

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

**MEETING OF SEPTEMBER 10-11, 2014
BARTSOW**

ITEM: 3

SUBJECT: **STATUS REPORT ON ACTIVITIES CONCERNING CHROMIUM
CONTAMINATION FROM PACIFIC GAS AND ELECTRIC
COMPANY'S HINKLEY COMPRESSOR STATION, SAN
BERNARDINO COUNTY**

CHRONOLOGY: This chronology lists key 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.

July 17, 2013 Certification of final Environmental Impact Report (EIR) for comprehensive cleanup of chromium in groundwater.

Mar 12, 2014 Adoption of Board Order No. R6V-2014-0023, Waste Discharge Requirements (WDRs) for PG&E's Agricultural Treatment Units.

Aug 1, 2014 Notice of Applicability for coverage under Board Order No. R6V-2014-0023 issued to PG&E for new, expanded and existing ATUs.

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

The July 2014 Status of Actions sheet distributed to the Hinkley Community Advisory Committee is enclosed (Enclosure 1) describing Water Board activities in that month.

Water Board staff will also provide an update on the following topics:

- Second Quarter 2014 chromium plume map summary
- Notice of Applicability for ATU WDRs
- In-situ remediation
- Pilot test for above-ground bioreactor
- Supplemental Environmental Project

- Chromium background study contract status
- Next actions

PG&E staff will briefly update the Board on its plans for transitioning out of the replacement water program, progress on the Hinkley School water line (the SEP project), and discuss its expansion of remediation systems.

The Community Advisory Committee Independent Review Project (IRP) Manager will provide an update of community meetings, stake holder outreach, joint technical meetings, establishing subcommittees, and concerns over the end of replacement water programs.

RECOMMENDATION

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

ENCLOSURES:

| ENCLOSURE | ITEM | BATES NUMBER |
|------------------|-----------------------------------|---------------------|
| 1 | July 2014 Status of Actions Sheet | 3-5 |
| 2 | Water Board Staff Presentation | 3-9 |
| 3 | PG&E Presentation | 3-27 |
| 4 | CAC IRP Presentation | 3-33 |

ENCLOSURE 1

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Lahontan Regional Water Quality Control Board

Status of Actions for PG&E Hinkley Chromium Contamination July 2014

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. No new updates have been received. The project remains on schedule to be completed by end of 2014.
2. **Cleanup and Abatement Order for Whole House Water (WHW) Supply:** Order R6V-2011-0005A2 directs PG&E to provide whole house replacement water to residences in the affected area. WHW systems are in operation at 31 residences.
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. In July, Water Board staff sent letters to residents in the northern area requesting their assistance in allowing PG&E to access their property for groundwater sampling. PG&E is due to submit an investigation status update for conducting additional plume definition in the groundwater monitoring report due on July 30 for 2nd quarter 2014.

Investigative and Reporting Orders

1. **Chromium Plume Boundary:** The first quarter 2014 chromium plume map is posted on the Water Board website at: www.waterboards.ca.gov/lahontan, on the "PG&E Hinkley Chromium Cleanup" page, at the bottom of page. The 2nd quarter 2014 plume map is due at the end of July.
2. **Chromium Detections in the West:** PG&E is continuing to extract groundwater from a well in the area west of the freshwater injection system and disposing of it to land at the former Heifer Ranch or used for dust control on PG&E projects. Extracted water exceeding 3.1 ppb Cr6 or 3.2 ppb CrT must be treated, such as with ion exchange, prior to disposal to land or used as dust control.
3. **Chromium Plume Containment:** Pursuant to the amended March 2012 CAO, PG&E submitted the monthly Plume Capture Report by July 15, 2014 evaluating chromium capture south of Thompson Road. The report states that overall data indicates the chromium plume capture was maintained at all monitoring points during the reporting period. This means that the main chromium plume associated with groundwater from beneath the Compressor Station is being contained from further migration at Thompson Road.

- 4. IRZ Well Replacement, Investigation, and Expansion:** In early June, the Water Board received PG&E's In-situ Reactive Zone (IRZ) Design and Construction Status Report. The report discusses areas within the plume boundaries for improving Cr6 conversion to Cr3 by IRZ treatment. PG&E proposes to replace ten ethanol injection wells in the Source Area where treatment effectiveness has been reduced due to biological fouling of wells. Wells are proposed for installation at up to five locations to better evaluate chromium treatment effectiveness where information is lacking. Lastly, PG&E also proposes to add wells at three locations to improve treatment in other areas of the chromium plume between the compressor station and Highway 58. The public will be allowed to comment on any expansion areas being considered by the Water Board.

Comprehensive Cleanup

- 1. March 12, 2014:** New Waste Discharge Requirements for PG&E's Agricultural Treatment Units adopted at Water Board meeting in Barstow. PG&E submitted a Report of Waste Discharge and monitoring plans for new and existing agricultural treatment units (ATUs) in April through July. Staff have reviewed the submittals and provided written responses to PG&E, notifying them of additional information needed. Report of Waste Discharge submittals are available for review on Geotracker at <https://geotracker.waterboards.ca.gov>.
- 2. Summer 2014:** Baseline monitoring in water supply wells, construction of new ATUs. Planting and irrigation to begin at new ATUs in fall.
- 3. Fall 2014:** Water Board staff will develop a new Cleanup and Abatement Order that will set dates to achieve interim cleanup such as dates to achieve less than 50 ppb Cr6, and 10 ppb Cr6 as well as dates to complete construction of expanded remediation efforts. The Order will also include a revised monitoring program. Water Board staff expects to hold workshops to receive public input on the draft Order.
- 4. September 10, 2014:** Next Water Board Meeting in Barstow. Anticipate a workshop on the draft Cleanup and Abatement Order.
- 5. November 2014 and/or April 2015:** Water Board meetings to further discuss and consider adopting new Cleanup and Abatement Order for comprehensive cleanup at Hinkley.

