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Mr. Aaron Yue
Project Manager
California Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, California 90630

Subject: Proposal for IM3 Extraction Well Pumping Rate modifications, PG&E Topock Compressor Station, Needles, California

Dear Mr. Yue:

This letter proposes modifications to the pumping rates for the Interim Measure No. 3 (IM3) extraction wells at Pacific Gas and Electric Company's (PG&E) Topock Compressor Station. PG&E wishes to reduce or shut down pumping from PE-1 and increase pumping from TW-3D and/or TW-2D and TW-2S. The purpose is to increase chromium mass removal, while maintaining landward hydraulic gradients, compared to the current pumping regime.

CURRENT PUMPING RATES AND LANDWARD GRADIENT COMPLIANCE

In a letter dated January 26, 2006, DTSC gave conditional approval for start-up of extraction well PE-1 pumping. That letter specified a combined minimum pumping rate of 135 gpm from extraction wells PE-1 and TW-3D. The letter also required that PG&E "confer and obtain DTSC approval prior to any adjustment of pumping rates based on…future evaluations".

The IM3 performance criterion for floodplain hydraulic control is a landward gradient of 0.001 ft/ft in the lower aquifer, established with the DTSC letter dated February 14, 2005.

IM3 extraction pumping maintained this landward gradient pumping from wells located on the MW-20 Bench (TW-3D, and formerly TW-2D and TW-2S), and since 2006 with pumping from floodplain extraction well PE-1 at 25-30 gpm combined with TW-3D pumping at 105-110 gpm. In the annual/fourth quarter GMP-PMP reports, an annual summary of key gradient compliance is provided in Table 5-3 and Figure 5-3. These summaries from 2014 are attached.

PROPOSED PUMPING MODIFICATION

PG&E proposes to meet the 135 gpm extraction pumping requirement by pumping from TW-3D alone.

If TW-3D does not produce 135 gpm, then TW-2D and TW-2S may be pumped to supplement TW-3D pumping meet the 135 gpm requirement.

The landward gradient will be monitored and if compliance with the 0.001 ft/ft criterion is in doubt, PE-1 will be pumped at rates up to 25 gpm, as needed to increase the landward gradient to comply with the 0.001 requirement.

It is anticipated that PE-1 would only need to be pumped during low river stages (potentially several months in fall or winter).

FACTORS CONSIDERED WITH PROPOSED MODIFICATION

Several factors were considered in developing this pumping modification proposal, as listed below:

- To date, gradient compliance reported with the GMP-PMP quarterly reports shows that landward gradients exceed 0.001 at all well pairs. Groundwater modeling of pumping from TW-3D alone indicates that the landward gradient is exceeded by a factor of 2 to 3 under year-round average conditions, with the MW-34-100/MW-45-95A gradient well pair being most sensitive to PE-1 pumping. Without pumping from PE-1, the lowest river stages in winter might reduce one key well pair gradient to 0.001. In that case, PE-1 pumping would resume to maintain gradient compliance.
- Chromium concentrations at PE-1 decreased rapidly after pumping began, and similar trends are seen in nearby wells such as MW-34-100. PE-1 chromium concentrations are presently in the 5 to 10 ppb range, while TW-3D concentrations are in the 750 ppb range. Chromium mass removal will be increased during months when TW-3D groundwater is not mixed with PE-1 groundwater. Table 5-2 is attached to summarize chromium concentrations measured in 2014 at active extraction wells PE-1 and TW-3D and also TW-2D and TW-2S.
- The three key gradient well pairs used for measuring landward gradient compliance are fitted with telemetry systems for transducer water level data. This allows frequent (weekly or even daily) checks of gradient without the need for physical access to well locations beyond routine monthly transducer downloads. This will be used to closely monitor gradient compliance when PE-1 pumping is shut down.
- TW-3D was tested at 135 gpm sustained pumping rate after well rehabilitation in early May 2015. Also in 2015, variable frequency drives (VFD) were installed at TW-3D and TW-2D to allow their pumping rates to be controlled remotely from the IM3 treatment facility.
- The gradient compliance discussion in quarterly GMP-PMP reports can be expanded to include analysis of gradients, summarize adjustments in pumping rates, and recommend pumping rates at TW-3D and PE-1 for the upcoming quarter.

Thank you for your consideration of our request. Please call me at (805) 234-2257 if you have any questions or need additional information.

Mr. Aaron Yue
May 28, 2015

Sincerely,

Yvonne Meeks
Topock Project Manager

Enclosures:
Table 5-2 – Analytical Results for Extraction Wells, January 2014 through December 2014
Table 5-3 – Calculated Hydraulic Gradients for Well Pairs by Month for 2014 Reporting Period
Figure 5-3 – Measured Hydraulic Gradients, River Elevation, and Pumping Rate, 2014 Reporting Period

cc: Chris Guerre/DTSC
Karen Baker/DTSC
Kevin Sullivan/PG&E