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Response to Comments on Draft Updated Requirements for In-situ Remediation Zones and Northwest Freshwater Injection System, Pacific Gas and Electric Company, Hinkley, San Bernardino County

Thank you for your August 17, 2015, comments on the draft *Updated Notice of Applicability for In-situ Remediation Zones and Freshwater Injection System (Draft NOA,* enclosed*)*. Many comments in your letter (comments 1- 3, 6 - 13, 15, 17, 20, 23, 25, 26, 27, 32 – 35) suggest editorial or other minor clarifications to various sections of the Draft NOA and associated monitoring and reporting program (MRP). Water Board staff agree with those changes as suggested, and have revised the final NOA and MRP accordingly. Responses to your additional comments and questions are provided below, using the numbering contained in your letter.

I. DRAFT NOA COMMENTS AND RESPONSES

PG&E Comment 4, suggesting editorial changes to clarify that the objectives of the 2012-2013 in-situ remedial zone (IRZ) tracer testing have been fulfilled and that results support that IRZ injection solutions move in the direction of groundwater flow. The comment also suggests rescinding investigative order R6V-2013-0026 requiring tracer testing, and incorporating those requirements into the NOA.

Response: We agree that cross-gradient monitoring for tracers has been completed, and this monitoring supports that IRZ injection solutions do not move in a cross-gradient direction in the IRZ area, but travel down-gradient (northerly) with the predominant groundwater flow path. Downgradient monitoring for tracers is ongoing, however, and will continue for the near-term until tracer concentrations in downgradient monitoring locations decline to below 10 micrograms per liter for at least two consecutive sampling events. This requirement is now contained in the Monitoring and Reporting Program (MRP) section III.D.2, and investigative order R6V-2013-0026 is rescinded as indicated in NOA section VIII. The description in section II.a of the NOA is accurate regarding the status of the tracer testing and remains unchanged.

PG&E Comment 5, requesting clarification if the 80 gallons per minute (gpm) freshwater injection rate listed in the project description is a regulatory maximum for operation of the freshwater injection system under this NOA.

Response: 80 gpm is not proposed as a regulatory maximum, but is provided only as an operational parameter describing current injection rates. No regulatory limit on freshwater injection volumes is needed because the General Waste Discharge Requirements R6V-2008-0014 do not contain such a limit. This is clarified in the final NOA. Annual operational parameters for the freshwater injection system will be proposed by PG&E in its annual reports required by CAO R6V-2015-0068.

PG&E Comment 14, suggesting additional investigative orders (IOs) and letters that should be formally rescinded by the NOA.

Response: We agree that IOs R6V-2011-0053, R6V-2011-0084, R6V-2012-0060 and R6V-2013-0026 can be noted as "completed" in the State's CIWQS database, as the requirements contained in those IOs are replaced or revised by the Draft NOA. These completed IOs are listed in the NOA section VIII.

II. DRAFT MONITORING AND REPORTING PROGRAM (MRP) COMMENTS AND RESPONSES

PG&E Comment 16, regarding requirements for monitoring well replacement if existing well(s) go dry.

Response: This comment addresses both current monitoring wells that have been dry for more than one year and potential future monitoring wells that may go dry for one year or more. PG&E's suggested revision proposes to conduct an evaluation for each dry monitoring well to see whether monitoring objectives are still being met elsewhere. This proposal for an evaluation is reasonable for **future** potential dry monitoring wells, and should be initiated upon the second consistent dry monitoring event.

However, the proposed evaluation is not reasonable for current monitoring wells that have been dry for more than four quarters. For example, of the six monitoring wells that have been dry for four or more quarters, Board staff have already determined that five of them (CA-MW-313, CA-MW-412S, MW-61, MW-74S, SA-SM-03S) are in locations where the data is needed to verify remediation performance or threat to domestic wells on Mountain View Road; only SC-MW-11S is located where monitoring objectives can be met by another other nearby (<1,000 feet) monitoring wells. All of the five monitoring wells where data is needed have not been sampled since 2013. This absence of data needs to be addressed immediately by collecting a sample following re-development or installation of a new well. Therefore, MRP sections IB.3 and 4 are revised as follows:

3. If any monitoring well required to be sampled under this MRP has been dry for one year or more <u>upon issuance</u> of the NOA, such wells must be either re-developed or replaced such that a water sample can be collected within one-quarter's time. As of third quarter 2015, the following monitoring wells have been dry for four or more quarters, and must be re-developed or replaced because no other monitoring wells are located such that the monitoring

objectives of these wells can be met: **CA-MW-313, CA-MW-412S, MW-61, MW-74S, and SA-SM-03S.**

4. If any monitoring well required to be sampled under this MRP has been dry for two consecutive sampling events <u>following issuance</u> of this NOA, an evaluation shall be submitted for each monitoring well that has gone dry regarding the potential need to replace that well in order to meet monitoring objectives. The evaluation should include an assessment of the likely causes for the well going dry and the proposed measures to meet monitoring objectives into the future.

PG&E Comment 18, regarding sampling for marker constituents when monitoring well rehabilitation compounds are used.

Response: We agree that deleting the marker constituents from Table A-3 will make monitoring requirements clearer. Marker constituent sampling requirements are clearly stated on page 16, Section III.B of the MRP.

PG&E Comment 19, regarding typographical errors in Table A-4.

Response: There are several typographical errors in Monitoring and Reporting Program Table A-4, Threshold Concentrations for IRZ Byproducts, Well Rehabilitation Compounds, and Tracers in Groundwater. These are corrected in the final version as follows:

- The threshold value of arsenic should be shown as 0.013 milligrams per liter (mg/L or ppm). This is a rounding error.
- The threshold value of iron should be 0.471 mg/L (the baseline value shown in the table is incorrect, should be 0.377 mg/L, not 0.337 mg/L)
- The threshold value of chloride should be 289 mg/L, not 29 mg/L.

PG&E Comment 21, regarding timing of implementing a West Area action plan, if needed to address byproduct detections.

Response: We agree the changes are appropriate, and have incorporated them into the draft MRP. The section now requires any proposal for an action plan to contain a schedule for implementation, which shall be implemented upon Water Board staff's proposal acceptance. This language is also incorporated into the East area action plan, as described in response to PG&E comment 22, below.

PG&E Comment 22, regarding implementing an East Area action plan if needed to address byproduct detections.

Response: The MRP is modified to require an evaluation to determine if existing remedial system operations are hydraulically containing byproducts within extraction wells along and upgradient of Santa Fe Avenue, as suggested, with the addition of the <u>underlined text</u> shown in section 2.a) and b):

2. East Area Action Plan

a) If east area Tier II monitoring wells indicate byproduct exceedances at or above the threshold levels listed in Table A-4, the Discharger shall:

i. Conduct east area Tier III monitoring. East area Tier III monitoring wells are listed in Table A-7.

ii. Evaluate whether current remedial system operations are hydraulically containing byproducts within extraction wells along and upgradient of Santa Fe Avenue. The evaluation shall provide data from pump tests, particle track modeling, potentiometric maps, etc., to verify all interpretations of capture or lack thereof. If byproducts are not hydraulically contained by extraction wells along and upgradient of Santa Fe Avenue, propose actions to reduce byproduct migration in groundwater north of Santa Fe Avenue. Such actions may include but are not limited to:
   1) Restarting extraction wells EX-21 and EX-22;
   2) Increasing extraction rates in extraction wells IW-01, IW-02, and/or IW-03;
   3) Installation of additional extraction wells, such as between EX-22 and IW-01.

iii. Data evaluation and an action plan proposal, if warranted, shall be submitted to the Water Board within 60 days of receiving laboratory results of Tier II monitoring well threshold exceedance(s) for Water Board staff's acceptance. Any action plan proposal shall contain a schedule for implementation.

iv. Implement proposed actions and schedule upon Water Board staff's proposal acceptance.

b) If east area Tier III monitoring wells indicate byproduct exceedances at or above the threshold levels listed in Table A-4, the Discharger shall:

i. Propose actions to reduce byproduct migration and concentrations below threshold levels in groundwater north of Santa Fe Avenue. The proposal shall contain a schedule for implementation and achieving remediation goals.

ii. Propose contingency wells to verify containment of byproduct migration.

iii. An action plan proposal shall be submitted to the Water Board within 60 days of receiving laboratory results of Tier III monitoring well threshold exceedance(s) for Water Board staff's acceptance. The proposal shall contain a schedule for implementation.

iv. Implement proposed actions and schedule upon Water Board staff's proposal acceptance.

