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Acting Secretary
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Department of Toxic Substances Control

Maureen F. Gorsen, Director
700 Heinz Avenue, Suite 100
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Arnold Schwarzenegger
Governor

May 3, 2006

Ms. Yvonne Meeks
Portfolio Manager - Site Remediation
Pacific Gas and Electric Company
4325 South Higuera Street
San Luis Obispo, CA 93401

TECHNICAL ADDENDUM NO. 2: APPROACH FOR HYDRAULIC TESTING OF WELLS AT LOCATIONS 1, 2, AND 4, INTERIM MEASURES PERFORMANCE MONITORING, PACIFIC GAS AND ELECTRIC COMPANY, TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA (EPA ID NO. CAT080011729)

Dear Ms. Meeks:

The Department of Toxic Substances Control (DTSC) has completed our review of Technical Addendum No. 2: Approach for Hydraulic Testing of Wells at Locations 1, 2, and 4, dated February 7, 2006, prepared by Pacific Gas and Electric Company (PG&E) and the email on May 2, 2006 providing additional information regarding management of water generated during the aquifer tests and request to treat the hydraulic test water at the Interim Measures No.3 (IM No.3) treatment system. A copy of the technical memorandum prepared by the DTSC Geological Services Unit (GSU), dated May 1, 2006, is enclosed.

DTSC is providing approval of the workplan with the following conditions:

1. PG&E shall prepare a letter responding to Comments 1, 2, 3, 5, 6, 7, and 8 identified in the enclosed GSU memorandum. The letter shall be submitted to DTSC prior to the start of the aquifer test.
2. PG&E shall obtain separate authorization and/or approvals for activities proposed on federal owned land. Any modifications or revisions to proposed workplan activities described in Technical Addendum No. 2 as may be requested and/or specified by federal agencies shall also obtain additional approval from DTSC prior to the start of the aquifer test.
3. PG&E shall manage the groundwater produced by the aquifer tests as follows: The groundwater produced from the three proposed test wells will be pumped directly into tanker trucks parked near the wells. Two trucks will be stationed at each well

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and temporary, above-ground piping will be used to transfer water from the well into the trucks. The trucks used to contain the water during the pumping tests will transport the water directly to the IM No.3 treatment facility for treatment. To the extent practical, the water will be processed from the tanker trucks to the IM No.3 treatment facility within approximately one day of being pumped from the well.

4. DTSC approves the reduction in the extraction well pumping rate from TW-3D to accommodate the groundwater produced by the aquifer test at the IM No.3 treatment facility.
5. PG&E shall coordinate with and obtain concurrence from Dr. Richard Coffman of DTSC as to whether monitoring well MW-26 or MW-51 will be tested at Location 4.
6. PG&E shall host conference calls with interested members of the Geo/Hydro Technical Workgroup (TWG) to discuss the step test results, the results of the first constant rate aquifer test, and any proposed adjustments to the constant rate tests to be conducted at the remaining two locations. DTSC intends that these calls will be handled in the same manner as the calls used to discuss the screen decisions (e.g., e-mail notice to interested parties a few hours before the call). Please coordinate with Dr. Richard Coffman regarding these calls.
7. PG&E shall complete the aquifer tests no later than May 26, 2006.

If you have any questions, please contact me at (510) 540-3943.

Sincerely,



Norman Shopay, P.G.
Project Manager
Geology, Permitting and Corrective Action Branch

NTS/206A

Enclosure: GSU Memorandum, Technical Addendum No. 2, Well Installation Work Plan, Interim Measures Performance Monitoring Program, PG&E Topock Compressor Station (dated May 1, 2006)

cc: PG&E Topock Consultative Workgroup Members - Via e-mail



Department of Toxic Substances Control

Maureen F. Gorsen, Director
8800 Cal Center Drive
Sacramento, California 95826-3200



Arnold Schwarzenegger
Governor



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MEMORANDUM

TO: Norman Shopay, P.G.
Senior Engineering Geologist
Geology, Permitting & Corrective Action Branch, Berkeley Office

FROM: Kate Burger, Ph.D., P.G. *Kate Burger*
Engineering Geologist, Northern California Geological Services Unit
Geology, Permitting & Corrective Action Branch, Sacramento Office

