

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

**MEETING OF JANUARY 30, 2025  
BARSTOW**

<b>ITEM 5</b>
<b>Status Report on Cleanup Activities Concerning Chromium Contamination from Pacific Gas and Electric Company's Hinkley Compressor Station</b>

<b>CHRONOLOGY</b>	
2002-2007	Pacific Gas & Electric (PG&E) developed and implemented a groundwater sampling program to determine background levels of chromium in the Hinkley Valley. Background levels are needed to determine the boundaries of contamination (i.e., draw plume maps), assess remediation progress, and to set cleanup levels.
2008	Water Board issues Cleanup and Abatement Order (CAO) R6V-2008-0002A1 that establishes average and maximum values for background total and hexavalent chromium, based on PG&E's 2007 Background Study Report. Adopted General Waste Discharge Requirements for PG&E, General Site-Wide Groundwater Remediation Project, Board Order No. R6V-2008-0014 to allow timely and efficient implementation of various remedial activities for hexavalent chromium in groundwater. Remedial projects are authorized by a Notice of Applicability (NOA) of General Waste Discharge Requirements issued by the Executive Officer.
2015	CAO R6V-2015-0068 establishes that background values from CAO R6V-2008-0002A1 will continue to be used and will be referred to as "interim" maximum background concentrations to distinguish these values from other values that may be adopted later based on the results from the United States Geological Survey (USGS) Chromium Background Study.
2023	Final USGS Chromium Background Study Report public release.
2024	CAO R6V-2015-0068-A1 revises the Area of Allowed Plume Expansion

## **BACKGROUND**

This agenda item is an update from Water Board staff, PG&E, and the Independent Review Panel (IRP) Manager on activities since the last update in August 2023 and planned for the upcoming year for chromium contamination cleanup in Hinkley and our efforts to revise the CAO.

## **DISCUSSION**

The Water Board will hear a report on staff oversight, a report of PG&E's remedial actions conducted for chromium cleanup, and a report of the IRP Manager's community outreach and involvement since the last update provided at the August 2023 board meeting. The executive summary from PG&E's second Four-Year Comprehensive Cleanup Status and Effectiveness Report (2020 to 2023) is provided as Enclosure 1.

Water Board staff will provide an update (20 minutes) on:

- Key activities since the last Board Meeting update in August 2023.

PG&E will provide an update (25 minutes) on (Enclosure 2,3):

- A Timeline of Recent Hinkley Project & Regulatory History (Enclosure 4) provides a summary of various historical milestones of the project since 2004.
- Remedial actions conducted in 2024; and
- Progress to reach target chromium concentrations by the associated deadlines in the CAO.

The Hinkley Community IRP Manager, Project Navigator, will provide an update (15 minutes) on (Enclosure 5):

- Outreach and technical advisory services provided to Hinkley Community; and
- IRP review of and outreach for the PG&E Hexavalent Chromium Background Evaluation

## **PUBLIC OUTREACH/INPUT**

Water Board staff provide Status of Action sheets that are discussed during quarterly Hinkley Community meetings and are provided to the community via the "Pacific Gas & Electric Company, Hinkley Chromium Cleanup" interested persons e-mail subscription list; hard copies are mailed to those that had previously requested it.

This agenda item was announced in the December 2024 Independent Review Panel newsletter.

This agenda item was posted to the Water Board's website and distributed to the community via the "Pacific Gas & Electric Company, Hinkley Chromium Cleanup" interested persons e-mail subscription list, and hard copies of the agenda announcement were mailed to those that had previously requested it.

**PRESENTERS**

1. Amanda Lopez, Water Board
2. Iain Baker, PG&E (Enclosure 2)
3. Dr. Raudel Sanchez, Project Navigator (Enclosure 4)

**RECOMMENDATION**

The Annual Status Report is an informational item, and no formal action is requested, though the Water Board members may give direction to staff.

