

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION**

**MEETING OF OCTOBER 9-10, 2013  
BARSTOW**

**ITEM:** 6

**SUBJECT:** **PACIFIC GAS AND ELECTRIC COMPANY (PG&E), HINKLEY COMPRESSOR STATION, SAN BERNARDINO COUNTY – STATUS REPORT FOR CLEANUP OF HISTORICAL CHROMIUM DISCHARGES**

**CHRONOLOGY:** This chronology lists Water Board actions related to the cleanup of chromium in groundwater.

Aug. 6, 2008 Cleanup and Abatement Order (CAO) No. R6V-2008-0002 directed PG&E, among other things, to continue interim remedial actions and to develop and implement a comprehensive cleanup strategy for chromium in groundwater.

Jan. 7, 2011 CAO No. R6V-2011-0005 and amendments directed PG&E to provide interim water supply (i.e., bottled water) and permanent replacement water supply to Hinkley residents having chromium in domestic wells within the affected area.

Jan. 6, 2013 Amended CAO R6V-2008-0002A4 directed PG&E to implement additional investigations for defining the full extent of chromium in groundwater.

July 17, 2013 Adopted final EIR for comprehensive cleanup of chromium in groundwater.

**STATUS:** This is a routine standing item for southern board meetings.

Following adoption of the final EIR at the July 17, 2013 Water Board meeting, Board staff has met with PG&E, the Community Advisory Committee (CAC), and the community on several occasions to work out the details of tentative waste discharge requirements for chromium remediation in Hinkley. The WDRs would allow PG&E to expand current agricultural treatment units (ATUs) and develop new ATUs for treatment of chromium in extracted groundwater. This issue is discussed in more detail in a separate October agenda item.

Since the last status update to the Board in July, PG&E has provided 32 residences with treated water meeting drinking water standards and the CAO hexavalent chromium standard of less than 0.06 micrograms per liter ( $\mu\text{g/L}$ ). PG&E was in negotiations to install treatment systems at four additional residences and requested an extension of the CAO deadline of August 31, 2013. The Executive Officer granted a two week extension and encouraged PG&E to work out disagreements where possible.

PG&E distributed the chromium plume map for second quarter 2013 at the end of July. The updated map shows a new chromium detection in the west above background levels. Concerned that this new detection indicated chromium migration threatening additional domestic wells including the Hinkley School, the Assistant Executive Officer issued an investigative order on August 2 requiring PG&E to submit an action plan and schedule for reducing chromium concentrations in groundwater. In compliance with the order, PG&E submitted an action plan proposing corrective actions and additional investigations. In a meeting on September 13 to discuss the Action Plan, among other items, PG&E agreed to submit a revised Action Plan to address Board staff's concerns on certain tasks.

Since the last status update, Water Board has received two requests from Hinkley residents concerning the whole house replacement water order on PG&E. The Hinkley residents have asked that amended CAO R6V-2011-0005A2 be revised concerning the affected area in the whole house replacement water program. The amended CAO defines the affected area as being within the contiguous chromium plume boundary and a one mile buffer from the contiguous chromium plume boundary where chromium is detected at any concentration in a domestic well. The residents are asking that the affected area be expanded to include a one mile buffer from other areas of chromium detections above background levels where not connected to the contiguous plume boundary.

On September 3, 2013, the Water Board received a request by PG&E to reduce the affected area for the whole house replacement water program. Based on the recent release of a draft MCL for hexavalent chromium of 10 parts per billion, the request proposes eliminating the one mile buffer for adding residents to the program (based on future plume boundary expansions) and only add additional residents to the program where the chromium level in domestic wells is at 3.1 ppb Cr(VI)/3.2 ppb Cr(T) or above.. Since this request was received on September 3, 2013, in third quarter, any potential order revisions would not apply to households in second quarter eligible for the program under the original amended order (June 7, 2012). The Executive Officer is requesting public comments on the requests by October 21, 2013.

After 18 months of planning and design, PG&E in its recent update on the Supplemental Environmental Project states that field crews will begin mobilizing in September 2013 on the Hinkley School water upgrade project. The project will likely progress through the next summer, involving a new supply well, pipeline installation, and water system upgrades. The project is scheduled to be handed over to the Barstow Unified School District in 3<sup>rd</sup> quarter 2014.

On September 16, 2013, the United States Geological Survey (USGS) completed a draft study plan to evaluate natural and human-caused hexavalent chromium near the mapped Hinkley plume. Water Board staff, PG&E, the CAC and USGS met September 19 to discuss the plan. Water Board staff will review the plan and anticipates presenting the study plan to the January 2014 Water Board meeting for Board member consideration.

As part of this item, the Hinkley CAC will provide a brief update on its activities since the Water Board's July Meeting. The CAC held a number of educational workshops in August and has been participating in several technical discussions with Water Board and PG&E staff. The CAC also has new members replacing members that resigned since July.

PG&E staff will make a presentation on its activities since July. PG&E will also discuss its request for modifying the whole house replacement water program.

**RECOMMENDATION**

This is an information item only. The Water Board may provide direction to staff as appropriate.

ENCLOSURES	ITEM	BATES NUMBER
1	September 2013 Status of Actions Sheet	6-7
2	Community Advisory Committee Presentation prepared by Project Navigator	6-11
3	Request for Public Comment on Requests received from PG&E and members of the public to modify the Whole House Replacement Water Program	6-27

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# **ENCLOSURE 1**

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## Lahontan Regional Water Quality Control Board

### Status of Actions For PG&E Hinkley Chromium Contamination September 2013

#### Enforcement

- 1. Supplemental Environmental Project (SEP):** The ACL settlement adopted by the Board on March 14, 2012 allows PG&E to spend at least \$1.8 million to update the drinking water system at the Hinkley School by the end of 2017. PG&E has reported that field crews will begin mobilizing in September on the Hinkley School water upgrade project. The project will likely progress through the next summer, involving a new supply well, pipeline installation, and water system upgrades. The project is scheduled to be handed over to the Barstow Unified School District in 3<sup>rd</sup> quarter 2014.
- 2. Cleanup and Abatement Order for Whole House Water (WHW) Supply:** Revised Order (R6V-2011-0005A2) was issued on June 7, 2012 directing PG&E to provide whole house replacement water to residences in the affected area. The Water Board received two requests to modify this order. The first request by a few residents concerned expanding the affected area to include chromium detections within one mile of non-continuous plume lines. The second request, made by PG&E, asked to reduce the affected area by eliminating the one-mile buffer and setting the chromium level in domestic wells at 3.1 ppb Cr(VI)/3.2 ppb Cr(T) or above for new eligible households. The Water Board Executive Offer is requesting public comments on both requests by October 21.
- 3. Cleanup and Abatement Order for Plume Definition:** Amended Order (R6V-2008-0002A4) issued on January 8, 2013 requires PG&E to delineate the extent of the chromium plume in groundwater and determine threats to domestic wells. PG&E has petitioned the CAO to the State Water Board. Until the State Board makes a decision, PG&E is obligated to comply with tasks and deadlines in the CAO. New monitoring wells at 21 new locations have been installed and sampled. The results will be used to assess the extent of chromium in groundwater. The full plume delineation findings are due in a report by October 30, 2013.