DATE: May 1, 2006

SUBJECT: Technical Addendum No. 2, Well Installation Work Plan
Interim Measures Performance Monitoring Program
PG&E Topock Compressor Station, Needles, San Bernardino County
Project No. 22120/540015-48/36-HWMP

DOCUMENT REVIEWED

Technical Memorandum, Technical Addendum No. 2: Approach for Hydraulic Testing of Wells at Locations 1, 2, and 4, Interim Measures Performance Monitoring, PG&E Topock Compressor Station, Needles, California. Prepared by CH2MHill. Dated February 7, 2006.

INTRODUCTION

The Northern California Geological Services Unit (GSU) of the Department of Toxic Substances Control (DTSC) has reviewed the above-referenced Technical Addendum to the Well Installation Work Plan for Interim Measures Performance Monitoring Program (IMPM Workplan). Submitted as required by the January 6, 2006 DTSC letter conditionally approving the IMPM Workplan, the Technical Addendum describes the Pacific Gas and Electric Company (PG&E) proposed approach to hydraulic testing at Locations 1, 2, and 4 (as identified in the January 6, 2006 DTSC letter).

DTSC provided the Technical Addendum to members of the Consultative Workgroup (CWG) on February 8, 2006. The comments and recommendations provided in this memorandum consider input received from: Dr. Richard Coffman (primary technical reviewer for DTSC); Dr. Keith Halford of the U.S. Geological Survey (USGS); GeoTrans, Inc. (on behalf of the Arizona Department of Environmental Quality); and Hargis Associates, Inc. (on behalf of the Fort Mojave Indian Tribe). If you have questions, please contact me at (916) 255-6537.

CURRENT STATUS OF WELLS FOR HYDRAULIC TESTING

The scope of the current investigation activities includes installation of hydraulic test wells at Locations 1 and 2, and at Location 4 if a well is installed at this location. The status of this well installation effort is as follows:

Location 1: The first borehole at this location is underway. The planned hydraulic test well, to be designated "TW-5", is expected to be ready for testing in late April.

Location 2: Hydraulic test well TW-4 has been installed in reworked Miocene conglomerate with a screened interval approximately 210 to 250 feet below ground surface (bgs).

Location 4: At this location, either existing well MW-26 or new well MW-51 could be used for hydraulic testing because both wells are completed with four-inch diameter casing and screen. New monitoring well MW-51 has been installed in reworked Miocene conglomerate with a screened interval approximately 97 to 112 feet bgs. Well MW-26 is primarily screened in a poorly graded sand from approximately 52 to 72 feet bgs.

The projected schedule is to conduct the aquifer testing over an eight to ten day period beginning on May 8, 2006.

OVERALL RECOMMENDATIONS

1. PG&E should schedule and implement the aquifer tests so that the data can be collected prior to the cutoff date for the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) groundwater data collection.
2. PG&E should obtain concurrence from DTSC as to whether well MW-26 or well MW-51 should be tested at Location 4.
3. GSU recommends that PG&E discuss the step test results with interested Geo/Hydro Technical Workgroup (TWG) members prior to conducting the constant rate aquifer tests. GSU recommends that PG&E host conference calls to discuss the step test results. Analogous to screen decision calls, TWG members would be given a few hours notice as to the scheduled call time. The calls would allow PG&E to address any issues raised by members prior to initiating the constant rate aquifer tests.
4. GSU recommends that PG&E evaluate the first set of constant rate test results prior to conducting the test at the remaining two locations. The first set of results could be used to identify a need to modify the design of the other two locations, as needed to address any wellbore storage effects in observation wells, insufficient test duration or pumping rate, and influence from Interim Measures No. 3 (IM 3) groundwater extraction. If feasible, PG&E should host a conference call with

interested TWG members to discuss the results and proposed modifications. If the call occurs, GSU anticipates that TWG members would be given a few hours notice of the scheduled call time.

