

Lahontan Regional Water Quality Control Board

MEMORANDUM

TO: Patty Kouyoumdjian
Executive Officer

FROM: 
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DATE: October 21, 2013

COMMENTS ON REQUESTS TO MODIFY THE WHOLE HOUSE REPLACEMENT WATER PROGRAM IN HINKLEY, SAN BERNARDINO COUNTY (CLEANUP AND ABATEMENT ORDER NO. R6V-2011-0005A2)

The Prosecution Team for the California Regional Water Quality Control Board, Lahontan Region (Water Board), provides comments in response to your September 11, 2013, request concerning PG&E's Whole House Replacement Water Program (WHRW Program) in Hinkley.

BACKGROUND

On June 7, 2012, the Water Board issued amended Cleanup and Abatement Order No. R6V-2011-0005A2 (Order) to PG&E requiring implementation of an expanded WHRW program in Hinkley. Under the Order, PG&E must provide whole house replacement water to residents in the affected area whose domestic wells contained detectable levels of hexavalent chromium [Cr(VI)] or total chromium [Cr(T)], during the most recent four consecutive quarters. The affected area was defined as being within the most recent contiguous chromium plume or within a one-mile buffer from the contiguous plume in the cross gradient and downgradient groundwater flow direction. At the time, the chromium plume extended as one continuous plume from the PG&E Compressor Station to about 6 miles northward and about two miles wide.

RESPONSE TO RESIDENTS' REQUESTS

The Water Board has been requested by Hinkley residents to expand the WHRW Program to all domestic wells within one mile of any monitoring well with a chromium detection exceeding a background level for either Cr(VI) or Cr(T), regardless of whether the monitoring wells are within the contiguous plume.

The Prosecution Team has no objections to the request made by Hinkley residents. The intent of amended Orders R6V-2011-0005A1 and R6V-2011-0005A2 was to offer conservative protection to owners of domestic wells that were or could be threatened by PG&E's chromium discharge above the background chromium normal for those individual wells. This level of protection should apply to any area within the Hinkley Valley where PG&E's chromium discharge exists or potentially exists. Implementation of remedial actions causing separation or detachment of the chromium plume does not make PG&E any less accountable for its chromium discharge, whether drawn as a contiguous plume or not part of a contiguous plume.

For example, PG&E's chromium plume was acted on in the past by agricultural wells located east of the Compressor Station. PG&E responded by contracting with the land owners to cease pumping and providing them with irrigation water from an alternate source near the Mojave River. As this alternate irrigation water percolated through the field crops to the water table, it likely diluted the underlying chromium plume and pushed out some of the plume boundaries eastward. This action could have resulted in detached plume areas that are now being detected above the maximum background chromium levels in the east and shown on maps as small circles. For these reasons, owners of domestic wells potentially having PG&E's chromium discharge in their wells should not be excluded from the WHRW Program.

RESPONSE TO PG&E'S REQUEST

In its September 3, 2013 letter to you, PG&E has requested that the Water Board modify the Order to require the WHRW Program be offered only to owners of domestic wells having greater than 3.1 ppb Cr(VI) and when the well is located within the boundaries of the contiguous chromium plume, beginning third quarter 2013. The Prosecution Team recommends you not grant this request.

We view this issue as consisting of four parts: the buffer zone, the 3.1 ppb Cr(VI) detection, the contiguous plume boundary, and the draft versus final drinking water standard for hexavalent chromium. Each issue is discussed below.

Buffer Zone

The one-mile buffer zone was included in the Order to offer conservative protection to residents in the cross gradient and down gradient groundwater flow directions from the Compressor Station whose domestic wells could contain some of PG&E's discharged chromium in well water. The chromium plume created in groundwater from PG&E's past releases is unlike other plumes in groundwater in the State of California and elsewhere, making this a unique case that justifies a buffer zone. First, the chromium was discharged to ground and groundwater decades before it was discovered and has been found in groundwater at concentrations exceeding 5,000 ppb, which is the hazardous waste limit. Cr(VI) detections in 2013 are as high as 4,500 ppb. Second, the plume has migrated beyond PG&E's Compressor Station property and is now more than 6 miles long and 2 miles wide on both PG&E and private land, limiting PG&E's control of the plume. This size makes it one of the largest in the nation and similar to some of the largest Superfund sites. Further, plume definition is not complete and increases in chromium concentrations along the current plume perimeter continue to occur. Third, the large number of domestic wells in the cross gradient and down gradient flow directions represent a significant threat to receptors not typically seen in other areas

where individuals rely on community or municipal water supply. And fourth, both the historical and current agricultural pumping wells in the area have shown the ability to pull the chromium plume in areas that were unforeseen and unexpected.