#### Investigative and Reporting Orders

- 1. Chromium Plume Boundary**  
The second quarter 2013 chromium plume map is posted on the Water Board website at: [www.waterboards.ca.gov/lahontan](http://www.waterboards.ca.gov/lahontan), on the "PG&E Hinkley Chromium Cleanup" page, at the bottom of page. The third quarter 2013 plume map is due at the end of October.

**2. Chromium Detections in the West**

On August 2, the Water Board issued an investigative order requiring PG&E to submit an action plan and schedule to reduce chromium detections in groundwater in the area of the Heifer Ranch, between Serra and Hinkley Roads. PG&E submitted an action plan on September 9 and it was discussed in a meeting on September 13. After hearing Water Board staff comments, PG&E agreed to revise the action plan and re-submit it.

**3. Chromium Plume Containment**

Pursuant to the amended March 2012 CAO, PG&E submitted the monthly Plume Capture Report on August 15, 2013 evaluating chromium capture south of Thompson Road. The report states that overall data indicates the chromium plume capture was maintained during the reporting period. This means that the main chromium plume associated with groundwater from beneath the Compressor Station is being contained at Thompson Road. The report complies with CAO requirements.

**4. Manganese Plume Investigation & Cleanup - Investigative Order (R6V-2012-0060)**

PG&E submitted a status report in August stating that monitoring wells have been installed and sampled for byproduct chemicals, such as manganese. In addition, two tracer tests in groundwater were begun in July to track the path of groundwater flow from the IRZ areas. Initial results of the investigation will be reported by end of November 2013.

**5. Whole House Water System - Investigative Order (R6V-2013-0001)** – According to a PG&E, WHW systems are in operation at 32 residences. Water samples collected from the ion exchange and the reverse osmosis systems at the new locations were all of good quality--no exceedances for chromium or other metals. PG&E was in negotiations to install treatment systems at four additional residences and requested an extension of the CAO deadline of August 31, 2013. The Executive Officer granted a two week extension and encouraged PG&E to work out disagreements where possible

**Status of Environmental Impact Report and Actions for Comprehensive Cleanup**

**July 17, 2013:** The Water Board certified the Final EIR at its regular meeting in Barstow.

**August 29, 2013:** Discussion of options for expanding agricultural treatment at a technical meeting in Hinkley with PG&E, Water Board staff, CAC members, and the IRP manager.

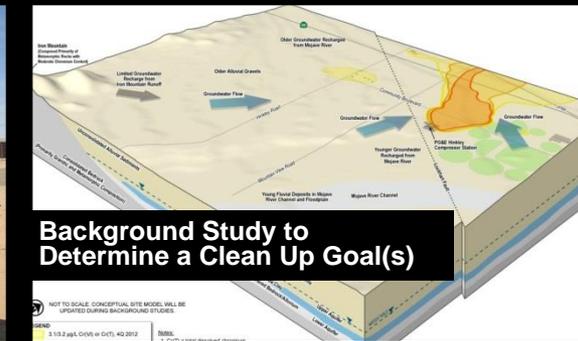
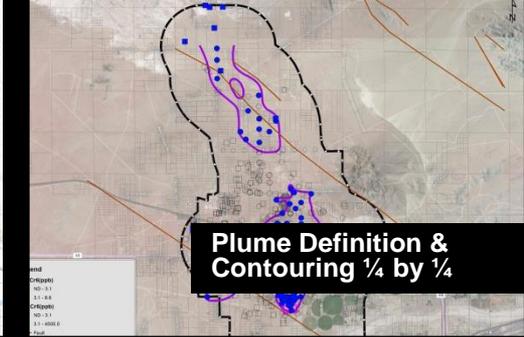
**October 9, 2013:** Water Board workshop to discuss agricultural treatment unit permitting options at regular meeting in Barstow.

**Status of Revised Chromium Background Study**

Water Board staff, members of the CAC and its IRP, PG&E and its consultants, and Dr. John Izbicki of the US Geological Survey (USGS) continue to meet monthly to develop a revised chromium background study plan. Dr. Izbicki submitted a draft proposal for the USGS's activities in the revised study at the September 19 meeting. Dr. Izbicki's proposal is being reviewed by members of the background study working group.

# **ENCLOSURE 2**

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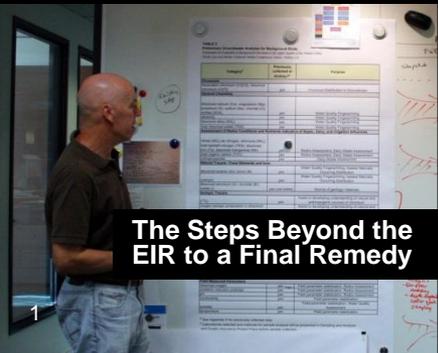


# The Hinkley Groundwater Remediation Project Still Has Many Issues Which Maintain the CAC and Community's Vocal Involvement.

Remarks by Dr. Ian A. Webster, IRP Manager (from Project Navigator, Ltd.)  
 At Lahontan Regional Water Quality Control Board Meeting, Barstow, CA, October 9, 2013  
 Contact: [iwebster@projectnavigator.com](mailto:iwebster@projectnavigator.com) or 714-388-1800

HINKLEY GROUNDWATER REMEDIATION PROJECT

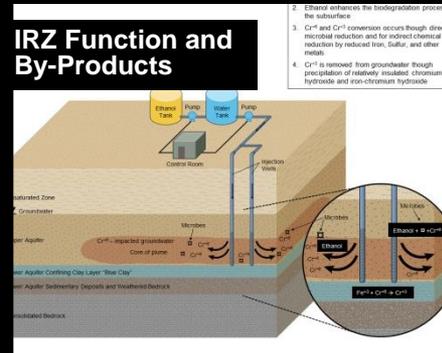
[WWW.HINKLEYGROUNDWATER.COM](http://WWW.HINKLEYGROUNDWATER.COM)  
[WWW.PROJECTNAVIGATOR.COM](http://WWW.PROJECTNAVIGATOR.COM)



