995 through 2004.

Maximum 1-Hour Ozone Concentrations at Arvin—Bear Mtn Blvd	
Year	**Max 1-hr conc, ppb**
1995	151
1996	**164**
1997	134
1998	151
1999	130
2000	145
2001	134
2002	151
2003	156
2004	155
Source: ARB, www.arb.ca.gov/adam	

DISPERSION MODELING – CTSCREEN MODEL

BACKGROUND

The CTSCREEN model was used to determine refined modeling impacts for direct operating and cumulative emissions. This modeling is a screening version of the CTDM/CTDMPLUS model and does not use real meteorological data. Therefore, staff is concerned that this model does not provide site-specific refined modeling impact results. While staff supports the use of a terrain adjusting model, we would prefer the use of models that use actual representative meteorological data such as CTDMPLUS, AERMOD, or CALPUFF. Additionally, an initial conversation with SJVAPCD staff indicates that they have the same

general preferences. Staff needs additional information regarding the use and regulatory acceptance of this model.

DATA REQUEST

23. Please identify why a screening model (CTSCREEN), rather than CTDMPLUS, was used to present refined modeling results and provide information that supports that the CTSCREEN time scaling factors are appropriate for the project location.

Response to Data Request 23: The issue of representative meteorological data to evaluate complex terrain impacts for the existing Pastoria facility was discussed with Carol Bohnenkamp, EPA Region 9 Regional Modeler, in November 2004. Representative meteorological data would be required to use the CTDMPLUS model for this project. Ms Bohnenkamp was not comfortable with the use of meteorological data collected during the 1960s for the complex terrain modeling analysis being prepared for the existing Pastoria facility, and requested that a screening approach be used to avoid the need for the meteorological data. Based on this discussion, and on the previously approved use of CTSCREEN for analyzing complex terrain impacts for the original Pastoria project (Pastoria Phase 1), the screening model was used for analyzing complex terrain impacts for the expansion project.

The CTSCREEN 1-, 3- and 24-hour and annual average values are generated internally by the model using default conversion factors. For convenience, the CTSCREEN modeling was performed on a 1-hour average basis and the results were converted to other averaging periods using this same default conversion factors. The default time scaling factors are identical to those previously accepted by the District, the CEC and the EPA for this facility. The CTSCREEN model does not produce an 8-hour average. The conversion factor of 0.5 for the 8-hour averaging period was provided by Scott Bohning of EPA Region 9 in a telephone conversation on December 1, 2004.

24. Please provide information that the District and USEPA has approved, or will approve, the use of CTSCREEN for this project.

Response to Data Request 24: The District, USEPA, and CEC approved the use of CTSCREEN for Phase I of the Pastoria project in 1997. The USEPA approved the use of CTSCREEN for Phase 1 of the project again in late 2004. The District has expressed no concerns regarding the use of CTSCREEN for this project. Based on these previous approvals, the applicant believes that the District and USEPA will approve the use of CTSCREEN for this project.

DISPERSION MODELING – MODELING RESULTS

BACKGROUND

The near-field operating and cumulative emissions refined modeling impact analysis uses the ISCST3 and CTSCREEN models. However, the presentation of the results does not always clearly indicate which model applies to the results presented. In order to review the modeling analysis in the time available in a 12-month licensing process, staff needs additional information to clearly understand which modeling results refer to which modeling files.

DATA REQUEST

25. Please provide a chart that notes which output modeling files, by file name, were used to present each of the results presented in AFC Tables 5.2-23, -24, -26, and -27.

Response to Data Request 25: Applicant response in progress. Response to be docketed on or before August 12, 2005.

EMISSION OFFSETS

BACKGROUND

The emission offset package includes: 1) the use of a considerable amount of pre-baseline (a.k.a. "pre-1990") emission reduction credits; 2) the use of at least portions of the same ERC certificates that are required to be used for the San Joaquin Valley Energy Center (01-AFC-22); and 3) the use of an old NO_x for PM_{10} interpollutant offset ratio value that staff first evaluated and approved in 1999. Staff needs additional information to: 1) determine the potential secondary impacts of the use of the pre-baseline ERCs; 2) to be able to conclude that there is no double use of any portion of any ERC certificate; and 3) to be able to conclude that the technical rationale for the proposed NO_x for PM_{10} interpollutant offset ratio is still technically sound.

The proposed NO_x for PM_{10} interpollutant offset ratio of 2.22 to 1 (2.72 to 1 including distance ratio) was originally determined to be adequate for the La Paloma siting case in 1999, and was then used again in the original Pastoria case in 2000 (which was subsequently amended by Calpine in favor of a SO_2 for PM_{10} interpollutant offset approach). It has been many years since the original NO_x for PM_{10} interpollutant offset ratio determination for La Paloma and some of the interpollutant offset calculation methods and information used in those interpollutant offset calculations may have changed in the intervening years.

DATA REQUEST

26. Please identify the date and quantity of pre-baseline ERCs, by pollutant, that were surrendered for the existing Pastoria project, and indicate if the use of those ERCs are likely to cause a failure of the annual offset equivalency evaluation.

Response to Data Request 26: Following is a list of ERCs, by pollutant, that were surrendered for the existing Pastoria project.

Cert. No.	Quantity, lb/yr	Date	Pre-1990?
NO_x			
S-1554-2	52,208	12/05/1990	yes
C-375-2	50,000	11/30/1987	yes
C-376-2	217,204	11/30/1987	yes
N-195-2	167,315	1/19/1988	yes
VOC			
S-1549-1	311,428	11/26/91	no
SO_x			
N-270-5	931,141	1/1/90	yes

The applicant has no information regarding the SJVAPCD offset equivalency evaluation other than that provided in the 2004 annual reconciliation report submitted to the USEPA by the District in August 2004. The applicant has requested a copy of this report from the District and will submit the report to the CEC staff within one week of its receipt.

27. Please discuss whether the surrendering of the Pastoria expansion project pre-baseline ERCs may affect future year offset equivalency determinations.

Response to Data Request 27: As indicated in Response 26, the applicant has no information regarding the SJVAPCD offset equivalency evaluation other than that provided in the 2004 annual reconciliation report. The applicant believes that the issue of the validity of pre-1990 ERCs has been thoroughly litigated and resolved in the San Joaquin Valley Energy Center proceeding (01-AFC-22) with the inclusion in the conditions of certification of AQ-C9, which required the applicant to notify the CEC of any disapproval by EPA of any ERCs approved for use for the project, and to apply for an amendment to substitute ERCs that meet EPA's approval. The applicant proposes the inclusion of similar language in the conditions of certification to be adopted for the Pastoria expansion project to allay the staff's concern regarding pre-1990 ERCs, as follows:

> **AQ-CX** The project owner shall submit to the CPM a copy of a Tracking System Report prepared by the District. The Tracking System Report shall describe the status of the District's accounting, under the USEPA's rulemaking action of February 13, 2003, to approve the District's NSR rules, of pre-1990 ERCs surrendered by the project owner or any predecessor for the Pastoria expansion project. Should USEPA ultimately reject the project owner's use of pre-1990 credits, the project owner will file with the CPM an amendment

containing a new offset package that meets USEPA requirements, and remedies the ERC shortfall.

Verifications:

(1) The project owner shall submit the Tracking System Report to the CPM no later than 30 days following its release by the District.

(2) The project owner shall notify the CPM within seven days of any written notice of a USEPA determination that the use of pre-1990 ERCs surrendered for the Pastoria expansion project has been disapproved. Within 60 days of receiving that notice, the project owner shall submit a request for an amendment that includes a new ERC package, which meets USEPA requirements and remedies the ERC shortfall.

28. Please update the "Calpine Corporation San Joaquin Valley ERC Reconciliation" table that was prepared December, 2004, for the Pastoria ERC amendment. Please provide a copy of this table electronically (.pdf or .xls).

Response to Data Request 28: The requested table is attached as Attachment AQ-28. An electronic copy is provided on the enclosed CD.

29. Please provide information to verify that the proposed NO_x for PM_{10} interpollutant offset ratio remains conservative given the changes in approved interpollutant calculations methods and more recent data for the NO_x for PM_{10} interpollutant offset ratio calculation input variables.

Response to Data Request 29: Applicant response in progress. Response to be docketed on or before August 12, 2005.

INITIAL COMMISSIONING EMISSIONS

BACKGROUND

The applicant has given their estimated emissions during the initial commissioning phase of operation in Appendix B, table B-7. Staff recently analyzed (approved by the Commission on December, 2004) an amendment from the current owners of the existing Pastoria facility (Pastoria Energy Facility, LLC), that approved an increase in hourly commissioning NO_x emissions to 308 lbs/hour and CO hourly emissions to 2,527 lbs/hour. These levels of emissions are greater than the maximum emissions identified during commissioning of the proposed expansion CTG in Table B-7. It should be noted that the turbine model for the expansion CTG (the GE frame 7FA) is identical to the combustion turbines for the present Pastoria project. In order to avoid future variances and/or amendments for the expansion CTG, staff believes that further evaluation of the emissions provided in Table B-7 are necessary.

DATA REQUEST

30. Please provide the technical rationale, including the source(s) of emissions data, that show a maximum of 129.8 lbs/hour for NO_x and 902 lbs/hour for CO in light of the commissioning emissions for the Pastoria Amendment (99-AFC-7) which are identified as 308 lbs/hour for NO_x and 2,527 lbs/hour for CO.

Response to Data Request 30: Applicant response in progress. Response to be docketed on or before August 12, 2005.

31. If the applicant decides to revise their emissions characteristics for commissioning activities, please revise Table 5.2-24 of the AFC and Tables B-7 and B-8 of the Appendix. Also please provide the revised modeling files that would substantiate the revisions to Tables 5.2-24 and Table B-8.

Response to Data Request 31: Applicant response in progress. Response to be docketed on or before August 12, 2005.

COMBUSTOR TUNING/SHORT TERM EMISSION LIMITS

BACKGROUND

Staff has recently reviewed and approved project amendments that have asked for separate short-term emission limits for combustor tuning events, separate from start-up events, which would occur after initial commissioning. However, no such request appears to have been made for this project's simple cycle turbine. Staff would like to ensure that the conditions of certification and the district permit conditions include these events, if necessary, in order to reduce the potential for future amendment requests. In order for staff and the district to formulate proper conditions the applicant needs to identify if any post initial commissioning combustor tuning events may be necessary and provide reasonable estimates for the frequency, duration, and emissions of these combustor tuning events.

DATA REQUEST

32. Please identify if combustor tuning events, which create the potential for higher than normal operating emissions, may occur and provide reasonable estimates for the frequency, duration, and emissions of these combustor tuning events.

Response to Data Request 32: The applicant believes that combustor tuning events may occur with comparable frequency, duration and emissions to combustor tuning events permitted for other Calpine Frame-type CTG projects. Combustor tuning is expected to take place less frequently than once per year; to last for up to six hours; and to be able to comply with the following emission limits (same as combustor tuning emission limits for the Los Medanos Energy Center GE Frame 7FA CTGs):

Expected Maximum Emission Rates during Combustor Tuning Activities		
Pollutant	**Emissions, lb/hr**	**Emissions, lb/period**
NO_x (as NO_2)	300	600
CO	2,514	2,514
VOC	48	96

33. Please provide suggested permit condition language to incorporate combustor tuning events, if necessary, based on the response to the data request above.

Response to Data Request 33: The suggested permit condition language to incorporate combustor tuning events is provided in Attachment AQ-33.

Attachment AQ-1

Pre- Data Adequacy District and EPA Correspondence

San Joaquin Valley
Air Pollution Control District

May 19, 2005

Mr. Andrew Whittome, Project Manager
Pastoria Energy Facility, LLC
39789 Edmonston Pumping Plant Rd
PO Box 866
Lebec, CA 93243-0866

Re: Notice of Receipt of Complete Application (05-AFC-1)
Project Number: S-1052027

Dear Mr. Whittome:

The District has received your Application for Certification (05-AFC-1) for a 160 MW GE 7FA simple cycle combustion turbine generator, at Tejon Ranch 30 Miles S of Bakersfield, and 6.5 Miles E of Grapevine, Rancho El Tejon. 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 Determination of Compliance. It is estimated that the project analysis will take 120 hours, and you will be charged at the weighted labor rate in accordance with District Rule 3010. The current weighted labor rate is $64.95 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.

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

David L. Crow
Executive Director/Air Pollution Control Officer

Northern Region Office
4230 Kiernan Avenue, Suite 130
Modesto, CA 95356-9322
(209) 557-6400 • FAX (209) 557-6475

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1990 East Gettysburg Avenue
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Southern Region Office
2700 M Street, Suite 275
Bakersfield, CA 93301-2373
(661) 326-6900 • FAX (661) 326-6985

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 a Determination of Compliance after application processing is complete. If you have any questions, please contact Mr. Thomas Goff at (661) 326-6900.

Sincerely,

David Warner
Director of Permit Services

for Leonard Kanden
Thomas Goff, P.E.
Permit Services Manager

DW:rwk
Ms. Barbara McBride, Calpine

sierra research

1801 J Street
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May 24, 2005

Mr. Thomas Goff
Permit Services Manager
San Joaquin Valley APCD
2700 M Street, Suite 275
Bakersfield, CA 93301-2373

Re: Pastoria Energy Facility Expansion Project #1052027

Dear Mr. Goff:

Pastoria Energy Facility, LLC, has filed an Application for Certification with the California Energy Commission (CEC) and an application for Authority to Construct with the District for the addition of one 160 MW GE 7FA simple cycle combustion turbine generator to be constructed and operated at the Pastoria Energy Facility in southern Kern County. In the application filed with the District in early May, we proposed a VOC emission rate for the turbine of 2.0 ppmvd @ 15% O_2 under normal turbine operating conditions (excluding startup, shutdown, and commissioning activities, as described in the application). During subsequent conversations with District staff, we were informed that the current BACT limit for VOC from large, simple-cycle combustion turbines is 1.3 ppmvd @ 15% O_2.

This letter follows up on our May 17, 2005 email message to Richard Karrs of your staff indicating that the applicant has agreed to reduce the proposed VOC emission limit from the 2.0 ppmvd @ 15% O_2 indicated in the permit application to 1.3 ppmvd @ 15% O_2 to comply with the District's VOC BACT guideline. The applicant has reviewed performance data for similar turbines, and based on the test data is confident that the proposed new turbine can meet a 1.3 ppmvd @ 15% O_2 limit under the current plant design. With this letter, we are providing revised tables from the AFC that show the revised VOC project emissions based on the 1.3 ppmvd @ 15% O_2 limit.

If you have any additional questions regarding the project, please do not hesitate to call.

Sincerely,

Nancy Matthews

Nancy Matthews

enclosures

cc: Richard Karrs, SJVAPCD
Dr. James Reede, CEC Project Manager
Keith Golden, CEC
Will Walters, Aspen Environmental
Gerardo Rios, EPA Region IX

5.2.5.2.1 Criteria Pollutant Emissions: Expansion CTG. Proposed maximum emissions from the expansion CTG were estimated on an hourly, daily, and annual basis based on expected operation and proposed annual operating limitations.

Emissions during Normal Operations. Emissions of NO_x, CO, and VOC were calculated from emission limits (in ppmv @ 15% O_2) and the exhaust flow rates. The NO_x emission limit reflects the application of SCR. The VOC and CO emission limits reflect the use of good combustion practices.

Maximum emissions are based on the highest heat input rate, shown in Table 5.2-17.

SO_x emissions were calculated from the heat input (in MMBtu) and a SO_x emission factor (in lb/MMBtu). The SO_x emission factor of 0.0020 lb/MMBtu was derived from the maximum allowable fuel sulfur content of 0.75 grains per 100 standard cubic feet. SO_x emissions were calculated using the heat input rates in Table 5.2-17 and the same hourly limit that applies to the existing CTGs.

Maximum hourly PM_{10} emissions are based on results of recent source tests of similar turbines. $PM_{2.5}$ emissions were determined based on the assumption that all gas turbine exhaust particulate matter emissions are less than 2.5 microns in size.

Emissions for the expansion CTG are summarized in Table 5.2-18. The BACT analysis upon which the emission factors are based is presented in the Air Quality Technical Report, Appendix E, and summarized in Section 5.2.6.3.

TABLE 5.2-18 *REVISED*
MAXIMUM EMISSION RATES – EXPANSION CTG

Pollutant	ppmv @ 15% O_2	lb/MMBtu	lb/hr
NO_x	~~2.5[a]~~	~~0.009~~	~~16.25~~
SO_2[b]	0.40	0.0020	3.495
CO	6.0[a]	0.0133	23.75
VOC	~~*1.3* 2.0[a]~~	~~*0.0016* 0.0025~~	~~*2.95* 4.53~~
PM_{10}	n/a	n/a	9.0

a. NO_x, CO, and VOC emission rates exclude startups and shutdowns (see Table 5.2-18).
b. Based on annual average natural gas sulfur content of 0.75 gr/100 scf and the hourly SO_2 permit limit for the existing PEF CTGs.

Emissions During Startup and Shutdown. Maximum emission rates expected to occur during a startup or shutdown are shown in Table 5.2-19. PM_{10} and SO_2 emissions are not included in this table because emissions of these pollutants will not be higher during startup and shutdown than during normal turbine operation.