Status of Revised Chromium Background Study

Dr. Izbicki, US Geological Survey is leading a revised background study. An amended short term contract is in place allowing USGS participation in the Background Study Technical Working Group for project planning and preliminary data gathering. A new contract for the full 3 to 5 year study is anticipated to be in place by Fall 2014.

Hexavalent Chromium Drinking Water Standard

On July 1, the final drinking water standard of 10 ppb for hexavalent chromium became effective throughout California. The number refers to water used for drinking and consumption and does not affect cleanup of the groundwater aquifer below Hinkley.

ENCLOSURE 2

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AGENDA ITEM #3

Status Report: Activities Concerning Chromium Contamination, PG&E Hinkley Compressor Station

September 10, 2014



Lisa Dernbach, PG, CEG, CHg
Senior Engineering Geologist

9/10/2014

Agenda Item #3

1

Outline

1. Second quarter 2014 chromium plume summary
2. Notice of Applicability for Agricultural Treatment Units (ATUs)
3. In-situ remediation
4. Pilot test for bioreactor
5. Supplemental Environmental Project
6. USGS Chromium Background Study contract status
7. Next actions





Chromium Plume Summary

2nd Quarter 2014

1. Plume Geometry:

- a) Generally, plume is depicted as **slightly smaller** in size compared to first quarter, with small areas in the plume core south of Thompson Road showing minor reductions in size.
- b) Plume through the Hinkley Gap around Red Hill is shown as separated for 2nd Q (decrease in Cr concentrations in MW-131S1 to below background in 2nd Q).
- c) Exception is “plumelet” in Water Valley around MW-184 near Grasshopper Road, now drawn bigger based on domestic well (DW) data. Concentrations in MW-184 and the DWs are similar, around 3-4 ppb Cr6.



Chromium Plume Summary

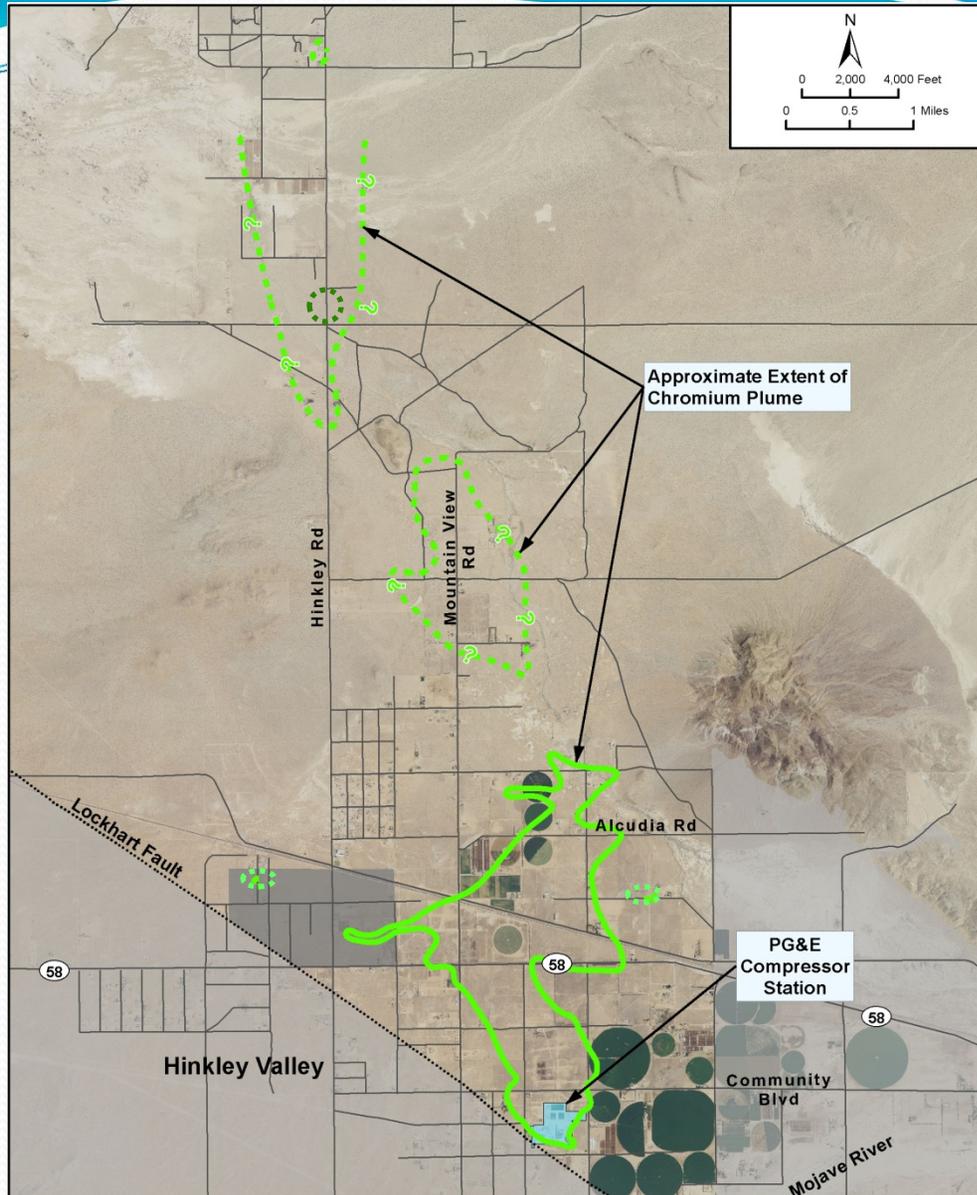
2nd Quarter 2014

2. Notable Monitoring Well (MW) info:

- a) MW 193-S3, in the Harper Dry Lake Valley, shows a 20% Cr6 decrease in 2nd Q to 220 ppb
- b) The highest Source Area point is SA-MW-05D, at 7,200 ppb Cr6, up from 4,600 Cr6 in 1st Q (56% increase)

