



Pacific Gas and
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July 27, 2017

Mr. Aaron Yue, Project Manager
Department of Toxic Substances Control
5795 Corporate Avenue
Cypress, CA 90630

Subject: Proposed changes to gradient control well pairs, PG&E Topock Compressor Station

Dear Mr. Yue:

Over the past 12 years of operations, the Interim Measure (IM-3) at the PG&E Topock Compressor Station has been successful in pulling the chromium plume in a landward direction and reducing chromium concentrations in the floodplain. This has resulted in declining chromium concentrations in extraction wells TW-3D and PE-01, and a consequent declining chromium mass removal rate in IM-3. Based on recent 2016 monitoring data, the average chromium concentration in PE-01 is 1.6 µg/L, while the concentration in TW-3D is 688 µg/L. The TW-3D well removes far more chromium than the PE-01 well. Minimizing the pumping of essentially clean water from PE-01 while maximizing the pumping of chromium containing water from TW-3D results in a significant increase in chromium removal rate while still maintaining landward gradients across the floodplain. In July 2015, DTSC approved modification to IM-3 extraction pumping, allowing PE-01 to be pumped at lower flow rates or shut down so long as the gradient control metric is met and the chromium concentrations in key floodplain wells don't trend upward.

The current set of gradient control wells was established in 2007 after PE-01 began pumping, and is designed to monitor gradients associated with pumping at both PE-01 and TW-3D. Prior to PE-01 being installed, the Central and South well pairs were set up to measure the gradient associated with TW-3D and used well MW-20-130 as the inboard well. MW-20-130 is located on the MW-20 bench near TW-2D/3D and is therefore appropriate for measuring the gradient associated with TW-2D/3D pumping alone. The current Central and South well pairs both use well MW-45-95 as the inboard well. MW-45-95 is located very close to well PE-01 and these well pairs were established specifically to measure the gradient associated with PE-1 pumping. The North pair (MW-33-150/MW-31-135) measures the gradient associated with TW-2D/3D pumping and has been used since pumping began in 2005.

The problem with using the current well pairs when PE-01 is not pumping is that the Central and South well pairs are designed to measure gradient associated with PE-01, not TW-3D. The current Central well pair measures the gradient in the right direction, but over a very short baseline in an area distant from the TW-3D pumping center. The current South well pair measures a gradient that is not aligned with the direction of groundwater flow when PE-01 is not pumping. Because of the mis-alignment of the current South well pair, it is often necessary to pump PE-01 for a few days per month just to meet the gradient target, although if the gradient were measured using MW-20-130 as the inboard well, the metric could be met without pumping PE-01 at all. PG&E is therefore proposing that when PE-01 is turned off, MW-20-130 be used in place of MW-45-95 as the inboard well for calculating gradient in the Central and South well pairs.

The attached Figure 1 shows the locations of the well pairs that would be used under both pumping scenarios. Also attached is Table 1, showing the gradients measured over the period from February 2016 through May 2017 in both sets of gradient wells. This shows that the gradient in the Central well pair is less when using MW-20-130 as the inboard well. The gradient in the South well pair is generally greater when using MW-20-130 as the inboard well, except during months when PE-1 was pumped more frequently. These data indicate that by using MW-20-130 as the inboard well, the gradient metric in the South well pair can be met without the need for PE-1 pumping.

If PE-01 is turned back on, then the MW-45-95 well would again be used as the inboard well for the Central and South well pairs. Water levels would continue to be monitored by transducer in all the gradient control wells so that the water level data will be available to calculate gradients from the appropriate set of wells regardless of whether PE-01 is pumped or not. PE-01 will be kept in standby mode and available for use as a contingency measure to address any increasing chromium concentration trends in floodplain wells.