<b>ENCLOSURE</b>	<b>ITEM</b>	<b>BATES NUMBER</b>
<b>1</b>	Executive Summary for PG&Es Four-Year Comprehensive Cleanup Status and Effectiveness Report (2020 to 2023)	<b>5 – 5</b>
<b>2</b>	PG&E presentations: Timeline of Hinkley Project and Site History	<b>5 – 13</b>
<b>3</b>	PG&E Annual Status Update of the Groundwater Remediation Program	<b>5 – 27</b>
<b>4</b>	PG&E Recent Project & Regulatory History Overview Memo	<b>5 – 47</b>
<b>5</b>	IRP Manager Community Outreach Summary Presentation	<b>5 – 51</b>



# **ENCLOSURE 1**



Pacific Gas and Electric Company

# **Four-Year Comprehensive Cleanup Status and Effectiveness Report (2020 to 2023)**

**Hinkley Compressor Station  
Hinkley, California  
Cleanup and Abatement Order  
No R6V-2015-0068**

March 29, 2024

## Executive Summary

This Four-Year Comprehensive Cleanup Status and Effectiveness Report (2020 to 2023) (report) provides a comprehensive evaluation of the effectiveness of remedy components (including hydraulic containment, agricultural operations, and in situ treatment) that have been implemented to date at the Pacific Gas and Electric Company Hinkley Compressor Station, located in Hinkley California, towards reaching remedial targets specified in the Cleanup and Abatement Order No. R6V-2015-0068, issued on November 4, 2015 (2015 CAO; California Regional Water Quality Control Board, Lahontan Region [Water Board] 2015). The report also recommends improvements for remedy performance and includes the operational plan for 2024. Exhibit ES-1 below summarizes the key construction and optimization activities, effectiveness evaluations, and recommendations for improvements from observations made between January and December 2023.

The 2015 CAO (Water Board 2015) established cleanup requirements for the Hinkley Compressor Station including the following cleanup timeframes for the southern plume in Requirement VI:

- Reach and maintain 50 parts per billion (ppb; equivalent to micrograms per liter [ $\mu\text{g/L}$ ]) hexavalent chromium (Cr(VI)) and total chromium in 90 percent of the 50 ppb Cr(VI) plume as of the date of the 2015 CAO by December 31, 2025, as determined by a specified set of monitoring wells; and
- Reach and maintain 10 ppb Cr(VI) and total chromium in 80 percent of the 10 ppb Cr(VI) plume as of the date of the 2015 CAO by December 31, 2032, as determined by a specified set of monitoring wells.

In 2014, Arcadis U.S., Inc. (Arcadis) conducted a remedial timeframe assessment (Remedial Timeframe Assessment report [RTA]; Arcadis 2014a) that estimated remedial timeframes based on a preliminary design of remedial infrastructure and a preliminary plan of construction sequencing and operations. The estimated timeframes from the RTA informed the cleanup timelines adopted in the 2015 CAO (Water Board 2015), although the deadlines established in the 2015 CAO are sooner, i.e., more optimistic, than the range of estimates identified in the RTA.

Since the 2015 CAO (Water Board 2015) was issued, considerable progress has been made in remedy implementation. The majority of infrastructure planned in the RTA (Arcadis 2014a) was constructed by 2019, with several components installed earlier than planned in the RTA. Improvements to the remedy, beyond what was planned in the RTA, are made when areas that warrant additional infrastructure are identified each year as part of adaptive management. To date, more than triple the amount of remedial infrastructure that was planned in the RTA has been installed (i.e., 117 remedial wells have been installed since 2015 in comparison to the 35 that were planned in the RTA). The Four-Year Comprehensive Cleanup Status and Effectiveness Report (2016 to 2019) (Arcadis 2020a) and subsequent 2020 Remedial Timeframe Assessment Action Plan (Arcadis 2020b) recommended seven new construction projects to improve the remedy. Between 2020 and 2023, many additional projects beyond those seven have been constructed and operated.

Considerable progress toward reaching the 2015 CAO (Water Board 2015) deadlines has been made since 2015. Significant plume contraction in the northern portion of the plume continued in 2023. In February 2022, further optimization of the pumping configuration to improve mass removal and plume contraction was initiated and has been successful to date. The groundwater extraction and Agricultural Treatment Unit (ATU) operations for containment have also provided a secondary benefit of nitrate removal, with approximately 395 tons of nitrate in groundwater from pre-existing land use activities removed from 1992 through 2023.