3. Domestic Well (DW) info:

- a) Nine DWs above maximum background values (3.1 ppb Cr6/3.2 ppb CrT)
- b) Maximum Cr6 in a DW is 4.8 ppb, near Mulberry Road west of the plume
- c) Most DWs concentrations around 3 to 4 ppb Cr6



Chromium Plume Extent for 2nd Quarter 2014

Notice of Applicability for ATU WDRs

- PG&E submitted Report of Waste Discharge and addenda in April through July 2014
- ROWD deemed complete; Notice of Applicability (i.e., permission to construct and operate ATUs) issued August 1, 2014 by Executive Officer
 - Clarifying comments and one minor change to monitoring program
 - Monitoring for southern ATUs must be submitted and approved prior to discharge



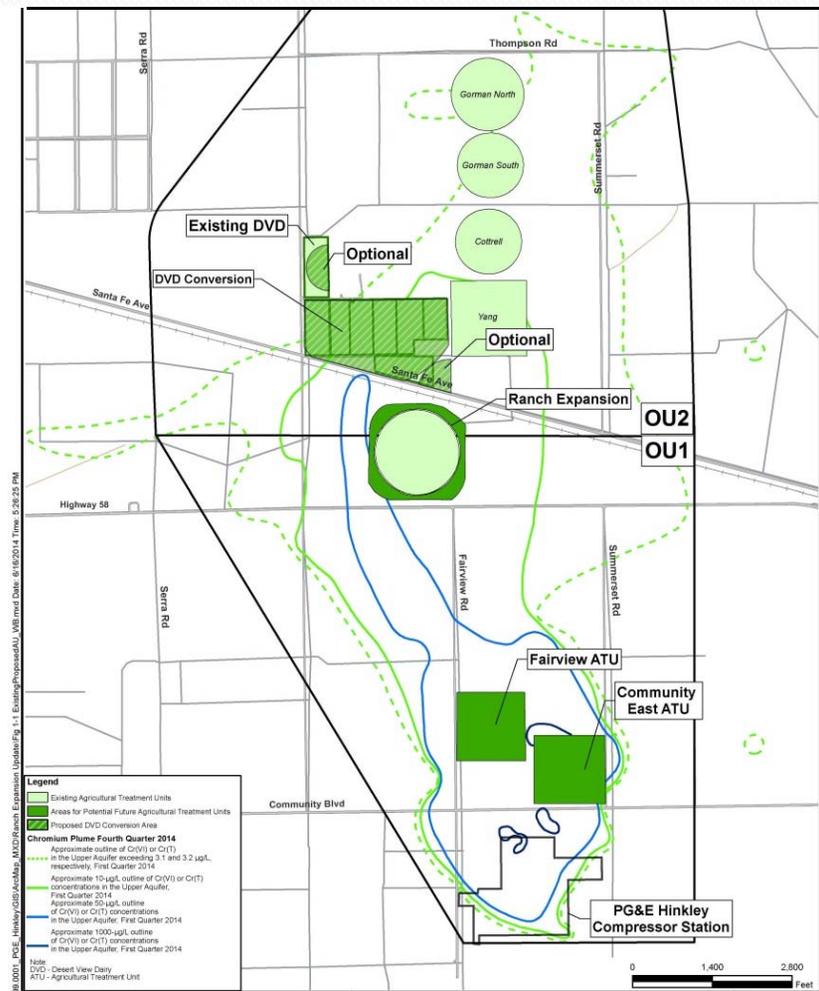
Notice of Applicability for ATU WDRs

- Authorizes 321 acres of ATUs (WDRs allows 500 acres maximum)
- Construction of new ATUs to start fall 2014; discharge in spring 2015
- EIR monitoring for domestic wells has started
 - ✓ Cr, TDS, nitrate, uranium, water levels



ATUs covered under WDRs

- New (dark green):
**Fairview
Community East**
- Expanded (dark green):
Ranch
- Existing (light green):
**Desert View Dairy
Gorman North and South
Cottrell
Yang**



In-Situ Remediation

May 2014 Status Report:

- Clogged injection wells limiting in-situ reactive zone (IRZ) treatment
- Tighter soils limiting IRZ treatment

Enhancements proposed:

- Install wells to investigate extent of remaining chromium in Source Area
- Install new injection wells to replace clogged wells
- Install new injection wells at closer spacing (150 feet vs 300 feet)
- Expand IRZ treatment to southwest area of Source Area



Map of IRZ Area

(To be inserted)

Pilot Test for Bioreactor

PG&E submitted proposal to conduct a pilot test for an above-ground bioreactor in the In-situ Reactive Zone (IRZ):