PG&E Comment 24 and Attachment A, regarding replacement water trigger levels contained in the Draft NOA. PG&E requests that the NOA be modified to require replacement water only for domestic wells containing constituents above applicable Maximum Contaminant Levels (MCLs).

Response: "Affected wells" requiring replacement water under the NOA are determined using exceedances of the maximum background chromium values of 3.1/3.2 parts per billion Cr6/CrT or increases by a certain percentage over baseline chromium levels, and by certain percentage increases of other constituents (total dissolved solids, nitrate and uranium) over baseline levels. These replacement water triggers are based on the significance criteria and mitigation measures specified in the Final Environmental Impact Report (EIR) adopted by the Water Board in July 2013.

PG&E Comment 28, regarding clarification if monitoring is not required for well rehabilitation chemicals conducted prior to the NOA.

Response: Well rehabilitation chemical monitoring is currently ongoing in monitoring wells associated with the IRZs. This monitoring is still required under the NOA, and shall continue as specified in MRP section III.B.

PG&E Comments 29 and 30, regarding notifications for reductions in remedial operations.

Response: We agree this requirement could result in insignificant changes being reported. The notification requirement in MRP section IV. A is revised to be consistent with notification requirements in Cleanup and Abatement Order R6V-2015-0068:

A. Reductions in corrective actions covered under this NOA of more than 10 percent on a monthly basis as compared to annual operational plans[1] shall require notification to Water Board staff prior to implementation. Such changes in operations shall also be reported in the quarterly monitoring reports.

   The Discharger shall also notify the Water Board staff of any planned design changes, i.e., construction of extraction or injection locations, within 14 calendar days before such change.

PG&E Comment 31, regarding documenting compliance with EIR mitigation measures.

Response: We agree that the approach to documenting compliance with EIR mitigation measures as described in the ATU Report of Waste Discharge EIR monitoring and reporting plan can be also be applied to the IRZ and NWFI activities.

[1] Annual operational plans are required for the IRZ and NWFI systems under Cleanup and Abatement Order No. R6V-2015-0068 (see page 6 of the CAO's Monitoring and Reporting Program).

PG&E Comment 36, regarding deleting requirement to report "permitted injection volumes" for each injection well, since no such permit limits exist.

Response: We agree the change is appropriate. Also, all discharges to groundwater for each IRZ, including authorized reagent and tracer volumes are required to be reported quarterly per section V.B.2 v and vi.

PG&E Comment 37, requesting clarification on which maps shall show chromium plume contours.

Response: MRP section V.B.2.b.iii has been revised to clarify which maps must show chromium plume lines as follows:

iii. Chromium plume lines for hexavalent and total chromium out to 3.1/3.2 parts per billion (ppb), 10 ppb, 50 ppb, 100 ppb, and 1,000 ppb shall be shown on all maps depicting chromium sampling locations and results (e.g., figures showing monitoring locations for general groundwater quality compliance monitoring, IRZ monitoring well locations and domestic well monitoring). Potentiometric maps do not need to depict chromium plume boundaries.

PG&E Comment 38, regarding purpose of showing contours of total organic carbon (TOC).

Response: Staff agrees that isoconcentration contours of TOC are not needed. The requirement will be revised to require concentrations (over the detection limit) of TOC in monitoring wells to be shown in a table.

Please contact Lisa Dernbach, Senior Engineering Geologist, at (530) 542-5424 (Lisa.Dernbach@waterboards.ca.gov) or Anne Holden, Engineering Geologist, at (530) 542-5450 (Anne.Holden@waterboards.ca.gov) with any questions.

Lauri Kemper, PE
Assistant Executive Officer

Enclosure: PG&E's August 17, 2015 Comments on the Draft *Updated Notice of Applicability for In-situ Remediation Zones and Freshwater Injection System (Draft NOA)*.

cc (via email): PG&E Lyris List
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AH/ma/T: Response to PG&E comments on NOA (Jan 2016)

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August 17, 2015

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California Regional Water Quality Control Board, Lahontan Region
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Subject: Issuance of New Notice of Applicability of General Waste Discharge Requirements for In-Situ Remediation Zones and the Northwest Freshwater Injection System (WDID 6B360804007, Board Order R6V-2008-0014), Pacific Gas and Electric Company's Hinkley Compressor Station, San Bernardino County

Dear Ms. Holden:

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to submit these comments on the Draft Notice of Applicability (Draft NOA) of General Waste Discharge Requirements for In-Situ Remediation Zones (IRZs) and the Northwest Freshwater Injection System (NWFI). In general, we agree with the approach to defining the project, the byproduct monitoring program and action plan framework, and the incorporation of the Environmental Impact Report (EIR) mitigation measures in the Draft NOA. We believe this NOA will promote efficient remediation of hexavalent chromium (Cr[VI]) in groundwater and provide the framework for holistic operation of the remedial systems, including operation of the IRZs, NWFI, and extraction and Agricultural Treatment Units (ATUs).

The following provides comments and language suggestions to improve clarity of the requirements and background and to modify the action plan. Suggested language edits are provided in underline ~~strikeout~~ format.

1. Introduction, page 1. The introduction should be edited to clarify that the NWFI is one component of the overall hydraulic capture system that prevents westward migration of the chromium plume. This could be clarified as follows:

> "The NOA also includes discharges to the northwest freshwater injection system (NWFI) which acts along with the northern extraction system to block westward migration of the chromium plume."

2. Section I.b, page 2. The first paragraph should be edited to clarify that ethanol injection volumes were reduced to manage byproducts, particularly manganese, in the Central Area IRZ as documented in Table 5-1 of the Quarterly Monitoring Reports for the In Situ Reactive Zone and Northwest Freshwater Injection Projects (Quarterly IRZ NWFI Reports, e.g. CH2M Hill and ARCADIS 2015).

The reduced effectiveness of chromium remediation in the South Central Re-injection Area (SCRIA) IRZ is due to reduced injection rates into the SCRIA IRZ. PG&E requested a change to the Cleanup and Abatement Order (CAO) R6V-2008-0002A2, to allow plume expansion associated with SCRIA operations, because there was a difference in

the baseline extent of Cr(VI) greater than 4 parts per billion (ppb) between the August 2008 and August 2009 data as the result of additional data obtained from the SCRIA IRZ perimeter monitoring wells. These monitoring wells were installed in 2009 to fill in gaps in the existing data (before commencing SCRIA IRZ operations). The area of allowable expansion in R6V-2008-0002A2 did not incorporate the new data from the SCRIA perimeter wells. Therefore, before SCRIA IRZ operations began, the chromium isoconcentration contours extended beyond the CAO approved area of allowable expansion in the southeastern portion of the SCRIA IRZ. In response, PG&E requested a modification of the CAO. Because the CAO was not modified, PG&E had to decrease injection into the SCRIA to prevent an unallowable expansion of the Cr(VI) plume (i.e. injections into the SCRIA were not reduced in relation to any concerns over the generation or migration of byproducts). The potential for plume expansion under increased SCRIA injection rates is currently being addressed through the start-up of new southern extraction and ATU systems.

To clarify these nuances between reasons for changes in operations of the Central Area IRZ and SCRIA IRZ, the following edit is suggested:

> "The action has reduced the effectiveness of chromium remediation, particularly in the ~~South-Central Re-injection Area located on the north side of Community Boulevard~~ Central Area IRZ located along Frontier Road."

3. Section II.a, page 3. The second paragraph should be edited to clarify that denatured ethanol is used for injection, as follows:

> "IRZs involve injecting carbon-containing compounds (e.g. ~~food-grade~~ denatured ethanol) into the groundwater via injection wells."

4. Section II.a, page 3. The end of the third paragraph indicates "[g]roundwater movement tracer tests related to the 2012-13 investigation are still ongoing, but preliminary data from those tests support the conclusion that manganese and other dissolved byproducts are not affecting nearby domestic wells." We believe that the two years of tracer data that have been collected through Second Quarter 2015 are sufficient to meet the objectives of that study and that the draft NOA should reflect a completed study.