The Steps Beyond the EIR to a Final Remedy



The Future of Hinkley



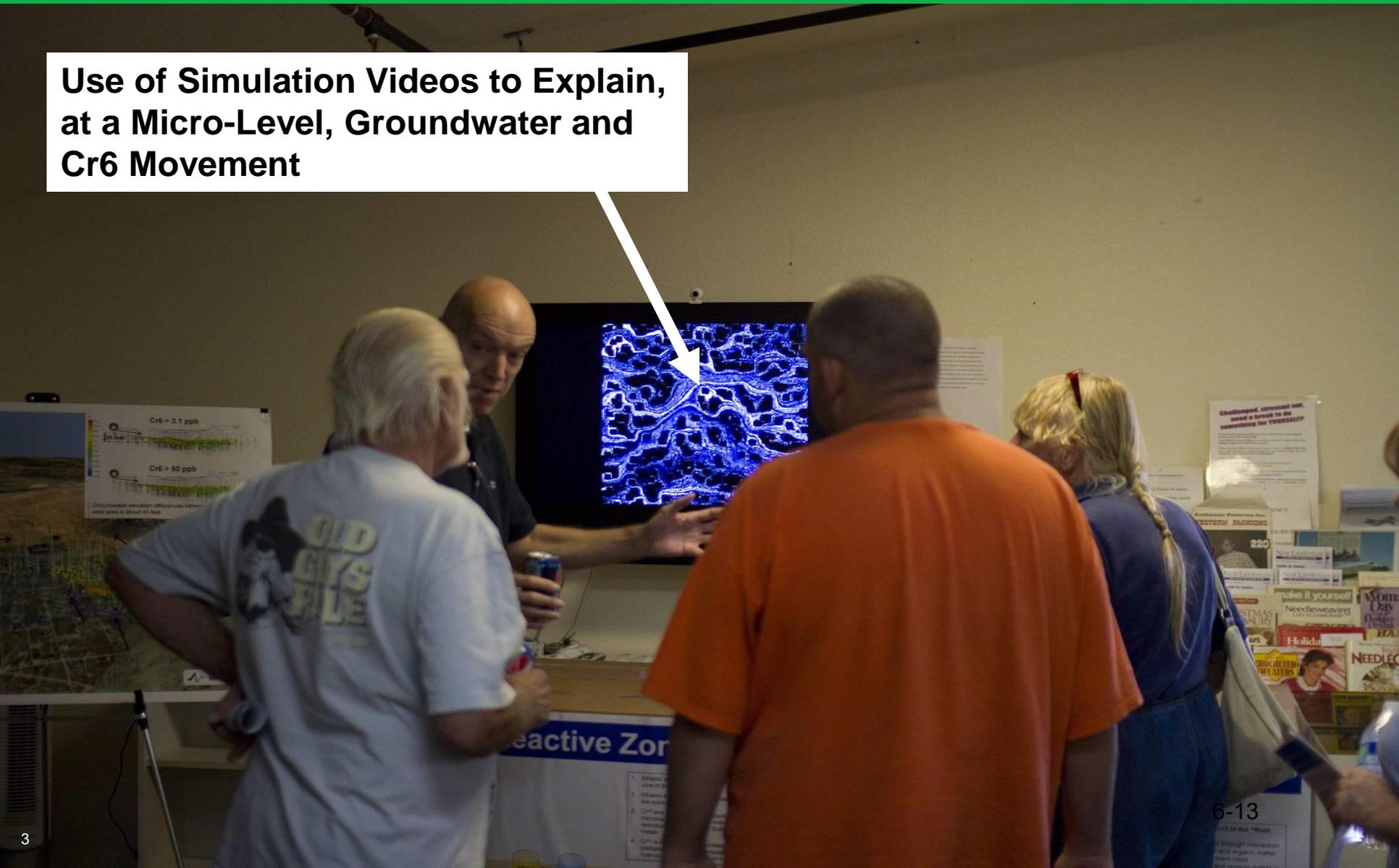
The New "Western Finger"

# 1. Monthly Community Meetings Are Still Very Well Attended, Indicative of Community Interest...



....and in a More Focused Fashion During August, the IRP Manager Held Weekly Workshops Using Videos to Illustrate Key Technical Issues.

Use of Simulation Videos to Explain, at a Micro-Level, Groundwater and Cr6 Movement



## 2. The CAC and Community Are Especially Happy with USGS's Involvement in the BGS...



# ...Extensive, Detailed Planning for the BGS is Well Underway with CAC Involvement...Here, What Data and Its Management.

**TABLE 3**  
**Preliminary Groundwater Analytes for Background Study**  
 Framework for Evaluation of Background Chromium in the Upper Aquifer of the Hinkley Valley  
 Pacific Gas and Electric Company Hinkley Compressor Station, Hinkley, CA

Category*	Previously collected at Hinkley <sup>2)</sup>	Purpose
<b>Chromium</b>		
hexavalent chromium (Cr(VI)), dissolved chromium (Cr(T))	yes	Chromium Distribution in Groundwater
<b>General Chemistry</b>		
dissolved calcium (Ca), magnesium (Mg), potassium (K), sodium (Na), chloride (Cl), sulfate (SO <sub>4</sub> )	yes	Water Quality Fingerprinting
alkalinity	yes	Water Quality Fingerprinting
dissolved silica (SiO <sub>2</sub> )	yes	Water Quality Fingerprinting
total dissolved solids (TDS)	yes	Water Quality Fingerprinting
<b>Assessment of Redox Conditions and Nutrients Indicative of Septic, Dairy, and Irrigation Influences</b>		
nitrate (NO <sub>3</sub> ) as nitrogen, ammonia (NH <sub>3</sub> ), total Kjeldahl nitrogen (TKN), dissolved iron (Fe), dissolved manganese (Mn)	yes	Redox Assessment, Dairy Waste Assessment
total organic carbon (TOC)	yes	Redox Assessment, Dairy Waste Assessment
orthophosphate	yes	Dairy Waste Assessment
<b>Natural Tracers - Trace Elements and Ions</b>		
dissolved arsenic (As), boron (B)	yes	Water Quality Fingerprinting, Assess Naturally Occurring Distribution
uranium	yes	Water Quality Fingerprinting, Assess Naturally Occurring Distribution
dissolved strontium (Sr), bromide (Br), iodide (I)	yes (not iodide)	Source of geologic materials
<b>Isotopic Tracers</b>		
$\delta^{13}C$	yes	Assist in developing understanding of natural and anthropogenic sources of chromium
oxygen isotope composition in dissolved chromate	no	Assist in developing understanding of natural and anthropogenic sources of chromium
$\delta^{18}O$ and $\delta^2H$	yes	Identify sources and mixed waters
$\delta^{34}S$ $^{34}S/^{32}S$	no	Source of geologic materials
<b>Dissolved Gases (natural tracers)</b>		
Argon	no	Identify sources and mixed waters
<b>Age Dating</b>		
tritium ( $^3H$ )/Helium	yes $^3H$ , not $^3He$	Age Dating, time since recharge, rate of groundwater movement
$^{14}C$	no	Age Dating, time since recharge, rate of groundwater movement
CFC-11, CFC-12, CFC-113	no	Age Dating, time since recharge, rate of groundwater movement
<b>Field Measured Parameters</b>		
dissolved oxygen	yes (stage)	Field parameter stabilization, Redox Assessment
oxidation reduction potential	yes	Field parameter stabilization, Redox Assessment
pH	yes	Field parameter stabilization, Redox Assessment
conductivity	yes	Field parameter stabilization
turbidity	yes	Field parameter stabilization, Water Quality Assessment
temperature	yes	Field parameter stabilization

<sup>2)</sup> See Appendix A for previously collected data.  
<sup>3)</sup> Laboratories selected and methods for sample analysis will be presented in Sampling and Analysis and Quality Assurance Project Plans before sample collection.