Criteria Pollutant Emissions Summary: Expansion CTG. The calculation of maximum facility emissions shown in Table 5.2-20 is based on the CTG emission rates shown in Tables 5.2-18 and 5.2-19, the fuel use limitations in Table 5.2-17, and the following assumptions:

TABLE 5.2-19
EXPANSION CTG STARTUP AND SHUTDOWN EMISSION RATES

	NO_x	CO	VOC
Startup and Shutdown, lb/hr	80	902	16

- The expansion CTG may operate up to 24 hours per day
- The CTG may have up to two 1-hour startups per day, with a total of 2 hours of startup/shutdown activity
- The CTG may have a total of 300 hours per year of startup/shutdown activity

TABLE 5.2-20 *REVISED*
EMISSIONS FROM EXPANSION CTG

	Pollutant				
Emissions/Equipment	NO_x	SO_2	CO	VOC	PM_{10}
Maximum Hourly Emissions					
CTG[a], pounds per hour	80	3.5	902	16	9.0
Maximum Daily Emissions					
CTG, pounds per day	450	84	2,113	*97* ~~132~~	216
Maximum Annual Emissions					
CTG, pounds per year	164,250	30,616	471,492	*29,730* ~~43,154~~	78,840

a. Maximum hourly NO_x, CO, and VOC emission rates reflect emissions during startup.

As discussed above, there will be no increase in emissions from the cooling tower (S-3636-5-2) as a result of the operation of the PEF Expansion.

5.2.5.2.2 Criteria Pollutant Emissions: Existing Equipment. The pre-project Stationary Source Potential to Emit (SSPE1) is equal to the overall potential to emit limit for all units covered by existing Authorities to Construct at the facility. The SSPE1 for the existing facility is shown in Table 5.2-21.

5.2.5.3 Emissions Assessment: Toxic Air Contaminants

5.2.5.3.1 Toxic Air Contaminant Emissions: Expansion CTG. Maximum hourly and annual TAC emissions were estimated for the proposed expansion CTG. Maximum proposed TAC emissions were calculated from the heat input rate (in MMBtu/hr and MMBtu/yr),

TABLE 5.2-29 *REVISED*
PSD SIGNIFICANT EMISSIONS LEVELS

Pollutant	Existing PEF Facility Emissions (tpy)	PEF Expansion Emissions Increase (tpy)	PSD Significance Threshold (tpy)	Are Emissions from Expansion Significant?
NO_x	172.9	82.1	40	Yes
SO_2	42.4	15.3	40	No
VOC	113.8	*14.9* ~~21.6~~	40	No
CO	610.5	285.7	100	Yes

TABLE 5.2-30
PSD LEVELS OF SIGNIFICANCE

Pollutant	Averaging Time	Significant Impact Levels	Maximum Allowable Increments
NO_2	Annual	1 µg/m³	25 µg/m³
SO_2	3-hour	25 µg/m³	512 µg/m³
	24-Hour	5 µg/m³	91 µg/m³
	Annual	1 µg/m³	20 µg/m³
CO	1-Hour	2000 µg/m³	N/A
	8-Hour	500 µg/m³	N/A
PM_{10}	24-Hour	5 µg/m³	30 µg/m³
	Annual	1 µg/m³	17 µg/m³

Table 5.2-29 shows that the proposed project will be a major modification to a major stationary source and will therefore be subject to PSD review for NO_x and CO. Since the SJVAPCD is a nonattainment area for PM_{10}, the project is not subject to PSD review for that pollutant.

The maximum modeled impacts from the expansion CTG are compared with the significance levels in Table 5.2-31. Since the modeled impacts of the proposed expansion turbine project are well below all applicable significant impact levels, no increments analysis is required.

5.2.5.4.7 Air Quality Related Values. The PSD regulations require an assessment of the impacts, including visibility, of major sources on Air Quality Related Values (AQRVs) in Class I areas within 100 kilometers of the project site. The nearest Class I area is the San Rafael Wilderness Area, which is located approximately 73 kilometers from the project site. The San Rafael Wilderness Area is located in the Los Padres National Forest. Figure 5.2-7 shows this area with respect to the project site. PSD is applicable to NO_2, CO, and SO_2 for this project. PSD is not applicable to PM_{10}, for which the SJVAPCD has been designated a non-attainment area. Emissions of CO are not generally a concern, and are not included in the AQRV analysis. However, PM_{10} emissions were included in the analysis.

5.2.6.3.1 Best Available Control Technology. Best Available Control Technology (BACT) must be applied to any new or modified source resulting in an emissions increase exceeding any SJVAPCD BACT threshold. Applicable BACT levels are shown in Table 5.2-35. SJVAPCD Rule 2201 requires PEF to apply BACT to any source that has an increase in emissions of NO_x, VOC, SO_x, CO, and PM_{10} (criteria pollutants) in excess of 2.0 pounds per highest day. Since the only source affected by the proposed modification is the new turbine, the maximum daily emissions from the turbine are compared with the BACT thresholds to determine BACT applicability.

TABLE 5.2-35 *REVISED*
SJVAPCD BACT EMISSION THRESHOLDS

Pollutant	Threshold	Expansion CTG Emissions
PM	2 lb/day	216 lb/day
NO_x	2 lb/day	450 lb/day
SO_2	2 lb/day	84 lb/day
VOC	2 lb/day	*97* ~~355~~ lb/day
CO	100 tpy	285.7 tpy

BACT for the applicable pollutants was determined by reviewing the District BACT Guidelines Manual, the South Coast Air Quality Management District BACT Guidelines Manual, the most recent Compilation of California BACT Determinations, CAPCOA (2nd Ed., November 1993), and USEPA's BACT/LAER Clearinghouse. A summary of the review is provided in the Air Quality Technical Report, Appendix E. For the combustion turbine, the District considers BACT to be the most stringent level of demonstrated emission control that is feasible. The PEF Expansion turbine will use the BACT measures discussed below.

As a BACT measure, the PEF Expansion project will limit the fuels burned in the new turbine to natural gas, a clean burning fuel. Burning of liquid fuels in the combustion turbine combustors would result in greater criteria pollutant emissions than if the units burned only gaseous fuels. This measure acts to minimize the formation of all criteria air pollutants.

BACT for NO_x emissions from the combustion turbine will be the use of low NO_x emitting equipment and add-on controls. The PEF Expansion will use selective catalytic reduction (SCR) and dry low-NO_x combustion to reduce NO_x emissions to 2.5 ppmvd NO_x, corrected to 15 percent O_2. The District BACT guidelines indicate that technologically feasible BACT from large, simple-cycle combustion turbines ($\geq$50 MMBtu/hr heat input) is an exhaust concentration of 2.5 ppmvd NO_x, corrected to 15 percent O_2; therefore, the new turbine will meet the BACT requirements for NO_x. The District BACT Guideline determination for NO_x from combustion turbines is shown in Appendix E.

BACT for CO emissions will be achieved by using good combustion practices to achieve CO emissions of 6.0 ppmvd, corrected to 15 percent O_2, on a 3-hour average basis. Recent District BACT determinations indicate that BACT from large, simple-cycle combustion turbines (≥50 MMBtu/hr heat input) is 6 ppmvd CO, corrected to 15 percent O_2. A review of recent BACT determinations for CO from combustion turbines is provided in Appendix E.

BACT for POC emissions will be achieved by use of good combustion practices in the combustion turbine. BACT for POC emissions from combustion devices has historically been the use of best combustion practices. POC emissions leaving the stacks will not exceed 1.3 ~~2.0~~ ppmvd, corrected to 15 percent oxygen. This level of emissions is consistent with recent BACT determinations for similar projects.

For the turbine, BACT for PM_{10} is best combustion practices and the use of gaseous fuels. District BACT Guideline 3.4.7 specifies BACT for SO_2 for simple cycle combustion turbines with an output rating of ≥ 50 MW as the exclusive use of clean-burning PUC regulated natural gas with a sulfur content of < 0.75 grains per 100 scf. The proposed turbine will burn exclusively PUC-regulated natural gas with an expected average sulfur content of 0.75 grains per 100 scf, which will result in minimal SO_2 emissions.

5.2.6.3.2 Emission Offsets. A new or modified facility with a stationary source NSR balance exceeding the SJVAPCD offset thresholds shown in Table 5.2-36. PEF must offset all emissions increases at a ratio that varies according to the distance between the facility and the source of the offsets.

TABLE 5.2-36 *REVISED*
SJVAPCD OFFSET EMISSION THRESHOLDS

Pollutant	Threshold, lb/yr	Existing Facility Emissions, lb/yr	Expansion CTG Emissions, lb/yr
~~NO_x~~	~~20,000~~	~~344,484~~	~~164,250~~
SO_2	54,730	84,780	30,616
CO[a]	200,000	1,220,166	471,492
~~VOC~~	~~20,000~~	~~227,619~~	*29,730* ~~43,154~~
PM	29,200	236,462	78,840

a. In attainment areas. CO emissions in nonattainment areas subject to 30,000 lb/yr offset threshold.

The District new source review rule requires project denial if SO_2, NO_2, PM_{10}, or CO air quality modeling results indicate emissions will interfere with the attainment or maintenance of the applicable ambient air quality standards or will exceed PSD increments. The modeling analyses presented in Section 5.2.5.3 of the application show that facility emissions will not interfere with the attainment or maintenance of the applicable air quality standards.

Emissions offset requirements for NO_x, VOC, SO_2, and PM_{10} are shown in Table 5.2-37 below. Appendix F, Table F-1 of the Air Quality Technical Report shows the ERCs that will be provided for the project. NO_x ERCs will be used for offsetting PM_{10} emissions increases, in accordance with Rule 2201 Section 4.13.3.2, at the ratio of 2.72:1 (including distance) that was previously approved for the PEF project.

TABLE 5.2-37 *REVISED*
FACILITY OFFSET REQUIREMENTS

Pollutant	Net Increase in Emissions (lb/yr)	Required Offset Ratio[a]	Offsets Required (lb/yr)
NO_x	164,250	1.5	246,375
VOC	*29,730* ~~43,154~~	1.5	*44,596* ~~64,732~~
SO_2	30,616	1.5	45,924
PM_{10}	78,840	1.5	118,260

a. Based on assumption that ERCs are obtained from sources more than 15 miles away

The federal PSD rules also require applicants to demonstrate that emissions from a project located within 10 km (6.2 miles) of a Class I area will not cause or contribute to the exceedance of any national ambient air quality standard or any applicable Class I PSD increment. Because the nearest Class I areas, San Rafael and Dome Land Wilderness Areas, are more than 10 km from PEF, this section is not applicable to the proposed facility.

5.2.6.3.3 SJVAPCD Prohibitory Rules. The general prohibitory rules of the SJVAPCD applicable to the project include the following:

- Rule 4001 – NSPS Subpart GG: As discussed above, compliance with the Subpart GG requirements has already been demonstrated.
- Rule 4002 – National Emissions Standards for Hazardous Air Pollutants: The requirements of this rule apply to the project; however, since the facility will continue to be a non-major source of HAPs, no action is necessary to demonstrate continued compliance.
- Rule 4101 – Visible Emissions: Prohibits visible emissions as dark or darker than Ringelmann No. 2 for periods greater than three minutes in any hour. The existing facility permit limits the visible emissions from the turbine lube oil vents (5%) and exhaust stacks (20%). The proposed simple cycle expansion CTG is expected to be able to comply with these limitations.
- Rule 4102 – Nuisance: Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property. The engineering evaluation for the original permit indicated that the equipment

Table A-1
PEF Expansion Project
Emissions and Operating Parameters for Expansion CTG
VOC Emission Rates Revised 5/05

Case	1) Hot Base	2) Hot Low	3) Avg. Base	4) Avg. Low	5) Cold Base	6) Cold Low
Ambient Temp, F	102	102	66	66	35	35
GT Load	100	50	100	50	100	50
GT heat input, MMBtu/hr (HHV	1642.0	1,067.20	1719.5	1116.7	1791.1	1159.2
Stack flow, lb/hr	3,325,000	2,295,000	3,484,000	2,325,000	3,635,000	2,369,000
Stack flow, acfm	2,933,650	2,249,983	3,009,083	2,276,233	3,072,833	2,300,917
Stack temp, F	830	784	798	755	766	723
Stack exhaust, vol %						
O2 (dry)	13.65%	14.24%	13.80%	14.02%	13.86%	13.91%
CO2 (dry)	4.18%	3.85%	4.09%	3.97%	4.06%	4.03%
H2O	9.55%	8.26%	8.42%	7.93%	7.64%	7.59%
Emissions						
NOx, ppmvd @ 15% O2	2.5	2.5	2.5	2.5	2.5	2.5
NOx, lb/hr	14.90	9.68	15.60	10.13	16.25	10.52
NOx, lb/MMBtu	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091
SO2, ppmvd @ 15% O2	0.402	0.402	0.402	0.402	0.402	0.402
SO2, lb/hr	3.33	2.17	3.49	2.27	3.50	2.35
SO2, lb/MMBtu	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
CO, ppmvd @ 15% O2	6.00	6.00	6.00	6.00	6.00	6.00
CO, lb/hr	21.77	14.15	22.80	14.81	23.75	15.37
CO, lb/MMBtu	0.0133	0.0133	0.0133	0.0133	0.0133	0.0133
VOC, ppmvd @ 15% O2	***1.3***	***1.3***	***1.3***	***1.3***	***1.3***	***1.3***
VOC, lb/hr	***2.70***	***1.76***	***2.83***	***1.84***	***2.95***	***1.91***
VOC, lb/MMBtu	***0.0016***	***0.0016***	***0.0016***	***0.0016***	***0.0016***	***0.0016***
PM10, lb/hr	9.0	9.0	9.0	9.0	9.0	9.0
PM10, lb/MMBtu	0.0055	0.0084	0.0052	0.0081	0.0050	0.0078
PM10, gr/dscf	0.00157	0.00222	0.00147	0.00219	0.00140	0.00215
NH3, ppmvd@15% O2	10.0	10.0	10.0	10.0	10.0	10.0
NH3, lb/hr	22.06	14.34	23.10	15.00	24.06	15.58

Table A-2
PEF Expansion Project
Detailed Calculations for Maximum Hourly, Daily, and Annual Criteria Pollutant Emissions for Expansion CTG
VOC Emission Rates Revised 5/05

Equipment	Base Load max. hour	Base Load hrs/day	Base Load hrs/yr	Startup max. hour	Startup hrs/day	Startup hrs/yr	NOx Base Load lb/hr	NOx Startup (2) lb/hr	SOx (1) Base Load lb/hr	SOx (1) Startup lb/hr	CO Base Load lb/hr	CO Startup (2) lb/hr	VOC Base Load lb/hr	VOC Startup (2) lb/hr	PM10 Base Load lb/hr	PM10 Startup lb/hr
Expansion CTG, baseload	0	22	8460	0	0	0	***16.25***	0.00	3.495	0.00	23.75	0.00	2.95	0.00	9.00	0.00
Expansion CTG, startups	0	0	0	1	2	300	0.00	80.00	0.00	3.495	0.00	902.00	0.00	16.00	0.00	9.00

Equipment	NOx Max lb/hr	NOx Max lb/day	NOx Total lb/yr	SOx Max lb/hr	SOx Max lb/day	SOx Total lb/yr	CO Max lb/hr	CO Max lb/day	CO Total lb/yr	VOC Max lb/hr	VOC Max lb/day	VOC Total lb/yr	PM10 Max lb/hr	PM10 Max lb/day	PM10 Total lb/yr
Expansion CTG, baseload	0.00	357.51	137,480	0.00	76.89	29,568	0.00	522.41	200,892	0.00	***64.83***	***24,930***	0.00	198.00	76,140
Expansion CTG, startups	80.00	92.49	24,000	3.50	6.99	1,049	902.00	1590.59	270,600	16.00	32.00	4,800	9.00	18.00	2,700
Total	80.00 lb/hr	450.00 lb/day	164,250 lb/yr	3.50 lb/hr	84.00 lb/day	30,616 lb/yr	902.00 lb/hr	2113.00 lb/day	471,492 lb/yr	16.00 lb/hr	***96.83*** lb/day	***29,730*** lb/yr	9.00 lb/hr	216.00 lb/day	78,840 lb/yr

Notes:

1. Startup emission rates for the simple cycle turbine are identical to those for the previously permitted combined cycle turbines.
2. Hourly SOx emission rate for the simple cycle turbine is identical to the emission limit for the existing combined cycle turbines.

Table F-1
PEF Expansion Project
Emission Reduction Credits
VOC Emission Rates Revised 5/05

	Q1 (lbs)	Q2 (lbs)	Q3 (lbs)	Q4 (lbs)	Annual, lbs	
NOx	90	91	92	92	365	Exclusion
Project Emissions	40,500	40,950	41,400	41,400	164,250	
Project Emissions Subject to Offset	40,500	40,950	41,400	41,400	164,250	
Required Offsets (1.5 ratio)	60,750	61,425	62,100	62,100	246,375	
ERC Cert S-1554-2 (Note a)	109,935	121,484	127,922	117,272	476,613	
ERC Cert S-1543-2	10,354	8,381	11,018	11,467	41,220	
Surplus NOx ERCs	59,539	68,440	76,840	66,639	271,458	
Additional NOx ERCs for PM10	52,877	53,464	54,052	54,052	214,445	
Net Surplus NOx ERCs	6,662	14,976	22,788	12,587	57,013	
VOC						
Project Emissions	***7,331***	***7,412***	***7,494***	***7,494***	***29,730***	
Project Emissions Subject to Offset	***7,331***	***7,412***	***7,494***	***7,494***	***29,730***	
Required Offsets (1.5 ratio)	***10,996***	***11,118***	***11,241***	***11,241***	***44,596***	
ERC Cert N-444-1 (Note b)	47,635	37,534	40,666	32,156	157,991	
ERC Cert S-1666-1	0	0	0	9	9	
Net Surplus VOC ERCs	***36,639***	***26,416***	***29,425***	***20,924***	***113,404***	
SOx						
Project Emissions	7,549	7,633	7,717	7,717	30,616	
Project Emissions Subject to Offset	7,549	7,633	7,717	7,717	30,616	
Required Offsets (1.5 ratio)	11,324	11,450	11,575	11,575	45,924	
ERC Cert S-1344-5	25,521	30,054	14,242	12,127	81,944	
Net Surplus SOx ERCs	14,197	18,604	2,667	552	36,020	
PM10						
Project Emissions	19,440	19,656	19,872	19,872	78,840	
Project Emissions Subject to Offset	19,440	19,656	19,872	19,872	78,840	
Required Offsets (1.5 ratio)	29,160	29,484	29,808	29,808	118,260	Ratio w/ dist
PM10 from NOx ERCs (2.72 ratio) (Note c)	52,877	53,464	54,052	54,052	214,445	2.72
Surplus NOx ERCs Used for PM10	52,877	53,464	54,052	54,052	214,445	
Net Surplus PM10 ERCs	0	0	0	0	0	

Notes:

a. These ERCs are surplus to those previously allocated for Pastoria and SJVEC.
b. These ERCs are surplus to those allocated for SJVEC (formerly Cert N-303-1).
c. The District has previously approved a NOx:PM10 ratio for Pastoria of 2.72 to 1, including the offset ratio.

sierra research

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June 8, 2005

Dr. James Reede
Energy Facility Siting Project Manager
California Energy Commission
1516 - 9th Street
Sacramento, CA 95814

Re: Pastoria Energy Facility Expansion Project
Docket # 05-AFC-01

Dear Dr. Reede:

Enclosed please find a copy of a letter from the US Environmental Protection Agency to Andrew Whittome, Project Manager for the Pastoria Energy Facility Expansion project. The letter indicates that EPA has found PEF's application for a Prevention of a Significant Deterioration (PSD) permit to be administratively complete.