The objective of tracer testing in the 2012-2013 byproduct investigation was to "evaluate distribution and migration of IRZ injection solution along the western IRZ boundaries," as stated in the workplan for the study (ARCADIS 2013). To meet this objective, tracers were injected in the SCRIA IRZ and Source Area IRZ in July and August 2013 and monitored for by sampling downgradient and cross-gradient wells in accordance with the workplan. The cross-gradient locations in particular were monitored to verify that injection solution did not migrate cross-gradient rather than downgradient from injection points.

At the time the study was designed, there was concern from the community and Water Board that IRZ injection solution could rapidly migrate to the west (cross-gradient) of the IRZ system. The workplan provided for two years of monitoring at the cross-gradient locations (ARCADIS 2013), a sufficient time period to meet the objectives of the test and assess whether the injection solution would migrate quickly westward and reach cross-gradient monitoring wells, the closest of which are located approximately 300 and 1,000 feet from injection points for the SCRIA and Source Area tests, respectively. Tracers have not been detected in the cross-gradient monitoring wells during the two years that data has been collected following tracer injections during the Third Quarter of 2013 as documented in quarterly monitoring reports (e.g., Figures 5-1 and 5-2, CH2M Hill and ARCADIS 2015). These data verify that IRZ injection solution does not migrate counter to groundwater flow direction (i.e. to the west) and that domestic wells to the west are not affected by IRZ injections and fulfils the

objectives of the tracer study. In accordance with the workplan, PG&E therefore proposes to discontinue sampling of cross-gradient monitoring wells.

In accordance with Water Board Investigative Order No. R6V-2013-0026, PG&E will continue to monitor downgradient monitoring wells where tracer was detected until tracer concentrations decrease to below 10 ppb for at least two consecutive quarters. We request that this requirement be incorporated into the Draft NOA so that Investigative Order No. R6V-2013-0026 can be rescinded. This will help to streamline the number of active orders.

To clarify that the objectives of the tracer testing have been fulfilled and that results corroborate the movement of IRZ injection solution in the direction of groundwater flow, we suggest deleting the following text from the last paragraph of Section II.a:

> "~~Groundwater movement tracer tests related to the 2012-13 investigation are still ongoing, but preliminary data from those tests support the conclusion that manganese and other dissolved byproducts are not affecting nearby domestic wells.~~"

In addition, we suggest the following requirement from R6V-2013-0026 be inserted into the Draft NOA MRP, so that R6V-2013-0026 can be rescinded:

> "Where tracers have been detected from 2013 tracer injections (injection details are contained in ARCADIS, 2013. Response to Investigative Order No. R6V-2012-0060 and R6V-2013-0026: Manganese Investigation Technical Report. Pacific Gas and Electric Company's Hinkley Compressor Station, Hinkley, California. November 19), tracers must continue to be monitored in subsequent sampling events, until the concentrations decline below 10 micrograms per liter for at least two consecutive quarterly sampling events."

5. Section II.b, page 3. Please clarify if the 80 gallons per minute (gpm) listed in the project description is a regulatory maximum for operation of the NWFI under this NOA. It is also noted that there is not a maximum flowrate for groundwater extraction from north of Highway 58 and injection back into the IRZ authorized discharge area in this NOA, nor are there specifications on the location of extraction wells for this purpose. PG&E agrees that a flowrate maximum and specification of the location of extraction wells is no longer needed for extraction north of Highway 58 and injection into the IRZ authorized discharge area. The flowrate specification is not needed given that there is new southern extraction and agricultural treatment that can be used to balance the injection into the IRZ and minimize potential for plume expansion. Also, the CAOs for the site, i.e. both existing CAO R6V-2008-0002A2 and the Proposed CAO R6V-2015-PROP that is being considered for adoption, contain requirements limiting potential plume expansion. In addition, allowing for flexibility in the location of water extracted from the north will allow for greater remedial efficiency and integration of hydraulic containment and in situ remediation system operations.

6. Section II.b, page 3. The text should be edited to clarify that the NWFI, is one component of the overall hydraulic capture system that prevents westward migration of the chromium plume, as follows:

> "The NWFI system ~~is designed to~~ is one component of the overall hydraulic capture system that prevents westerly plume movement to where sensitive receptors, such as the Hinkley School wells and other domestic wells, are located."

7. Section II.b, page 3. The text should be edited to clarify which well required filtration through granular ferric

hydroxide media as follows:

"Water from ~~these wells~~ supply well PGE-14 was filtered through a granular ferric hydroxide media system to remove naturally-occurring arsenic and meet drinking water standards."

8. Section II.b, page 3. The date of start-up of freshwater supply wells FW-03 and FW-04 should be corrected as follows:

"Beginning in ~~2015~~ December 2014, groundwater is now extracted from newly installed freshwater supply wells FW-03, and -04 located southeast of the compressor station (i.e., cross-gradient of the plume)."

9. Section II.b, page 3. The number of freshwater injection wells should be clarified to include the back-up well IN-03 as follows:

"Water from these new wells is conveyed about two miles north through an underground pipeline, and re-injected at a flow rate of up to 80 gpm into ~~six~~ injection wells along Serra Road. The system includes seven injection wells, with six operated at any one time."

10. Section V.b , page 6. We suggest clarifying that the order referenced in this section is the ATU Waste Discharge Requirements (WDRs), with the following addition to the beginning of the first paragraph on page 6:

"Board Order No. R6V-2014-0023, the Agricultural Treatment Unit Waste Discharge Requirements, was the first order governing discharges that was issued following the adoption of the Environmental Impact Report (EIR)."

11. Section V.b, page 6. In the last paragraph the section reference included in parentheses should be corrected as follows:

"(see section ~~IV.c~~ V.c, below, and attachment C for details)."

12. Section V.c, page 6. The second sentence in paragraph one is referencing ethanol volumes in the Central Area IRZ (not the entire IRZ system), and should be edited as follows:

"For example, ethanol injections in the Central Area IRZ have been reduced from an average monthly injection volume of 733 gallons per month during 2007 to 2011, to 175 gallons monthly average from 2012 to 2014."

13. Section V.c, page 7. We suggest clarifying that natural attenuation may be relied upon to return water quality to pre-remedial conditions with inclusion of the following language from WTR-MM-4 in the second to last paragraph of the section on page 7:

"The assessment can include analysis of the potential for natural attenuation to return pre-remedial reference conditions within an acceptable timeframe, as determined by the Water Board."

14. Section VIII, page 8. The NOA revokes the previous NOAs for in-situ remediation dated April 7, 2009, August 17, 2009, and July 7, 2010. There are several other investigative orders and letters that PG&E believes should also be rescinded by the Draft NOA. The list of suggested orders for rescission and the rationale are as follows:

- **Investigative Orders R6V-2011-0053 and R6V-2011-0084** which provided requirements for IRZ and manganese mitigation system operations that are being updated with the Draft NOA.
- **Investigative Orders R6V-2012-0060 and R6V-2013-0026 and the letter entitled, "Comments on Manganese Investigation Technical Report", dated February 19, 2014** which contain line items that require on-going monitoring and reporting for the 2012-13 byproducts investigation. For example, Investigative Order R6V-2012-0060 specifies that sampling of all wells sampled during third quarter 2012 shall continue in future quarterly monitoring events, a sampling program that is different than the MRP in the Draft NOA. Given that the byproduct investigation is complete, as detailed in Section II.a paragraph 3 of the draft order and comment 4 above, these on-going monitoring and reporting requirements are no longer necessary.
- **Letter entitled "Response to Requests to Use New Water Supply Wells / Extension of a NOA", dated October 3, 2014** which stated that the NWFI and SCRIA IRZs could operate indefinitely under the July 7, 2010 IRZ NOA. PG&E suggests that stating that this letter is no longer applicable will help to streamline and clarify the regulatory orders governing remedial system operation.