Progress has been made since 2015 in reduction in the 50 µg/L and 10 µg/L Cr(VI) plumes and in mass removal, with 89 percent of the mass removed from groundwater to date. Progress temporarily slowed in 2020 and 2021 because new projects were in the process of being built and the enhancement took some time to show improvements. Progress resumed in 2022 and 2023 with improvements from several new infrastructure projects realized. However, there were several challenges identified in the Four-Year Comprehensive Cleanup Status and Effectiveness Report (2016 to 2019) (Arcadis 2020a) that continue to impact remedy effectiveness and create uncertainty in reaching 2015 CAO remedial goals (Water Board 2015) as follows:

- There is uncertainty associated with areas of elevated chromium concentrations that were unknown in 2015 until proactive investigation identified them, which have been slower to be treated to remedial targets than anticipated. In Situ Reactive Zone (IRZ) injections were increased in 2022 to address these areas and were successful in reducing Cr(VI) concentrations. However, the increased injections resulted in plume expansion, and the injections had to be greatly reduced to allow the plume to contract, thereby limiting plume treatment and progress toward 2015 CAO remedial targets (Water Board 2015). A revision to the Area of Allowed Plume Expansion in Attachment 3 of the 2015 CAO was recommended early in 2023 to allow temporary and quantified plume expansion, as envisioned in the 2015 CAO, to conduct the IRZ injections necessary to achieve 2015 CAO remediation targets (Arcadis 2023d). The long timeframe to reach a decision on that request is impeding progress toward achieving Cleanup Abatement Order (CAO) remedial timeframe targets.
- Areas where the hydrogeologic conditions may be influenced by the complexity of the Lockhart Fault system splays identified by the U.S. Geological Survey as part of the chromium background study, and complex hydrogeologic conditions within the plume core delta deposits are limiting the effectiveness of existing remedial infrastructure and complicating plans for future designs. One example is the confined unit causing the plume expansion with IRZ injections noted in the bullet above. These subsurface complexities were not realized until remedial activities involving injection and or extraction from the aquifer revealed them.
- Areas that are becoming dewatered due to drought conditions are resulting in very thin saturated areas containing elevated chromium concentrations that are difficult to treat with IRZ injection and limit groundwater extraction. Because of the lack of Mojave River flows and limited Lenwood Recharge Basin imports in recent years, groundwater levels in the Hinkley Valley and greater area have shown a steady decline since 2011, when the last significant Mojave River flows prior to 2023 occurred. Groundwater levels have decreased up to 40 feet in the Hinkley Valley agricultural area east of the chromium plume from 2011 through 2023. Groundwater levels within the plume core have also steadily declined by more than 20 feet in some areas over this period, creating complex conditions for remedial activities. A brief period of Mojave River flows occurred in 2023 along with the resumption of Lenwood Recharge Basin imports, resulting in recharge in the southeastern Hinkley Valley, but recharge from these events has yet to be observed within the plume core.

In this report, a comprehensive evaluation of whether the remedy is on track to reach target concentrations listed in CAO Requirement IV, with a focus on the 50 µg/L target of December 31, 2025, is presented. Based on the monitoring data from 2015 through 2023, there has been an approximately 77 percent reduction in the 50 µg/L plume (23 percent remaining). These actual performance results to date show an improvement in the rate of decline in the 50 µg/L plume area in the last 4 years, putting progress on track to meet the 2025 goal. However, as will be discussed in this comprehensive evaluation, the plume that is left to be treated is situated in the most challenging settings within the complex hydrogeologic environment of the site and will be harder to treat than the first 77 percent, and the modeling results indicate additional work may be needed to reach the 2025 goal. In accordance with the CAO, an action plan will be submitted following this report to propose remedy

Four-Year Comprehensive Cleanup Status and Effectiveness Report (2020 to 2023)

enhancements. These enhancements, in conjunction with the extra remedy infrastructure installed to date and the Water Board issuance of the CAO revision to expand the Area of Allowed Plume Expansion, are expected to decrease the uncertainty of reaching the 2025 goal for 90 percent treatment of the 50 µg/L plume.