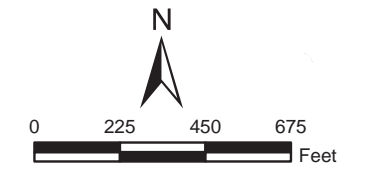
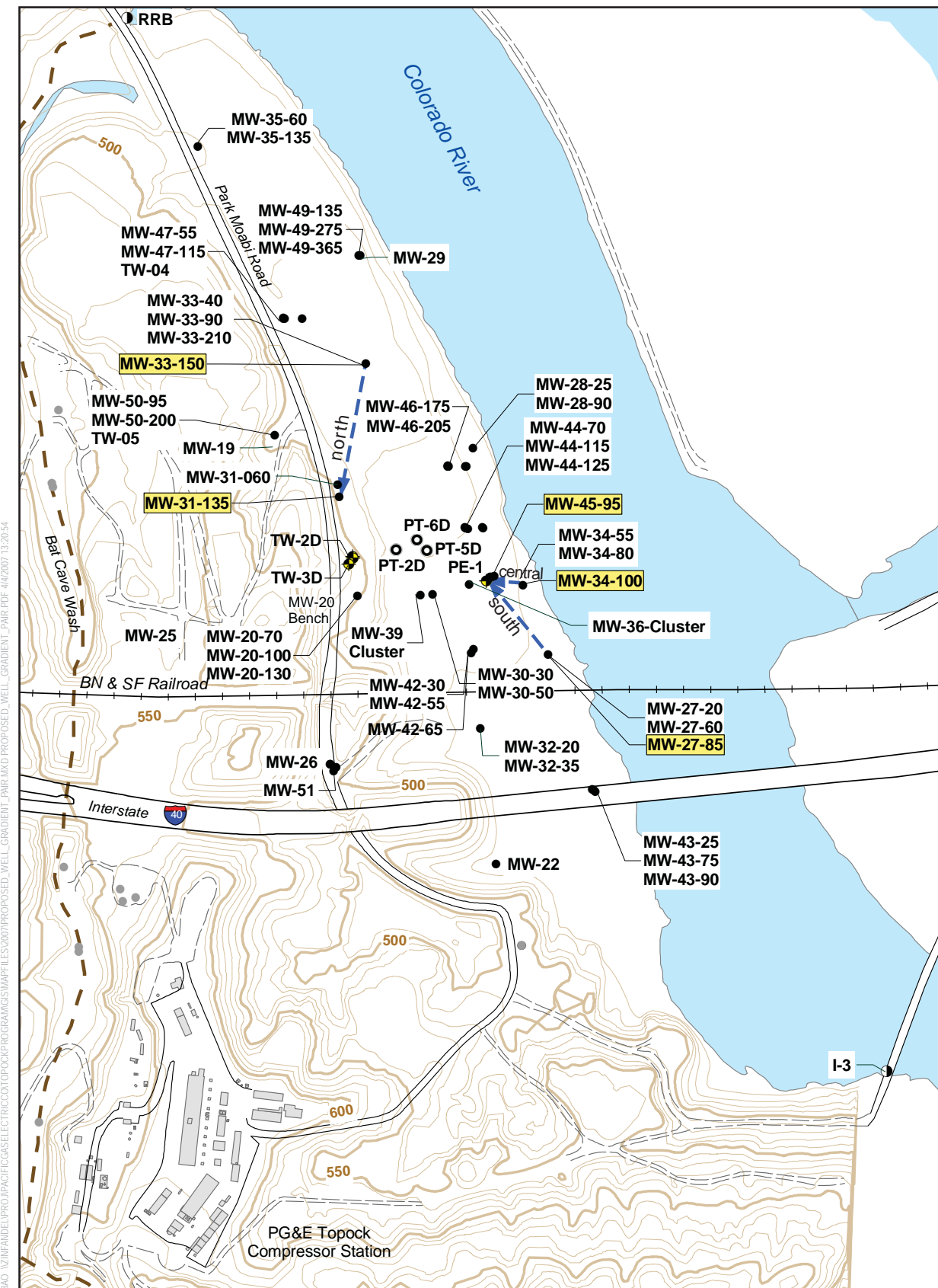
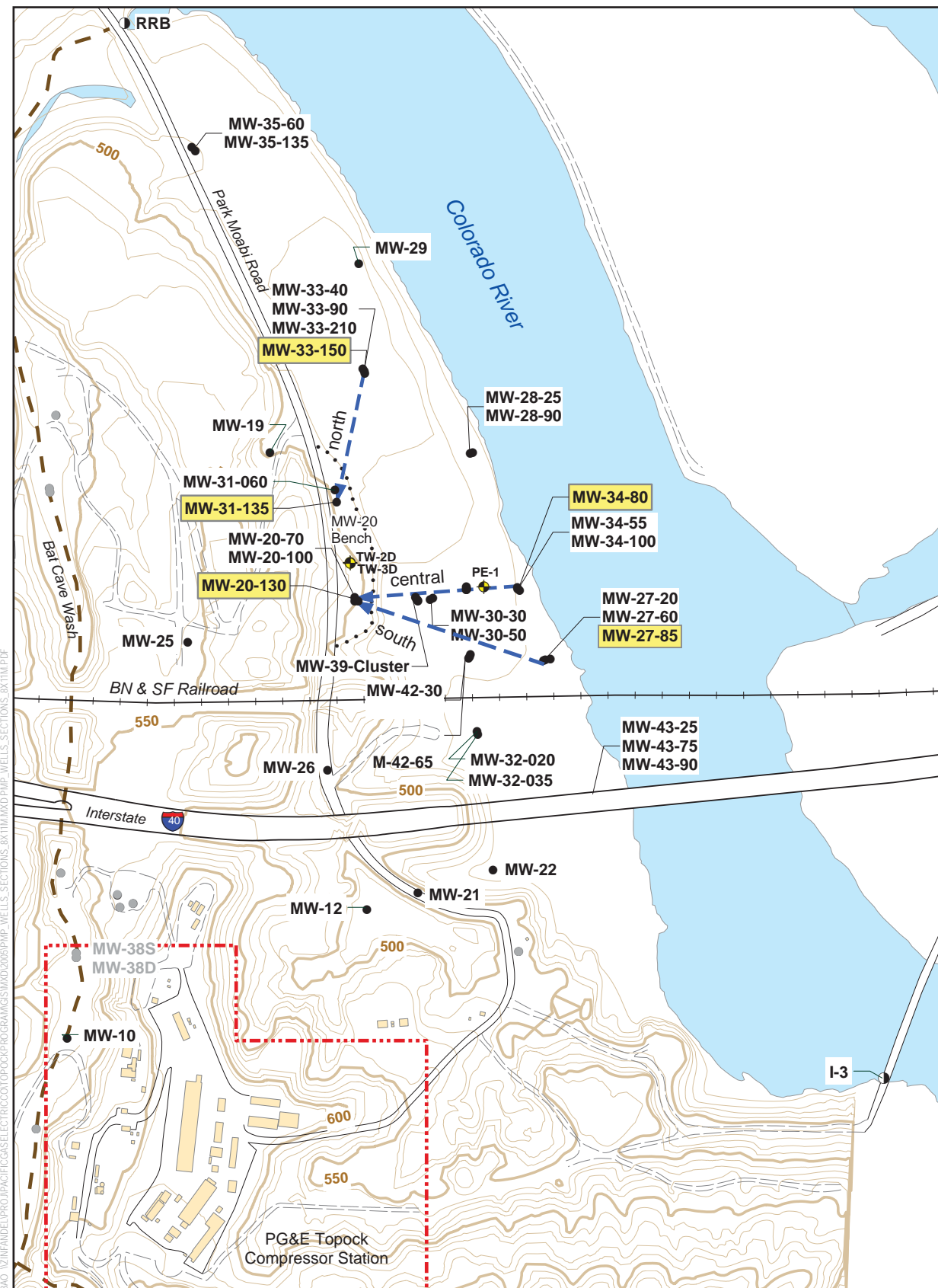
We would appreciate your review and concurrence with this proposal by September 1, 2017. We would be glad to use weekly technical calls or ad hoc calls to facilitate your review. Please contact me at (760) 791-5884 if you have any questions or comments regarding this response.