Existing SAP

RESponsibility: PGE, USGS, Snapshot, BGS, BGS

RESOURCE NEEDS

SCHEDULE

DELIVERABLES (Feasibility CSMs)

DATA: PRESERVATION, PRESERVATION

SAP as of 3/13

(Evaluating) CH database

DAMP update discussion is 'timely'

on screen

Early Am note -

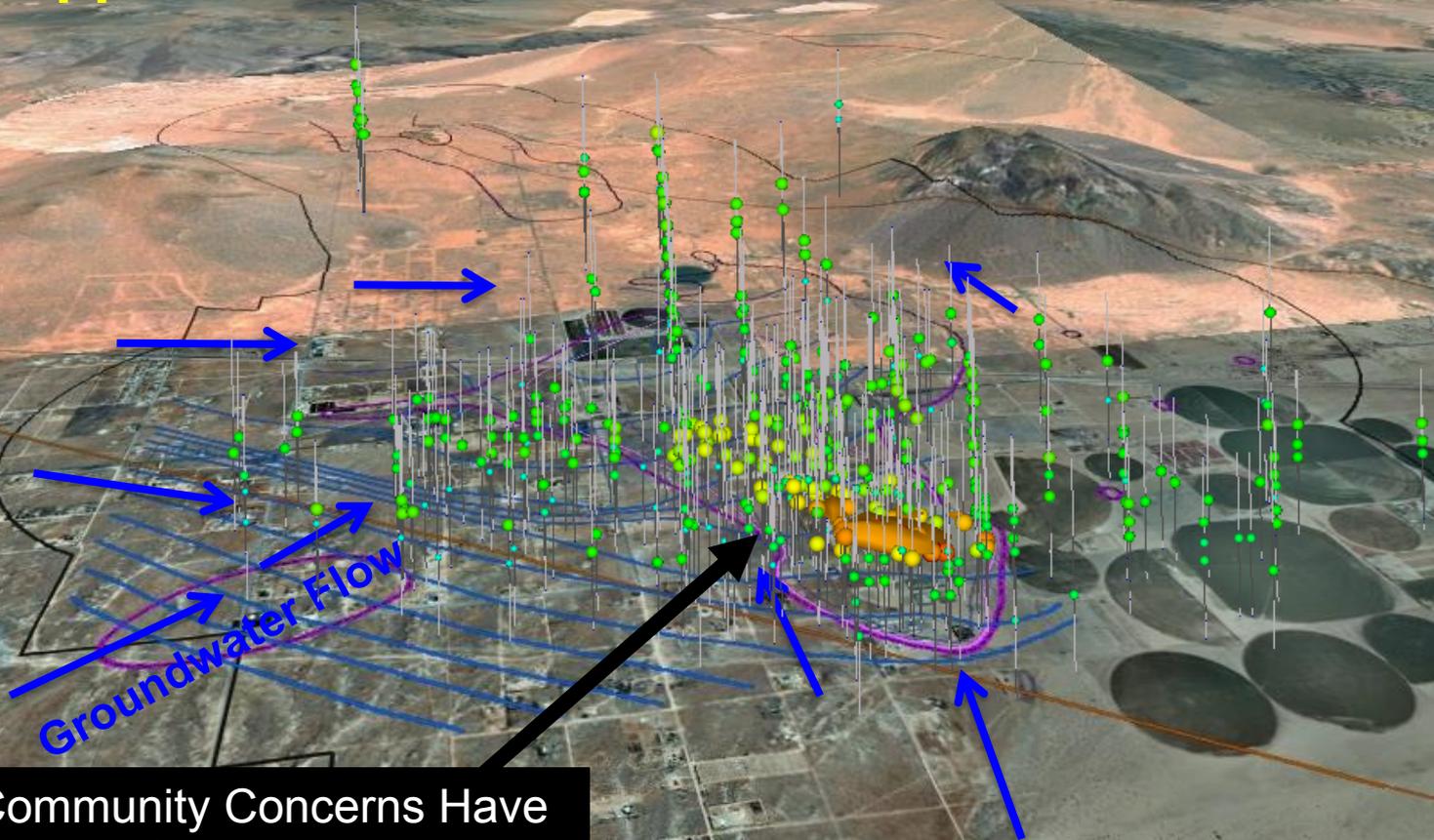
- DAMP
- Best Practices
- Cost talk - (cost schedule)

USES only?

- add on
- geophysical
- 5th phase analysis
- Geo flow modeling
- depth dependent water quality sampling

### 3. Community Concerns Linger About “IRZ Containment” and the Community Looks Forward to a 3<sup>rd</sup> Q PG&E Report.

Cr6 > 50 ppb



CAC & Community Concerns Have Lingered from 4<sup>th</sup> Q 2012 Regarding the Generation and Transport of By-Products Such as Mn and As.

4. The Community Remains Concerned About “Seeming Plume Shape Instability” as Exemplified by the Alleged “Western Finger” ...





**...However, Communication Mechanisms Now in Place Allow the CAC to Discuss Issues, Such as “the Finger,” with PG&E, Water Board, USGS, & IRP Manager.**