- 5 to 20 gpm extracted groundwater
- First stage: acetic acid (vinegar) and phosphoric acid added to reduce Cr6 to Cr3
- Second stage: aeration through rock layer and filtration of byproducts (iron & manganese) through sand filter
- Monitoring to be at all stages
- Treated water returned to aquifer upgradient of Central Area IRZ
- Duration of testing: 6 months



Supplemental Environmental Project

Project accepted in March 2012:

- Planning and designs completed
- Construction started in fall 2013
- New supply wells and water line completed
- Following testing and shake down, system should be turned over to School District by **end 2014/early 2015**



USGS Chromium Background Study

Contract Status

- Contract request package submitted to State Board in late March 2014
- State Board contract analyst's questions addressed mid-May 2014
- Contract to USGS for review week of August 11, 2011
- UPDATE SLIDE AFTER 8/11
- Execution anticipated late Sept. 2014; field work can begin



Next Actions



| | |
|---------------------------------------|--|
| <h2>Background Study</h2> | <ul style="list-style-type: none">• Continue Technical Working Group meetings• Contract executed fall 2104 |
| <h2>Cleanup and Abatement Order</h2> | <ul style="list-style-type: none">• Prepare draft CAO with deadlines and directives for chromium cleanup• Distribute for public comment |
| <h2>Waste Discharge Requirements</h2> | <ul style="list-style-type: none">• For future expanded IRZ areas (if needed) |

Questions?



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ENCLOSURE 3

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PG&E Update
to the
Lahontan RWQCB