The letter is being provided for your information at this time. Once the project is accepted as data adequate by the CEC, we will formally enter the letter into the project docket.

If you have any questions regarding this letter or any other air quality issues related to the project, please do not hesitate to call.

Sincerely,

Nancy Matthews

Nancy Matthews

cc: Will Walters, Aspen Environmental
Keith Golden, CEC
Andrew Whittome, Calpine
Rick Tetzloff, Calpine
Gregg Wheatland, Ellison, Schneider & Harris
Jennifer Scholl, URS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

June 6, 2005

Mr. Andrew Whittome
Project Manager
Calpine, Dublin Office
4160 Dublin Blvd, Suite 150
Dublin, CA 94568-3139

Dear Mr. Whittome:

I am writing in response to your Prevention of Significant Deterioration ("PSD") permit application for the proposed Pastoria Energy Facility Expansion ("PEFE") project, dated May 2, 2005, and received by Region 9 on May 5, 2005. The application is for the construction and operation of a 160 megawatt simple cycle combustion turbine generator, to supplement the existing 750 MW base load facility. After review of the above application and supporting information, EPA has determined that it is administratively complete.

Based on the information in your application, Table 1 summarizes project potential to emit, PSD significant thresholds, and whether PSD review would apply to individual criteria pollutants. Kern County air quality is classified federal attainment for NO_2, CO, and SO_x,

Table 1 – Total PEFE Potential to Emit, and PSD Significance Levels

Pollutant	Existing PTE (tons/yr)	Expansion Project PTE (tons/yr)	PSD Significance Levels (tons/yr)	Attainment Pollutant?	Subject to PSD Review?
NO_2	172.9	82.1	40	Yes	Yes
CO	610.5	235.7	100	Yes	Yes
PM_{10}	118.2	39.4	15	No	No
SO_x	42.4	15.3	40	Yes	No
VOC/O_3	113.8	21.6	40	No	No

and federal nonattainment for ozone and PM_{10}. PSD review is required for any attainment pollutant emitted above the applicable PSD significance level. Therefore, PSD review is triggered for NO_2, and CO.

Finally, this notification does not imply that the EPA agrees with any analyses, conclusions or positions contained the application. Also, if you should request a suspension in the processing of the application, or submit new information indicating a significant change in

the project design, ambient impact or emissions, this determination may be revised. When our review is completed and a draft permit developed, we will publish a public notice of our intent to issue the permit. The comment period specified in the notice shall be at least 30 days.

Please be advised that anyone making a FOIA request may have full access to the application materials and other information you provide to us in connection with this permit action. You are reminded of your rights to claim business confidentiality under 40 CFR 2, Subpart B for any part of or all of the information you provide us. If you do not make a claim of confidentiality for any of this material within 15 days of the date you receive this letter you will have waived your right to do so. Please note that the facility name and address may not be claimed as confidential. If you wish to claim confidentiality, you must substantiate your claim. Your substantiation must address the points enumerated in the attachment to this letter, in accordance with 40 CFR 2.204(e).

Should you have any questions concerning the review of your application, please contact Manny Aquitania at (415) 972-3977.

Sincerely,

Laura Yoneyama
for
Gerardo C. Rios
Chief, Permits Office

cc: Michael Argentine, Calpine
Barbara McBride, Calpine
Nancy Matthews, Sierra Research
Thomas Goff, SJVUAPCD

ATTACHMENT

INSTRUCTIONS FOR CLAIMING CONFIDENTIALITY

A. Pursuant to 40 CFR 2.204(e), your claim must address these points:

i. The portions of the information alleged to be entitled to confidential treatment;

ii. The period of time for which confidential treatment is desired by the business (e.g., until the occurrence of a specific event, or permanently);

iii. The purpose for which the information was furnished to EPA and the appropriate date of submission, if known;

iv. Whether a business confidentiality claim accompanied the information when it was received by EPA;

v. Measures taken by you to guard against the undesired disclosure of the information to others;

vi. The extent to which the information has been disclosed to others and the precautions taken in connection therewith;

vii. Pertinent confidentiality determinations, if any, by EPA or other Federal agencies, and a copy of any such determination or reference to it, if available;

viii. Whether you assert that disclosure of this information would be likely to result in substantial harmful effects on your business's competitive position, and if so, what those harmful effects would be, why they should be viewed as substantial; and an explanation of the casual relationship between disclosure and such harmful effect, and

ix. Whether you assert that the information is voluntarily submitted information and if so, whether any disclosure of the information would tend to lessen the availability to EPA of similar information in the future. "Voluntarily submitted information" is defined in 40 CFR Section 2.201(i) as business information in EPA's possession.

a) The submission of which EPA has no statutory or contractual authority to require; and

b) The submission of which was not prescribed by statute or regulation as a condition of obtaining some benefit (or avoiding some disadvantage)

under a regulatory program of general applicability, including such regulatory programs as permit, licensing, registration, or certification programs, but excluding programs concerned solely or primarily with the award or administration by EPA of contracts or grants.

B. We will disclose information covered by your claim only to the extent provided for in 40 CFR Part 2, Subpart B Confidentiality of Business Information. Please address your claim and substantiation of confidentiality to the staff person mentioned in the letter at EPA Region 9 (AIR-3), 75 Hawthorne Street, San Francisco, CA 94105.

sierra
research

1801 J Street
Sacramento, CA 95814
(916) 444-6666
Fax: (916) 444-8373

June 9, 2005

Dr. James Reede
Energy Facility Siting Project Manager
California Energy Commission
1516 - 9th Street
Sacramento, CA 95814

Re: Pastoria Energy Facility Expansion Project
Docket # 05-AFC-01

Dear Dr. Reede:

Enclosed please find a copy of a letter from the San Joaquin Valley Air Pollution Control District. The letter indicates that SJVAPCD has not identified any sources of air emissions that would meet the CEC staff criteria for inclusion in a cumulative impacts analysis for the Pastoria Energy Facility Expansion project.

The letter is being provided for your information at this time. Once the project is accepted as data adequate by the CEC, we will formally enter the letter into the project docket.

If you have any questions regarding this letter or any other air quality issues related to the project, please do not hesitate to call.

Sincerely,

Nancy Matthews

Nancy Matthews

cc: Will Walters, Aspen Environmental
Keith Golden, CEC
Andrew Whittome, Calpine
Rick Tetzloff, Calpine
Gregg Wheatland, Ellison, Schneider & Harris
Jennifer Scholl, URS

San Joaquin Valley
Air Pollution Control District

June 6, 2005

Ms. Nancy Matthews
Sierra Research
1801 J Street
Sacramento, CA 95814

Re: Cumulative Impact Analysis of Pastoria Energy Facility Expansion Project
District Project Number: S-1052027

Dear Ms. Matthews:

The District has reviewed your request for assistance in identifying projects with air contaminant emissions that would be included in the assessment of the cumulative impact of the Pastoria Energy Facility expansion project. In addition to the emissions from the expansion project, the cumulative impact modeling analysis considers emissions from projects located within 6 miles from the Pastoria site that have been approved for construction but are not yet operating or are currently in the application review process. Projects having less than 5 tons/yr of each criteria pollutant are considered *de minimus* and are not included in the analysis.

A review of District records has not identified any project meeting the selection criteria set forth in your letter and summarized above.

If you have any questions, please contact Richard Karrs at (661) 326-6954.

Sincerely,

~~David Warner~~
Director of Permit Services

Richard W Karrs

for Thomas Goff, P.E.
Permit Services Manager
DW:rwk

David L. Crow
Executive Director/Air Pollution Control Officer

Northern Region Office
4230 Kiernan Avenue, Suite 130
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(209) 557-6400 • FAX (209) 557-6475

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June 14, 2005

Mr. Thomas Goff
Permit Services Manager
San Joaquin Valley APCD
2700 M Street, Suite 275
Bakersfield, CA 93301-2373

Re: Pastoria Energy Facility Expansion Project #1052027

Dear Mr. Goff:

Pastoria Energy Facility, LLC, has filed an Application for Certification with the California Energy Commission (CEC) and an application for Authority to Construct with the District for the addition of one 160 MW GE 7FA simple cycle combustion turbine generator to be constructed and operated at the Pastoria Energy Facility in southern Kern County. In the application filed with the District in early May, we made an error in the calculation of annual NOx emissions from the expansion CTG (Table A-2 of the Air Quality Technical Report) that slightly overestimated the annual NOx emissions from the project. This error was pointed out by Richard Karrs of your staff in a telephone conversation on June 9, 2005.

The purpose of this letter is to provide corrected versions of the tables that include the erroneous annual NOx emissions. The corrected tables also reflect the change in the VOC emission rate for the project that was the subject of our letter dated May 24, 2005. The ambient air quality modeling analysis is not being revised as that analysis did not utilize the erroneous annual NOx emission rate in Table A-2.

If you have any additional questions regarding the project, please do not hesitate to call.

Sincerely,

Nancy Matthews

Nancy Matthews

enclosures

cc: Richard Karrs, SJVAPCD
Dr. James Reede, CEC Project Manager
Keith Golden, CEC
Will Walters, Aspen Environmental
Gerardo Rios, EPA Region IX

Table A-2
PEF Expansion Project
Detailed Calculations for Maximum Hourly, Daily, and Annual Criteria Pollutant Emissions for Expansion CTG
VOC Emission Rates Revised 5/05; Annual NOx Emissions Corrected 6/05

Equipment	Base Load max. hour	Base Load hrs/day	Base Load hrs/yr	Startup max. hour	Startup hrs/day	Startup hrs/yr	NOx Base Load lb/hr	NOx Startup (2) lb/hr	SOx (1) Base Load lb/hr	SOx (1) Startup lb/hr	CO Base Load lb/hr	CO Startup (2) lb/hr	VOC Base Load lb/hr	VOC Startup (2) lb/hr	PM10 Base Load lb/hr	PM10 Startup lb/hr
Expansion CTG, baseload	0	22	8460	0	0	0	***16.25***	0.00	3.495	0.00	23.75	0.00	2.95	0.00	9.00	0.00
Expansion CTG, startups	0	0	0	1	2	300	0.00	80.00	0.00	3.495	0.00	902.00	0.00	16.00	0.00	9.00

Equipment	NOx Max lb/hr	NOx Max lb/day	NOx Total lb/yr	SOx Max lb/hr	SOx Max lb/day	SOx Total lb/yr	CO Max lb/hr	CO Max lb/day	CO Total lb/yr	VOC Max lb/hr	VOC Max lb/day	VOC Total lb/yr	PM10 Max lb/hr	PM10 Max lb/day	PM10 Total lb/yr
Expansion CTG, baseload	0.00	357.51	137,480	0.00	76.89	29,568	0.00	522.41	200,892	0.00	***64.83***	***24,930***	0.00	198.00	76,140
Expansion CTG, startups	80.00	92.49	24,000	3.50	6.99	1,049	902.00	1590.59	270,600	16.00	32.00	4,800	9.00	18.00	2,700
Total	80.00 lb/hr	450.00 lb/day	***161,480*** lb/yr	3.50 lb/hr	84.00 lb/day	30,616 lb/yr	902.00 lb/hr	2113.00 lb/day	471,492 lb/yr	16.00 lb/hr	***96.83*** lb/day	***29,730*** lb/yr	9.00 lb/hr	216.00 lb/day	78,840 lb/yr

Notes:

1. Startup emission rates for the simple cycle turbine are identical to those for the previously permitted combined cycle turbines.
2. Hourly SOx emission rate for the simple cycle turbine is identical to the emission limit for the existing combined cycle turbines.

Table F-1
PEF Expansion Project
Emission Reduction Credits
VOC Emission Rates Revised 5/05; Annual NOx Emissions Corrected 6/05

	Q1 (lbs)	Q2 (lbs)	Q3 (lbs)	Q4 (lbs)	Annual, lbs	
NOx	90	91	92	92	365	Exclusion
Project Emissions	***39,817***	***40,260***	***40,702***	***40,702***	***161,480***	
Project Emissions Subject to Offset	***39,817***	***40,260***	***40,702***	***40,702***	***161,480***	
Required Offsets (1.5 ratio)	***59,726***	***60,389***	***61,053***	***61,053***	***242,221***	
ERC Cert S-1554-2 (Note a)	109,935	121,484	127,922	117,272	476,613	
ERC Cert S-1543-2	10,354	8,381	11,018	11,467	41,220	
Surplus NOx ERCs	***60,563***	***69,476***	***77,887***	***67,686***	***275,612***	
Additional NOx ERCs for PM10	52,877	53,464	54,052	54,052	214,445	
Net Surplus NOx ERCs	***7,686***	***16,012***	***23,835***	***13,634***	***61,167***	
VOC						
Project Emissions	***7,331***	***7,412***	***7,494***	***7,494***	***29,730***	
Project Emissions Subject to Offset	***7,331***	***7,412***	***7,494***	***7,494***	***29,730***	
Required Offsets (1.5 ratio)	***10,996***	***11,118***	***11,241***	***11,241***	***44,596***	
ERC Cert N-444-1 (Note b)	47,635	37,534	40,666	32,156	157,991	
ERC Cert S-1666-1	0	0	0	9	9	
Net Surplus VOC ERCs	***36,639***	***26,416***	***29,425***	***20,924***	***113,404***	
SOx						
Project Emissions	7,549	7,633	7,717	7,717	30,616	
Project Emissions Subject to Offset	7,549	7,633	7,717	7,717	30,616	
Required Offsets (1.5 ratio)	11,324	11,450	11,575	11,575	45,924	
ERC Cert S-1344-5	25,521	30,054	14,242	12,127	81,944	
Net Surplus SOx ERCs	14,197	18,604	2,667	552	36,020	
PM10						
Project Emissions	19,440	19,656	19,872	19,872	78,840	
Project Emissions Subject to Offset	19,440	19,656	19,872	19,872	78,840	
Required Offsets (1.5 ratio)	29,160	29,484	29,808	29,808	118,260	Ratio w/ dist
PM10 from NOx ERCs (2.72 ratio) (Note c)	52,877	53,464	54,052	54,052	214,445	2.72
Surplus NOx ERCs Used for PM10	52,877	53,464	54,052	54,052	214,445	
Net Surplus PM10 ERCs	0	0	0	0	0	

Notes:

a. These ERCs are surplus to those previously allocated for Pastoria and SJVEC.

b. These ERCs are surplus to those allocated for SJVEC (formerly Cert N-303-1).

c. The District has previously approved a NOx:PM10 ratio for Pastoria of 2.72 to 1, including the offset ratio.

Criteria Pollutant Emissions Summary: Expansion CTG. The calculation of maximum facility emissions shown in Table 5.2-20 is based on the CTG emission rates shown in Tables 5.2-18 and 5.2-19, the fuel use limitations in Table 5.2-17, and the following assumptions:

TABLE 5.2-19
EXPANSION CTG STARTUP AND SHUTDOWN EMISSION RATES

	NO_x	CO	VOC
Startup and Shutdown, lb/hr	80	902	16

- The expansion CTG may operate up to 24 hours per day
- The CTG may have up to two 1-hour startups per day, with a total of 2 hours of startup/shutdown activity
- The CTG may have a total of 300 hours per year of startup/shutdown activity

TABLE 5.2-20 *REVISED*
EMISSIONS FROM EXPANSION CTG

	Pollutant				
Emissions/Equipment	NO_x	SO_2	CO	VOC	PM_{10}
Maximum Hourly Emissions CTG[a], pounds per hour	80	3.5	902	16	9.0
Maximum Daily Emissions CTG, pounds per day	450	84	2,113	*97* ~~132~~	216
Maximum Annual Emissions CTG, pounds per year	*161,480* ~~164,250~~	30,616	471,492	*29,730* ~~43,154~~	78,840

a. Maximum hourly NO_x, CO, and VOC emission rates reflect emissions during startup.

As discussed above, there will be no increase in emissions from the cooling tower (S-3636-5-2) as a result of the operation of the PEF Expansion.

5.2.5.2.2 Criteria Pollutant Emissions: Existing Equipment. The pre-project Stationary Source Potential to Emit (SSPE1) is equal to the overall potential to emit limit for all units covered by existing Authorities to Construct at the facility. The SSPE1 for the existing facility is shown in Table 5.2-21.