shown: Plume and Barrier Discussions at a TEM, Barstow, 8/30/13

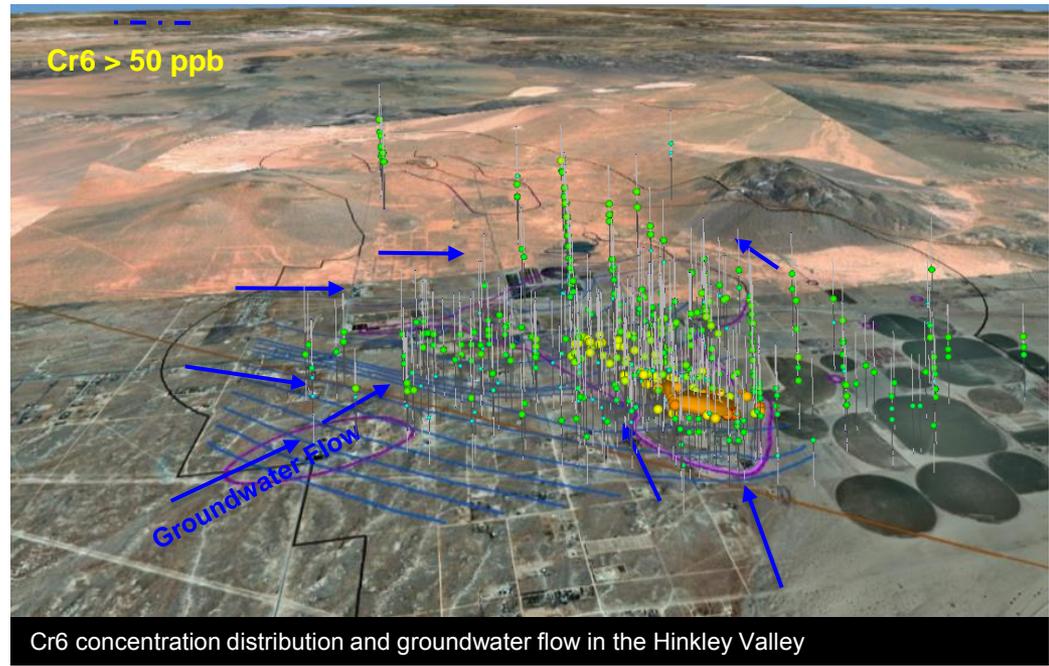
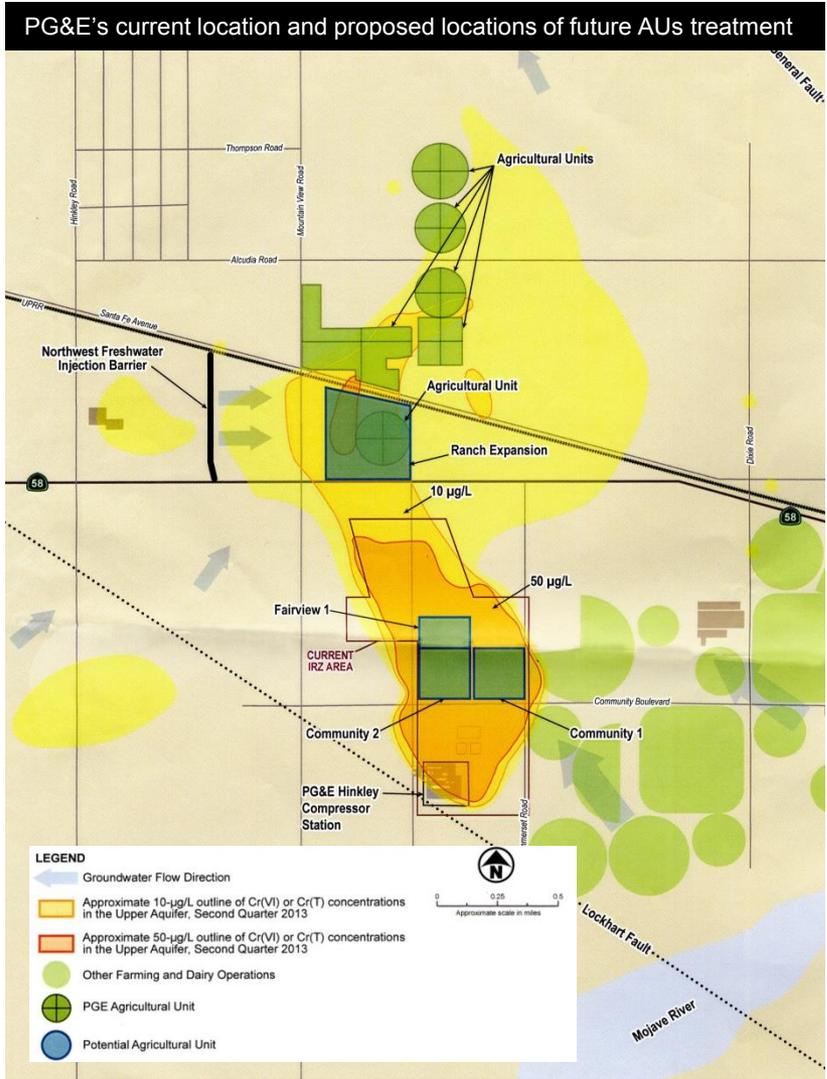


# 5. Whole House Water (WHW) Treatment Systems are All Installed and Most Residents are Very Satisfied.

But Most Residents with the System Are Unclear About PG&E's Long-term Commitment to Maintain the Systems



# 6. PG&E and the Water Board are Engaging with the CAC/Community on the Permitting and Engineering Steps Beyond the EIR...



...But Equally Importantly, the Remaining Hinkley Community Members are Hungry to Engage with PG&E and the Water Board on the “Future of Hinkley.”



# 7. A Resource: A Significant Amount of Information Regarding the Hinkley Groundwater Remediation Project Can Be Accessed Through the IRP Manager's Website at [www.HinkleyGroundwater.com](http://www.HinkleyGroundwater.com).

## Hinkley Groundwater Remediation Program

Community Advisory Committee Website

HOME	ABOUT	SITE INFORMATION	PATH TO CR6 MCL	FACT SHEETS	COMMUNITY MEETINGS	MEDIA	BLOG	CONTACT
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The purpose of the Community Advisory Committee (CAC) is for Hinkley residents and community leaders to advise, share concerns with, and provide direct input into the Hinkley Groundwater Remediation Program.

Local phone number for IRP Manager: 760.253.2560  
Alternate number at Project Navigator, Ltd: 714.388.1800

### Updates

August 6, 2013  
[IRP MANAGER TO HOST COMMUNITY WORKSHOPS FOR THE MONTH OF AUGUST](#)

May 10, 2013

### Current Programs

**PG&E Proposed Plan for Removal of Inactive Domestic Wells from the Domestic Well Sampling Plan**  
[Find out which inactive domestic wells PG&E is proposing to remove from its](#)

## 8. Grand Conclusions.

- The CAC, the Hinkley Community and the IRP Manager (plus staff) **meet regularly**
- Significant Interest in the New Background Study (BGS)
  - **Encouraged by USGS's** Active Participation
- A Dialog is **Slowly Starting** About the Future of Hinkley
  - e. g. Monthly Meetings have begun with the CAC, IRP Manager, PG&E, and the Water Board to discuss the **Pathway from the EIR to a flexible Final Remedy**
  - Hinkley's Compatibility/Integration/Lifestyle with a **"Sustainable PG&E Remedy"**
- **The CAC is thanks the Lahontan Water Board and PG&E** for the significant technical outreach both have performed

# **ENCLOSURE 3**

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## Lahontan Regional Water Quality Control Board

September 11, 2013

### REQUEST FOR PUBLIC COMMENTS

#### Modification of Whole House Replacement Water Program Cleanup and Abatement Order R6V-2011-0005A2

The Lahontan Regional Water Quality Control Board (Water Board) received correspondence requesting modifications to the Whole House Replacement Water Program (Program) in Cleanup and Abatement Order R6V-2011-0005A2 and potentially to 2008-0002-A4, which defines how the contiguous plume of hexavalent chromium is drawn. The Water Board Executive Officer is soliciting comments on these modifications proposed by two individuals and PG&E. These comments are requests for changes on who is eligible for the Program.

#### Deadline and Recipient

**Comments are due by noon on October 21, 2013.** Please submit the comments to Sue Genera, Executive Assistant, by way of either email ([sue.genera@waterboards.ca.gov](mailto:sue.genera@waterboards.ca.gov)) or mailed/hand delivery to the South Lake Tahoe office. Please place the phrase "comment on PG&E modification" in the subject line of the email. If you have any questions, please contact Richard Booth, Senior Engineering Geologist, at [richard.booth@waterboards.ca.gov](mailto:richard.booth@waterboards.ca.gov) or (530) 542-5574.

#### Background

Between 1952 and 1966, PG&E used hexavalent chromium, also known as chromium 6, to fight corrosion in cooling tower water near Hinkley. The wastewater from the cooling towers was discharged to unlined ponds at the site. Some of the wastewater percolated to the groundwater, resulting in hexavalent chromium pollution. The chromium affects an area of groundwater more than five miles long and nearly two miles wide.

On June 7, 2012, the Water Board issued an amended Cleanup and Abatement Order (R6V-2011-0005A2) (Order) to PG&E requiring the utility company to implement an expanded whole house replacement water program for households. Under the terms of that Order, PG&E provides whole house replacement water to those whose wells are located laterally within one mile downgradient or cross-gradient from the contiguous plume boundaries, and which have detectable levels of chromium 6 at any time during the most recent four consecutive quarters. Order 2008-0002-A4 sets out how the contiguous plume is to be drawn, and requires that "plume boundary lines be drawn to connect any monitoring well located within one-half mile (2600 feet) of any other monitoring well having chromium concentrations of 3.1 [parts per billion] ppb chromium 6 or 3.2 ppb total chromium."