September 2014 Meeting
Barstow, CA

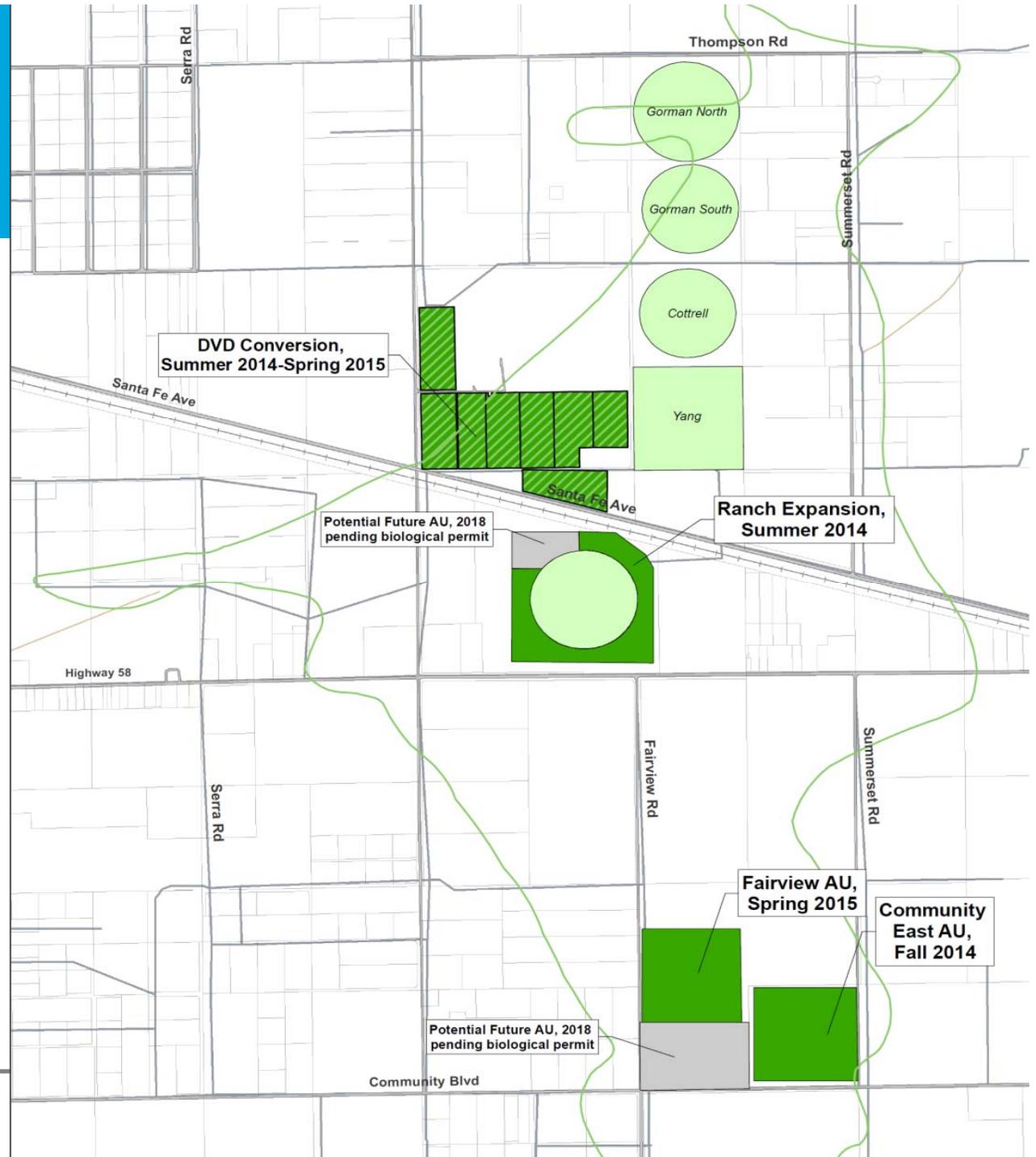


Planned AU Expansion 2014-2015

NOA issued August 4 2014

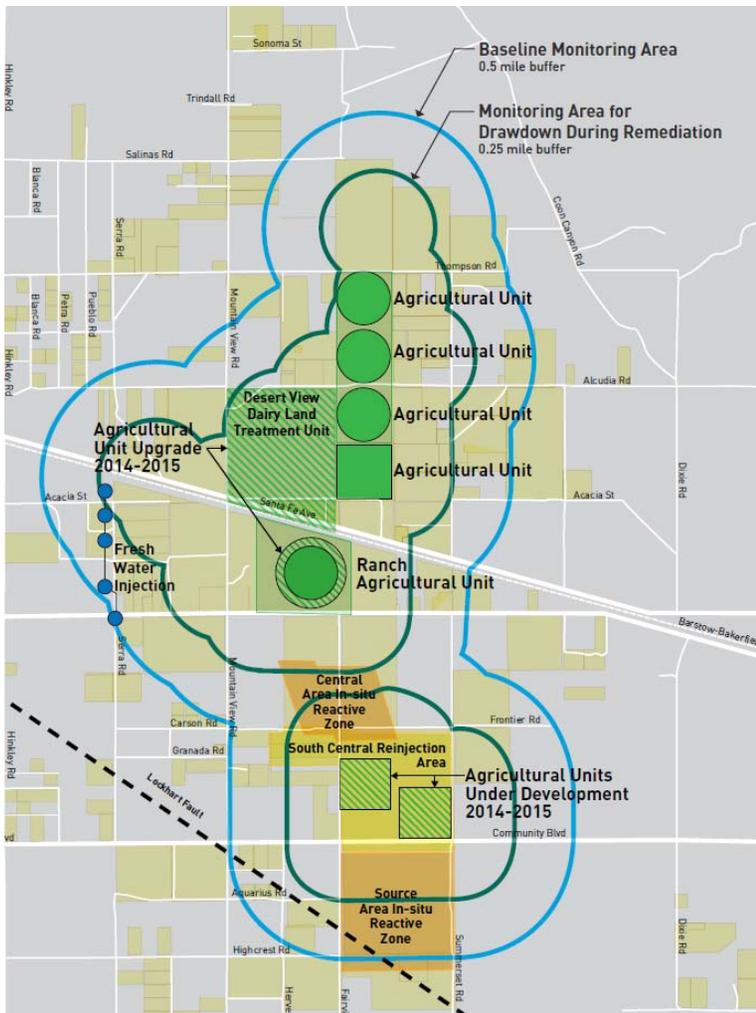
Legend

- Existing Agricultural Units
- Areas for Potential Future Agricultural Units
- Approximate outline of Cr(VI) and Cr(T) in the Upper Aquifer exceeding 3.1 and 3.2 micrograms per liter, respectively, Third Quarter 2013
- Dashed where inferred





Baseline Sampling and Monitoring



PG&E is working with residents in proximity to remediation activities to:

- Gather baseline data
- Closely monitor for potential by-products of remediation and drawdown of the aquifer



Other Site Field Activities

- SEP project – Wells & Freshwater Line
- Agricultural Units
 - Mitigation Tasks
- Western Area – Testing & System Install
- IRZ Area
- Lower Aquifer – Testing & Install
- Other activities

ENCLOSURE 4

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IRP Manager Remarks at the Lahontan Regional Water Quality Control Board Meeting *Community Outreach*

September 10, 2014
Barstow, California

Prepared for

Lahontan Regional Water Quality
Control Board

Prepared by

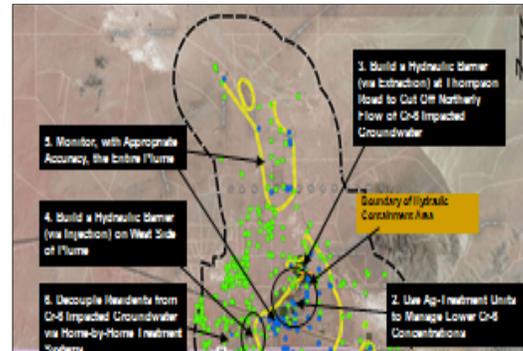
Dr. Ian A. Webster
Project Navigator, Ltd.
iwebster@projectnavigator.com

Community's Technical Appreciation has Grown Across Many Fronts

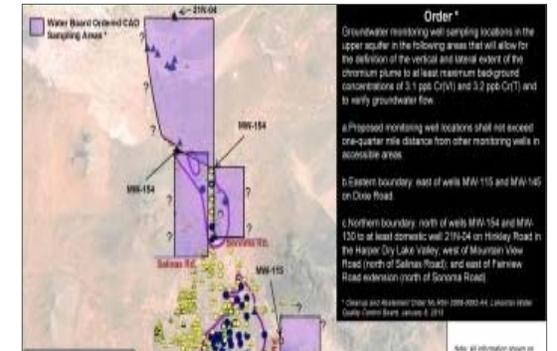
Plume Hydraulic Control



Cr6 Treatment by IRZ & ATU's



Plume Definition



Supplementary Environmental Program

Pacific Gas and Electric Company
 Jeff McCarty
 Board Member
 2008 Community Work
 Hearing, CA 95977
 Phone: 916.255.1928
 E-Mail: jmm@pge.com

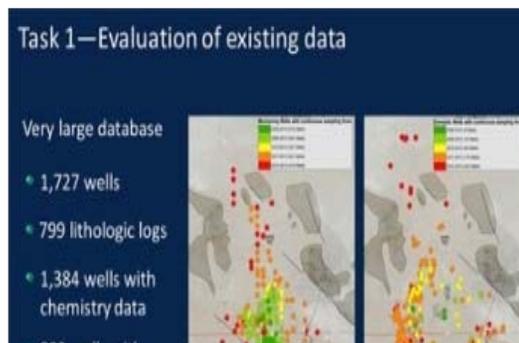
October 31, 2012

Ms. Patty Kouyoumdjian
 Executive Officer
 California Regional Water Control Board, Lahontan Region
 2401 Lake Tahoe Blvd.
 South Lake Tahoe, CA 96150