The changes to sampling frequencies under 2015 CAO Requirements I.C and I.D (Water Board 2015) in 2024 included a decreased sampling frequency in 10 wells and increased sampling frequency in 6 wells. During 2023, remedial systems were operated according to the monthly goals set forth in the 2023 operational plan (Arcadis 2021a), with the following exceptions. IRZ operations were below plan 7 out of 12 months. Planned IRZ monthly injection flow rates were not met due to reductions in flow rates in the eastern Central Area and eastern SCRIA IRZs to prevent eastern plume expansion while the Water Board’s issuance of a revised CAO amending the Area of Allowed Plume Expansion is pending. The Northern ATUs were below goals in January through March 2023 when rates were reduced to prevent overwatering and crop damage because heavy rains and cooler temperatures limited the need for irrigation, but capture was maintained despite the reduction in flow.

Exhibit ES-1 2023 Remedy Summary

Remedial System/Area	Were Plans for 2023 Construction Implemented? <sup>a</sup>	Additional Construction Activities <sup>b</sup>	System Effectiveness	Changes Recommended for 2024
Hydraulic Containment North	<b>Yes</b> Transitioned two successful optimizations from pilot tests to routine	<b>Not applicable</b>	<b>Effective</b> <ul style="list-style-type: none"> <li>• Successful containment and optimization ahead of plan; and</li> <li>• Significant plume contraction continued.</li> </ul>	<b>None</b>
Hydraulic Containment South	<b>No</b> CAO amendment pending	<b>Yes</b> One extraction well	<b>Effective, with exceptions</b> IRZ injections continued to be reduced to avoid plume expansion.	<b>Yes</b> Amend 2015 CAO Attachment 3 to allow for eastern Central Area and Deep East SCRIA IRZ treatment to resume at higher rates
Lower Aquifer	<b>None</b>	<b>Not applicable</b>	<b>Effective, with recommendations</b>	<b>None</b>
Central Area IRZ	<b>Not applicable</b>	<b>Yes</b> One injection well	<b>Effective, with recommendations</b> Eastern Central Area treatment is limited because of plume expansion during injection.	<b>Yes</b> <ul style="list-style-type: none"> <li>• Perform field investigation in eastern Central Area; and</li> <li>• Amend Areas of Allowed Expansion in 2015 CAO Attachment 3 to allow eastern Central Area treatment to resume at higher injection rates.</li> </ul>

Four-Year Comprehensive Cleanup Status and Effectiveness Report (2020 to 2023)

Remedial System/Area	Were Plans for 2023 Construction Implemented? <sup>a</sup>	Additional Construction Activities <sup>b</sup>	System Effectiveness	Changes Recommended for 2024
SCRIA IRZ	<b>Yes</b> One injection well	<b>Yes</b> Three injection wells	<b>Effective, with exceptions</b> <ul style="list-style-type: none"> <li>• Cr(VI) concentrations decreased in southwest and northwest; and</li> <li>• IRZ treatment is limited in east to manage plume expansion.</li> </ul>	<b>Yes</b> Water Board approval to amend Area of Allowed Expansion in 2015 CAO Attachment 3 to allow Deep East SCRIA IRZ treatment to resume at higher injection rates.
WCB IRZ	<b>Yes</b> One injection well	<b>Yes</b> Two injection wells	<b>Effective</b> <ul style="list-style-type: none"> <li>• Significant Cr(VI) concentration reductions due to WCB IRZ operations and new infrastructure.</li> </ul>	<b>None</b>
Source Area IRZ	<b>Not applicable</b>	<b>Yes</b> One injection well	<b>Effective, with recommendations</b> <ul style="list-style-type: none"> <li>• Cr(VI) treatment improved with new infrastructure; and</li> <li>• Areas for improvement identified.</li> </ul>	<b>Yes</b> Enhance remedy in the Source Area to improve treatment in both shallow and deep zones.

**Notes:**

<sup>a</sup> 2023 construction plan as presented in Arcadis 2023c.

<sup>b</sup> Construction activities in addition to those in the 2014 RTA (Arcadis 2014a).