To clarify that these orders and letters are no longer active, PG&E suggests the following language edit to Section VIII:

> "This NOA rescinds the previous NOAs for in-situ remediation dated April 7, 2009; August 17, 2009, and July 7, 2010. This NOA also rescinds Investigative Orders R6V-2011-0053, R6V-2011-0084, R6V-2012-0060 and R6V-2013-0026 and the letters "Comments on Manganese Investigation Technical Report" dated February 19, 2014 and "Response to Requests to Use New Water Supply Wells / Extension of a NOA", dated October 3, 2014. Previous monitoring and reporting programs associated with those NOAs, investigative orders and letters are also rescinded."

15. MRP, Table A-1, page 2. In the plans for implementation of the EIR mitigation measures for the IRZs, PG&E submitted definitions of sampling areas for water supply wells for WTR-MM-2B (ARCADIS 2015a). We suggest adding the following footnote to the monitoring area definition, "water supply wells one mile downgradient and cross-gradient of the IRZs[x]" accept the proposed WTR-MM-2B proposed sampling and provide for future modifications to the monitoring definition:

> "[x] The initial sampling areas are those defined in *Response to Comments and Additional Information on Manganese Mitigation Plan*, dated January 26, 2015. Sampling areas shall be modified in the annual mitigation monitoring and reporting program report."

We suggest the same comment be added to the WTR-MM-2A monitoring area definition in Table A-1.

16. MRP, Section I.B.3, page 4. The Draft Monitoring and Reporting Program (MRP) for groundwater monitoring well sampling for IRZs states: "If any monitoring well required to be sampled under this MRP is dry for one year or more, it must be either re-developed or replaced such that a water sample can be collected." PG&E recommends a case-by-case evaluation in the event that a monitoring well is unable to be sampled due to insufficient volume. This is recommended for several reasons. For example, the monitoring objectives may continue to be met by use of data from other nearby wells (e.g. a well within a short lateral distance or a deeper well beneath the dry well within the same hydrostratigraphic unit) or geologic conditions may not allow installation of a deeper well within the same hydrostratigraphic unit.

PG&E proposes that when a monitoring well has not been sampled for more than a year due to insufficient

water, the well will be assessed using the generalized decision tree provided as Figure 1. The water level, total sounded depth, and well construction information will be examined, and sampling using a different method may be attempted. If sampling is still not possible, a determination will be made whether the well cannot be sampled due to accumulation of sediment or due to a decline in the water table. If sediment has accumulated in the well, maintenance options such as video logging and redevelopment will be considered. If after the maintenance action sampling performance has not improved or if the water table has dropped locally to a point where sampling is not possible, then nearby existing wells will be evaluated to see if they are able to meet the monitoring objectives. Such factors as the function of the monitoring well in the monitoring network, well construction, the monitored portion of the aquifer unit, historical analytical results for the well and current results for nearby wells, and evidence of treatment at both the subject well and other nearby wells will be considered during evaluation. If a nearby well, including a deeper well at the same location, is able to provide data to meet the monitoring objectives it will be substituted into the monitoring network. If a suitable well is not identified to substitute into the monitoring network, a recommendation will be made whether to temporarily suspend sampling at the location or to replace the well. Temporary suspension of sampling may be necessary if the hydrologic unit has been dewatered. To implement this change PG&E suggests editing the language as follows:

> "If any monitoring well required to be sampled under this MRP is dry for one year or more, ~~it must be either re-developed or replaced such that a water sample can be collected~~ an evaluation shall be submitted for each monitoring well that has gone dry regarding the potential need to replace that well in order to meet monitoring objectives. The evaluation should include an assessment of the likely causes for the well going dry and the proposed measures to meet monitoring objectives into the future."

17. MRP, Section IB.5, page 4. To clarify that all wells do not need to be sampled each quarter, PG&E suggests the following edit:

> "During each monitoring event, all **performance monitoring wells and sentry wells** to be ~~shall be~~ sampled shall be analyzed for the constituents listed in and using the methods in Table A-3.

18. MRP, Section I.B.5 page 4 and Table A-3, page 8. There are potentially two different requirements for which monitoring wells require sampling for marker constituents when well rehabilitation compounds are used. Requirement I.B.5 of the MRP states that all performance monitoring wells and sentry wells shall be sampled for the constituents listed in and using the methods in Table A-3. Per the footnote to this table, sulfate, chloride, and orthophosphate are to be monitored as marker constituents for well rehabilitation compounds, implying that all performance and sentry wells will be sampled regardless of location of use of well rehabilitation compounds. Section III.B of the MRP on page 16 requires sampling for marker constituents when well rehabilitation compounds are used at monitoring wells, if they are located within 500 feet cross gradient or downgradient of the injection location. To avoid the potential conflict between these two requirements, PG&E suggests deleting sulfate, chloride, and orthophosphate from Table A-3.

19. MRP, Table A-4, page 8. Table A-4 of the MRP defines the chloride threshold concentration as 29 parts per million (ppm). Note 3 of Table A-4 indicates the threshold concentrations are based on either the regulatory concentration or a 25 percent increase over the maximum baseline concentration, whichever is greater. The regulatory concentration and maximum baseline concentration listed on Table A-4 for chloride are 150 ppm and 231 ppm, respectively. Please clarify that the correct chloride threshold concentration is 290 ppm, 25% increase over the maximum baseline concentration, rather than the 29 ppm listed.

20. MRP, Section I.B, Table A-5, page 9. PG&E suggests adding monitoring well CA-MW-601 to the list of Tier I Byproduct Monitoring wells, East Area Wells on this table.

21. MRP, Sections I.D.1, page 11. The West Area Action Plan states "Implement proposed action within 45 days of Water Board's staff's proposal acceptance. Some actions that may be implemented, such as increasing extraction rates, can be readily implemented within 45 days, while other actions, such as those that involve construction, could take more time to get through the pre-construction surveys and clearance procedures. We suggest that in the action plan a schedule be proposed and the plan be implemented according to the approved schedule, as follows:

"D. Action Plan for Byproduct Migration

1. West Area Action Plan

a) If west area Tier II monitoring wells indicate byproduct exceedances at or above the threshold levels listed in Table A-4, the Discharger shall conduct west area Tier III monitoring. West area Tier III monitoring wells are listed in Table A-7.

b) If west area Tier II monitoring wells indicate byproduct exceedances at or above the threshold levels listed in Table A-4, the Discharger must:

i. Propose actions to reduce byproduct migration to Tier II west area monitoring wells, such as increased operation of the NWFI system (if operating at less than full permitted capacity), increased extraction, or other effective measures. A proposal shall be submitted to the Water Board within 60 days of receiving laboratory results of Tier II monitoring well threshold exceedance(s) for Water Board staff's acceptance. <u>The proposal shall contain a schedule for implementation.</u>

ii. Implement proposed actions <u>and schedule upon</u> ~~within 45 days of~~ Water Board staff's proposal acceptance.

c) If any west area Tier III well contains byproduct concentrations at or exceeding thresholds listed in Table A-4, the Discharger shall:

i. Propose actions to reduce byproduct migration in groundwater west of the NWFI system. A proposal shall be submitted to the Water Board within 60 days of receiving laboratory results of Tier III monitoring well threshold exceedance(s) for Water Board staff's acceptance. <u>The proposal shall contain a schedule for implementation.</u>

ii. Implement proposed actions <u>and schedule upon</u> ~~within 45 days of~~ Water Board staff's proposal acceptance."

22. MRP, Sections I.D.2, pages 11 and 12. The East Action Plan requires an immediate proposal of actions to reduce byproduct concentrations north of Santa Fe Avenue, if byproducts exceed threshold concentrations in Tier II monitoring wells. However, the Tier II monitoring wells are located upgradient of Santa Fe Avenue. It is possible that the threshold concentrations could be exceeded without concentrations north of Santa Fe Avenue ever increasing, making the action plan unnecessary. For instance, if triggers are exceeded at Tier II monitoring wells south of Santa Fe Avenue, the groundwater could still flow directly into extraction wells, e.g. IW-01 and IW-02, without ever migrating north of Santa Fe Avenue. It is also possible that these triggers could be exceeded while the extraction wells south of Santa Fe Avenue maintain hydraulic control. For instance, if threshold concentrations are exceeded in monitoring wells between extraction wells south of Santa Fe Avenue, the groundwater may flow a short distance north of Santa Fe Avenue and then bend back toward the extraction wells where it is captured. To handle these potential situations, PG&E suggests that exceedances at the Tier II wells trigger an evaluation of capture and action only if capture is not achieved, while exceedances at the Tier III wells would directly trigger an action.