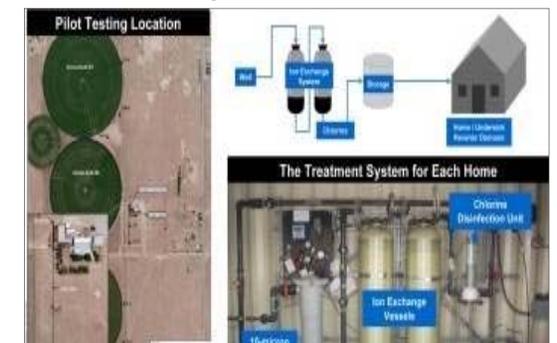
Subject: Pacific Gas and Electric Company Report on the Supplemental Environmental Project (SEP) in accordance with Board Order No. RBV-2012-0013

Dear Ms. Kouyoumdjian:

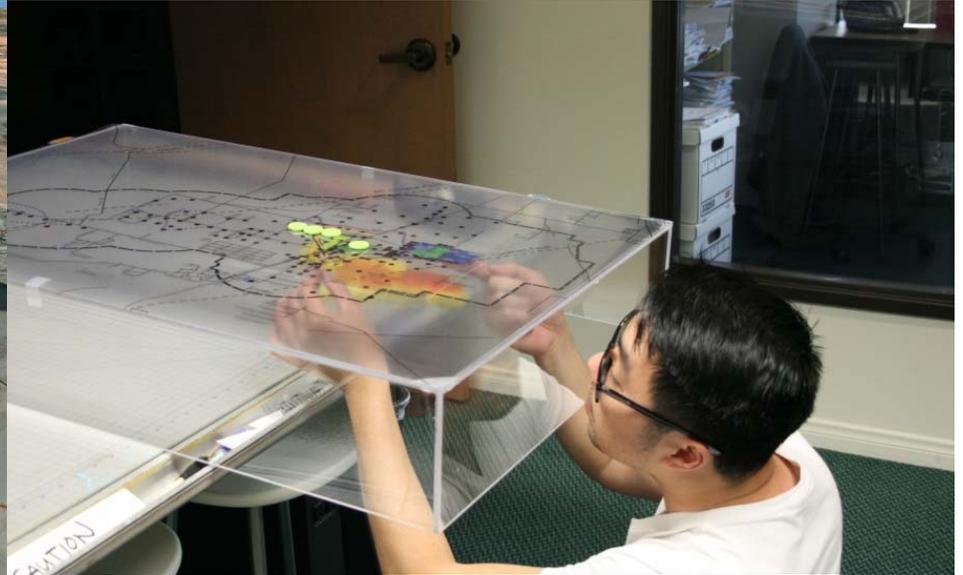
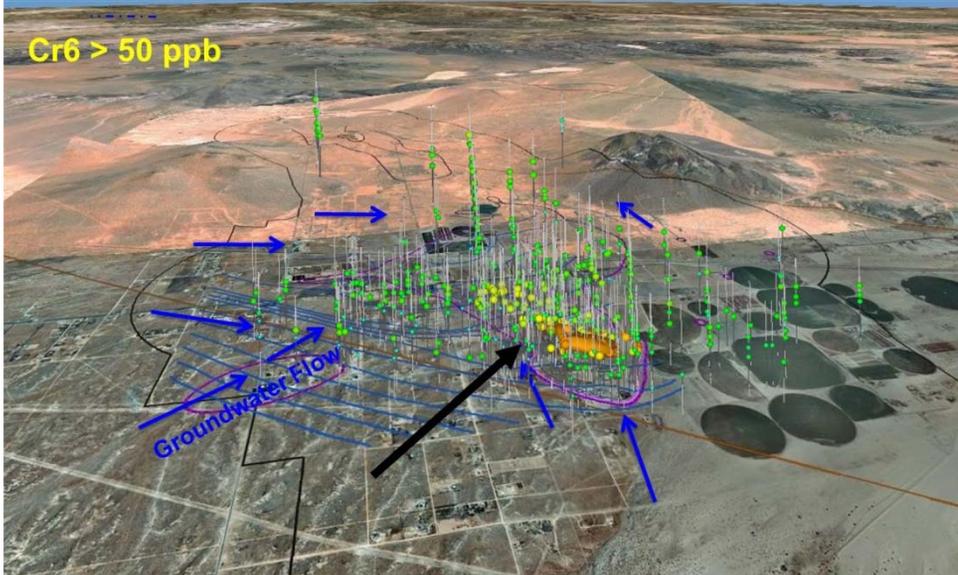
Background Study (BGS) by USGS



Whole House Replacement Water



An IRP Manager Dedicated Focus on Learning and Technical Understanding via Crystal Clear Visuals and Models.