SCRIA = South Central ReInjection Area

WCB = Western Community Boulevard



# **ENCLOSURE 2**



# PG&E Hinkley Compressor Station

Hexavalent Chromium Groundwater  
Remediation Program Overview

January 2025





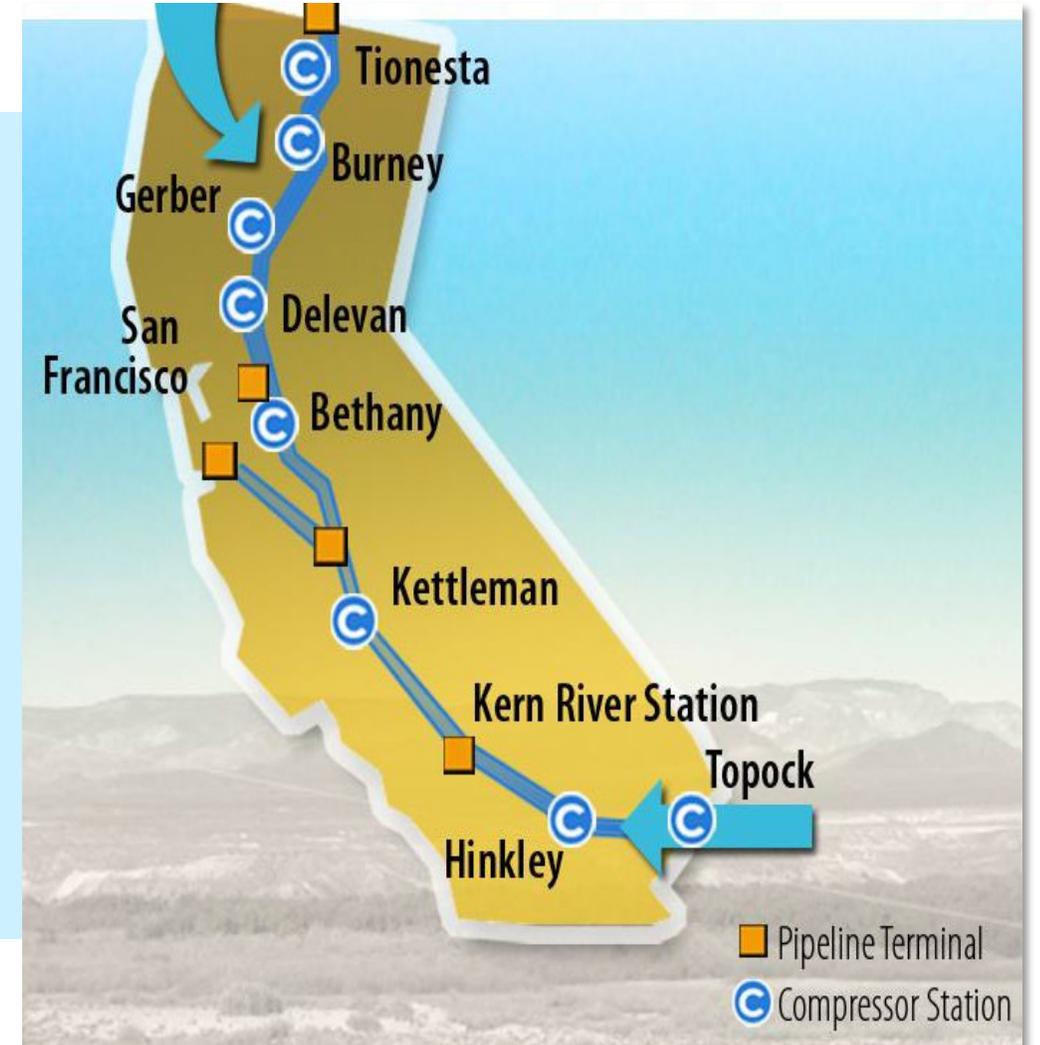
**Natural gas received from outside California via Arizona and Oregon**