## Requests for Modification of Board Order(s)

On July 11, 2013, the Water Board Executive Officer issued a letter to PG&E to clarify whether domestic wells were entitled to be included within the Program when they were within one mile of monitoring well (MW) 145-S, which had detections of chromium 6 above 3.1 ppb, but which was not drawn as part of the contiguous plume because it was more than one-half mile from other wells with detections above 3.1 ppb chromium 6 or 3.2 ppb total chromium. The letter concluded that MW-145S was isolated from the chromium plume and not part of the plume, hence domestic wells at issue were not within the one-mile buffer zone from the contiguous plume, and not eligible for the Program, as it was defined by the Order. **At the July Board meeting, several members of the public asked the board to reconsider that conclusion, and to include within the Program all wells within one mile of any monitoring well with detection of chromium 6 that exceed 3.1 ppb, regardless of whether the wells are within the contiguous plume.** These requests were followed by email requests dated September 9, 2013 (attached).

On September 3, 2013, the Water Board also received a proposal from PG&E to modify the Program (attached). **That proposal requests that in the future potentially eligible residents of the Program be defined as being within the contiguous plume boundary, and having domestic wells with levels of chromium 6 above the current background level of 3.1 ppb. Bottled water would be offered to residents with domestic well detections below 3.1 ppb within the contiguous plume boundary. No changes are being proposed for individuals that are currently eligible for the program.** The basis for the request is based, in part upon the draft drinking water standard of 10 ppb for chromium 6 issued by the California Department of Public Health last month.

- Attachments:
1. [July 11, 2013 letter from Water Board](#)
  2. [September 3, 2013 letter from PG&E](#)
  3. [September 9, 2013 email from Daron Banks](#)
  4. [September 9, 2013 email from Theresa Schoffstall](#)

## Lahontan Regional Water Quality Control Board

July 11, 2013

Sheryl Bilbrey  
Director, Chromium Remediation  
Pacific Gas and Electric Company  
111 Almaden Road  
San Jose, CA 95113

### **FOLLOW-UP ON MAY 16, 2013 EMAIL REGARDING REQUIREMENTS TO PROVIDE REPLACEMENT WATER TO WELLS WITHIN ONE-MILE OF WELLS EXCEEDING 3.1 µg/L HEXAVALENT CHROMIUM OR 3.2 µg/L TOTAL CHROMIUM THAT ARE OUTSIDE OF THE CONTIGUOUS PLUME**

In late May 2013, I received a telephone call from your representatives, objecting to an assertion made by the Lahontan Water Board staff about PG&E's obligation to provide replacement water to property owners on the eastern side of the plume, within one-mile of monitoring well (MW) 145S. In a May 16, 2013 email to PG&E, Lahontan Water Board staff asserted that property owners within one-mile cross gradient or downgradient from any monitoring well that is over 3.1 micrograms per liter (µg/L) hexavalent chromium or 3.2 µg/L total chromium must be added to the replacement water program. After reviewing the existing orders, including the 2011 Whole House Replacement Water Cleanup and Abatement Order (Replacement Water CAO; R6V-2011-0005A1), and the 2012 amendment (R6V-2011-0005A2) to that order, I agree with your conclusion that PG&E is not obligated to provide water to those households under the requirements of the existing orders.

The original Replacement Water CAO defined "affected area" to include all domestic wells within one mile downgradient or cross-gradient from the 3.1 µg/L hexavalent chromium plume, and that the 2012 amended Replacement Water CAO did not change the definition of "affected area," but specifically states that it would continue to "include all domestic wells located laterally within one mile downgradient or cross-gradient from the **contiguous**, including contiguous areas depicted with dashed lines, 3.1 µg/L hexavalent chromium or 3.2 µg/L total chromium plume boundaries..." (2012 Replacement Water CAO amendment, Finding 4). Footnote 2 of the 2012 Replacement Water CAO amendment was not intended to change the definition of the affected area, and that the footnote says nothing about adding non-contiguous wells to the CAO requirements. MW-145S is outside of the contiguous plume. The distance between MW-145S and the nearest well within the plume is approximately 4,200 feet, which exceeds the 2,600 feet that PG&E is required to use to connect monitoring wells having chromium concentrations of 3.1 µg/L hexavalent chromium or 3.2 µg/L total chromium or greater, defining the contiguous plume boundary.

In review of the applicable orders, which include the 2011 Replacement Water CAO, the 2012 amendment to that Order, and R6V-2008-0002-A4, which requires that plume boundary lines be drawn to connect monitoring wells within one-half mile of any other monitoring well having chromium concentrations above 3.1 µg/L hexavalent chromium or 3.2 µg/L total chromium, I agree that by the terms of our orders, PG&E is only required to provide replacement water to those with detections of chromium within one-mile of the contiguous plume, and that MW-145S is not part of the contiguous plume. Not only is this consistent with the terms of the orders, but upon further investigation, is also consistent with how PG&E has been implementing its replacement water program in the past. I would, however, encourage you to use your resources, where able, to address the community's concerns about their water supply.

If you have any questions or concerns about my conclusions, please contact Doug Smith, Richard Booth, or the board's counsel, Kim Niemeyer.



PATTY Z. KOUYOUMDJIAN  
EXECUTIVE OFFICER

Cc: (transmitted by email):  
PG&E Hinkley Iyris list  
Kevin Sullivan, PG&E  
Lauri Kemper, Lahontan Water Board  
Lisa Dernbach, Lahontan Water Board  
Anne Holden, Lahontan Water Board  
Laura Drabandt, State Water Board Office of Enforcement  
Hinkley Community Advisory Committee  
Ian Webster, Project Navigator

T: PGE Replacement Water for eastern side



September 3, 2013

Patty Kouyoumdjian  
Executive Officer  
Lahontan Regional Water Quality Control Board  
2501 Lake Tahoe Boulevard  
South Lake Tahoe, California 96150

**Subject: Whole House Replacement Water Program Modification**

Dear Ms. Kouyoumdjian:

Pacific Gas and Electric Company (PG&E) is committed to remediating the groundwater in the Hinkley community, and has made substantial progress towards that goal. We also are committed to working closely with the California Regional Water Quality Control Board, Lahontan Region (Regional Board) and the Hinkley community to address concerns about drinking water supplies.

Last year, PG&E voluntarily introduced an unprecedented program that offers whole house replacement water to Hinkley residents living within one mile of the hexavalent chromium plume boundary if their domestic well has *any* detection of hexavalent chromium, i.e., any amount above the 0.06 parts per billion (ppb) detection limit. PG&E's program guarantees that the level of hexavalent chromium in replacement water is more than *800 times lower than* the standards currently applied to other California residents.

On August 23<sup>rd</sup>, the State of California issued a proposed hexavalent chromium drinking water standard of 10 ppb. A final drinking water standard is expected next year.