To implement this change as well as the timing change proposed in comment 21, the following edits are suggested:

"2. East Area Action Plan

a) If east area Tier II monitoring wells indicate byproduct exceedances at or above the threshold levels listed in Table A-4, the Discharger shall:

i. Conduct east area Tier III monitoring. East area Tier III monitoring wells are listed in Table A-7.

ii. Evaluate whether current remedial system operations are hydraulically containing byproducts within extraction wells along and upgradient of Santa Fe Avenue. If byproducts are not hydraulically contained by extraction wells along and upgradient of Santa Fe Avenue, p~~P~~ropose actions to reduce byproduct migration in groundwater north of Santa Fe Avenue. The proposal shall contain a schedule for implementation. Such actions may include but are not limited to:

1) Restarting extraction wells EX-21 and EX-22;

2) Increasing extraction rates in extraction wells IW-01, IW-02, and/or IW-03;

3) Installation of additional extraction wells, such as between EX-22 and IW-01.

iii. Data evaluation and a~~A~~n action plan proposal, if warranted, shall be submitted to the Water Board within 60 days of receiving laboratory results of Tier II monitoring well threshold exceedance(s) for Water Board staff's acceptance.

iv. Implement proposed actions and schedule upon ~~within 45 days~~ of Water Board staff's proposal acceptance.

b) If east area Tier III monitoring wells indicate byproduct exceedances at or above the threshold levels listed in Table A-4, the Discharger shall:

i. Propose actions to reduce byproduct migration in groundwater north of Santa Fe Avenue. The proposal shall contain a schedule for implementation.

ii. An action plan proposal shall be submitted to the Water Board within 60 days of receiving laboratory results of Tier III monitoring well threshold exceedance(s) for Water Board staff's acceptance. The proposal shall contain a schedule for implementation.

iii. Implement proposed actions and schedule upon ~~within 45 days of~~ Water Board staff's proposal acceptance."

23. MRP, Section I.E.3, page 12. PG&E suggests clarifying the existence of several currently approved water supply wells that would not require additional approval under this order with the insertion of the following language into this requirement:

"Currently approved water sources for freshwater injection include supply wells FW-01, FW-02, FW-03 and FW-04."

24. MRP, Section II, page 12. In its current form, the Draft NOA would improperly require PG&E to provide replacement water for wells containing chromium or remediation byproducts at levels lower than their respective state or federal drinking water standards (Maximum Contaminant Levels or "MCLs"). California law does not support requiring replacement water for wells containing constituents below MCLs. PG&E asks that the Draft NOA be modified to follow California law and only require replacement water for wells containing constituents above their respective MCL. Further detailed comments on this issue are provided in Attachment A.

25. MRP, Section II.A.1.a.i.1, page 13. Please clarify reference to Table 1. Should this be a reference to Table A-8?

26. MRP, Section II.A.1.b.i, page 14. It is noted that the criteria to define actually affected wells in the MRP (Section II.A.1.b) have been updated to reference pre-remedial reference levels versus the criteria used in

mitigation measure WTR-MM-2a of the NOA MMRP (Attachment C). Specifically, the MRP reads that:

Actually affected domestic wells will be defined as any domestic water supply well with hexavalent or total chromium concentrations that exceed any of the following criteria due to activities conducted under General WDRs R6V- 2008-0014:

1) *Maximum background levels (if **pre-remedial reference levels** were below maximum background levels), or*
2) *Concentrations increase by 10% or more (if **pre-remedial reference levels** exceed maximum background levels).*

While the criteria listed in mitigation measure WTR-MM-2a read:

1) *Maximum background levels (**if the well previously had concentrations below maximum background levels**); or*
2) *Concentrations increase by 10% or more (**if the well previously had concentrations that exceed maximum background levels**).*

In the *Response to Comments and Additional Information for the Manganese Mitigation Plan for Manganese Exceedance at CA-MW-506S* (ARCADIS, 2015), it was recommended that pre-remedial reference levels be established for WTR-MM-2A and WTR-MM-2B using a minimum of four data points representing each of the seasons of the year and basing the remedial reference concentration on that dataset. PG&E suggests adding the following clarification of how pre-remedial reference values will be calculated as a footnote in Section MRP II.A.1.b.i for WTR-MM-2A:

"Pre-remedial reference values will be calculated according to procedures proposed in *Response to Comments and Additional Information on Manganese Mitigation Plan*, dated January 26, 2015"

The same footnote is suggested to define pre-remedial reference levels for Section A.1.a.i on WTR-MM-2B.

27. MRP, Section II.A.2.a, page 14. The MRP text reads "If a monitoring well within one-half mile upgradient or one-quarter cross gradient of a water supply well exceeds mitigation trigger criteria for actually affected domestic supply wells for remediation byproducts, (described in section II.A.1.a 1-4, above), mitigation measures WTR-MM-2 and WTR-MM-2B are required for the water supply well…". It appears this section should have referred to Section II.A.1.a.i.1-4.

28. MRP, Section III.B, page 16. To clarify that monitoring is not required for well rehabilitation chemical use conducted prior to this NOA, PG&E suggests the following edit:

"1. Monitoring for well rehabilitation chemicals and compounds used under this NOA is required for the appropriate marker constituent for any chemical or compound used."

29. MRP, Section IV.A., page 17. The term "any reduction" in this requirement is vague and could be interpreted as requiring reporting of insignificant information (e.g., a change in flowrate at an individual well of less than one percent may be reportable). PG&E suggests additional specificity as follows to be consistent with the current NOA:

"Reports shall note all periods when the entire system is shutdown for more than 24 hours and state the cause. ~~Any reduction in operations lasting longer than 24 hours will be reported in the quareterly monitoring reports.~~"

30. MRP, Section IV.B, page 17. The southern extraction network for the new southern ATUs has been built and plumbed so that water can be used at the IRZs during cooler winter months when agricultural application rates are reduced. As a result, the IRZ operations are planned to change by greater than 20 percent on a monthly basis as a part of routine operations. The requirement to notify when operations change, even when within plan, will generate numerous unneeded notifications. PG&E recommends that an operational plan for the IRZ systems be submitted annually and notifications be made when the IRZ systems are deviating from that plan and to use a more stringent metric of 10 percent on a monthly basis, rather than 20 percent. In addition, the Draft MRP requirement "Significant change also means changes lasting longer than 6 consecutive days or more than 6 days in a calendar month," is vague. It is not clear what operational requirement would have to change for a period of 6 days to trigger notification and this requirement is not necessary if implementing the requirements to notify changes to operations in comparison to plan as proposed for the CAO. Finally, PG&E suggests defining "design changes" to clarify that infrastructure, rather than operational requirements, trigger those types of notification requirements.

PG&E proposes to implement these changes as follows:

> "PG&E shall submit an annual operational plan for the IRZ systems. Changes in IRZ operations of more than 10 percent on a monthly basis as compared to the annual operational plan shall require notification to Water Board staff prior to implementation. ~~The Discharger shall notify the Water Board of any planned significant change in normal remedial operations, such as routine maintenance or design changes, within 14 calendar days before the change.~~ Significant change means when more than ~~20~~ 10 percent of the extraction and injection locations are shut down, or when the total system flow rate is decreased by greater than ~~20~~ 10 percent on a monthly basis as compared to the annual operation plan. ~~Significant change also means changes lasting longer than 6 consecutive days or more than 6 days in a calendar month.~~ The notification shall include the reason for the planned changes and when the system should be returned to normal operating conditions. The Discharger shall also notify the Water Board of any planned design changes, i.e. construction of extraction or injection locations, within 14 calendar days before the change."

It should be noted that the above-recommended edits are consistent with the notification requirements proposed in the Transmittal of Consensus Change, Cleanup and Abatement Order (CAO) R6V-2015-PROP on July 8, 2015 by the Prosecution Team and PG&E. If the recommended changes are made in both orders, it would create a single unified set of notification requirements for remedial operations.