5.2.5.3 Emissions Assessment: Toxic Air Contaminants

5.2.5.3.1 Toxic Air Contaminant Emissions: Expansion CTG. Maximum hourly and annual TAC emissions were estimated for the proposed expansion CTG. Maximum proposed TAC emissions were calculated from the heat input rate (in MMBtu/hr and MMBtu/yr),

TABLE 5.2-29 *REVISED*
PSD SIGNIFICANT EMISSIONS LEVELS

Pollutant	Existing PEF Facility Emissions (tpy)	PEF Expansion Emissions Increase (tpy)	PSD Significance Threshold (tpy)	Are Emissions from Expansion Significant?
NO_x	172.9	*80.7* ~~82.1~~	40	Yes
SO_2	42.4	15.3	40	No
VOC	113.8	*14.9* ~~21.6~~	40	No
CO	610.5	285.7	100	Yes

TABLE 5.2-30
PSD LEVELS OF SIGNIFICANCE

Pollutant	Averaging Time	Significant Impact Levels	Maximum Allowable Increments
NO_2	Annual	1 µg/m³	25 µg/m³
SO_2	3-hour	25 µg/m³	512 µg/m³
	24-Hour	5 µg/m³	91 µg/m³
	Annual	1 µg/m³	20 µg/m³
CO	1-Hour	2000 µg/m³	N/A
	8-Hour	500 µg/m³	N/A
PM_{10}	24-Hour	5 µg/m³	30 µg/m³
	Annual	1 µg/m³	17 µg/m³

Table 5.2-29 shows that the proposed project will be a major modification to a major stationary source and will therefore be subject to PSD review for NO_x and CO. Since the SJVAPCD is a nonattainment area for PM_{10}, the project is not subject to PSD review for that pollutant.

The maximum modeled impacts from the expansion CTG are compared with the significance levels in Table 5.2-31. Since the modeled impacts of the proposed expansion turbine project are well below all applicable significant impact levels, no increments analysis is required.

5.2.5.4.7 Air Quality Related Values. The PSD regulations require an assessment of the impacts, including visibility, of major sources on Air Quality Related Values (AQRVs) in Class I areas within 100 kilometers of the project site. The nearest Class I area is the San Rafael Wilderness Area, which is located approximately 73 kilometers from the project site. The San Rafael Wilderness Area is located in the Los Padres National Forest. Figure 5.2-7 shows this area with respect to the project site. PSD is applicable to NO_2, CO, and SO_2 for this project. PSD is not applicable to PM_{10}, for which the SJVAPCD has been designated a non-attainment area. Emissions of CO are not generally a concern, and are not included in the AQRV analysis. However, PM_{10} emissions were included in the analysis.

BACT for CO emissions will be achieved by using good combustion practices to achieve CO emissions of 6.0 ppmvd, corrected to 15 percent O_2, on a 3-hour average basis. Recent District BACT determinations indicate that BACT from large, simple-cycle combustion turbines (≥50 MMBtu/hr heat input) is 6 ppmvd CO, corrected to 15 percent O_2. A review of recent BACT determinations for CO from combustion turbines is provided in Appendix E.

BACT for POC emissions will be achieved by use of good combustion practices in the combustion turbine. BACT for POC emissions from combustion devices has historically been the use of best combustion practices. POC emissions leaving the stacks will not exceed 1.3 ~~2.0~~ ppmvd, corrected to 15 percent oxygen. This level of emissions is consistent with recent BACT determinations for similar projects.

For the turbine, BACT for PM_{10} is best combustion practices and the use of gaseous fuels. District BACT Guideline 3.4.7 specifies BACT for SO_2 for simple cycle combustion turbines with an output rating of ≥ 50 MW as the exclusive use of clean-burning PUC regulated natural gas with a sulfur content of < 0.75 grains per 100 scf. The proposed turbine will burn exclusively PUC-regulated natural gas with an expected average sulfur content of 0.75 grains per 100 scf, which will result in minimal SO_2 emissions.

5.2.6.3.2 Emission Offsets. A new or modified facility with a stationary source NSR balance exceeding the SJVAPCD offset thresholds shown in Table 5.2-36. PEF must offset all emissions increases at a ratio that varies according to the distance between the facility and the source of the offsets.

TABLE 5.2-36 *REVISED*
SJVAPCD OFFSET EMISSION THRESHOLDS

Pollutant	Threshold, lb/yr	Existing Facility Emissions, lb/yr	Expansion CTG Emissions, lb/yr
~~NOx~~	~~20,000~~	~~344,484~~	*161,480* ~~164,250~~
SO_2	54,730	84,780	30,616
CO[a]	200,000	1,220,166	471,492
VOC	20,000	227,619	*29,730* ~~43,154~~
PM	29,200	236,462	78,840

a. In attainment areas. CO emissions in nonattainment areas subject to 30,000 lb/yr offset threshold.

The District new source review rule requires project denial if SO_2, NO_2, PM_{10}, or CO air quality modeling results indicate emissions will interfere with the attainment or maintenance of the applicable ambient air quality standards or will exceed PSD increments. The modeling analyses presented in Section 5.2.5.3 of the application show that facility emissions will not interfere with the attainment or maintenance of the applicable air quality standards.

Emissions offset requirements for NO_x, VOC, SO_2, and PM_{10} are shown in Table 5.2-37 below. Appendix F, Table F-1 of the Air Quality Technical Report shows the ERCs that will be provided for the project. NO_x ERCs will be used for offsetting PM_{10} emissions increases, in accordance with Rule 2201 Section 4.13.3.2, at the ratio of 2.72:1 (including distance) that was previously approved for the PEF project.

TABLE 5.2-37 *REVISED*
FACILITY OFFSET REQUIREMENTS

Pollutant	Net Increase in Emissions (lb/yr)	Required Offset Ratio[a]	Offsets Required (lb/yr)
NO_x	*161,480* ~~164,250~~	1.5	*242,221* ~~246,375~~
VOC	*29,730* ~~43,154~~	1.5	*44,596* ~~64,732~~
SO_2	30,616	1.5	45,924
PM_{10}	78,840	1.5	118,260

a. Based on assumption that ERCs are obtained from sources more than 15 miles away

The federal PSD rules also require applicants to demonstrate that emissions from a project located within 10 km (6.2 miles) of a Class I area will not cause or contribute to the exceedance of any national ambient air quality standard or any applicable Class I PSD increment. Because the nearest Class I areas, San Rafael and Dome Land Wilderness Areas, are more than 10 km from PEF, this section is not applicable to the proposed facility.

5.2.6.3.3 SJVAPCD Prohibitory Rules. The general prohibitory rules of the SJVAPCD applicable to the project include the following:

- Rule 4001 – NSPS Subpart GG: As discussed above, compliance with the Subpart GG requirements has already been demonstrated.
- Rule 4002 – National Emissions Standards for Hazardous Air Pollutants: The requirements of this rule apply to the project; however, since the facility will continue to be a non-major source of HAPs, no action is necessary to demonstrate continued compliance.
- Rule 4101 – Visible Emissions: Prohibits visible emissions as dark or darker than Ringelmann No. 2 for periods greater than three minutes in any hour. The existing facility permit limits the visible emissions from the turbine lube oil vents (5%) and exhaust stacks (20%). The proposed simple cycle expansion CTG is expected to be able to comply with these limitations.
- Rule 4102 – Nuisance: Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property. The engineering evaluation for the original permit indicated that the equipment

Attachment AQ-4a

FLM Guidance Regarding PM_{10} Apportionment

Attachment 1

Recommendations regarding inclusion of Elemental Carbon and Organic Carbon fraction of PM-10 emissions in Class I visibility modeling analyses

The following guidance has been prepared by the National Park Service (NPS) and USDA-Forest Service (USDA-FS) for applicants to use in assessing visibility impacts to Class I areas managed under the Prevention of Significant Deterioration (PSD) regulations. This guidance applies to all PSD permit application where the Class I modeling protocol has been approved after September 5, 2002. Any PSD permit applicant who has submitted an approved Class I modeling protocol prior to September 5, 2002 is not covered by this guidance and is instead subject to the recommendations listed in the approved protocol.

At present, the guidance is specific to permits for new/modified combustion turbines (CTs). Other types of emission sources may be subject to these or alternative recommendations on a case-by-case basis.

This guidance is based on the best engineering judgment of NPS and USDA-FS and on the best information currently available. State/local regulatory agencies, applicants, and turbine vendors are encouraged to research these questions more fully and provide their findings to NPS and USDA-FS. NPS and USDA-FS may alter this guidance at any time based on new data received.

Please note that the emissions modeled in the Class I analysis must be the maximum short-term (lb/hr) emissions reflected in the PSD permit.

<u>Natural-Gas Fired Combustion Turbines.</u>

- 25% of PM emissions are filterable and 75% of PM emissions are condensable.
- All filterable PM will be considered elemental carbon (EC).
- Condensable PM will be considered either organic carbon (OC) or sulfate.
- If primary sulfate emissions are provided by the applicant, OC will be estimated as the difference between condensable PM and sulfate. This assumes that the applicant has not already adjusted the PM emissions based on the estimated sulfate, in which case all condensable PM will be considered OC.
- If primary sulfate emissions are not provided by the applicant, sulfate will be estimated as 1/3rd of the applicant's SO_2 emissions, adjusted for the difference in molecular weight between SO_2 and SO_4. The OC emissions will be computed as the difference between the condensable PM and the computed sulfate emissions.

Oil-Fired Combustion Turbines

- 37% of PM emissions are filterable and 63% of PM emissions are condensable.
- Filterable PM emissions are split equally among EC and SOIL.
- If primary sulfate emissions are provided by the applicant, OC will be estimated as the difference between condensable PM and sulfate. This assumes that the applicant has not already adjusted the PM emissions based on the estimated sulfate, in which case all condensable PM will be considered OC.
- If primary sulfate emissions are not provided by the applicant, sulfate will be estimated as 40% of the applicant's SO_2 emissions, adjusted for the difference in molecular weight between SO_2 and SO_4. The OC emissions will be computed as the difference between the condensable PM and the computed sulfate emissions.

The primary sulfate emissions should be input directly to CALPUFF. For the OC, EC, and SOIL emissions, these are input to CALPUFF as PM-10 emissions. However, the light extinction coefficient for PM-10 which is input to CALPOST (Input Group 2) is calculated based on the PM apportionment determined above and the relative light extinction efficiency of each constituent. The recommended extinction coefficients are EC =10, OC =4, and Soil = 1.

An example calculation is provided below for a natural gas-fired unit:

Emissions: SO_2 = 10 lb/hr, PM-10 = 10 lb/hr, Primary SO_4 not provided

Step 1: Calculated SO_4 emissions (Input to CALPUFF)

SO_4 = 0.33 * 10 * (96/64) = 4.95 lb/hr

Step 2: Calculated SO_2 emissions (Input to CALPUFF)

SO_2 = 0.67 * 10 = 6.70 lb/hr

Step 3: Calculated EC

EC = 0.25 * 10 = 2.5 lb/hr

Step 4 : Calculated OC

OC = (0.75 * 10) – 4.95 = 2.55 lb/hr

Step 5: Calculated PM-10 Emissions (Input to CALPUFF)

PM-10 = 2.5 + 2.55 = 5.05 lb/hr

Step 6: Calculated light extinction coefficient for PM (EEPMF in CALPOST)

EEPMF = ((2.5 * 10) + (2.55 * 4)) / (2.5 + 2.55) = 6.97

Attachment AQ-4b

FLM Guidance Regarding Nitrogen Deposition Analysis Thresholds

Guidance on Nitrogen and Sulfur Deposition Analysis Thresholds

Background

The National Park Service (NPS) and the U.S. Fish and Wildlife Service (FWS) have developed criteria for evaluating the contribution of additional nitrogen (N) or sulfur (S) to deposition within Class I areas. This document describes the equation and process by which Deposition Analysis Thresholds (DATs) have been developed for Class I areas. The NPS and FWS have developed this DAT equation in response to requests by permitting authorities and permit applicants to continue to develop consistent, predictable permit review processes, and to expedite the permit review process. In developing DATs, the NPS and FWS seek to further improve the process by providing a quantitative method with which to evaluate sulfur deposition in Class I areas. DATs for both sulfur and nitrogen have been developed and are presented here.

The Clean Air Act Amendments of 1977 give Federal Land Managers (FLMs) an "affirmative responsibility" to protect air quality and air quality related values (AQRVs) within Class I areas. An AQRV is a resource that may be adversely affected by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified by the FLM for a particular area. FLMs are responsible for reviewing air quality permit applications from proposed new or modified major sources near Class I areas, and determining the potential impacts, if any, that may result from source emissions. FLMs take into account the particular resources and AQRVs that would be affected; the frequency and magnitude of any potential impacts; and the direct, indirect, and cumulative effects of any potential impacts. In making these determinations, FLMs are mandated to err on the side of resource protection.

Deposition-induced changes to AQRVs are of serious concern to FLMs and these thresholds are intended to distinguish where deposition increases may result in potentially adverse ecosystem stresses, as well as where the deposition increases are likely to have a negligible impact on AQRVs.

Deposition Analysis Thresholds

A DAT is *the additional amount of N or S deposition within a Class I area, below which estimated impacts from a proposed new or modified source are considered insignificant*. The DAT for a park or refuge will be compared with the amount of additional deposition resulting from a source, as modeled using CALPUFF or other appropriate models. The N DAT represents total N, including both wet and dry deposition. Total nitrogen includes NO, NO_2, HNO_3, NO_3, NH_3, and NH_4. The S DAT represents total S deposition. Total N and total S were selected in order to be consistent with conventions used in deposition loading, to represent the total amount of N and S inputs received in an ecosystem and to be compatible with CALPUFF model outputs.

The framework for calculating both the N and S DATs is:
DAT = Natural Background Deposition * Variability Factor * Cumulative Factor

Using this framework, DATs for N and S have been calculated for the Eastern and Western regions of the United States, and are presented below. A discussion of each component used to develop this equation and DATs is also presented.

Determination of Background Nitrogen (B_N) and Sulfur (B_S) Deposition

Natural background deposition was used to determine the DAT because aquatic and terrestrial ecosystems evolved under natural background deposition conditions. Therefore, some fraction of natural background deposition is likely within the range of natural variability for these ecosystems.

The B_N values were selected from a range of natural background deposition values published in peer-reviewed scientific literature, and from information provided by consultations with researchers (Dentener *pers. comm.*; Galloway *et al.* 1995; Galloway *et al.* 1996; NAPAP 1991; NADP 2000). The B_S values were determined in the same manner (Bates, Lamb 1992; Bates *et al.* 1992; Dentener *pers. comm.*; Galloway *et al.* 1996; Galloway *et al.* 1982; Galloway, Whepdale 1980). From this range of deposition values, the values of 0.50 kg/ha/yr for the East and 0.25 kg/ha/yr for the West were selected for both N and S, as they fulfilled the requirements of being scientifically valid as well as being conservative. These values represent the low end of the regional range of values that are presented in estimates of regional natural background deposition. This conservatism is necessary in order to fulfill the mandate to err on the side of resource protection, and to protect air quality and AQRVs within Class I areas. A reference of all literature used to determine B_N and B_S is attached, as well as Supporting Literature references for all sources used in developing both DATs.

Different B_N and B_S values were developed for the Eastern and Western United States. These separate values are based on the distinction between east and west natural deposition estimates made through global and national scale modeling analyses. The East DAT and West DAT are applicable to Class I areas located east and west of the Mississippi River, respectively.

The NPS and FWS do not intend to devise methodology for assessing exact pre-industrial deposition throughout the United States. Currently it is not possible or necessary to determine natural deposition values for each Class I area. It is most appropriate to determine the B_N and B_S values on a large spatial scale, such as the Eastern and Western regions of the United States. This has the added advantage of allowing for a simpler application process for applicants.

Use of a Variability Factor

Once natural background deposition numbers are determined, FLMs have a responsibility to determine what fraction of this deposition could be added to existing natural and anthropogenic deposition amounts within an ecosystem and still be considered insignificant. The NPS and FWS selected very conservative natural background numbers from the range of values presented in scientific literature, and have determined that all combined anthropogenic sources could contribute up to 50% of this conservative natural

background value without triggering concerns regarding resource impacts. Rationale for this decision came from looking at the modeled historical deposition scenarios in the scientific literature, where the range of estimates for any given area are often + or – 50% or more between various studies. Furthermore, the range of natural variability associated with annual natural background deposition at any given site is unknown, but 50% above or below the historical mean is plausible during any given year due to fluctuations in climate, biotic productivity, bacterial decomposition, lightning occurrence, fire, volcanic activity, sea spray, and other factors.

The NPS and FWS have determined that a total increase in deposition, from all sources over time, greater than fifty percent of natural background deposition would trigger management concerns. Therefore, the natural background value (B_N or B_S) is multiplied by 0.5, or 50%.

Use of a Cumulative Factor

There is an FLM concern that, over time, cumulative deposition from emissions sources may produce impacts upon Class I areas. It is beneficial to the FLMs, the permitting authority, and the applicant to determine what amount, if any, a new source could contribute to total deposition while having a reasonable assurance that cumulative deposition from all new sources would not exceed 50% of natural background. In developing the 1996 proposal for New Source Review Reform, the U.S. Environmental Protection Agency (EPA) determined that, as long as no individual source contribution exceeds 4% of a Class I increment, it is unlikely that the accumulation of sources over time will exceed that increment. The FLMs have applied the 4% value used in Class I increment significant impact levels to these new deposition analysis thresholds. By incorporating this value into the DAT equations, new sources whose modeled deposition amounts are below the DATs are not likely to significantly contribute to cumulative impacts from N or S deposition.