COMMENTS AND RECOMMENDATIONS

1. As the final stage of well development, PG&E proposes to conduct step tests at each well in four 15-minute steps at four progressively higher pumping rates (e.g., 10, 30, 50, 70 gallons per minute (gpm)). The final design of each step test will be determined in the field based on well yield observed during development. Reviewers (USGS, DTSC, GeoTrans) have expressed concern regarding the proposed 1-hour duration of the step tests. GeoTrans has recommended that the test duration be increased if pumping rates less than 50 gpm are used. At Locations 2 and 4, it is likely that PG&E will need to use lower pumping rates than are cited in the Technical Addendum because these wells were completed in reworked Miocene Conglomerate. The 15-foot screen length used for well MW-51 (Location 4) would also constrain the allowable pumping rate, if this well is used for hydraulic testing.
2. The Technical Addendum indicates that the groundwater flow model was used to estimate the appropriate duration for the constant rate aquifer tests. Several reviewers (USGS, DTSC, GeoTrans) have raised concerns regarding the short time frame (2 to 4 hours) derived from the simulations and have recommended longer tests. PG&E should provide further justification for the proposed duration of the constant rate pumping tests.
3. Reviewers have noted that water storage and management logistics may have influenced the recommended aquifer test duration. From a technical perspective, the aquifer tests should be designed to ensure collection of high quality data that supports the RFI. GSU realizes that the test design must consider the water management logistics, but further evaluation of water management options may allow longer test duration.
4. The Technical Addendum requests DTSC permission to treat groundwater generated by the tests at the IM 3 groundwater treatment facility. The Fort Mojave Indian Tribe has indicated a preference for off-site disposal (see comments from Hargis+Associates). GSU understands that DTSC has provided responses to the Fort Mojave Indian Tribe regarding this comment. Another consideration is that, based on the anticipated water volumes to be generated by the tests and discussions of available water storage, treatment at the IM 3 facility would require short-term lowering of the IM 3 groundwater extraction rate by approximately 7 to 15 gpm. This decrease will not have an impact on the ability of IM 3 to maintain landward hydraulic gradients, particularly considering the seasonal high river levels.
5. Page 2 of the Technical Addendum states that "The groundwater flow model simulations were run in steady state and do not simulate the daily or seasonal river level fluctuations, but rather indicate what the effects of pumping would be in the

absence of river fluctuations.” As requested by GeoTrans, PG&E should clarify how steady-state model simulations support a projection of transient drawdown effects during the aquifer test.

6. Page 3 of the Technical Addendum states that “Model results indicate that, if pumping rates remain constant, pumping at these wells [TW-3D, PE-1] will produce minimal variations in water levels at surrounding monitoring wells. Therefore, it is not anticipated that the IM-3 extraction system will need to be shut down during hydraulic testing of the new wells.” PG&E should provide further details regarding: (1) the measures that will be used to ensure constant pumping from wells TW-3D and PE-1 during the aquifer tests; (2) potential modifications to the aquifer tests if IM 3 pumping is determined to unduly affect the test results; and (3) as requested by GeoTrans, the potential impact of variable IM 3 pumping rates on the aquifer test results.
7. The USGS has raised a concern regarding the potential effect of wellbore storage on the ability to observe drawdown in observation wells. When evaluating the first set of constant rate test results, PG&E should determine whether this is an issue and, if so, mitigate the effects by monitoring water levels with packed off transducers. PG&E should identify the logistical issues (e.g., supplier, time to arrive at site) that would be necessary if packers are needed.
8. As requested by GeoTrans, PG&E should provide further discussion regarding (a) the pre-test monitoring procedures and (b) the duration of recovery monitoring after completion of the constant rate tests.
9. The USGS has recommended that the results of the first constant rate test be evaluated as soon as possible so that appropriate adjustments can be made for the subsequent two aquifer tests. To allow the proposed one-mobilization approach to the tests, this would require downloading of the transducers after completing the first constant rate test and on-site evaluation of the data. The USGS has offered its on-site assistance for evaluating the first data set, provided that the work is approved by the U.S. Bureau of Reclamation. Adjustments could be made to the test duration, to the pumping rates, to accommodate any effects of well storage in the observation wells, and to address any effects of on-going pumping from the IM 3 extraction wells.

Peer Reviewed By: Richard Coffman, Ph.D., P.G., and Alfredo Zanolari, C.H.G., C.E.G.