After careful review of the existing whole house replacement water program, significant experience implementing the program over the last year, and consideration of the proposed hexavalent chromium drinking water standard, PG&E believes future eligibility for the program should be modified pending the final drinking water standard. Specifically, PG&E's proposal is as follows:

- Currently Eligible Residents: PG&E is proposing no changes. Simply put, residents who currently are eligible for the program will remain in the program with no changes.
- Future Potentially Eligible Residents: While the drinking water standard is being finalized, PG&E proposes that any newly eligible residents would meet the following criteria: (1) the residence is within the contiguous hexavalent chromium plume boundary, and (2) the domestic well has a detection of hexavalent chromium above the current

background level of 3.1 ppb. Bottled water would continue to be offered to residents with domestic well detections below 3.1 ppb within future depictions of the contiguous plume boundary.

As described more fully below, PG&E believes these proposed modifications continue to provide an unprecedented level of protection to Hinkley residents while the hexavalent chromium drinking water standard is being finalized. Consistent with PG&E's original program design and the Regional Board's order, the final drinking water standard will set the standard for continued program eligibility once it is established.

## **1. Background**

PG&E is committed to cleaning up the hexavalent chromium plume caused by its historical operations and to working with the Regional Board and the community to restore the water quality in Hinkley. Our interim remedial actions have made significant progress, reducing the highest concentrations of hexavalent chromium in the plume core by over 50%, increasing remedial pumping to over 1,000 gallons per minute, and demonstrating plume capture at Thompson Road. Working cooperatively with the Regional Board, the Independent Review Panel Manager, the United States Geological Survey and the community of Hinkley, PG&E is committed to implementing the final approved remedy and updating the study to determine the naturally occurring levels of hexavalent chromium in the groundwater.

In addition to focusing on the clean-up, PG&E has responded to residents' concerns regarding drinking water. Since 2010, a program of replacement water has been in place and has evolved over time. Because the main route of chromium exposure is through ingestion, the program began with the provision of bottled water for cooking and drinking, to anyone over the current background level of 3.1 ppb. This program was gradually expanded to include residents within ½ mile of the plume, and eventually to residents within one mile of the plume.<sup>1</sup>

Last year, in response to a desire for a more "permanent" solution PG&E expanded the program beyond bottled water to include whole house replacement water. Because the State had not yet adopted a drinking water standard for hexavalent chromium, the eligibility criteria for the replacement water program was set at the hexavalent chromium detection limit of 0.06 ppb. This resulted in Hinkley residents being guaranteed a drinking water supply with no detectable levels of hexavalent chromium, more than 800 times lower than the standard applied to other California residents.

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<sup>1</sup> This geographic buffer zone is unprecedented; PG&E has not identified any other examples of a party voluntarily offering bottled water one mile outside the boundary of the impacted groundwater, nor has PG&E identified any example of a regulatory order requiring bottled or replacement water one mile outside a plume boundary.

## **2. Current Information Regarding Hexavalent Chromium levels in Domestic Wells**

PG&E understands that Hinkley residents are concerned about the quality of the water in their homes, and believes that the facts can help to allay these fears. Over the last few years we have taken a total of approximately 2,500 samples from more than 400 domestic wells. Data from those samples show that:

- All of the domestic water supply wells in Hinkley are well below the existing state drinking water standard for total chromium of 50 ppb, without any treatment.
- All of the domestic water wells in Hinkley also below the newly proposed drinking water standard for hexavalent chromium of 10 ppb, again, without any treatment.
- In fact, all of the wells in Hinkley contain lower hexavalent chromium levels than those found in municipal water supplies in numerous communities across the state of California such as Apple Valley, Davis, and others.

More specifically, nearly half of all eligible residents' domestic wells are below 1.2 ppb, the average background level for hexavalent chromium currently established by the Regional Board. This is over 40 times lower than drinking water standard for total chromium and 8 times lower than the proposed hexavalent chromium standard. Ninety percent of all eligible residents' wells are below 3.1 ppb, the current maximum background level, over 16 times lower than the drinking water standard for total chromium and 3 times lower than the proposed hexavalent chromium standard. The highest domestic well detection is 8.6 ppb, 6 times lower than the standard for total chromium and lower than the proposed hexavalent chromium standard.

## **3. Hexavalent Chromium Drinking Water Standard**

On August 23<sup>rd</sup>, the California Department of Public Health (CDPH) proposed a hexavalent chromium drinking water standard of 10 ppb. CDPH recently advised a court overseeing the process that it would finalize the drinking water standard within twelve months, i.e., by August 2014.<sup>2</sup> As described above, all of the drinking water supply wells in Hinkley meet the proposed standard by a large margin.

In 2012, the Regional Board issued an order stating that the final hexavalent chromium drinking water standard will define continued eligibility in PG&E's whole house replacement water program.<sup>3</sup>

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<sup>2</sup> The Natural Resources Defense Council has sued CDPH for its delay in adopting the hexavalent chromium drinking water standard. In July, the court overseeing the matter issued an order that, among other things, set a hearing in late October to determine when CDPH will finalize the drinking water standard.

<sup>3</sup> Residents who are no longer eligible for the program after the drinking water standard is finalized can elect to have PG&E either remove or transfer ownership of the whole house water replacement units.

#### 4. New Program Specifics

Based on all of the information available at this time, including sampling data from domestic water supplies, experience implementing the whole house replacement water program, and issuance of the proposed hexavalent chromium drinking water standard, PG&E believes it is appropriate to reevaluate future eligibility for the program while the drinking water standard is being finalized. Even with the proposed modifications, PG&E's program provides an extremely conservative level of protection not seen anywhere else in California or the rest of the country. PG&E's specific proposal is described below.

##### a. Currently Eligible Residents

PG&E is not proposing any changes to the program for currently eligible residents. PG&E is committed to installing all of the replacement water systems for the households within the current boundary of the replacement water program, i.e., households located within one mile of the 2013 second quarter plume boundary. In addition, PG&E will finalize negotiations with all eligible residents who have elected the property purchase option. Although all of these residents' wells contain hexavalent chromium levels well below the proposed drinking water standard, PG&E will honor its original commitments.

##### b. Future Potentially Eligible Residents

While the hexavalent chromium drinking water standard is being finalized, PG&E proposes to modify the whole house water program eligibility criteria for any *new* residents as follows: (1) the residence is within the contiguous hexavalent chromium plume boundary; and (2) the resident's domestic well contains hexavalent chromium above the currently adopted background level of 3.1 ppb. For residents within future depictions of the contiguous plume boundary with domestic well detections below 3.1 ppb, PG&E will continue to offer bottled water. PG&E believes these modifications are justified given the extremely conservative and unprecedented nature of the current program, coupled with the fact that any future expansion of the program likely will be short-term given the long lead times for the whole house replacement water units and the expected timing of the final drinking water standard.

Because PG&E is not proposing any changes for currently eligible residents, the existing one-mile buffer already provides a hefty margin of conservatism to PG&E's program. All residents within one mile of the 2013 second quarter plume map will continue to be eligible for the program while the hexavalent chromium standard is being finalized. As noted above, PG&E is unaware of any other program that provides such an extensive geographic buffer. In the unlikely event the contiguous plume boundary expands beyond the current one-mile buffer, residents within the expanded plume will be eligible for the program.