Deposition Analysis Threshold Equation

The DAT for a specific Class I area is calculated as:

$$\textbf{Nitrogen DAT} = B_N(0.5) * 0.04$$

$$\textbf{Sulfur DAT} = B_S(0.5) * 0.04$$

Where: B_N = natural background nitrogen deposition value.

Eastern Class I areas: B_N = 0.50 kg/ha/yr

Western Class I areas: B_N = 0.25 kg/ha/yr

B_S = natural background sulfur deposition value.

Eastern Class I areas: B_S = 0.50 kg/ha/yr

Western Class I areas: B_S = 0.25 kg/ha/yr

0.5 = Variability Factor

0.04 = Cumulative Factor

This equation incorporates a 0.5 Variability Factor and a 0.04 Cumulative Factor. The value of 0.04 represents a four percent safety factor to protect Class I areas from cumulative deposition impacts. B_N or B_S is multiplied by 0.5 to result in a value that is fifty percent of the natural background deposition. The NPS and FWS consider an

increase in deposition (resulting from all sources over time) that is greater than fifty percent of the B_N or B_S value to be a threshold that triggers management concerns. The use of both factors is explained in more detail below.

Therefore, DATs for nitrogen and sulfur in Eastern and Western Class I parks and refuges are:

East DAT: (0.50 kg/ha/yr N *or* S * 0.5) * 0.04 = 0.01 kg/ha/yr N *or* S
West DAT: (0.25 kg/ha/yr N *or* S * 0.5) * 0.04 = 0.005 kg/ha/yr N *or* S

Discussion

The DAT is a deposition threshold, not necessarily an adverse impact threshold. The DAT is the additional amount of deposition that triggers a management concern, not neccesarily the amount that constitutes an adverse impact to the environment. Both the NPS and the FWS utilize a case-by-case approach to permit review. Adverse impact determinations will be considered on a case-by-case basis for modeled deposition values that are higher than the DAT. This approach considers the best scientific information available for each park or refuge to assess existing as well as potential future deposition impacts. The magnitude of the deposition that an individual source would contribute as well as the sensitivity of the ecosystem must be considered. At present there is no equation that would, in all situations, allow an FLM to determine whether or not a source of N or S deposition would cause or contribute to an adverse impact. Therefore, FLMs will continue to use scientific data and information, in conjunction with modeling, to evaluate whether or not an adverse impact would occur. FLMs must also take into account site-specific information for each Class I area. This would include evaluating the potential deposition impacts from a source not just in relation to the DAT, but with other factors as well, such as whether adverse impacts resulting from deposition have been documented, or are suspected, in that specific Class I area.

Coastal ecosystems have evolved under naturally higher sulfur deposition rates due to contribution from oceanic sources. This factor will be considered by the NPS and FWS when making the case-by-case determination as to whether S deposition from a proposed source will adversely impact a Class I area containing coastal ecosystems.

While the values used in the DAT equation reflect current NPS/FWS guidance and the scientific information available, it is important to note that these values could be updated as new changes in effects-related information becomes available. These DATs replace any previous screening level values or deposition thresholds that may have been utilized by the NPS or FWS prior to the development of these DATs. The NPS and FWS will work closely with permit applicants to implement these DATs, and applicants are encouraged to contact the NPS or FWS at all stages of the application process.

References

Literature used to determine the B_N values:

Dentener, F. J. Personal communication with Tamara Blett, National Park Service. Globally modeled nitrogen maps for 1860. April 19, 2001.

Galloway, J.N., W.H. Schlesinger, H. Levy II, A. Michaels, and J.L. Schnoor. 1995. Nitrogen fixation: Anthropogenic enhancement – environmental response. Global Biogeochemical Cycles 9(2): 235-252.

Galloway, J.N., W.C. Keene, and G.E. Likens. 1996. Processes controlling the composition of precipitation at a remote Southern hemisphere location: Torres del Paine National Park, Chile. Journal of Geophysical Research 101(D3): 6883-6897.

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Literature used to determine the B_S values:

Bates, T.S. and B.K. Lamb. 1992. Natural sulfur emissions to the atmosphere of the continental United States. Global Biogeochemical Cycles, Vol 6(4):431-435.

Dentener, F. J. Personal communication with Tamara Blett, National Park Service. Modeling data for global sulfur deposition in 1860. July 9, 2001.

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Supporting Literature used in developing N and S DATs:

Bates, T.S., B.K. Lamb, A. Guenther, J. Dignon, and R.E. Stoiber. 1992. Sulfur emissions to the atmosphere from natural sources. Journal of Atmospheric Chemistry 14:315-337.

Bower, J.L. and I. Valiela. 2001. Historical changes in atmospheric nitrogen deposition to Cape Cod, Massachusetts, USA. Atmospheric Environment 35: 1039-1051.

Dentener, F.J. and P.J. Crutzen. 1994. A global 3D model of the ammonia cycle. Journal of Atmospheric Chemistry 19: 331-369.

Fenn, M.E., M.A. Poth, J.D. Aber, J.S. Baron, B.T. Bormann, D.W. Johnson, A.D. Lenly, S.G. Mcnulty, D.F. Ryan and R. Stottlemeyer. 1998. Nitrogen excess in North American ecosystems: Predisposing factors, ecosystem responses, and management strategies. Ecological Applications 8(3): 1039-1051.

Hedin, L.O., J.J. Amestro, and A.H. Johnson. 1995. Patterns of nutrient loss from unpolluted old growth temperate forests: Evaluation of biogeochemical theory. Ecology 76(2): 493-509.

Holland, E.A., B.H. Braswell, T.F. Lamasque, A. Townsend, T. Sulzman, T.F. Muller, F. Dentener, G. Brasseur, H. Levy II, T.E. Penner, and G.T. Roelofs. 1997. Variations in the predicted spatial distribution of atmospheric nitrogen deposition and their impact on carbon uptake by terrestrial ecosystems. Journal of Geophysical Research, 102(D13):15849-15866.

Kasgnoc, A.D. 1998. A time averaged inventory of subaerial volcanic sulfur emissions. Journal of Geophysical Research 103(25):251-262.

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Van Aardenne, J. A., F.J. Dentener, C.G.M. Klijn Goldewijk, J. Lelieveld, and J.G. J. Olivier. A 1°-1° resolution dataset of historical anthropogenic trace gas emissions for the period 1890-1990. Submitted to Global Biogeochemical Cycles, 1999.

Vitousek, P.M., J. Piber, R.W. Howarth, G.E. Likens, P.A. Matson, D.W. Schindler, W.S. Scheslinger, and G.D. Tilman. 1997. Human Alteration of the Global Nitrogen Cycle:

Causes and Consequences. Issues in Ecology (1), Spring 1997. Ecological Society of America.

Attachment AQ-4c

Email message to Gary Rubenstein of Sierra Research
from Mike McCorison of the USFS

Gary Rubenstein

From: Mike McCorison [mmccorison@fs.fed.us]
Sent: Friday, April 01, 2005 4:27 PM
To: Gary Rubenstein
Cc: Andrzej Bytnerowicz; Trent Procter; Mike McCorison
Subject: RE: Background Ozone Level for San Rafael Wilderness Area

Gary, I just calculated a daily weight ozone average from the 2003-2004 data from a site representative of San Rafael, 56.3 ppb. These data are from passive samplers that Dr Bytnerowicz developed at the research lab.
Is a there a suggested default modeling value for Ozone? We have some scattered ammonia data, but I would feel better having you using the suggested modeling default (0.5 ppb?).

Mike Mc Corison
USFS Southern California
Air Resource Specialist
Angeles National Forest
Voice 626-574-5286
Mobile 626-437-0624
Fax 626-574-5233

"Gary Rubenstein"
<GRubenstein@sierraresearch.com>

04/01/2005 10:18 AM

To
"Mike McCorison"
<mmccorison@fs.fed.us>

cc
"Nancy L. Matthews"
<NMatthews@sierraresearch.com>,
"Gary Rubenstein"
<GRubenstein@sierraresearch.com>

Subject
RE: Background Ozone Level for San Rafael Wilderness Area

Thanks.

Gary

-----Original Message-----
From: Mike McCorison [mailto:mmccorison@fs.fed.us]
Sent: Friday, April 01, 2005 9:08 AM
To: Gary Rubenstein
Cc: Gary Rubenstein; Nancy L. Matthews; Mike McCorison
Subject: Re: Background Ozone Level for San Rafael Wilderness Area

We just completed a some Ozone work in that area. I'll try to get the prelim results and get back to you next week sometime.

Mike Mc Corison

USFS Southern California
Air Resource Specialist
Angeles National Forest
Voice 626-574-5286
Mobile 626-437-0624
Fax 626-574-5233

"Gary Rubenstein"
<GRubenstein@sierraresearch.com>
03/31/2005 10:46 AM

To "Mike McCorison" <mmccorison@fs.fed.us>

cc "Gary Rubenstein" <GRubenstein@sierraresearch.com>, "Nancy L. Matthews" <NMatthews@sierraresearch.com>

Subject Background Ozone Level for San Rafael Wilderness Area

Mike - We're working on a Class I impact analysis for a modification to the Pastoria Energy Facility. The nearest Class I area is the San Rafael Wilderness Area. What background average ozone concentration do you recommend that we use for the regional haze analysis? Also, would it be appropriate to use the default background ammonia concentration of 0.5 ppb for forested areas?

Thanks. If you have any questions about this request, please don't hesitate to call me or Nancy Matthews at 916-444-6666.

Gary

Attachment AQ-9

Revised Table A-1

Table A-1
PEF Expansion Project
Emissions and Operating Parameters for Expansion CTG
Rev. July 05

Case	1) Hot Base	2) Hot Low	3) Avg. Base	4) Avg. Low	5) Cold Base	6) Cold Low
Ambient Temp, F	102	102	66	66	35	35
GT Load	100	50	100	50	100	50
GT heat input, MMBtu/hr (HHV)	1642.0	1,067.20	1719.5	1116.7	1791.1	1159.2
Stack flow, lb/hr (*no dilution air)*	3,325,000	2,295,000	3,484,000	2,325,000	3,635,000	2,369,000
Stack flow, lb/hr (w/ dilution air)	*5,133,507*	*4,083,507*	*5,398,809*	*4,239,809*	*5,673,770*	*3,278,938*
Stack flow, acfm *(w/ dilution air)*	2,933,650	2,249,983	3,009,083	2,276,233	3,072,833	2,300,917
Stack temp, F	830	784	798	755	766	723
Stack exhaust, vol %						
O2 (dry)	13.65%	14.24%	13.80%	14.02%	13.86%	13.91%
CO2 (dry)	4.18%	3.85%	4.09%	3.97%	4.06%	4.03%
H2O	9.55%	8.26%	8.42%	7.93%	7.64%	7.59%
Emissions						
NOx, ppmvd @ 15% O2	2.5	2.5	2.5	2.5	2.5	2.5
NOx, lb/hr	14.90	9.68	15.60	10.13	16.25	10.52
NOx, lb/MMBtu	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091
SO2, ppmvd @ 15% O2	0.402	0.402	0.402	0.402	0.402	0.402
SO2, lb/hr	3.33	2.17	3.49	2.27	3.50	2.35
SO2, lb/MMBtu	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
CO, ppmvd @ 15% O2	6.00	6.00	6.00	6.00	6.00	6.00
CO, lb/hr	21.77	14.15	22.80	14.81	23.75	15.37
CO, lb/MMBtu	0.0133	0.0133	0.0133	0.0133	0.0133	0.0133
VOC, ppmvd @ 15% O2	2	2	2	2	2	2
VOC, lb/hr	4.16	2.70	4.35	2.83	4.53	2.93
VOC, lb/MMBtu	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
PM10, lb/hr	9.0	9.0	9.0	9.0	9.0	9.0
PM10, lb/MMBtu	0.0055	0.0084	0.0052	0.0081	0.0050	0.0078
PM10, gr/dscf	0.00157	0.00222	0.00147	0.00219	0.00140	0.00215
NH3, ppmvd@15% O2	10.0	10.0	10.0	10.0	10.0	10.0
NH3, lb/hr	22.06	14.34	23.10	15.00	24.06	15.58

Attachment AQ-13
References for Construction Equipment Fuel Use Assumptions

Equipment	Gal/hr per unit	Basis for Assumption
Backhoe	2.25	Based on midrange of Cat. 428D low fuel use factor (p.20-17)
Boom Truck	3.13	Onroad equipment; same as TID WEC
Cranes, 15 ton	4.00	Same as TID WEC small crane
Cranes, 230 ton	7.50	Same as TID WEC large crane
Cranes, 25 ton	4.00	Same as TID WEC small crane
Dozer	4.00	Based on midrange of Cat. D6N low fuel use factor (p. 20-13)
Excavator	3.13	Onroad equipment; same as TID WEC
Dump Truck, 2 ton	3.70	Based on midrange of Cat. 322C low fuel use factor (p. 20-15)
Forklift	1.70	Based on midrange of Cat. TH330B (80-99 hp) low fuel use factor (p. 20-18)
Manlift, 60 ft	1.72	Same as TID WEC
Motor Grader	3.00	Based on midrange of Cat. 12H low fuel use factor (p. 20-13)
Pile Driving Eqt	7.50	Assume same as largest unit (scraper) based on hp rating
Tandem Dump, 30 CY	3.13	Onroad equipment; same as TID WEC
Scrapers	7.50	Based on midrange of Cat. 621G low fuel use factor (p. 20-16)
Roller Compactors	3.25	Based on midrange of Cat. CS-433E low fuel use factor (p. 20-19)
Water truck	3.13	Onroad equipment; same as TID WEC
Welding Machine, Portable	1.27	Same as TID WEC
Concrete Pumps	3.13	Onroad equipment; same as TID WEC
Note: Low fuel use factor assumed for these fuel consumption rates because expansion project construction area has already been roughed out as part of the overall site preparation for Phase 1. Terrain is flat, most of travel is on paved or gravel roads with low rolling resistance.		

Attachment AQ-14

TABLE 5.2-20 *REVISED*
EMISSIONS FROM EXPANSION CTG

Emissions/Equipment	Pollutant				
	NO_x	SO_2	CO	VOC	PM_{10}
Maximum Hourly Emissions CTG[a], pounds per hour	80	3.5	902	16	9.0
Maximum Daily Emissions CTG, pounds per day	450	84	2,113	*97* ~~132~~	216
Maximum Annual Emissions CTG, pounds per year	*161,480* ~~164,250~~	30,616	471,492	*29,730* ~~43,154~~	78,840

a. Maximum hourly NO_x, CO, and VOC emission rates reflect emissions during startup.

TABLE 5.2-35 *REVISED*
SJVAPCD BACT EMISSION THRESHOLDS

Pollutant	Threshold	Expansion CTG Emissions
PM	2 lb/day	216 lb/day
NO_x	2 lb/day	450 lb/day
SO_2	2 lb/day	84 lb/day
VOC	2 lb/day	*97* ~~355~~ lb/day
CO	100 tpy	*235.7* ~~285.7~~ tpy

Attachment AQ-19

TABLE 5.2-14
LAWS, ORDINANCES, REGULATIONS, STANDARDS (LORS), AND PERMITS FOR PROTECTION OF AIR QUALITY
Revised July 2005

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Sections)
		Federal			
Clean Air Act (CAA) §160-169A and implementing regulations, Title 42 United States Code (USC) §7470-7491 (42 USC §7470-7491), Title 40 Code of Federal Regulations (CFR) Parts 51 & 52 (Prevention of Significant Deterioration Program)	Requires prevention of significant deterioration (PSD) review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	USEPA	Issues Prevention of Significant Deterioration Permit for a Major Modification to an Existing Major Source.	Permit to be obtained before start of construction.	5.2.4.1.1 5.2.4.2.4 5.2.5.4.4-9 5.2.6.1
CAA §171-193, 42 USC §7501 et seq. (New Source Review)	Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to pollutants for which ambient concentration levels are higher than NAAQS.	SJVAPCD with USEPA oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.1.1 5.2.4.2.3 5.2.6.3.1 5.2.6.3.2
CAA §401 (Title IV), 42 USC §7651 (Acid Rain Program)	Requires reductions in NO_x and SO_2 emissions.	SJVAPCD with USEPA oversight	Issues Acid Rain monitoring plan error report after review of application.	Meet compliance deadlines listed in regulations; no permit issued.	5.2.4.1.1 5.2.4.2.5 5.2.6.1
CAA §501 (Title V), 42 USC §7661 (Federal Operating Permits Program)	Establishes comprehensive permit program for major stationary sources.	SJVAPCD with USEPA oversight	Issues Title V permit after review of application.	Permit to be obtained prior to commencement of construction.	5.2.4.1.1 5.2.4.2.6 5.2.6.1
CAA §111, 42 USC §7411, 40 CFR Part 60 (New Source Performance Standards – NSPS)	Establishes national standards of performance for new stationary sources.	SJVAPCD with USEPA oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.1.1 5.2.4.2.7 5.2.6.3.3
CAA §112, 42 USC §7412, 40 CFR Part 63 (National Emissions Standards for HAPs – NESHAP)	Establishes national standards of performance for hazardous air pollutants.	SJVAPCD with USEPA oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.1.1 5.2.6.3.3

TABLE 5.2-14
LAWS, ORDINANCES, REGULATIONS, STANDARDS (LORS), AND PERMITS FOR PROTECTION OF AIR QUALITY
Revised July 2005

