April 23, 2014

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NOTICE OF INCOMPLETE REPORT OF WASTE DISCHARGE SUBMITTAL, WASTE DISCHARGE REQUIREMENTS FOR AGRICULTURAL TREATMENT UNITS (WDID 6B361403002, BOARD ORDER NO. R6V-2014-0023), PACIFIC GAS AND ELECTRIC COMPANY COMPRESSOR STATION, HINKLEY, SAN BERNARDINO COUNTY

Lahontan Regional Water Quality Control Board (Water Board) staff received the first of three Report of Waste Discharge (ROWD) submittals for the subject line Waste Discharge Requirements (WDRs) on April 4, 2014. According to the ROWD cover letter, two additional submittals are forthcoming to complete the full ROWD package: a biological and cultural package to be submitted in mid-April; and a construction package to be submitted in early May.

Water Board reviewed the April 4, 2014 submittal and determined that additional information is needed, described below.

Please note that this letter does not provide coverage under the WDRs for the proposed project. This letter conveys information needed to complete the April 4 submittal only, which primarily addresses water quality requirements contained in the WDRs. A Notice of Coverage will be issued to PG&E once the full ROWD package has been received and deemed complete.

PROJECT DESCRIPTION

The proposed project involves constructing and operating two new agricultural treatment units (ATUs) known as the Community East and Fairview ATUs, and expanding the existing Ranch ATU. The ATUs are proposed to treat chromium in groundwater and provide enhanced hydraulic containment of the chromium plume. Also, the irrigation system at the existing Desert View Dairy (DVD) ATU will be converted from subsurface drip irrigation to drag-drip irrigation (or equivalent method to prevent aerial spraying of groundwater).

All existing ATUs (DVD, Gorman North and South, Cottrell, and Yang ATUs) will also be covered under the WDRs. The total amount of new, expanded and existing ATUs covered under the WDRs is 327 acres.

ADDITIONAL INFORMATION NEEDED

The comments below cite sections, tables, and figures that require additional information in the ROWD. Please note that full descriptions are needed in the text portion rather than referring the reader to find the information in tables and figures.

1. Site Background, Section 1.1. Additional details of the ATUs currently in operation are needed. In the text of this section, please describe operations at the DVD, Gorman North and South, Cottrell, and Yang fields. State that the DVD was permitted under Board Order No. R6V-2008-0034, while the other existing fields were not, pending adoption of the WDRs R6V-2014-0023.

2. Remedial Objectives, Section 1.2; and Project Description, Section 2. The ROWD states the project is proposed to enhance the hydraulic containment and treatment of groundwater affected by chromium. Please provide additional description and details in this section on how the proposed project as a whole will enhance hydraulic containment and treatment of the chromium plume in groundwater *compared* to the existing remediation systems. Provide a comparison of extracted volume and chromium concentration or mass to be treated. Discuss total acreage of all combined projects and the range of total pumping rates. Provide figures showing the current hydraulic capture zones compared to anticipated capture zones.

   If such details are contained in a different section of the ROWD, please reference such sections and associated figures.

3. Project Description, Section 2. Discuss the thickness (vertical extent) of the chromium plume in the areas to be remediated by the existing and proposed ATUs. Discuss whether extraction wells at existing and proposed ATUs are addressing and/or will address the full thickness of the chromium plume. If not, describe why.

4. Water Quality, Sections 2.1.2 and 2.2.2. A summary of the water quality for the proposed ATUs is described in the text and listed in Table 2-3. Please state whether any other constituents were found to exceed drinking water standards at any of the proposed project areas, and if so, provide such information in Table 2-3.

5. Proposed Southern ATUs, Section 2.2. State that the new ATU Community East will be on the same location as the former East Land Treatment Unit that operated between 1992 and 2001 and whether there will be any differences or changes from past operations.

6. Southern ATUs Design, section 2.2.1

   a. The discussion states that existing extraction wells previously used at the site will be used for the Community East and Fairview ATUs. More discussion is needed about the prior use, age, design (including whether wells are screened in the deep or shallow zones of upper aquifer), current condition and suitability of these older extraction wells. Also, describe whether they will need to be rehabilitated and redeveloped prior to operation.

b. b. Provide a discussion of how the existing and planned extraction wells for the proposed Southern ATUs affect the operation and effectiveness of the existing IRZ remediation project. For instance, what is the range of distances separating extraction wells for Southern ATUs and the range of reaction time for IRZ activities prior to migration to extraction wells. Also explain the reactions to occur in the proposed Southern ATUs if IRZ reagents or byproducts are present in extracted water applied to ground.

7. Water Rights, Section 2.4. The water rights owned by PG&E and amount of water needed to operate the project are discussed. Are the amounts just for the proposed ATUs in the ROWD or for all the ATUs operated by PG&E, including the Gorman, Cottrell, and Yang fields? Please clarify.

8. Groundwater Modeling and Analysis of Potentially Affected Wells, Section 3.1.

   a. It is not clear if the results of modeling discussed reflect just the proposed ATUs or the proposed and existing ATUs. Please clarify.

   b. b. Please specify the range of groundwater extraction rates which were used to estimate non-PG&E pumping (first bullet on page 15), and the source of the data. Please describe the type of pumping that was considered non-PG&E pumping (e.g., domestic use, agricultural use).

   c. Please provide the range of pumping rates used to estimate current ATU pumping (second bullet, page 15).

   d. The numbers in table 3-1 do not match the text descriptions on page 15 (third bullet), and do not appear to account for the Fairview ATU. Please reconcile the text and table amounts for pumping, and include all pumping used in modeling assumptions.

   e. Section 3.1 states that "particle track modeling was conducted to predict groundwater movement for 10 years", but no further information on the modeling is provided. Additional information is needed about particle track modeling and results depicted on figures 3-1, 3-2, 4-2 and 4-3. For example, describe what the "particles" represent. If the particles represent byproducts, what are the sources of the byproducts? How are the starting locations of the particle tracks determined? It appears particles do not always originate from ATUs, but in some cases from areas located laterally from ATUs. Why is this? What assumptions are used to determine lateral and vertical migration of the particles? How do existing remedial actions, such as in-situ remediation extraction and injection, affect particle tracks?