**"Expanded Outreach to Other Stakeholder Groups:
"Invest Where You Can Make the Biggest
Difference and Add Value.""**

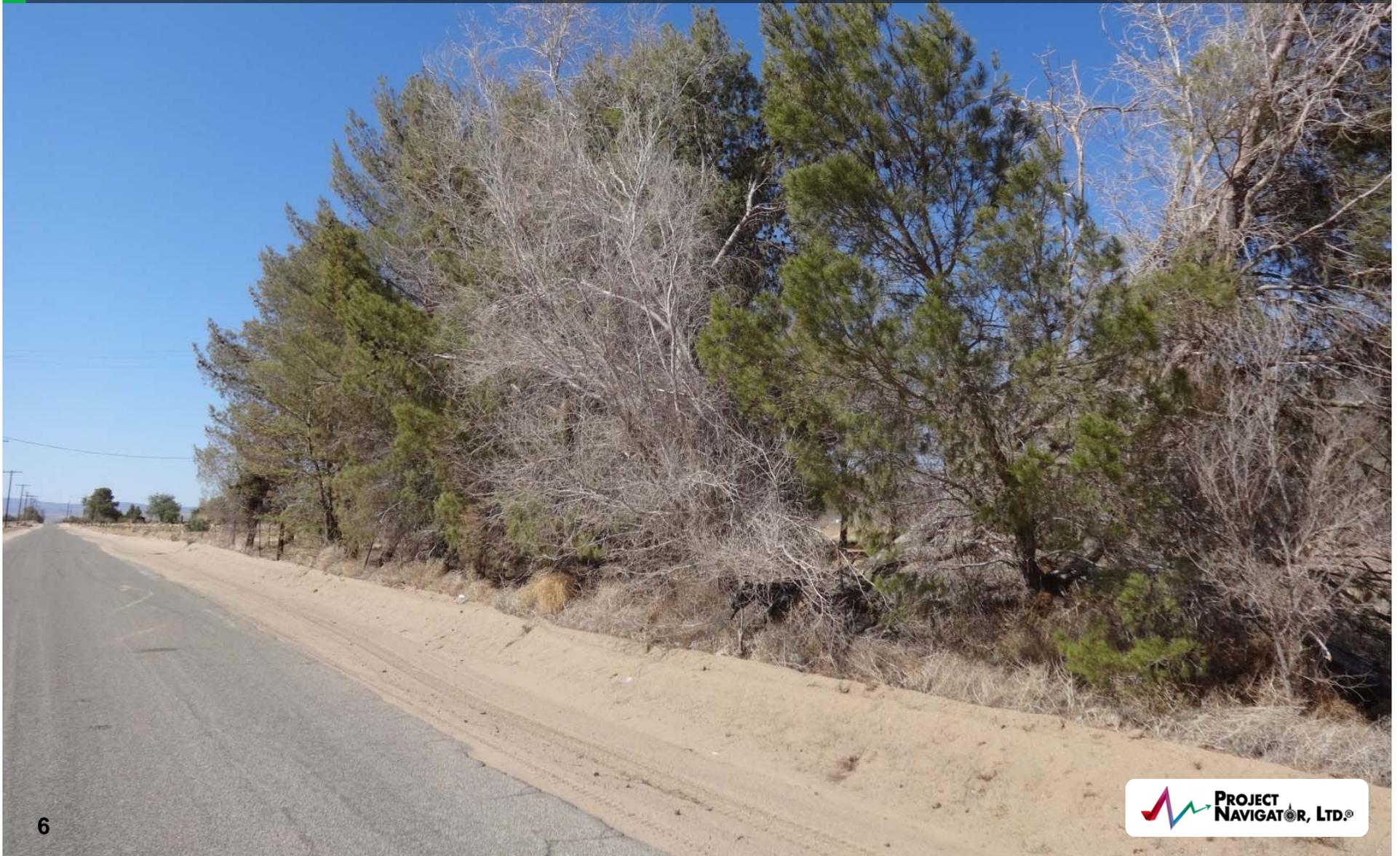


There was a Good Turnout over the 3 Hours during the Community BBQ at the Community Center, with Folks Enjoying Each Others' Company throughout Two Rooms

CAC Member Betty Hernandez and IRP Manager, Dr. Ian Webster made some remarks to clear confusion about the CAC Request to Residents to allow their private well data to be reviewed by USGS's Dr. John Izbicki in his Cr6 Background Study.



Fostering the Establishment of a Few “Issue Specific Sub-groups” Where Community Stakeholders Can Invest Their Time (and Passion) such as Penny Harper and the Watering of Trees on PG&E Owned Property



Continuing Expansion of One-on-One Outreach to Community Members Who Have Unique Specific Problems and Seek Tech Advice



CAC has Retained Annie Cwieka as the CAC Community Meeting Facilitator



Facilitating Dialogue with Various Community Stakeholders Re-defining Their "Most Important" Issues