Sincerely,

A handwritten signature in blue ink, appearing to read "Curt Russell".

Curt Russell
Topock Site Manager

cc: Chris Guerre/DTSC, Pam Innis/DOI



- LEGEND**
- Groundwater monitoring well
 - Monitoring well used for hydraulic gradient calculation
 - River Gage Station
 - ⚡ IM Extraction Well
 - Well Pair

A. Gradient well pairs in use when PE-01 is not pumping.

B. Gradient well pairs in use when PE-01 is pumping.

FIGURE 1
Gradient Well Pairs



Table 1. Comparison of Monthly Average Gradients Using Current and Proposed Well Pairs

Month	North Well Pair	Current Gradient Pairs using MW-45-95		Proposed Gradient Pairs using MW-20-130		PE-1 Avg. Pumping Rate (gpm)
		Central Well Pair	South Well Pair	Central Well Pair	South Well Pair	
Feb-16	0.0029	0.0056	0.0012	0.0050	0.0039	2.3
Mar-16	0.0030	0.0068	0.0014	0.0057	0.0044	0.1
Apr-16	0.0024	0.0095	0.0021	0.0045	0.0033	6.2
May-16	0.0030	0.0087	0.0016	0.0054	0.0040	2.2
Jun-16	0.0030	0.0119	0.0026	0.0053	0.0039	4.9
Jul-16	0.0029	0.0054	0.0028	0.0038	0.0037	5.4
Aug-16	0.0022	0.0159	0.0043	0.0033	0.0025	11.4
Sep-16	0.0023	0.0212	0.0066	0.0037	0.0032	18.1
Oct-16	0.0021	0.0239	0.0072	0.0031	0.0026	21.5
Nov-16	0.0022	0.0188	0.0053	0.0035	0.0027	15.2
Dec-16	0.0023	0.0137	0.0035	0.0038	0.0028	9.2
Jan-17	0.0024	0.0141	0.0035	0.0040	0.0030	9.2
Feb-17	0.0026	0.0247	0.0073	0.0039	0.0031	21.3
Mar-17	0.0029	0.0257	0.0080	0.0046	0.0039	22.6
Apr-17	0.0027	0.0100	0.0023	0.0050	0.0038	3.9
May-17	0.0024	0.0117	0.0027	0.0049	0.0037	8.8