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Sections)
		State			
H&SC §44300-44384; California Code of Regulations (CCR) §93300-93347 (Toxic "Hot Spots" Act)	Requires preparation and biennial updating of facility emission inventory of hazardous substances; risk assessments.	SJVAPCD with CARB oversight	After project review, issues DOC with conditions limiting emissions.	Screening HRA submitted as part of AFC.	5.2.4.1.2
California Public Resources Code §25523(a); 20 CCR §§1752, 2300-2309 (CEC & CARB Memorandum of Understanding)	Requires that CEC's decision on AFC include requirements to assure protection of environmental quality; AFC required to address air quality protection.	CEC	After project review, issues Final Certification with conditions limiting emissions.	SJVAPCD approval of AFC, i.e., DOC, to be obtained prior to CEC approval.	5.2.4.1.2
		Local			
SJVUPCD Rule 2201 (New and Modified Stationary Source Review)	NSR: Requires that pre-construction review be conducted for all proposed new or modified sources of air pollution, including BACT, emissions offsets, and air quality impact analysis.	SJVAPCD with CARB oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.3 5.2.6.3.1-2
SJVAPCD Rule 2520 (Federally Mandated Operating Permits)	Implements operating permits requirements of CAA Title V.	SJVAPCD with USEPA oversight	Issues Title V permit after review of application.	Agency approval to be obtained before start of construction.	5.2.4.2.6
SJVAPCD Rule 2540 (Acid Rain Program)	Implements acid rain regulations of CAA Title IV.	SJVAPCD with USEPA oversight	Issues Title IV permit after review of application.	Application to be made within 12 months of start of facility operation.	5.2.4.2.5
SJVAPCD Rule 4101 (Visible Emissions)	Limits visible emissions to no darker than Ringelmann No. 2 for periods greater than 3 minutes in any hour.	SJVAPCD with CARB oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained prior to commencement of operation.	5.2.4.2.8 5.2.6.3.3
SJVAPCD Rule 4102 (Public Nuisance)	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	SJVAPCD with CARB oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.8 5.2.6.3.3
SJVAPCD Rule 4201 (Particulate Matter)	Limits PM emissions from stationary sources.	SJVAPCD with CARB oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.8 5.2.6.3.3

TABLE 5.2-14
LAWS, ORDINANCES, REGULATIONS, STANDARDS (LORS), AND PERMITS FOR PROTECTION OF AIR QUALITY
Revised July 2005

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Sections)
SJVAPCD Rule 4801 (Sulfur Compounds Emissions)	Limits SO_2 emissions from stationary sources.	SJVAPCD with CARB oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.8 5.2.6.3.3
SJVAPCD Rule 4703 (Stationary Gas Turbines)	Limits NO_x and CO emissions from gas turbines.	SJVAPCD with CARB oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.8 5.2.6.3.3
SJVAPCD Rule 4001 (New Source Performance Standards: 40 CFR 60, Subpart GG, Stationary Gas Turbines; Subpart Da, Boilers; proposed Subpart KKKK, Gas Turbines)	Requires monitoring of fuel, other operating parameters; limits NO_x and SO_2 and PM emissions, requires source testing, emissions monitoring, and recordkeeping.	SJVAPCD with CARB oversight	After project review, issues DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 5.2.6.3.3

Attachment AQ-28 (also provided electronically)

Calpine Corporation San Joaquin Valley ERC Reconciliation

Certificate		Total Certificate Value (lbs)					Allocated to Pastoria Phase 1					Allocated to SJVEC (lbs)					Allocated to Pastoria Expansion (lbs)					Remaining Certificate Value (lbs)				
Owner	Number	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
NOx ERCs																										
Calpine	C-375-2	12,500	12,500	12,500	12,500	50,000	12,500	12,500	12,500	12,500	50,000					0						0	0	0	0	0
Calpine	C-376-2	54,301	54,301	54,301	54,301	217,204	54,301	54,301	54,301	54,301	217,204					0						0	0	0	0	0
Calpine	N-195-2	41,829	41,829	41,829	41,828	167,315	41,829	41,829	41,829	41,828	167,315					0						0	0	0	0	0
Pastoria	S-1543-2	10,354	8,381	11,018	11,467	41,220					0					0	10,354	8,381	11,018	11,467	41,220	0	0	0	0	0
Pastoria	S-1547-2	3,986	9,681	19,140	9,076	41,883					0	3,986	9,681	19,140	9,076	41,883						0	0	0	0	0
Pastoria	S-1550-2	1,160	7,055	4,075	3,491	15,781					0	1,160	7,055	4,075	3,491	15,781						0	0	0	0	0
Pastoria	S-1554-2	306,647	310,056	313,464	313,464	1,243,631	11,385	12,719	14,051	14,053	52,208	185,327	175,853	171,491	182,139	714,810	49,372	52,008	50,035	49,586	201,001	60,563	69,476	77,887	67,686	275,612
Totals		430,777	443,803	456,327	446,127	1,777,034	120,015	121,349	122,681	122,682	486,727	190,473	192,589	194,706	194,706	772,474	59,726	60,389	61,053	61,053	242,221	60,563	69,476	77,887	67,686	275,612
VOC ERCs																										
Calpine	C-348-1	30,485	30,519	30,470	30,501	121,975					0	30,485	30,519	30,470	30,501	121,975					0	0	0	0	0	0
Calpine	N-444-1	53,352	43,607	47,208	38,670	182,837					0	5,717	6,073	6,542	6,514	24,846	10,996	11,118	11,241	11,232	44,587	36,639	26,416	29,425	20,924	113,404
Pastoria	S-1549-1	82,952	83,873	84,795	84,794	336,414	76,791	77,643	78,496	78,498	311,428	6,161	6,230	6,299	6,296	24,986					0	0	0	0	0	0
Calpine	S-1665-1	8,440	8,546	8,621	8,621	34,228					0	8,440	8,546	8,621	8,621	34,228					0	0	0	0	0	0
Calpine	S-1666-1	0	0	0	9	9											0	0	0	9	9	0	0	0	0	0
Totals		175,229	166,545	171,094	162,595	675,463	76,791	77,643	78,496	78,498	311,428	50,803	51,368	51,932	51,932	206,035						36,639	26,416	29,425	20,924	113,404
SOx ERCs																										
Calpine	N-270-5	395,000	344,100	298,948	298,948	1,336,996	229,596	232,147	234,699	234,699	931,141	10,765	10,885	11,004	11,004	43,658					0	154,639	101,068	53,245	53,245	362,197
Pastoria	S-1344-5	25,521	30,054	14,242	12,127	81,944					0						11,324	11,450	11,575	11,575	45,924	14,197	18,604	2,667	552	36,020
Totals		395,000	344,100	298,948	298,948	1,336,996	229,596	232,147	234,699	234,699	931,141	10,765	10,885	11,004	11,004	43,658						168,836	119,672	55,912	53,797	398,217
PM10 ERCs																										
Calpine	C-347-4	50,845	67,976	8,408	42,056	169,285					0	50,845	67,976	8,408	42,056	169,285					0	0	0	0	0	0
Calpine	C-448-4	1,067	1,067	1,067	1,067	4,268					0	1,067	1,067	1,067	1,067	4,268					0	0	0	0	0	0
Calpine	C-449-4	82	28	373	674	1,157					0	82	28	373	674	1,157					0	0	0	0	0	0
Calpine	N-208-4	715	8,177	6,581	715	16,188					0	715	8,177	6,581	715	16,188					0	0	0	0	0	0
Calpine	N-297-4	0	0	101	66,394	66,495					0	0	0	101	66,394	66,495					0	0	0	0	0	0
Calpine	S-1577-4	489	0	0	23,085	23,574					0	489	0	0	23,085	23,574					0	0	0	0	0	0
Calpine	S-1578-4	421	0	176	46,954	47,551					0	421	0	176	46,954	47,551					0	0	0	0	0	0
Calpine	S-1666-4	0	0	0	18,238	18,238					0	0	0	0	11,831	11,831					0	0	0	0	6,407	6,407
Calpine	S-1683-4	0	0	0	1,462	1,462					0	0	0	0	1,462	1,462					0	0	0	0	0	0
Calpine	S-1684-4	0	0	0	11,843	11,843					0	0	0	0	11,843	11,843					0	0	0	0	0	0
Calpine	S-1687-4	0	0	610	0	610					0	0	0	610	0	610					0	0	0	0	0	0
Calpine	S-1689-4	0	0	0	2,604	2,604					0	0	0	0	2,604	2,604					0	0	0	0	0	0
Calpine	S-1690-4	0	0	0	1,830	1,830					0	0	0	0	1,830	1,830					0	0	0	0	0	0
Calpine	S-1691-4	0	0	0	856	856					0	0	0	0	856	856					0	0	0	0	0	0
Calpine	S-1692-4	0	0	987	14,019	15,006					0	0	0	987	14,019	15,006					0	0	0	0	0	0
Calpine	S-1693-4	1,091	1,103	1,115	1,115	4,424					0	1,091	1,103	1,115	1,115	4,424					0	0	0	0	0	0
Totals		54,710	78,351	19,418	232,912	385,391	0	0	0	0	0	54,710	78,351	19,418	226,505	378,984	0	0	0	0	0	0	0	0	6,407	6,407

Revised 7/19/2005

Attachment AQ-33
Conditions for Combustor Tuning Activities

Definition of "Combustor Tuning Activities:"

Combustor Tuning Activities:

All testing, adjustment, tuning, and calibration activities recommended by the gas turbine manufacturer to insure safe and reliable steady state operation of the gas turbine following replacement of the combustor. This includes, but is not limited to, adjusting the amount of fuel distributed between the combustion turbine's staged fuel systems to simultaneously minimize NOx and CO production while minimizing combustor dynamics and ensuring combustor stability.

Definition of "Combustor Tuning Period:"

Combustor Tuning Period:

The period, not to exceed 360 minutes, during which gas turbine combustor tuning activities are taking place.

Emission limits applicable during combustor tuning periods:

The pollutant emission rate from the Gas Turbine during a combustor tuning period shall not exceed the limits established below:

Maximum Allowable Emission Rates during Combustor Tuning Activities		
Pollutant	**Emissions, lb/hr**	**Emissions, lb/period**
NOx (as NO_2)	300	600
CO	2,514	2,514
VOC	48	96

Limit on total number of hours per year of combustor tuning activities:

The total number of hours during which the Gas Turbine may undergo gas turbine combustor tuning shall not exceed 6 hours per year.

Requirement for monitoring of emissions during combustor tuning activities:

The owner/operator shall demonstrate compliance with conditions AQ-X by using properly operated and maintained continuous monitors (during all hours of operation including equipment Start-up and Shutdown and Gas Turbine Combustor Tuning periods) for all of the following parameters:

-- NOx emissions (as NO_2)
-- CO emissions
-- fuel consumption

Requirement for recordkeeping and reporting:

To demonstrate compliance with Condition AQ-X, the owner/operate shall record the start time, end time and duration of each Gas Turbine Combustor Tuning Period. On an annual basis, the owner/operator shall report the total number of hours during which the Gas Turbine operated in gas turbine combustor tuning mode during the year.

TECHNICAL AREA: BIOLOGICAL RESOURCES
AUTHOR: SUSAN SANDERS

BACKGROUND

The applicant proposes to construct and operate an additional 160 MW unit at the same 31-acre Pastoria Energy Facility (PEF) site that was analyzed and licensed in 99-AFC-7. This addition will require minimal changes to the existing PEF, but construction will require continued compliance with some of the same Conditions of Certification that applied to 99-AFC-7 (e.g., implementation of Worker Environmental Awareness Program). Staff therefore needs to assess compliance with the agency-approved PEF Biological Resources Mitigation Implementation and Monitoring Plan and the USFWS Biological Opinion. This information will be included in the Final Biological Resources Report, a document that apparently is in preparation.

DATA REQUEST

34. Please complete and submit the Final Biological Resources Report described in Volume II, Summary of Construction Compliance Related Biological Resources Information, Appendix E.

Response to Data Request 34: Completion of the Final Biological Resources Report for the existing PEF is still in progress and will be docketed with the CEC as soon as it is complete. Three copies of the Final Biological Resources Report for the existing Pastoria Energy Facility linears and the 2004-2005 Annual Biological Resources Report have been docketed with the CEC on July 25, 2005, under separate cover. In addition, three copies of the following documents are also being docketed under separate cover on July 25, 2005 to address an earlier information request made by the CEC Project Manager for 05-AFC-1: 1) 1) Biological Resources Mitigation Implementation and Monitoring Plan dated March 2004; and 2) Nationwide Permit Notification Corps of Engineers 404 Permit prepared for Pastoria Energy Facility dated August 2000.

35. Please submit a copy of the Amended Biological Opinion, issued by the USFWS on 2/13/04

Response to Data Request 35: Three copies of the Amended Biological Opinion, issued by the USFWS on 2/13/04 have been docketed with the CEC on July 25, 2005, under separate cover.

TECHNICAL AREA: CULTURAL RESOURCES
AUTHOR: DOROTHY TORRES

BACKGROUND

The applicant sent letters to individuals and groups of Native Americans identified by the Native American Heritage Commission. The letters described the project and asked whether any Native Americans had concerns regarding cultural resources that might be affected by the project.

DATA REQUESTS

36. Please provide copies of any written correspondence received from Native American individuals or groups. If the project receives a comment by telephone, please provide a summary of the conversation.

Response to Data Request 36: One letter was received in response to the June 2, 2005 notification. This letter, dated July 4, 2005, is from the Tejon Indian Tribe. No other written or verbal comments have been received to date. A copy of this letter is provided in Attachment CR-36.

Attachment CR-36

Tejon Indian Tribe
Cultural Resource Management Team

July 4, 2005

Christine Hacking, M.A., R.P.A.
URS Corporation
130 Robin Hill Road, Suite 100
Santa Barbara, Ca. 93117

Re: Pastoria Energy Facility

Dear Ms. Hacking:

Thank you for your recent letter, dated June 2, 2005. This letter is to inform you the Tejon Indian Tribe is very much interested in the information you have sent us.

At this time, we do not have any knowledge nor do we have any recorded information pertaining to this site. However, due to the fact that we do claim this area as part of our historical territory, I am hereby requesting that we be kept informed on your progress, as we are very interested in how your progress proceeds.
Our main concern is the unearthing of human remains and/or burial artifacts. I am attaching a copy of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) and the Archaeological Resources Protection Act (ARPA). If any are uncovered, the Native American Heritage Commission and the Kern County Coroner must be contacted. The NAHC will immediately contact the person it believes to be the most likely descendent of the deceased Native American.

Sincerely,

Gloria Morgan
Assistant Project Manager
Tejon Indian Tribe CRMT

cc: Tribal Council Officers

Attachments: NAGPRA and ARPA

2234 4th Street Wasco, California 93280 (661) 758-2303 Fax: (661) 758-9385
e-mail: kmorgan@bak.rr.com

Archaeological Resources Protection Act

AN ACT To protect archaeological resources on public lands and Indian lands, and for other purposes.

Sec. 470aa. Congressional findings and declaration of purpose

(a) The Congress finds that -

(1) archaeological resources on public lands and Indian lands are an accessible and irreplaceable part of the Nation's heritage;

(2) these resources are increasingly endangered because of their commercial attractiveness;

(3) existing Federal laws do not provide adequate protection to prevent the loss and destruction of these archaeological resources and sites resulting from uncontrolled excavations and pillage; and

(4) there is a wealth of archaeological information which has been legally obtained by private individuals for noncommercial purposes and which could voluntarily be made available to professional archaeologists and institutions.

(b) The purpose of this chapter is to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data which were obtained before October 31, 1979.

Sec. 470bb. Definitions

As used in this chapter -

(1) The term "archaeological resource" means any material remains of past human life or activities which are of archaeological interest, as determined under uniform regulations promulgated pursuant to this chapter. Such regulations containing such determination shall include, but not be limited to: pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any of the foregoing items. Nonfossilized and fossilized paleontological specimens, or any portion or piece thereof, shall not be considered archaeological resources, under the regulations under this

paragraph, unless found in archaeological context. No item shall be treated as an archaeological resource under regulations under this paragraph unless such item is at least 100 years of age.

(2) The term "Federal land manager" means, with respect to any public lands, the Secretary of the department, or the head of any other agency or instrumentality of the United States, having primary management authority over such lands. In the case of any public lands or Indian lands with respect to which no department, agency, or instrumentality has primary management authority, such term means the Secretary of the Interior. If the Secretary of the Interior consents, the responsibilities (in whole or in part) under this chapter of the Secretary of any department (other than the Department of the Interior) or the head of any other agency or instrumentality may be delegated to the Secretary of the Interior with respect to any land managed by such other Secretary or agency head, and in any such case, the term "Federal land manager" means the Secretary of the Interior.

(3) The term "public lands" means -

(A) lands which are owned and administered by the United States as part of -

(i) the national park system,

(ii) the national wildlife refuge system, or

(iii) the national forest system; and

(B) all other lands the fee title to which is held by the United States, other than lands on the Outer Continental Shelf and lands which are under the jurisdiction of the Smithsonian Institution.

(4) The term "Indian lands" means lands of Indian tribes, or Indian individuals, which are either held in trust by the United States or subject to a restriction against alienation imposed by the United States, except for any subsurface interests in lands not owned or controlled by an Indian tribe or an Indian individual.

(5) The term "Indian tribe" means any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in, or established pursuant to, the Alaska Native Claims Settlement Act (85 Stat. 688) (43 U.S.C. 1601 et seq.).

(6) The term "person" means an individual, corporation, partnership, trust, institution, association, or any other private entity or any officer, employee, agent, department, or instrumentality of the United States, of any Indian tribe, or of any State or political subdivision thereof.

(7) The term "State" means any of the fifty States, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.

Sec. 470ee. Prohibited acts and criminal penalties

(a) Unauthorized excavation, removal, damage, alteration, or defacement of archaeological resources

No person may excavate, remove, damage, or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless such activity is pursuant to a permit issued under section 470cc of this title, a permit referred to in section 470cc(h)(2) of this title, or the exemption contained in section 470cc(g)(1) of this title.