The buffer zone requirement in the Order offered reasonable protection to domestic well owners because the chromium plume was not fully defined on all boundaries at the time. In 2012, PG&E was conducting investigative actions to define the chromium plume on all boundaries. The buffer was also justified because portions of the plume boundary were still migrating due to lack of remedial actions in all plume areas. For instance, quarterly monitoring reports and plume maps before the Order was issued showed the chromium plume increasing in concentration and with distance east of Summerset Road and north of Thompson Road where no remedial actions occurred to contain migration. The buffer was needed to account for pumping wells that could pull on the chromium plume at any time and change its configuration. Lastly, the one-mile buffer zone provided a reasonable protection to residential wells that are sampled just four times over 365 days. The buffer zone provides a margin of safety for well owners since increases in chromium concentrations may occur without detection for three months.

All of the reasons stated above are still valid today. PG&E continues to install monitoring wells to complete chromium plume definition on all boundaries. Furthermore, the plume appears to still be migrating or is not defined in areas to the east, north and west of the current 3.1 ppb Cr(VI)/3.2 ppb Cr(T) boundaries. Remedial actions to contain plume migration are still limited. No containment actions are being undertaken north of Thompson Road where the plume appears to have migrated into unknown areas within the Harper Dry Lake Valley. Additionally, no containment actions are being implemented in some areas of the east and west plume boundaries. And PG&E is not proposing to increase the sampling frequency of domestic wells to offer greater protection to well owners. For all these reasons, the justification for continuing the one-mile buffer around the chromium plume is valid and should not be reduced.

Above 3.1 ppb Cr(VI) Detection

The Order requires PG&E to offer its voluntary program to wells owners having either Cr(VI) or Cr(T) greater than the background levels. Order No. 2 states in part:

“...Except for Paragraphs 2(c)(8), 2(f) and 2(g), the requirements in paragraph 2 of Order No. R6V-2011-0005A1, are suspended as long as PG&E implements a voluntary Program as described...including:

- a) Replacement water service to eligible property owners that have wells that contain levels of hexavalent chromium greater than 3.1 ppb or total chromium greater than 3.2 ppb and are willing to receive replacement water...”

The intent for including total chromium in the Order was to account for increases in concentration attributed to PG&E remedial actions, allowing property owner's replacement water when water quality was affected above the Water Board established maximum background concentrations for total chromium. PG&E's operation of multiple agricultural units over a three mile extent currently and historically have the potential to add total chromium detections in groundwater above naturally occurring levels. Increased Cr(T) concentrations could result from the conversion of Cr(VI) to trivalent chromium (Cr(III)), which at times can be detected in the soluble form. The same goes for PG&E's in-situ operations since 2004 which have also converted Cr(VI) to Cr(III) at the water table. Increases in total chromium detections may be attributed to increases in Cr(III) concentrations as a result of PG&E's remedial actions. Therefore, the Prosecution Team opposes the elimination of the total chromium requirement from the Order.

Contiguous Plume Segment

Since the Order was issued, the chromium plume originating from the Compressor Station has separated into detached southern and northern plumes. The southern plume is connected to the Compressor Station where the original discharges of chromium occurred and remain in the soils. The southern plume is being contained from northward migration at Thompson Road due to PG&E remedial actions. The detached northern plume is currently separated from the southern plume by a distance of approximately 4,000 feet. The separation between the two plumes becomes greater with time as the northern plume migrates with natural groundwater flow to the north at an estimated rate of 2.53 feet per day.

Due to the changes in the chromium plume configuration since June 2012, PG&E's request that the WHRW Program be offered only from the contiguous plume implies it would only apply to the southern chromium plume and not the detached northern chromium plume. However, logic would suggest that the owners of domestic wells needing the greatest protection are cross gradient and down gradient of the detached northern plume that is still migrating. For all these reasons, the justification for continuing the definition of the affected area including both the southern and northern detached chromium plumes is valid and should not be reduced.

Draft Versus Final Drinking Water Standard

In its request to modify the Order, PG&E cites the basis being the recent issuance of a draft maximum contaminant level (MCL) for Cr(VI) of 10 ppb by the California Department of Public Health (CDPH). Using the draft MCL, PG&E believe it offers sufficient protection to Hinkley domestic well owners with water quality below the proposed standard.