31. MRP, Section V.B, page 18. The Draft NOA specifies that the discharger must submit an annual report documenting compliance with all applicable EIR mitigation measures described in NOA Attachment C and shown in Table A-9. It is recognized that not all mitigation measures contained in Attachment C will apply to discharges or activities conducted under the general WDRs. The EIR mitigation Measures Compliance Report may be combined with reporting required by Board Order No. R6V-2014-0023, ATU WDRs.

In accordance with the requirements in the ATUs WDRs, Board Order No. R6V-2014-0023, PG&E submitted a Report of Waste Discharge (ROWD) including a Monitoring and Reporting Plan for the proposed ATUs. The ROWD was approved by the Board in the ATU NOA August 1, 2014. PG&E asserts that the approach to meeting the requirements for monitoring, reporting, and standards for completion (i.e., evidence of compliance) as described in the ATU ROWD Monitoring and Reporting plan (ARCADIS 2014 a, b, c) can also be applied to the IRZ and NFWI activities covered under this NOA, and that such an approach will satisfy the requirement to document compliance with all applicable EIR mitigation measures described in NOA Attachment C and shown in Table A-9. For example, to comply with the requirements of mitigation measures Air-MM-6 and Air-MM-7, PG&E consulted with San Bernardino County (County), describing performance standards and specifications PG&E would employ

in connection with work undertaken at the site pursuant to the ATUs. County approval of proposed Green House Gas (GHG) measures was received in letter dated July 17, 2014 and a copy of the approval letter was submitted with the ATU Annual Report (ARCADIS 2015b). The same GHG performance standards as currently applied for the ATUs can be applied for the IRZ and NWFI activities covered under this NOA, and additional consultation with the County is not required in order to comply with mitigation measures Air-MM-6 and Air-MM-7.

32. MRP, Section V.B.2.a.v, page 19. PG&E suggests deleting "~~tracers and well rehabilitation compounds~~" from footnote 6 on this bullet, as they are covered under bullet vi.

33. MRP, section V.B.2.v, pages 19 and 20. PG&E suggests deleting "extraction flowrates" and the seasonal details from this requirement, because the language appears to be a carryover from the ATU requirements and extraction flowrates are not as applicable to the IRZs. Also, PG&E assumes that a description of IRZ operations will be included in the reports, although not explicitly listed as a reporting requirement. PG&E also recommends specifying a threshold for bounding what magnitude of changes bear discussion in alignment with the notification requirements. To implement these changes, the following edits are suggested:

> "Cite decreases ~~changes or variations~~ in volumes of greater than 10 percent on a monthly basis in comparison to the operational plan ~~or extraction flowrates from the same season in the previous year, as well as the previous monitoring event,~~."

34. MRP, section V.B.2.vii, page 20. As written, the text requires that graphs for all constituents and all monitoring wells will be prepared, although this is not currently being done and the purpose of preparing such graphs is not clear. PG&E suggests the following modifications to this language to clarify:

> "The results of sample analysis shall be described and reported in tabular form. Data will be presented in ~~and~~ graphic form as needed for illustration of results. When needed, e~~E~~ach graph prepared for ground water data shall be plotted with raw data at a scale appropriate to show trends or variations in water quality. For graphs showing the trends of similar constituents, the scale shall be the same."

35. MRP, section V.B.2.viii, page 20. PG&E suggests the language "~~impacted or potentially threatened~~" be changed to "actually affected or potentially affected" to be consistent with the language of the mitigation measures.

36. MRP, section V.B.2.xi, page 20. PG&E suggests removing the requirement to report "~~percentage of permitted injection volumes for each well.~~" because there are no specifications in the Draft NOA that limit injection volumes for each well.

37. MRP, Section V.B.2.b.ii, page 21. Please clarify which maps require the chromium plume contours to be posted (i.e. shall the chromium contours be posted on potentiometric surface and byproduct maps? PG&E recommends the chromium contours not be included on these figures, because they will become busy and difficult to read). Also, PG&E suggests that the freshwater supply wells be shown on figures that depict the NWFI system, but are not necessary on zoom-in maps, for example the maps showing the extent of manganese in the IRZ area. Zooming out to show the freshwater supply maps on the more detailed IRZ maps would make it difficult to post readable data within the IRZ areas.

38. MRP, Section V.B.2.b.iv.2, page 21. The Draft MRP requires quarterly mapping of total organic carbon (TOC), manganese, iron, and arsenic. PG&E suggests that the requirement to include contours of total organic carbon (TOC) be removed, because the Draft MRP does not define a threshold concentration for TOC. Further, because

injections of carbon (currently ethanol) are completed in doses up to several times per week, concentrations of TOC detected at a monitoring well are temporally variable and not representative of an "average" quarterly concentration at a location. Therefore, contouring may be misleading. PG&E requests clarification regarding the purpose of contouring TOC.

Other IRZ byproducts, including arsenic, manganese, and iron will be addressed in greater detail in the annual mitigation monitoring and reporting program report. The occurrence and distribution of arsenic, manganese, and iron will be discussed in relation to WTR-MM-2b, and plume maps will be created and presented as part of the input for required annual groundwater modeling. Accordingly, PG&E suggests that quarterly reports continue to provide contour maps for manganese, while the data for iron and arsenic be presented in the annual mitigation monitoring and reporting program report and contoured, if appropriate, based on the data. Manganese is suggested for quarterly reporting, because it is the constituent which has been found to extend the greatest distances from IRZ injection locations in comparison to iron and arsenic. Also, well rehabilitation compound marker constituents have not been detected at significant concentrations to date in monitoring wells downgradient of locations where these compound have been used. Therefore, PG&E suggests that the requirement to contour be modified to only if well rehabilitation compound marker data suggests arrival at downgradient monitoring wells.

To implement these changes, the following language edits are suggested:

> "iv.2) Hexavalent chromium and manganese g~~G~~roundwater sampling results from monitoring and other wells. Manganese ~~IRZ byproduct plume~~ contours shall be drawn around all monitoring wells in Table A-2 that meet or exceed the threshold concentration for manganese ~~each constituent~~ shown in Table A-4. ~~IRZ byproducts include manganese, iron, arsenic, and total organic carbon.~~ Include maps showing the extent of well rehabilitation compounds, if arrival is detected at sentry downgradient monitoring wells, and tracers in groundwater, if applicable."

Please call me at (415) 314-8530 if you have any questions regarding the information presented in this letter.

Sincerely,

Iain Baker

Attachments

A Draft NOA Replacement Water Provisions Comments

Figure 1 IRZ Monitoring Well Performance Evaluation, Maintenance and Replacement Decision Tree

References

ARCADIS. 2013. Response to Investigative Order No. R6V-2012-0060: Byproduct Plume Monitoring in IRZ Areas. Pacific Gas and Electric Company's Hinkley Compressor Station,

Hinkley, California. February 15.

ARCADIS. 2014a. Revised Report Of Waste Discharge for Proposed Agricultural Treatment Units, Pacific Gas and Electric Company, Hinkley Compressor Station, Hinkley, California. May 28.

ARCADIS. 2014b. Report of Waste Discharge for Proposed Agricultural Treatment Units Revised [final] Addendum 1: Biological and Cultural Mitigation Submittals. Hinkley Compressor Station. Hinkley, California. June 10.

ARCADIS. 2014c. Report of Waste Discharge for Proposed Agricultural Treatment Units Addendum 2: Preconstruction Mitigation Submittals. Hinkley Compressor Station. Hinkley, California. May 15.

ARCADIS. 2015a. Response to Comments and Additional Information for the Manganese Mitigation Plan for Manganese Exceedance at CA-MW-506S. Pacific Gas and Electric Company, Hinkley Compressor Station, Hinkley, California. January 26.

ARCADIS. 2015b. Annual Mitigation Monitoring and Reporting Program Compliance Report for Agricultural Treatment Units. Hinkley Compressor Station, San Bernardino County, California. February 19.

CH2M Hill and ARCADIS. 2015. Second Quarter 2015 Monitoring Report for the In Situ Reactive Zone and the Northwest Freshwater Injection Projects, Pacific Gas and Electric Company, Hinkley Compressor Station, Hinkley, California. July 15.