(b) Trafficking in archaeological resources the excavation or removal of which was wrongful under Federal law

No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands or Indian lands in violation of -

(1) the prohibition contained in subsection (a) of this section, or

(2) any provision, rule, regulation, ordinance, or permit in effect under any other provision of Federal law.

(c) Trafficking in interstate or foreign commerce in archaeological resources the excavation, removal, sale, purchase, exchange, transportation or receipt of which was wrongful under State or local law

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No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange, in interstate or foreign commerce, any archaeological resource excavated, removed, sold, purchased, exchanged, transported, or received in violation of any provision, rule, regulation, ordinance, or permit in effect under State or local law.

(d) Penalties

Any person who knowingly violates, or counsels, procures, solicits, or employs any other person to violate, any prohibition contained in subsection (a), (b), or (c) of this section shall, upon conviction, be fined not more than $10,000 or imprisoned not more than one year, or both: Provided, however, That if the commercial or archaeological value of the archaeological resources involved and the cost of restoration and repair of such resources exceeds the sum of $500, such person shall be fined not more than $20,000 or imprisoned not more than two years, or both. In the case of a second or subsequent such violation upon conviction such person shall be fined not more than $100,000, or imprisoned not more than five years, or both.

(e) Effective date

The prohibitions contained in this section shall take effect on October 31, 1979.

(f) Prospective application

Nothing in subsection (b)(1) of this section shall be deemed applicable to any person with respect to an archaeological resource which was in the lawful possession of such person prior to October 31, 1979.

(g) Removal of arrowheads located on ground surface

Nothing in subsection (d) of this section shall be deemed applicable to any person with respect to the removal of arrowheads located on the surface of the ground.

NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT OF 1990

(P.L. 101-601; 25 USC 3001 et seq.; 104 Stat. 3048 et seq.)

PROVISIONS FOR THE PROTECTION AND REPATRIATION OF NATIVE AMERICAN HUMAN REMAINS AND CULTURAL ITEMS DISCOVERED ON FEDERAL OR TRIBAL LANDS, OR CURRENTLY CURATED BY FEDERAL OR FEDERALLY ASSISTED CURATION FACILITIES.

Summary

The purpose and intent of this Act is to acknowledge the ownership of certain Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony by Native American tribes or organizations, and to treat these remains and objects in a way that is agreeable to these tribes or organizations.

The first provision of the Act covers Native American remains or objects discovered on federal or Tribal lands after the date of enactment of this Act. The federal land managing agency must notify Native American tribes or organizations of the discovery, providing them an opportunity to issue a claim of affiliation to the remains or objects. The Tribe or organization determined to have the right of ownership of the remains or objects may then consult with the agency to determine what action should be taken with the remains or objects. The agency is responsible for carrying out these determinations.

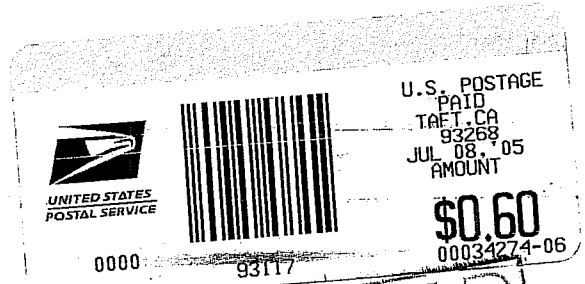
The second provision of the Act covers Native American remains or objects possessed or controlled by federal or federally-assisted institutions, curation facilities, or agencies. The curation facility shall inventory all of these remains and objects, and provide these inventories to Native American tribes or organizations. The Tribes or organizations may issue a claim of affiliation to the remains or objects. The Tribe or organization determined to have the right of ownership of the remains or objects may then consult with the curation facility to determine what action should be taken to repatriate the remains or objects. The curation facility is responsible for carrying out these determinations.

The Act also makes provisions for the prosecution of those who knowingly sell, purchase, use for profit, or transport for sale or profit Native American human remains or objects covered in this Act, whether or not they derive from federal or Indian lands. This part is

incorporated directly into chapter 53 of title 18, United States Code, thus no implementing regulations are required.

The implementing regulations for this Act are 43 CFR Part 10. As of the date of this publication, draft 4 of these regulations has been published in the Federal Register for final comment. Guidelines described in this summary are based on this draft.

TEJON INDIAN TRIBE
2234 4th Street
Wasco, California 93280



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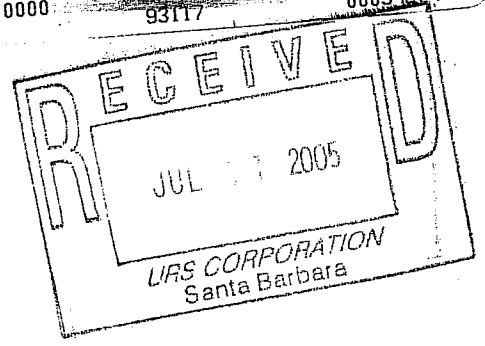

Christine Hacking, M.A., R.P.A.
URS Corporation
130 Robin Hill Road, Suite 100
Santa Barbara, Ca. 93117

93117+3153 07

TECHNICAL AREA: POWER PLANT EFFICIENCY
AUTHOR: STEVE BAKER

BACKGROUND

Two alternative methods of cooling the gas turbine's inlet air are evaporative cooling and fogging. Depending on which method is employed, there would be a slight difference in plant efficiency, and a significant difference in project wastewater disposal (with a concomitant difference in project energy consumption). The Application states in some sections (e.g., §§ 1.3.4, 3.1, 3.4.8.1) that turbine inlet air will be cooled by an evaporative cooling system. It states elsewhere (e.g., Table 3.4.1-1, Figure 3.4-1, §§ 3.9.2.1.3, 4.3.2) that inlet air will be cooled by fogging.

DATA REQUEST

37. Please discuss which method for cooling the gas turbine's inlet air will be used and why it was chosen.

Response to Data Request 37: "Evaporative cooling" describes the general method used to cool the combustion turbine inlet air through the evaporation of water. Evaporative cooling may be performed with evaporative coolers or with a fogging system. The PEF Expansion combustion turbine will use a fogging system similar to those used by the existing CTG units at PEF. A fogging system was chosen due to its reduced pressure drop across the CTG inlet air ducting as compared to an evaporative cooler. Any pressure drop along the air inlet ducting adversely affects the CTG performance (lower output and higher heat rate).

TECHNICAL AREA: HAZARDOUS MATERIALS MANAGEMENT
AUTHOR: ALVIN GREENBERG, PH.D.

BACKGROUND

Table 3.4.10-1 of the AFC lists the chemicals used for water treatment, none of which have changed as a result of this expansion. However, several chemicals are not identified, such as "Oxygen scavenger 30%," "Scale inhibitor," and "Polymer." In order to conduct an assessment of the risks posed to the public due to the transportation, storage, and use of hazardous materials, staff needs the identity of all chemicals proposed for use on the site. Additionally, no information has been provided about the increase in deliveries of anhydrous ammonia with this expansion. Anhydrous ammonia is classified and regulated as an acutely hazardous material and the increase in deliveries must be known before staff can assess the risk to the public due to an increase in deliveries.

DATA REQUEST

38. Please provide the chemical name and Chemical Abstract Service (CAS) number of the hazardous materials currently identified as Oxygen scavenger 30%," "Scale inhibitor," and "Polymer in Table 3.4.10-1 of the AFC.

Response to Data Request 38: The chemical names and CAS numbers requested are as follows:

Oxygen scavenger-30% is Eliminox	CAS # 497-18-7 is for Carbohydrazide
Inhibitor	CAS #7664-38-2 is for 10 - 30% Phosphoric Acid
Polymer	There is no hazardous material in the product and therefore no CAS number.

39. No information has been provided about the increase in deliveries of anhydrous ammonia with this expansion. Please provide an estimate of how many truck deliveries of anhydrous ammonia will occur per year, taking into account the deliveries required for the existing PEF, and the proposed Expansion facility.

Response to Data Request 39: Applicant response in progress. Response to be docketed on or before August 12, 2005.

TECHNICAL AREA: PUBLIC HEALTH
AUTHOR: ALVIN GREENBERG, PH.D.

BACKGROUND

The Public Health section of the Application for Certification did not include the additional cooling tower emissions caused by the expansion.

DATA REQUEST

40. The Health Risk Assessment does not include cooling tower emissions. Please provide these emission factors.

Response to Data Request 40: Applicant response in progress. Response to be docketed on or before August 12, 2005.

TECHNICAL AREA: SOIL AND WATER RESOURCES
AUTHOR: LINDA D. BOND

BACKGROUND

The Applicant has provided a copy of their primary water supply agreement (Contract Between Wheeler Ridge-Maricopa Water Storage District and Pastoria Energy Facility, LLC for Industrial Water Service dated 11/29/2000), but omitted Exhibit A referenced in this contract. The contract indicates that Exhibit A contains key information, including a listing of the maximum amount of water that may be ordered annually.

DATA REQUEST

41. Please provide a copy of Exhibit A for the Contract between Wheeler Ridge-Maricopa Water Storage District and Pastoria Energy Facility, LLC for Industrial Water Service dated 11/29/2000. If this contract has been amended or replaced, please provide a copy of the current water supply contract and all associated exhibits and amendments.

Response to Data Request 41: Three copies of the complete Contract between Wheeler Ridge–Maricopa Water Storage District and Pastoria Energy Facility, LLC have been docketed July 25, 2005 with the CEC under separate cover.

BACKGROUND

The Application for Certification, page 3-3 states the following:

"Stormwater will be discharged to the existing PEF onsite stormwater detention pond. Stormwater that does not infiltrate into the soils or evaporate will be discharged to Pastoria Creek in accordance with applicable regulations and in coordination with Tejon Ranch." The AFC did not provide recent chemical characteristics of the groundwater and Pastoria Creek at or near the site. This information is required under the California Energy Commission Power Plant Site Certification Regulations. This data establishes the baseline against which any future contamination from discharges would be measured.

DATA REQUEST

42. Please provide a description of the chemical characteristics of the groundwater.

Response to Data Request 42: The chemical characteristics of the groundwater in the vicinity of the existing Pastoria Energy Facility are included in the fax transmittal from the Wheeler Ridge-Maricopa Water Storage District dated June 21, 2005. This transmittal includes a map showing the location of Monitoring Well #1 (MW1), a cross section showing the geology and groundwater conditions in the vicinity of the existing Pastoria Energy

Facility, and a table denoting the chemical characteristics of groundwater samples taken in December 2002 and January 2003. A copy of the fax transmittal is provided as Attachment SOIWR-42.

43. Please provide a description of the chemical characteristics of Pastoria Creek.

Response to Data Request 43: The chemical characteristics of Pastoria Creek taken from the existing culvert at the intersection of Pastoria Creek and the Edmonston Pump Plant Road are included in the e-mail transmittal from the Wheeler Ridge-Maricopa Water Storage District dated July 19, 2005. This transmittal includes a table denoting the chemical characteristics of water samples taken from Pastoria Creek in February 2003 and May 2005. A copy of this e-mail transmittal and table is provided in Attachment SOIWR-43.

BACKGROUND

The Application for Certification, page 3-3 states the following: "Stormwater that does not infiltrate into the soils or evaporate will be discharged to Pastoria Creek in accordance with applicable regulations and in coordination with Tejon Ranch." Since the proposed project will add to the site's impervious surface area the amount of soil available to absorb stormwater will be reduced which staff assumes could lead to an incremental increase in levels of stormwater flowing to Pastoria Creek. The report, Flood Inundation Study for the Pastoria Energy Facility (URS, September 6, 2001), which was submitted by the Applicant with the Supplement to AFC (6/13/2005), noted several assumptions describing the characteristics of water flows that would exit the project site during flood events. However, neither the current AFC nor the report addressed the effects of the expansion project on the flood flows downstream of the project.

DATA REQUEST

44. Please provide a description that specifically addresses the incremental effect of the expansion project on flood flows that are diverted around the project and that exit the project. The description should include a discussion of how the project would affect flow velocities, sediment deposition and sediment scour around the project and downstream of the project compared to pre-expansion project conditions.

Response to Data Request 44: The area where the Pastoria Energy Facility Expansion (PEFE) will be constructed currently drains to the stormwater pond constructed as part of the existing PEF. This area drains to existing culverts that drain directly into the PEF stormwater pond. The stormwater system for the existing PEF was designed assuming this area (or drainage shed) would eventually include another combustion turbine unit similar to the existing units. Each drainage shed within the existing PEF was designed based on an infiltration coefficient of 0.92. This runoff coefficient takes into consideration that some areas within the drainage shed are impervious (runoff coefficient of 1.0) and some areas are

surfaced with gravel, with a somewhat lower runoff coefficient. When the PEFE is designed, the area will be designed to maintain the site average of 0.92 or lower. Therefore, there will be no incremental effect of the PEFE on flood flows.

In fact, any increase in runoff due to gravel areas being replaced with concrete foundations will be more than offset by a decrease in runoff due to the generator step-up transformer containment area. As part of the PEFE construction, a generator step-up transformer will be installed with a containment area with a runoff coefficient of 0.0. Any rainwater that falls into this containment area is collected, drained to an oil water separator, and pumped to the existing cooling tower.

Attachment SOIWR-42

WHEELER RIDGE-MARICOPA WATER STORAGE DISTRICT
12109 Highway 166
Bakersfield, CA 93313-9360
(661) 858-2281
(661) 858-2643 FAX

FAX TRANSMITTAL

TO: Jennifer Scholl, URS Corporation PAGES 4

FAX: (805) 964-0259 FAX

FROM: Tom Suggs TRS

DATE: June 21, 2005

REMARKS:

I am transmitting the following per your request:

- well location map, MW1
- cross section D-D' showing geology and groundwater conditions in the vicinity of Pastoria Energy/Calpine
- hard copy chemistry – MW1

Please let me know if there is more that I can do.

15G
14F
14H
13J
18M
18L
13N
19D
20C
15Q1
15Q2
14N
14Q
24H
22G2
23G
22E
21G1
24M
25B
29G
26F
25F
27C
850 CANAL
26R
RANCHO RD.
27Q
27N
30H
LAVAL RD.
D1
K1
6Q1
Well MW1
(10N/18W-6Q1)
AQUEDUCT
TURNOUT WRM 15
TURNOUT WRM 14
REACH 18A
R.18W., S.B.M.
R.19W., S.B.M.

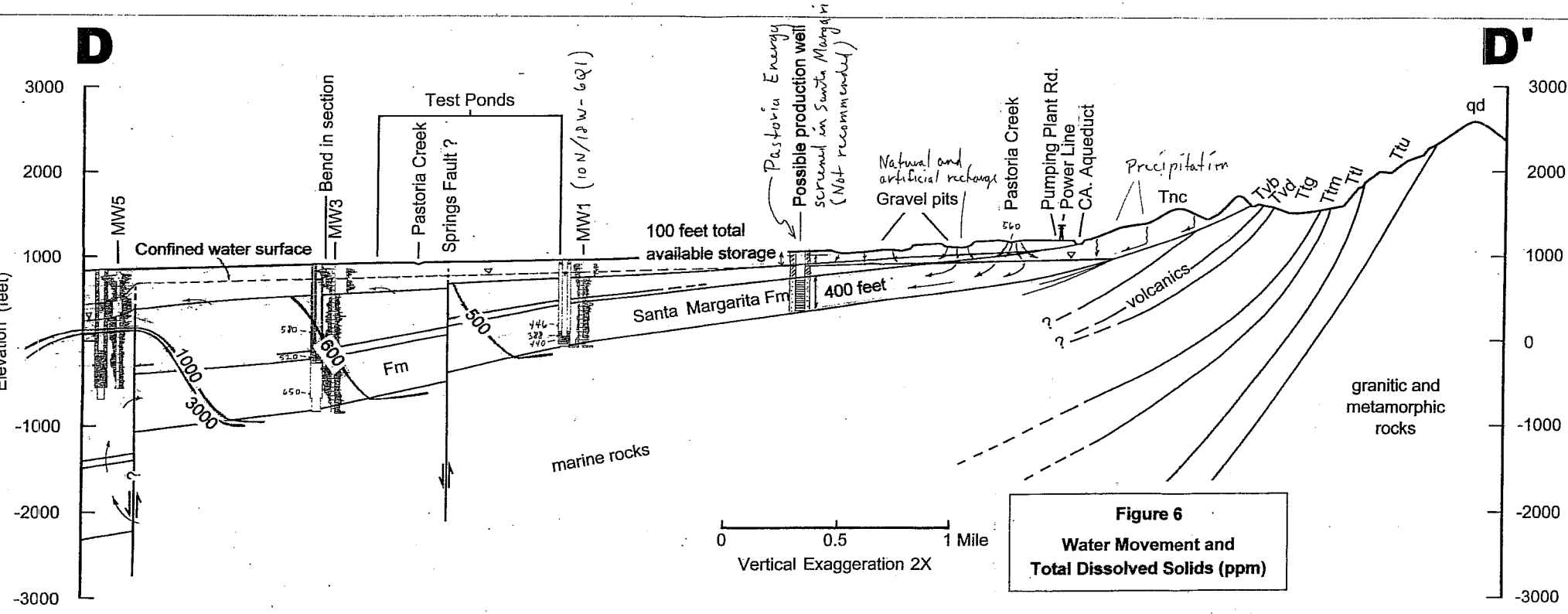

Figure 6
Water Movement and
Total Dissolved Solids (ppm)