The Prosecution Team is against modifying any Water Board order based upon a proposed drinking water standard. We believe that decisions affecting active domestic wells should be based on a final standard when it is released due to the potential for the proposed standard to be changed. The Order also appears to acknowledge this variable where it states in Order No. 3:

"A new section, Paragraph 3.f., is added to the Order as follows:

3.f. When a final MCL (or drinking water standard) for hexavalent chromium is adopted by CDPH [California Department of Public Health], the requirements of Order No. R6V-2011-0005A1 and this Order (CAO No. R6V-2011-0005A2) pertaining to providing either interim or whole house replacement water for impacted wells only applies to locations of wells containing hexavalent chromium at levels above the MCL level established by CDPH."

PG&E's claim that the draft standard provides sufficient protection to domestic well owners fails to consider the adopted Public Health Goal of 0.02 ppb Cr(VI) and the deliberative process the CDPH must use to establish a drinking water standard considering identified health impacts associated with Cr(VI) and other state requirements. Also, current detections in some domestic wells are close to the draft standard. For instance, domestic wells 28-21 and 34-25 have contained Cr(VI) and Cr(T) detections in recent years in the 8 ppb and 6 ppb range, respectively. If additional domestic wells should show similar detections and if the final drinking water standard is set at less than 8 ppb, there will have been insufficient protection in place to domestic well owners in Hinkley, contrary to the intent of the Order. Therefore, since too many variables exist, the Prosecution Team does not recommend reducing requirements of the WHRW Program in the Order until a final MCL is set by CDPH.

Alternative Approach to Buffer Zone

The purpose of the one-mile buffer zone from the chromium plume boundary in the Order was to offer an alternative to the statistical analysis requirement in paragraph 3.a. of amended Order R6V-2011-0005A1. The statistical analysis was needed when chromium was detected in domestic wells at concentrations less than the maximum background levels, but was found to be increasing beyond what was expected within the range of natural variability. A statistical trend analysis would indicate that increasing chromium concentrations were more than likely occurring due to PG&E's past or current activities.

Should you consider modifying the Order to eliminate the one-mile buffer zone, the Prosecution Team recommends reinstating the 3.a. requirement in amended Order R6V-2011-0005A1 as a means of evaluating potential impacts of PG&E's waste chromium in domestic wells above background chromium and providing the replacement water program to those likely affected by PG&E's discharges. On April 12, 2012, the Prosecution Team submitted a letter to Harold Singer, Executive Officer, offering feasible statistical tests that could be used to complete such evaluations. These statistical tests are still a viable option for PG&E to use and we request that you consider imposing this requirement should you decide to modify the Order.

Request to Remind PG&E to Notify Property Owners in Five Days

In discussing the new program specifics for future potentially eligible residents, PG&E's letter states that "[t]he next opportunity to identify newly eligible residents is after the 2013 third quarter plume map is submitted at the end of October." (Page 5, 2nd full paragraph.) This contradicts CAO R6V-2011-0005A2, directive 2.c which states, "for any eligible property owners identified after the Fourth Quarter 2012 Groundwater Monitoring Report, PG&E will notify the Regional Board of the additional eligible property owner(s) and will contact the eligible property owner(s) within 5 days of verified sampling results and offer to supply interim bottled water and will provide the eligible property owner(s) with information regarding the Program. Once the eligible property owner has elected to participate in the Program, PG&E will install the replacement water system within six months."

The Order reads that PG&E is to notify eligible property owners within five days of verified sampling results, and not waiting until the plume map is submitted to the Water Board at the end of the quarter. In fact, in May 2013, PG&E had monitoring results for the four newly eligible properties, but did not send out the required notices to the property owners until August 2, 2013. It appears PG&E does not understand the five day notification requirement as stated in their letter. The Prosecution Team would appreciate an affirmation of its interpretation of the five day notification process, and does not support any changes to the requirement.

CONCLUSION

The Prosecution Team acknowledges work that PG&E has completed to date to define the extent of the chromium plume in groundwater and implement remedial actions to contain the plume from further migration. However, these tasks have not yet been completed. Therefore, continuation of the Whole House Replacement Water Program is needed to provide full protection to the owners of domestic wells in the Hinkley Valley being threatened by PG&E's chromium discharge. Until consistent plume migration control and plume definition occurs, any modification to the Order to reduce its necessary requirements is improper and not in the best interest of the water quality and its domestic supply beneficial uses in the Hinkley Valley.