Replacement Water Provisions

In its current form, the Draft NOA would improperly require PG&E to provide replacement water for wells containing chromium or remediation byproducts at levels lower than their respective state or federal drinking water standards (Maximum Contaminant Levels or "MCLs"). MCLs establish levels that state and federal agencies with expertise for public health determinations have determined are safe. Requiring replacement water for levels below MCLs is not supported by California law. In State Water Resources Control Board (SWRCB) Order WQ 2005-0007, *In the Matter of the Petitions of Olin Corp. and Std. Fusee, Inc. for Review of Clean up and Abatement Order No. R3-2004-0101* (May 19, 2005) ("*In re Olin*" attached as Exhibit X) the SWRCB ordered regional boards to defer to the agencies that are responsible for setting MCL's and public health goals. The Lahontan Regional Board's recent Draft CAO correctly states this principal: "In State Water Board Water Quality Order 2005-007 (Olin Order), the SWRCB clarified that an "affected well," for which regional water boards have discretion to require replacement water pursuant to Water Code 13304(a), was one that did not meet the federal, state and local drinking water standards." PG&E asks that the Draft NOA be modified to follow California law and only require replacement water for wells containing constituents above their respective MCL.

The Draft NOA Replacement Water Triggers

The Draft NOA replacement water triggers are found in Attachment B (the Monitoring And Reporting Program Section II.A.). The Draft NOA requires that PG&E provide replacement water if a well contains chromium above maximum background levels (3.1 ppb hexavalent chromium or 3.2 ppb total chromium) or if the chromium concentration increases 10% provided that the well was above the maximum background level before remediation started. The California MCL for hexavalent chromium is 10 ppb and for total chromium it is 50 ppb. As a result, the Draft NOA replacement water triggers of 3.1 or 3.2 ppb or a 10% increase in chromium concentrations would require replacement water for wells containing chromium levels below California MCLs for chromium.

The replacement water provisions for remediation byproducts (such as manganese, iron, and nitrate) require replacement water if a concentration increases 10% or 20% provided that the well was above a primary or secondary MCL prior to the start of remediation. In addition, the Draft NOA requires replacement water if a concentration increases 20%, even if the well did not exceed the MCL prior to remediation. The latter requirement could result in the provision of replacement water for wells that contain constituents below MCLs, i.e., at levels the agencies tasked with determining public health have determined are safe.

The Draft NOA also contains requirements that PG&E provide replacement water for wells located within specified distances (up to one mile) from a well that requires replacement water under the provisions outlined above, unless PG&E can expedite remediation of conditions in the area. These Draft NOA provisions likely also would require the provision of replacement water for wells where constituents are below MCL levels.

California Law Does Not Support Requiring Replacement Water For Wells that Contain Constituents Below Drinking Water Standards

Regional boards lack the authority to require replacement water for wells with water meeting all applicable federal, state, and local water quality standards. The Porter-Cologne Water Quality Control Act (the "Act") sets forth the legal authority of regional boards. (See Cal. Water Code § 13200 et. seq. [setting forth the organization and powers of the regional water boards].) The Act states that a regional board can order a person "who has discharged or discharges waste into the waters of this state in violation" of the law to take "necessary remedial action, including, but not limited to, overseeing cleanup and abatement efforts." (*Id.* § 13304(a).) A regional

board "may require the provision of, or payment for, uninterrupted replacement water service . . . to each affected public water supplier or private well owner." (*Id.*) The Act further states that replacement water "shall meet all applicable federal, state, and local drinking water standards." (*Id.* § 13304(f).) The State Board has interpreted Water Code section 13304(f) as limiting the power of a regional board to require replacement water in excess of applicable federal, state, and local drinking water standards, or where no such standards exist, in excess of the public health goals set by the California Office of Environmental Health Hazard Assessment (OEHHA). ("*In re Olin*").

In re Olin considered whether a regional board could, pursuant to its power under Water Code section 13304, require a discharger to provide replacement water service to owners of private domestic wells with levels of a contaminant below an existing California public health goal (PHG) but above maximum background levels. (*Id.* at pp. 1–2.) The regional board there issued a CAO requiring the discharger to provide replacement water to owners of wells that exceeded the maximum background contaminant levels of 4 micrograms per liter (µg/L) even though the background level was lower than the applicable public health goal (PHG) of 6 µg/L; at the time, no MCL had been established for the contaminant. The State Board noted that the Act gives the regional boards the power to require replacement water to owners of "affected" wells, but does not define "affected." (*Id.* at p. 3.) However, the State Board specifically stated that "affected" wells include those wells that don't meet drinking water standards. "Wells 'affected' by a discharge of waste include those wells in which water does not meet the federal, state and local drinking water standards." (Id at p. 6.) The State Board in *In re Olin* only moved to the PHG when there was no drinking water standard available. "There is currently no enforceable state or federal standard for perchlorate in drinking water for use in determining when a well is affected such that the user should be entitled to replacement water service." (Id. at p. 3.) "Where no federal, state, or local standard yet exists, it is appropriate to use goals developed by agencies with expertise for public health determinations in deciding whether replacement drinking water is necessary." (Id. at p. 6.) Thus, while Olin utilized the PHG to trigger replacement water, the State Board specifically said that an "affected" well under the Water Code replacement water provision included a well that did not meet a drinking water standard and that health goals should be used when no drinking water standard yet exists.

The reasoning behind the use of the PHG in Olin is the State Board's direction to the regional board to defer to state agencies with expertise for public health determinations when deciding when and where to require replacement water. The State Board included the Department of Health Services (DHS), the predecessor to CDPH in setting drinking water standards, in addition to OEHHA (the entity charged with establishing PHG's) throughout its Olin opinion when it directed the regional board to defer to state agencies. "The Water Boards should defer to OEHHA and DHS in determining the appropriate level of contamination requiring replacement drinking water service requirements." (*Id.* at p. 5.) "Where new water replacement orders are considered . . . regional water boards should defer to OEHHA and DHS in determining safe drinking water levels." (Id. at p. 7.) "Any other approach would require regional water boards to make individual, possibly inconsistent public health and toxicological determinations or, in the alternative, to require replacement drinking water whenever there is any detection of a contaminant." (*Id.* at p. 6.) Other approaches also "ignore the expertise of OEHHA and, in the case of contaminants for which MCLs have been developed, DHS." (*Id.*) Accordingly, the State Board ordered that the contested CAO be revised to require replacement water only for wells that exceeded the PHG and to add a provision that allowed the discharger to end replacement water service to owners of wells that tested at or below the applicable PHG for four consecutive quarters. (*Id.* at p. 8.)

Similar to the regional board in *In re Olin*, the Draft NOA defines affected wells in a manner that fails to defer to the expertise of the regulatory agencies charged with determining safe drinking water levels. Specifically, the Draft NOA repeatedly requires replacement water for wells containing constituents at levels below their respective MCLs. Yet, as was the case in *In re Olin*, in a circumstance where maximum background levels are lower

than applicable drinking water quality requirements, the "affected well" definition should use the applicable drinking water standard. (Cf. *In re Olin* at pp. 4–5 [maximum background levels were 4 µg/L and the PHG was 6 µg/L].) Accordingly, the Draft NOA should be revised to use MCL's as the trigger to provide replacement water. Further, similar to the revisions ordered in *In re Olin*, the Draft NOA should be revised to allow PG&E to stop replacement water service if a well has tested at or below the applicable MCL for four consecutive quarters.

As a related matter, the provisions in the Draft NOA defining affected wells as those wells in which chromium or remediation byproduct levels increase by ten or twenty percent should likewise be revised. The ten or twenty percent thresholds are arbitrary and not supported by facts or science. Unless regional board requirements are supported by factual and/or scientific findings, they are an abuse of discretion per Code of Civ. Proc., § 1094.5, subd. (b); Wat. Code, §§ 13320, subd. (a) & 13330. "Abuse of discretion is established if the respondent has not proceeded in the manner required by law, the order or decision is not supported by the findings, or the findings are not supported by the evidence." (Code of Civ. Proc., § 1094.5, subd. (b).) A regional board's actions must have strong support in the evidence and be further supported by findings which bridge the logical gap between the evidence and action. (Topanga Assn. for a Scenic Community v. County of Los Angeles (1974) 11 Cal.3d 506, 514.) The absence of factual or scientific support for the Draft NOA percentage increase requirements is particularly troubling to the extent that these provisions require replacement water for a well that meets all drinking water standards.