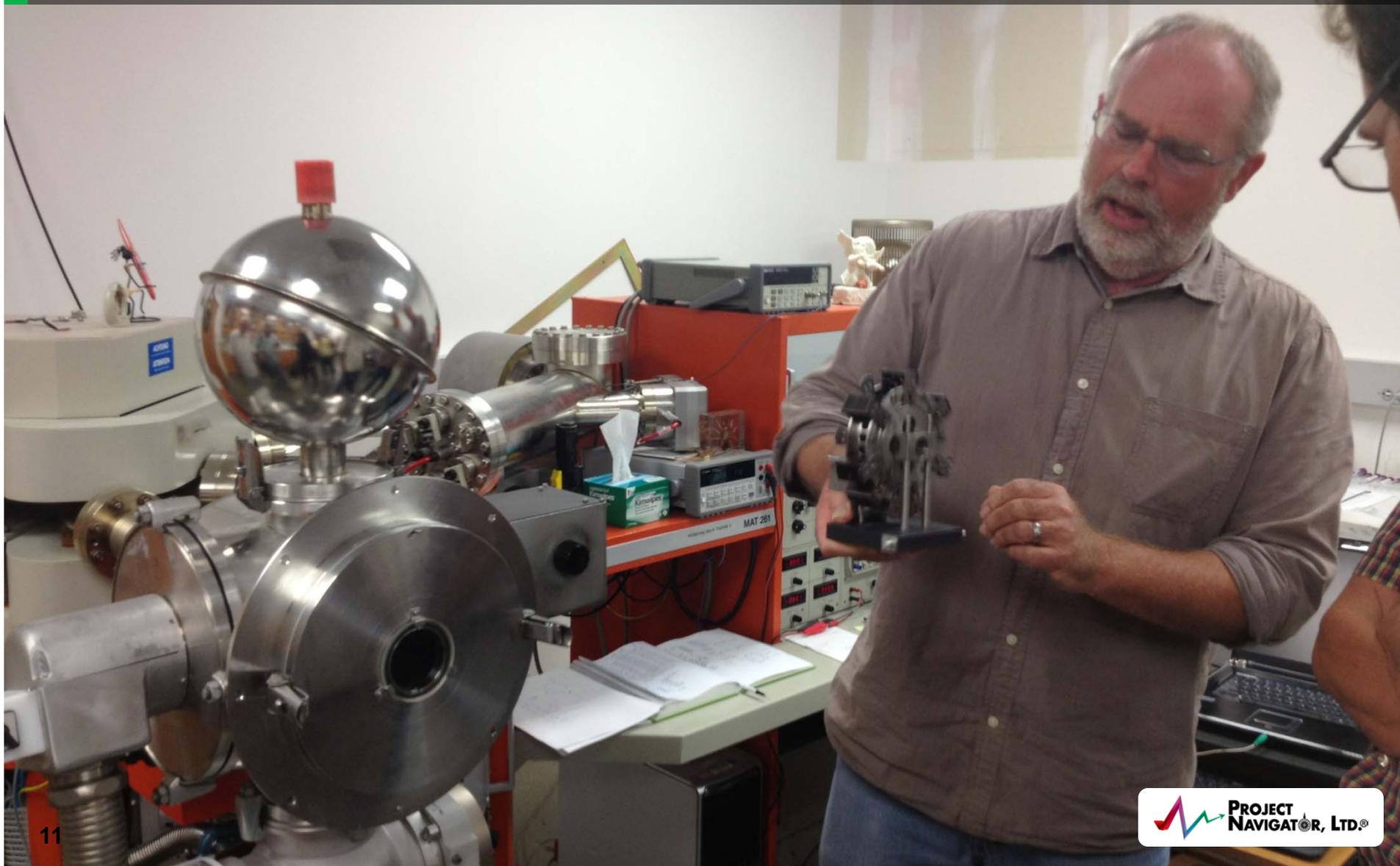
CAC/IRP/PG&E/WB Continue to Work Together to Plan the New Cr6 BGS



04/17/2014 08:34



John Fitzpatrick of USGS Discussing How Cr6 Isotopes will be Measured at the USGS Menlo Park Laboratory for the BGS



Advice to Stakeholders re WHW Program, and Its Pending Termination

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WATER QUALITY

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PG&E to end bottled water delivery for Hinkley residents



Bottled water provided by PG&E is used as the Banks family's primary source of drinking water at their home in Hinkley on Thursday, March 7, 2013. Many residents participate PG&E's water program that provides Culligan and Sparkletts bottled water for cooking and drinking as an alternative to contaminated ground water.

File photo by Rachel Luna — Staff Photographer

Comments

Print

Email

Recommended

By **Jim Steinberg**, *The Sun*

POSTED: 07/30/14, 5:32 PM PDT | UPDATED: 2 WEEKS AGO | 1 COMMENT

HINKLEY >> Pacific Gas & Electric Co. officials have notified residents here that their programs

[READ MORE](#)



MOST POPULAR

DAY WEEK NEWS SPORTS BIZ A&E EMAIL LIFE

Amazon taps Redlands for its fifth California fulfillment center

“Cajon Crawls” dropping part of northbound 15 Freeway to 2 lanes this weekend

High winds, hail bash Needles, snap power poles

Drive-by shooting seriously wounds one man in San Bernardino

San Bernardino crash kills Riverside man, injures 6 others

Amazon plans 700,000 sq. ft. warehouse for Redlands

San Bernardino police seize 10,000 pounds of marijuana

Fontana man arrested after 529 roosters found on the property

Source: <http://www.sbsun.com/environment-and-nature/20140730/pge-to-end-bottled-water-delivery-for-hinkley-residents>

CAC/IRP Involvement /Feedback on the Upcoming CAO



Technical Outreach: Mid-Course Adjustment

2012 / 2013



2014 Vision

■ Outreach and Teaching

- Via CAC
- Monthly Community Meetings

■ Style

- Tough to separate technical from politics

■ Techniques

- Slide decks
- Some models
- Web site (suffers from “content overload”)

■ Use of External Expertise

- Two entities
 - ◆ One for toxicology/risk
 - ◆ One for EIR review and comment

■ IRP Manager’s “Independent” Perspective Emphasized

- Refocus on technical education

■ Meetings

- Many, many more “one-on-ones”
- Workshop format to replace lecture style Community meetings

■ Techniques

- Table top models for workshops
- Videos of similar work elsewhere
- Back to basics style
- Mail delivered newsletter
- Top 4 things (in simple bullets) as website entry splash page

■ Improved Use of External Experts

- As simple as introducing a “new technical face”
- “Guest speaker concept”