Similarly, modifying the eligibility trigger to well detections above 3.1 ppb will continue to provide a large margin of safety. This level is over 16 times lower than the standard currently applied to all other California residents and over 3 times lower than the proposed hexavalent chromium drinking water standard.

PG&E also notes that the Regional Board's current methodology for defining the hexavalent chromium plume boundary provides an additional measure of conservatism to PG&E's program. As discussed in detail in PG&E's 2013 second quarter plume map submission, the Regional Board considers only one line of data when defining the plume – detections above 3.1 ppb in wells that are located within 2,000 feet<sup>4</sup> of one another. This methodology is inconsistent with standard industry practice by failing to consider all critical data such as groundwater flow, elevation or chemistry. For example, the Regional Board's methodology requires the plume to include wells on the other side of the Lockhart fault and wells that contain dramatically higher water elevations than the plume—areas that clearly are not attributable to PG&E's historic operations. When all relevant data is considered, the contiguous hexavalent chromium plume is much smaller. Because the whole house replacement water program is directly tied to the Regional Board's narrow plume delineation criteria, there is an extra level of conservatism built in.

The expected timing of the final drinking water standard further supports PG&E's proposed modifications. When the Regional Board first considered replacement water in its 2011 Clean-up and Abatement Order, it concluded that bottled water was an adequate and protective short-term solution but that whole house replacement water should be provided as a more "permanent" solution.<sup>5</sup> At that time, the State of California had just issued the hexavalent chromium public health goal and the final drinking water standard was expected to take years to develop.

CDPH has now issued its proposed drinking water standard and is under court supervision to issue the final, which is expected by August 2014. On average, it takes approximately 9 months between the time a resident is identified as eligible for the whole house water program and the time the unit is turned over to the resident for use.<sup>6</sup> The next opportunity to identify newly eligible residents is after the 2013 third quarter plume map is submitted at the end of October. Taking into account the 9-month lead time, any newly eligible residents identified in October would not have their systems in place until July 2014, only 1 month before the drinking water standard is finalized. Newly identified residents after the fourth quarter of 2013 likely would not receive systems before the drinking water standard is finalized.

Given the multiple layers of conservatism built into PG&E's whole house water replacement program and the fact that all domestic wells in Hinkley are well below the proposed drinking water standard, it makes sense to modify the program until the standard is finalized. Eligibility

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<sup>4</sup> Beginning in the third quarter, the Regional Board has ordered PG&E to modify the plume delineation criteria and connect all detections above 3.1 ppb in wells that are located 2,600 feet of one another. PG&E has petitioned this modification to the State Water Resources Control Board, on the grounds that it is arbitrary and unsupported. Nevertheless, absent a change to the new 2,600-foot criteria prior to submission of the third quarter plume map, PG&E expects the plume will artificially expand as compared to the 2,000-foot criteria.

<sup>5</sup> Order R6V-2011-0005A1, para. 32.

<sup>6</sup> Many factors contribute to this time period including: testing the resident's well to confirm eligibility; the resident's consideration of whether to elect the whole house replacement water option or the property purchase option; ordering the systems once the election has been made; construction of the necessary collateral infrastructure (e.g., electrical, plumbing, etc.); and start-up testing. Once a resident signs the access agreement, PG&E installs and hands over the system within five months.

for the program likely will change once the standard is finalized. In the meantime, in the unlikely event the plume expands beyond the current one-mile buffer, PG&E will offer whole house replacement water systems to any resident within the expanded plume boundary with a domestic well detection above 3.1 ppb, and bottled water to residents with domestic well detections below 3.1 ppb.

#### **5. Requested Action**

PG&E asks that Regional Board Order R6V-2011-0005A2 be amended to provide for the updated replacement water program described in this letter. Specifically, we ask that the order be amended to state that the provisions of Order R6V-2-11-0005A1 will continue to be suspended so long as PG&E provides replacement water as described in this letter.

Thank you for your consideration of this request. I would be happy to discuss this proposal with you or to provide you with any additional information that you might require.

Sincerely,



Sheryl Bilbrey  
Director, Chromium Remediation

Cc: Lauri Kemper  
Kim Niemeyer

From: Daron Banks

Sent: Monday, September 09, 2013 1:38 PM

To: Kouyoumdjian, Patty@Waterboards; Kemper, Lauri@Waterboards; Dernbach, Lisa@Waterboards; Robert Potter; Raudel Sanchez

Subject: Request for order revision

Hi ladies, I was speaking to Lisa and asked about what was happening about the continuous plume order. During the conversation I reminded Lisa that it was a formal request at the July board meeting held in Barstow. The request was made by myself and Theresa Schofstall we requested that the CAO be revised to include all areas of the plume under the definition of the plume 3.1ppb the circles should be included in continuous plume boundary or at the very least be added to the existing plume as circles separate but still plume which would increase the area of the actual plume and boundary to include separate circles. Can I please get a response to the July board meeting request.

Thanks, Daron

Sent from my iPad

**From:** Theresa Schoffstall  
**Date:** September 9, 2013, 5:25:44 PM PDT  
**To:** <[Patty.Kouyoumdjian@waterboards.ca.gov](mailto:Patty.Kouyoumdjian@waterboards.ca.gov)>  
**Cc:** <[ldernbach@waterboards.ca.gov](mailto:ldernbach@waterboards.ca.gov)>  
**Subject:** Schoffstalls-24553 Community Blvd. RE: 1 mile plume boundary

Hello Patty,

I had officially met you at the last water-board meeting at the Hampton Inn this summer and spoke asking the board to amend the order to have PG&E extend their mile boundary to surround all their plumes, not just the largest one. I know you had a-lot on your plates with the EIR but was curious to know if you are going to pursue this request. I also saw that PG&E requested to remove the mile boundary entirely.

We are the family that is located approx 200 feet outside the mile boundary to the east of the plume. When my husband purchased the property in 1997 he had his, then sister in law who is a geologist, test the water in the well for chrome 6 and the result was non detect, unfortunately for us he cannot find the result and her company does not achieve tests that far back. When we heard from the school that PG&E was fined and that chrome levels were still high we tested our well again and the results of chrome 6 were .085 ppb. My husband went to PG&E's local office and PG&E refused to offer us bottled water or to include us in their programs. I started attending meetings and when I learned of the manganese we tested our well again for manganese, arsenic and chrome 6. The results for mag & arsenic were non detect but in less a year the chrome 6 had doubled to .17 ppb. PG&E claims it is background and therefore they have no responsibility to us. I was diagnosed with cancer at the age of 32 and my family has had a great deal of odd health problems. I am not sure if they are chromium 6 related or not but we did not want to stay and take that chance. Our home has been on the market for close to 2 years and has lost interested buyers due to the chromium 6. It is now sitting vacant and my husband and I stand to lose the equity we built even in a downed market. I am aware that the levels of chrome 6 in our well are not as high as others, but my families health is just as important as those in the plume and within 1 mile from the plume. The fact that PG&E contaminated "part" of Hinkley has affected the well-being of "all" of the community- physically, mentally and financially. I understand you are only allowed to act with the authority that the laws allow. If you have any authority to push forward this amendment or to forward my request to those who do, I would greatly appreciate it. Please call my cell @ [\(623\)293-2535](tel:6232932535) if you have any questions or advice.

Thank You!

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