CEQA Does Not Grant The Regional Board Additional Legal Authority To Require Replacement Water

Because the Draft NOA exceeds the Regional Board's authority under the Act, it is also unlawful under the California Environmental Quality Act (CEQA). Public Resources Code section 21004 states that "[i]n mitigating or avoiding a significant effect of a project on the environment, a public agency may exercise only those express or implied powers provided by law other than" CEQA. (Pub. Resources Code § 21004; see *Kenneth Mebane Ranches v. Superior Court* (1992) 10 Cal.App.4th 276, 291 ["CEQA does not grant a local public entity additional powers, independent of those granted by other laws."].) "In order to fulfill CEQA's requirement that feasible mitigating actions be taken, a public agency is required to select from the various powers which have been conferred upon it by other law, those which it determines may be appropriately and legally exercised." (*Sierra Club v. Cal. Coastal Comm'n* (2005) 35 Cal.4th 839, 859 [alterations and ellipsis omitted].) As explained above, the Draft NOA exceeds the Regional Board's authority because it requires PG&E to provide replacement water to owners of wells that exceed certain arbitrary levels even if those levels are lower than the state drinking water standard. Thus, the Draft NOA is an unlawful mitigation measure under CEQA. (See *id*. [rejecting a claim that the Coastal Commission had the authority under CEQA to require mitigation measures for the impacts of the parts of a project that were outside the coastal zone, and therefore beyond the Commission's jurisdiction under the Coastal Act]; see also *Kenneth Mebane Ranches*, *supra*, 10 Cal.App.4th at pp. 291–92 [holding that a flood control agency had no express or implied power to acquire property outside its jurisdiction by eminent domain to mitigate the environmental impacts of a flood control project and could not lawfully have a mitigation measure that required such acquisition].)

EIR Replacement Water Provisions and PG&E's Petition To The SWRCB

The Draft NOA replacement water provisions closely track the replacement water mitigation measures outlined in the 2013 EIR. PG&E previously challenged (with comments to the Regional Board and a petition to the SWRCB filed Aug. 8, 2013) the EIR replacement water mitigation measures because they could be used to support a future order that could require replacement water for wells that contain chromium at levels below the MCL. PG&E asked the SWRCB to put PG&E's petition in abeyance until an order was issued that required PG&E to provide replacement water for wells containing chromium at levels below the MCL. The Draft NOA replacement water

provisions are exactly what PG&E anticipated when it filed its petition of the EIR mitigation measures, and left unchanged may force the activation of the 2013 petition.

Draft NOA Replacement Water Requirements Assume All Chromium and Remediation Byproducts In The Hinkley Area Are Related To Remediation Activities

The Draft NOA replacement water provisions require replacement water when wells contain specified levels of chromium or remediation byproducts. These requirements ignore the fact that chromium and all remediation byproducts identified in the Draft NOA are also naturally occurring in the Hinkley area. Cleanup requirements must be linked to PG&E's activities by the evidence and findings. SWRCB Resolution No. 92-49 authorizes regional boards to require investigation and cleanup and abatement for any location "affected by the discharge or threatened discharge." (Resolution No. 92-49, section II.A.3.) This presupposes that the investigation and cleanup and abatement requirements are linked to that discharger's activities. Because the Draft NOA imposes requirements that it does not link to PG&E's activities using findings and evidence, the requirements are not authorized by California law. An administrative agency's findings must be sufficient to allow parties to determine the basis for the agency's action. (Topanga Assn. for a Scenic Community v. County of Los Angeles (1974) 11 Cal.3d 506, 514.) The findings must form an analytic bridge between the evidence and the agency's conclusion. (Id. at p. 515.). Although the Draft NOA allows PG&E to present evidence if PG&E believes that a constituent increase is not related to remediation activities, the Draft NOA does not contain the required evidence or findings to support the underlying assumption that constituents at certain levels or increases of a certain percentage are related to PG&E's activities.

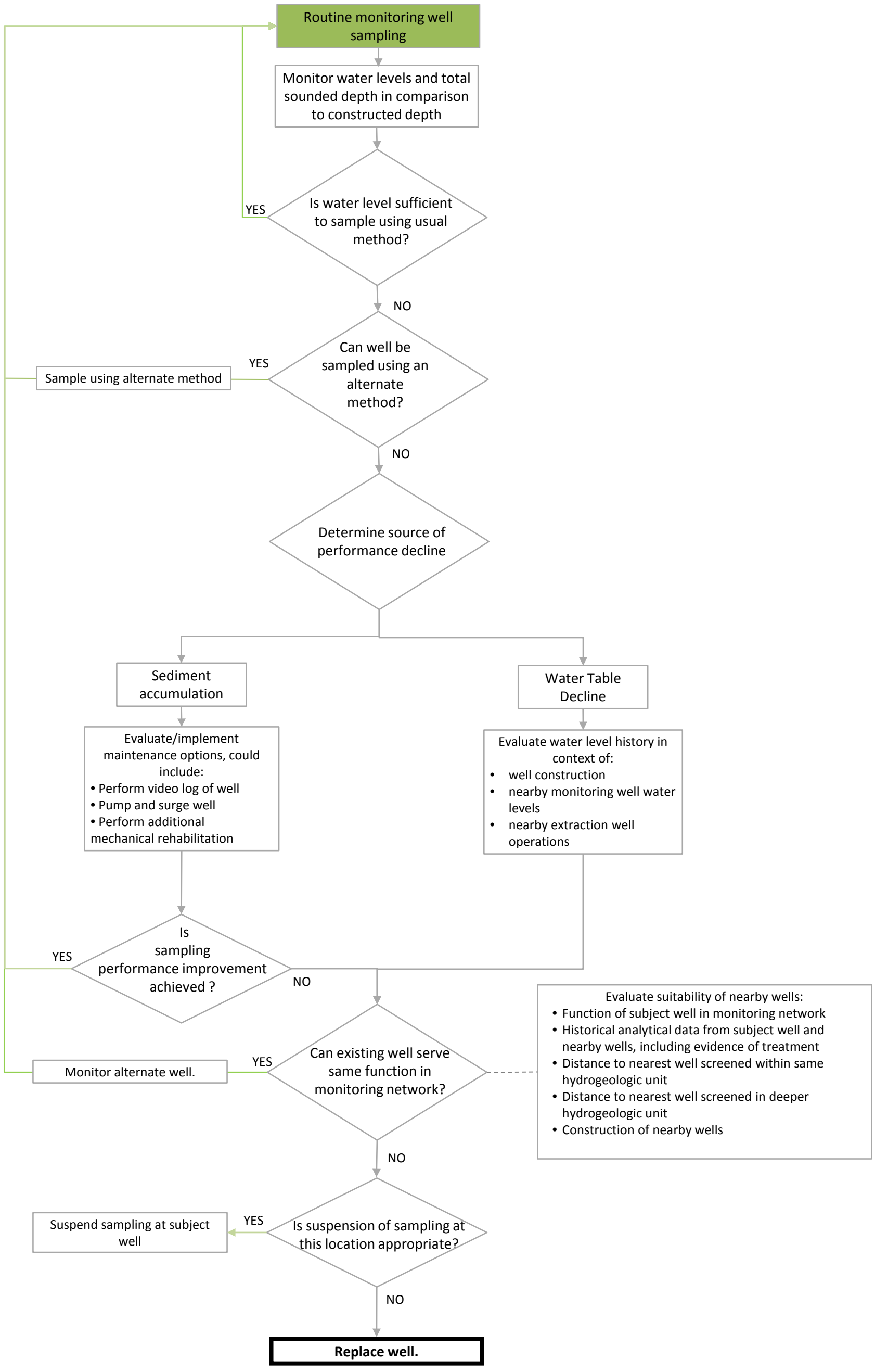

Figure 1 IRZ Monitoring Well Performance Evaluation, Maintenance and Replacement Decision Tree

PACIFIC GAS AND ELECTRIC COMPANY
HINKLEY, CALIFORNIA

ARCADIS

Notes:
The evaluations and maintenance options listed are examples and are not all-inclusive.