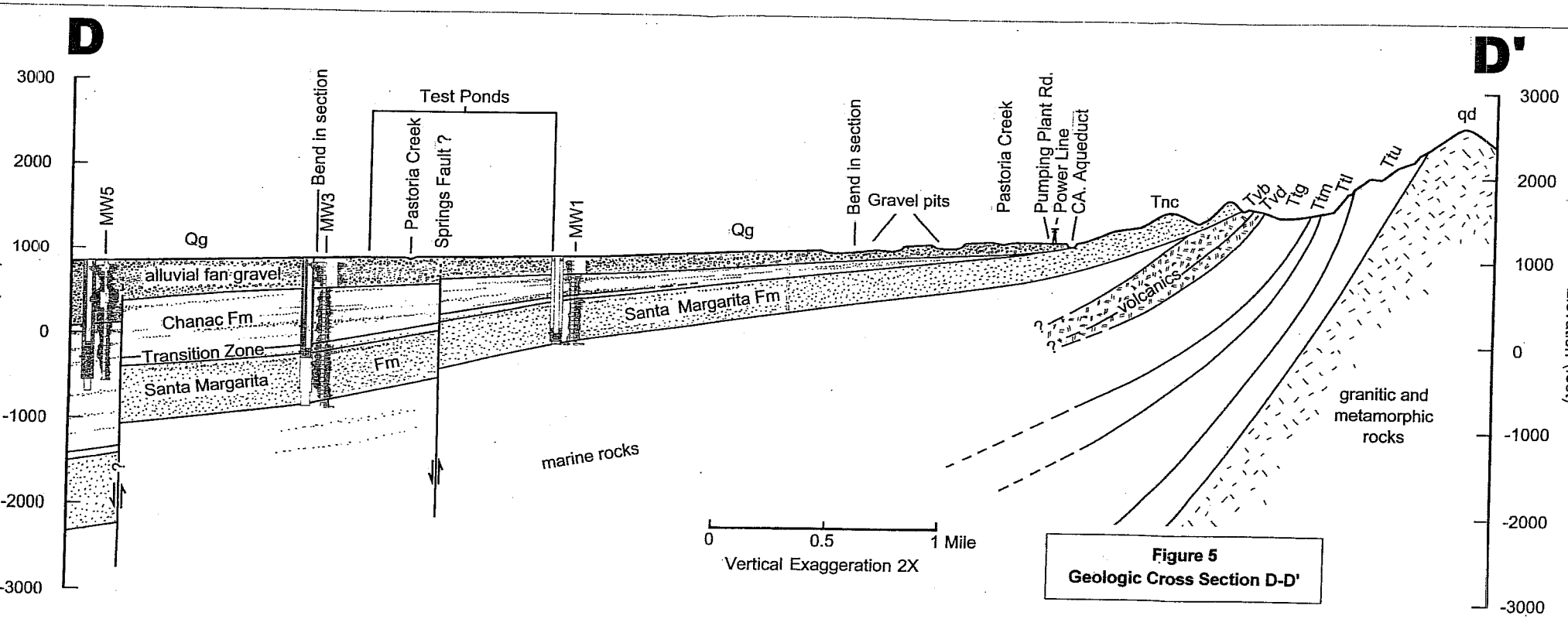

Figure 5
Geologic Cross Section D-D'

Well No	Other Name	Lab No	Lab	Sample Date	Analysis	Constituent	ND	Results	Units	Collected by	Lab Report	Record Last Modified	Modified By
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Bicarbonate (HCO3)		62	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Calcium		28	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Carbonate (CO3)		24	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Chloride		103	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Color		70	units	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Fuel ID	Crude/Waste Oil		530	ug/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Metals	Dissolved Arsenic		2.9	ug/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Electrical Conductivity		455	umhos/cm	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Fluoride		0.081	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	SP213183-02	FGL	12/23/2002	Radio	Gross Alpha		4	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-890'	SP213183-02	FGL	12/23/2002	Radio	Gross Beta		3.94	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Hydroxide (OH)	<	0.81	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Langelier Index		+1.1	-	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Magnesium		10	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	MBAS	<	0.1	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Nitrate as NO3		3.7	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Nitrite as N		0.02	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	pH		9.18	pH Units	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Potassium		4.5	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Sodium		86	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Sulfate		37	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Fuel ID	Tetracosane		111	%	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Metals	Total Arsenic		3.3	ug/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Total Dissolved Solids (TDS)		338	mg/L	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	SP213183-02	FGL	12/23/2002	Radio	Total Radium		0.0683	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-890'	02-12979-2	BC	12/23/2002	Tit22GM	Turbidity		40	NT Units	WRMWSD	Y	3/3/2003	Paul Damron
10N18W06Q01	MW1-890'	SP213183-02	FGL	12/23/2002	Radio	Uranium		1.69	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Bicarbonate (HCO3)		100	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Calcium		21	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Carbonate (CO3)		11	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Chloride		92	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Color		20	units	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Fuel ID	Crude/Waste Oil		1000	ug/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Metals	Dissolved Arsenic		7.1	ug/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Electrical Conductivity		635	umhos/cm	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Fluoride		0.093	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	SP213356-01	FGL	12/30/2002	Radio	Gross Alpha		3.13	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-768'	SP213356-01	FGL	12/30/2002	Radio	Gross Beta		2.76	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Hydroxide (OH)	<	0.81	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Langelier Index		+0.8	-	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Magnesium		7	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	MBAS	<	0.1	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Nitrate as NO3		3.8	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Nitrite as N		0.02	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	pH		8.96	pH Units	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Potassium		3.5	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Sodium		100	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Sulfate		56	mg/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Fuel ID	Tetracosane		58	%	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Metals	Total Arsenic		11.9	ug/L	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Total Dissolved Solids (TDS)		446	mg/L	WRMWSD	Y	2/28/2003	Paul Damron

Well No	Other Name	Lab No	Lab	Sample Date	Analysis	Constituent	ND	Results	Units	Collected by	Lab Report	Record Last Modified	Modified By
10N18W06Q01	MW1-768'	SP213356-01	FGL	12/30/2002	Radio	Total Radium		0.135	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-768'	02-13065-1	BC	12/30/2002	Tit22GM	Turbidity		100	NT Units	WRMWSD	Y	2/28/2003	Paul Damron
10N18W06Q01	MW1-768'	SP213356-01	FGL	12/30/2002	Radio	Uranium		4.83	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Aggressiveness Index		11.9	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Aluminum		150	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Antimony	<	1	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Arsenic		7	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Barium		36.9	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Beryllium	<	0.2	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Bicarbonate (HCO3)		210	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Boron		1.19	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Cadmium		0.4	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Calcium		30	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Carbonate (CO3)	<	10	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Chloride		28	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Chromium	<	1	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Wet	Color		7	units	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Copper	<	10	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Fuel ID	Crude Oil	<	0.5	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Fuel ID	Diesel	<	0.5	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Electrical Conductivity		683	umhos/cm	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Fluoride		0.3	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300615-01	FGL	1/16/2003	Radio	Gross Alpha		2.85	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300615-01	FGL	1/16/2003	Radio	Gross Beta		1.1	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Hydroxide (OH)	<	10	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Iron		500	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Fuel ID	Jet Fuel	<	0.5	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Langelier Index		0	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Lead		3.2	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Magnesium		5	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Manganese		30	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	MBAS	<	0.1	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Mercury		0.02	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Fuel ID	Mineral Spirits	<	0.5	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Nickel	<	1	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Nitrate		3.8	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Nitrite as N	<	0.1	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Wet	Odor	<	1	TON	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	pH		7.8	pH Units	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Potassium		4	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Selenium	<	2	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Silver	<	1	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Sodium		111	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Sulfate		127	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Thallium	<	0.2	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Total Alkalinity (as CaCO3)		170	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Total Anions		7	meq/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Total Cations		6.8	meq/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Total Dissolved Solids (TDS)		440	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Total Hardness		95.4	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Radio	Total Radium		0	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron

Well No	Other Name	Lab No	Lab	Sample Date	Analysis	Constituent	ND	Results	Units	Collected by	Lab Report	Record Last Modified	Modified By
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Fuel ID	TPH-Gas	<	0.05	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Wet	Turbidity		7.3	NT Units	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300615-01	FGL	1/16/2003	Radio	Uranium		2.66	pCi/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Metals	Vanadium		2	ug/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Fuel ID	Waste Oil	<	2	mg/L	WRMWSD	Y	3/10/2003	Paul Damron
10N18W06Q01	MW1-900'	SP300556-01	FGL	1/16/2003	Tit22GM	Zinc	<	20	ug/L	WRMWSD	Y	3/10/2003	Paul Damron

Attachment SOIWR-43

Index	Well No	Other Name	Lab No	Lab	Sample Date	Analysis	Constituent	ND	Results	Units	Uncertainty	Collected by	Lab Report	Record Last Modified	Modified By
14693	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Aggressiveness Index		12.6	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14695	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Aluminum		2630	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14696	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Antimony	<	1	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14697	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Arsenic		2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14698	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Barium		100	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14699	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Beryllium	<	0.2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14682	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Bicarbonate (HCO3)		300	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14674	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Boron		0.16	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14700	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Cadmium	<	0.2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14669	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Calcium		62	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14681	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Carbonate (CO3)	<	10	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14684	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Chloride		25	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14701	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Chromium		4	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14709	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Wet	Color		6	units		WRMWSD	Y	4/10/2003	Paul Damron
14675	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Copper	<	10	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14714	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Fuel ID	Crude Oil			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14713	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Fuel ID	Diesel			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14690	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Electrical Conductivity		852	umhos/cm		WRMWSD	Y	4/10/2003	Paul Damron
14687	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Fluoride		0.5	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14718	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Radio	Gross Alpha		3.26	pCi/L		WRMWSD	Y	4/10/2003	Paul Damron
14719	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Radio	Gross Beta		4.41	pCi/L		WRMWSD	Y	4/10/2003	Paul Damron
14680	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Hydroxide (OH)	<	10	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14676	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Iron		1110	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14715	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Fuel ID	Jet Fuel			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14694	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Langelier Index		0.7	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14702	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Lead		2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14670	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Magnesium		8	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14677	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Manganese		150	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14692	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	MBAS	<	0.1	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14703	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Mercury		0.02	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14716	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Fuel ID	Mineral Spirits			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14704	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Nickel		5	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14685	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Nitrate		18	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14686	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Nitrite as N	<	0.1	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14710	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Wet	Odor	<	1	TON		WRMWSD	Y	4/10/2003	Paul Damron
14689	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	pH		8	pH Units		WRMWSD	Y	4/10/2003	Paul Damron
14671	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Potassium		5	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14705	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Selenium		3	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14706	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Silver	<	1	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14672	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Sodium		140	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14683	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Sulfate		178	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14707	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Thallium	<	0.2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14679	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Total Alkalinity (as CaCO3)		240	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14688	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Total Anions		9.6	meq/L		WRMWSD	Y	4/10/2003	Paul Damron
14673	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Total Cations		10	meq/L		WRMWSD	Y	4/10/2003	Paul Damron
14691	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Total Dissolved Solids (TDS)		560	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14668	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Total Hardness		188	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14721	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Radio	Total Radium		0.136	pCi/L		WRMWSD	Y	4/10/2003	Paul Damron
14712	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Fuel ID	TPH-Gas			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14711	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Wet	Turbidity		60.8	NT Units		WRMWSD	Y	4/10/2003	Paul Damron
14720	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Radio	Uranium		3.7	pCi/L		WRMWSD	Y	4/10/2003	Paul Damron
14708	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Metals	Vanadium		11	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14717	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Fuel ID	Waste Oil			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14678	Pastoria Creek @ Pumping Plant Rd.		SP301458-01	FGL	2/13/2003	Tit22GM	Zinc	<	20	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14635	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Aggressiveness Index		13.1	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14637	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Aluminum		100	ug/L		WRMWSD	Y	4/10/2003	Paul Damron

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14638	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Antimony	<	1	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14639	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Arsenic	<	2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14640	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Barium		73.9	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14641	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Beryllium	<	0.2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14624	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Bicarbonate (HCO3)		300	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14616	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Boron		0.62	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14642	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Cadmium	<	0.2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14611	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Calcium		87	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14623	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Carbonate (CO3)	<	10	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14626	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Chloride		21	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14643	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Chromium	<	1	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14651	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Wet	Color		15	units		WRMWSD	Y	4/10/2003	Paul Damron
14617	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Copper	<	10	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14656	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Fuel ID	Crude Oil			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14655	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Fuel ID	Diesel			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14632	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Electrical Conductivity		788	umhos/cm		WRMWSD	Y	4/10/2003	Paul Damron
14629	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Fluoride		0.3	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14660	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Radio	Gross Alpha		2.3	pCi/L		WRMWSD	Y	4/10/2003	Paul Damron
14661	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Radio	Gross Beta		3.95	pCi/L		WRMWSD	Y	4/10/2003	Paul Damron
14622	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Hydroxide (OH)	<	10	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14618	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Iron		90	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14657	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Fuel ID	Jet Fuel			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14636	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Langelier Index		1.2	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14644	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Lead	<	0.2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14612	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Magnesium		40	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14619	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Manganese	<	10	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14634	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	MBAS	<	0.1	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14645	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Mercury		0.02	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14658	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Fuel ID	Mineral Spirits			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14646	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Nickel		1	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14627	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Nitrate		4.8	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14628	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Nitrite as N	<	0.1	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14652	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Wet	Odor	<	1	TON		WRMWSD	Y	4/10/2003	Paul Damron
14631	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	pH		8.4	pH Units		WRMWSD	Y	4/10/2003	Paul Damron
14613	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Potassium		4	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14647	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Selenium		2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14648	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Silver	<	1	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14614	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Sodium		45	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14625	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Sulfate		157	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14649	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Thallium	<	0.2	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14621	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Total Alkalinity (as CaCO3)		240	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14630	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Total Anions		8.9	meq/L		WRMWSD	Y	4/10/2003	Paul Damron
14615	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Total Cations		9.7	meq/L		WRMWSD	Y	4/10/2003	Paul Damron
14633	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Total Dissolved Solids (TDS)		520	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14610	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Total Hardness		382	mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14663	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Radio	Total Radium		0.193	pCi/L		WRMWSD	Y	4/10/2003	Paul Damron
14654	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Fuel ID	TPH-Gas			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14653	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Wet	Turbidity		1.6	NT Units		WRMWSD	Y	4/10/2003	Paul Damron
14662	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Radio	Uranium		2.15	pCi/L		WRMWSD	Y	4/10/2003	Paul Damron
14650	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Metals	Vanadium		4	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14659	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Fuel ID	Waste Oil			mg/L		WRMWSD	Y	4/10/2003	Paul Damron
14620	Pastoria Creek @ Pumping Plant Rd.		SP302086-01	FGL	2/28/2003	Tit22GM	Zinc	<	20	ug/L		WRMWSD	Y	4/10/2003	Paul Damron
14849	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	SM3113B	Arsenic	<	2	ug/L		Paul Damron	Y	7/19/2005	Tom Suggs
14836	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Bicarbonate (HCO3)		260	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14847	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Boron		0.42	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14830	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Calcium		65	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs

Index	Well No	Other Name	Lab No	Lab	Sample Date	Analysis	Constituent	ND	Results	Units	Uncertainty	Collected by	Lab Report	Record Last Modified	Modified By
14835	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Carbonate (CO3)		0	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14837	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Chloride		23	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14841	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Electrical Conductivity		640	umhos/cm		Paul Damron	Y	7/19/2005	Tom Suggs
14845	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	ESP		-0.2			Paul Damron	Y	7/19/2005	Tom Suggs
14846	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Gypsum Requirement		0	lb/ac-ft		Paul Damron	Y	7/19/2005	Tom Suggs
14843	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Hardness as CaCO3		290	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14834	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Hydroxide (OH)		0	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14848	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Langelier Index		0.43	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14831	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Magnesium		32	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14839	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Nitrate as NO3		12	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14840	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	pH		7.57	units		Paul Damron	Y	7/19/2005	Tom Suggs
14833	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Potassium		3.2	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14844	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	SAR		0.7			Paul Damron	Y	7/19/2005	Tom Suggs
14832	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Sodium		36	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14838	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Sulfate		100	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs
14842	Pastoria Creek @ Pumping Plant Rd.		505199-1	Zalco	5/13/2005	Irrigation	Total Dissolved Solids (TDS)		450	mg/L		Paul Damron	Y	7/19/2005	Tom Suggs

TECHNICAL AREA: TRANSMISSION SYSTEM ENGINEERING
AUTHOR: SUDATH ARACHCHIGE AND MARK HESTERS

BACKGROUND

Staff needs to completely identify downstream transmission facilities required for the interconnection of the new project. Staff requires a completed Facility Study by Southern California Edison that identifies electric system impacts of the project and discusses mitigation measures considered and those proposed to maintain conformance with National Energy Regulatory Commission (NERC), Western Systems Coordinating Council (WSCC) and California Integrated System Operator (Cal-ISO) reliability or planning criteria. Any significant electric facilities identified by this study will require environmental analysis.

DATA REQUEST

45. Please provide a signed copy of the Facility Study Agreement with Southern California Edison and indicate in a schedule when the Facility Study will be completed.

Response to Data Request 45: The applicant will docket copies of the Facility Study Agreement to the CEC once it has been received from Southern California Edison.

46. Please provide a complete Facility Study. This study should demonstrate conformance with NERC, WSCC and Cal-ISO reliability or planning criteria based on load flow, post transient, transient and fault current studies. Where mitigation is required to ensure compliance with the previously mentioned criteria, provide the alternatives considered and the reasons for choosing a preferred alternative.

Response to Data Request 46: The applicant will docket copies of the Facility Study to the CEC once it has been received from Southern California Edison.

47. Please submit an Environmental Assessment for Transmission Line Upgrades and Mitigations.

Response to Data Request 47: Applicant response in progress. Response to be docketed on or before August 12, 2005.

48. Please submit the letters of approval (preliminary and final) from the CAISO for interconnection of the new unit.

Response to Data Request 48: The applicant will docket copies of the letters of approval from the CAISO for the interconnection of the new unit to the CEC once it has been received from Southern California Edison.