9. Domestic and Agricultural Supply Wells Potentially Affected by Agricultural Byproducts, Section 3.3 (and Figure 3-2). The text on page 18 states that Figure 3-2 depicts particle tracking results and indicates that no domestic or agricultural supply wells were determined to be potentially affected by agricultural byproducts due to ATU operation, since the water applied to ATUs will be captured by extraction wells

before reaching supply wells. However, Figure 3-2 does not show the currently known extent of byproducts in groundwater; for example, total dissolved solids and nitrates in groundwater near the Desert View Dairy. Without this information, it cannot be determined if extraction for ATU operations might influence existing byproduct plume movement such that supply wells could be affected.

Mitigation measure WTR-MM-2b states, in part, that supply wells are considered affected if byproduct concentrations exceed specified criteria due to remedial actions. Remedial actions include groundwater movement due to remedial pumping, as well as increases in byproduct concentrations due to the percolation of irrigation water from ATUs. Particle track modeling shown on figures attempts to address the latter action, but no analysis of the potential for byproduct plume movement due to groundwater extraction is provided. As stated in WTR-MM-2b, *Groundwater Modeling*, (WDRs Attachment F, page 22) "PG&E will annually model the movement of any byproduct plumes and will provide maps and descriptions of estimated plume movement . . . for the following three years". Please provide this information on additional figures (depicted yearly for three years), and provide in-text descriptions of the information and shown on such figures. Include a discussion if byproduct plume movement over the next three years may affect supply wells.

10. Domestic and Agricultural Supply Wells Potentially Affected by Drawdown, Section 3.4 (and Figure 3-1). In the text in section 3-4, please discuss whether Figure 3-1 indicates if any domestic wells are within the modeled 10-foot drawdown buffers, triggering analysis for increases in arsenic, manganese, uranium or gross alpha per mitigation measure WTR-MM-2c.

11. Agricultural Byproduct Sampling, Section 4.1.2. The text states that "during remediation, the sampling area includes 0.5 miles cross-gradient and 0.25 miles downgradient of the ATUs." The sampling area description should be corrected to read "0.5 miles downgradient and 0.25 miles cross-gradient . . ." (emphasis added).

12. Soil Sampling, Section 4.4. The text in the first paragraph on page 30 states that the "MRP specifies that Cr(III) should be sampled, but standard commercial analysis for Cr(III) for soil are unavailable. Cr(III) will be calculated as the difference between Cr(T) and Cr(VI)." In the next paragraph on page 30 of the ROWD, it states that, for the proposed southern ATUs, samples will be collected and analyzed for Cr(III) (insoluble salts).

    Table E-4, ATU Soil Monitoring in the MRP, specifies that trivalent chromium (insoluble salts) is a required constituent for soil monitoring. Please clarify if soil samples will be analyzed for Cr(III) (insoluble salts) rather than being calculated as the difference between Cr(T) and Cr(VI).

13. Biological Monitoring, Section 5.2. This section discusses that PG&E does not have the authority to handle or relocate desert tortoises [until appropriate permits have been issued by wildlife agencies]. Please provide additional information about PG&E's procedures if a desert tortoise is observed in a work area.

14. The following table and figures are incomplete and need additional information:

a. In Table 1-1, Summary of ROWD Requirements (row 1, column 1), the reference to the section containing information on establishing baseline chromium in supply wells is incorrect (should be section 4.1.1, not section 1.1.1).

b. In the Summary Table of ATU Acreages, Estimated Irrigation Rates, and Water Rights (Table 2-1), please add a row showing acreages for each of the proposed ATUs.

c. The discussion on Site Background on Page 1 references the PG&E Compressor Station but its location is not shown on any of the figures. The Compressor Station property needs to be labeled on these figures: 1-1, 2-5, 3-1, 3-2, 3-3, 3-4, 3-5, 4-1.

d. Figure 3-2, the legend states that both gold and red colored lines represent particle tracks in the deep zone of the upper aquifer, unlike in Figure 3-1 where the legend states that the red colored particle track represents the shallow zone of the upper aquifer. Is one of these legends incorrect?

e. On Figures 3-3, 3-4, and 3-5, show the location of active domestic well 34-06 which is in proximity to the boundaries depicted in modeling results for potentially affected domestic wells.

f. In order to determine if the proposed monitoring well network shown in Figure 4-3 for the Southern ATUs is appropriate, extraction well locations, such as shown in Figure 2-4, need to be added to the map in Figure 4-3. Also include the outline of the chromium plume boundary as required by the WDRs.

g. For all figures depicting particle tracks, please show the extraction well network assumed to be influencing particle track movement.

Water Board staff appreciates the efforts of PG&E in preparing the ROWD submittal. Please contact Lisa Dernbach at (530) 542-5424 with any questions.

LAURI KEMPER, PE
ASSISTANT EXECUTIVE OFFICER

cc: Margaret Gentile, PhD, PE, Arcadis US, Inc.
PG&E Lyris List

AH/adw/T: Incomplete ROWD 2
File Under: PGE