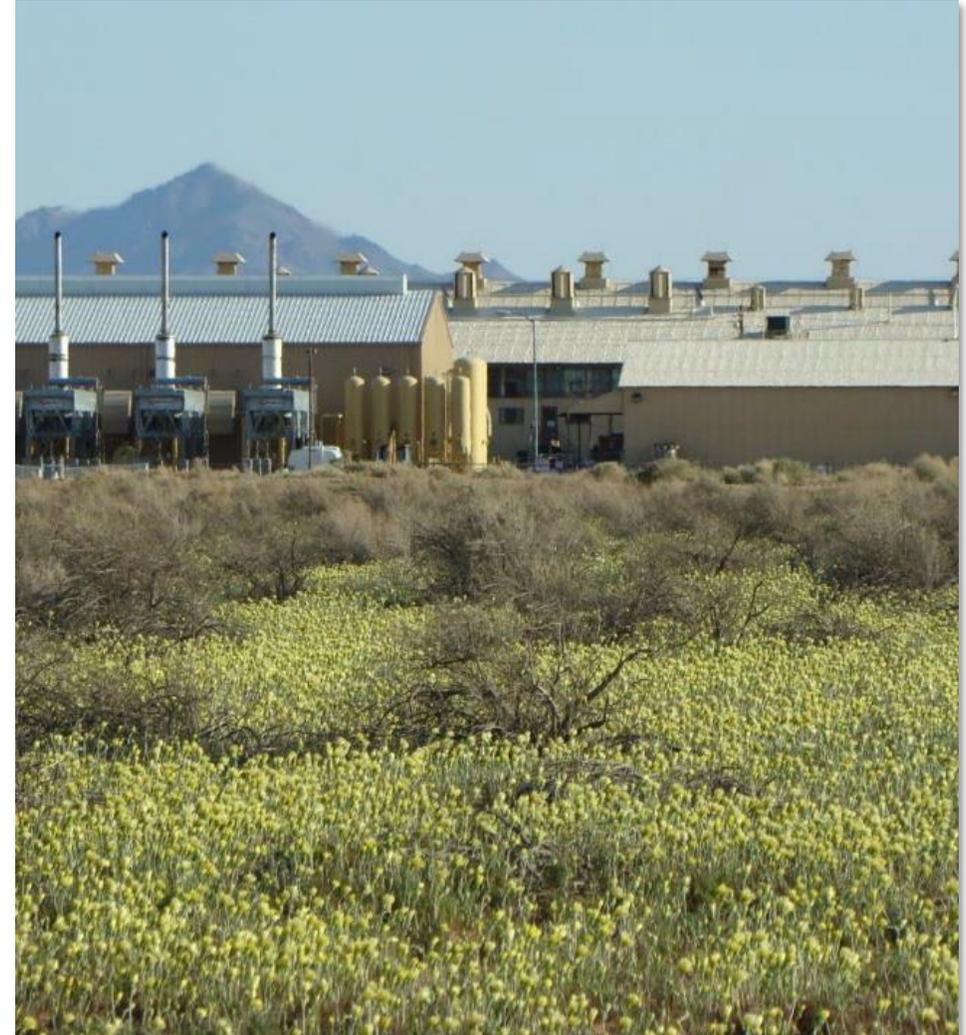
**10 gas-fired compressors re-pressurize the gas to push it into PG&E's pipelines**



**Compressed gas is cooled with cooling towers**



- 1952-1964** ● Cooling water containing hexavalent chromium (Cr(VI)) to prevent corrosion was disposed of in unlined evaporation ponds
- 1987** ● The Lahontan Regional Water Quality Control Board (Water Board) issues a Cleanup and Abatement Order (CAO) directing PG&E to undertake specified site investigation activities
- 1992-2001** ● Groundwater remediation with Land Treatment Units and spray irrigation





# Remedy Selection Regulatory Milestones

• **New CAO** issued, included requirement for FS

• **CEQA** evaluation complete and **EIR** finalized

• **New CAO** issued, included timeframes for treatment of 10 and 50 ppb plumes



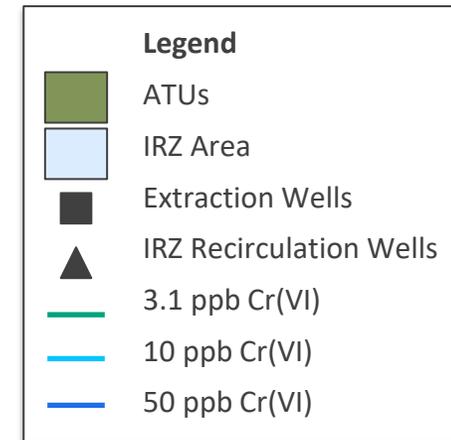
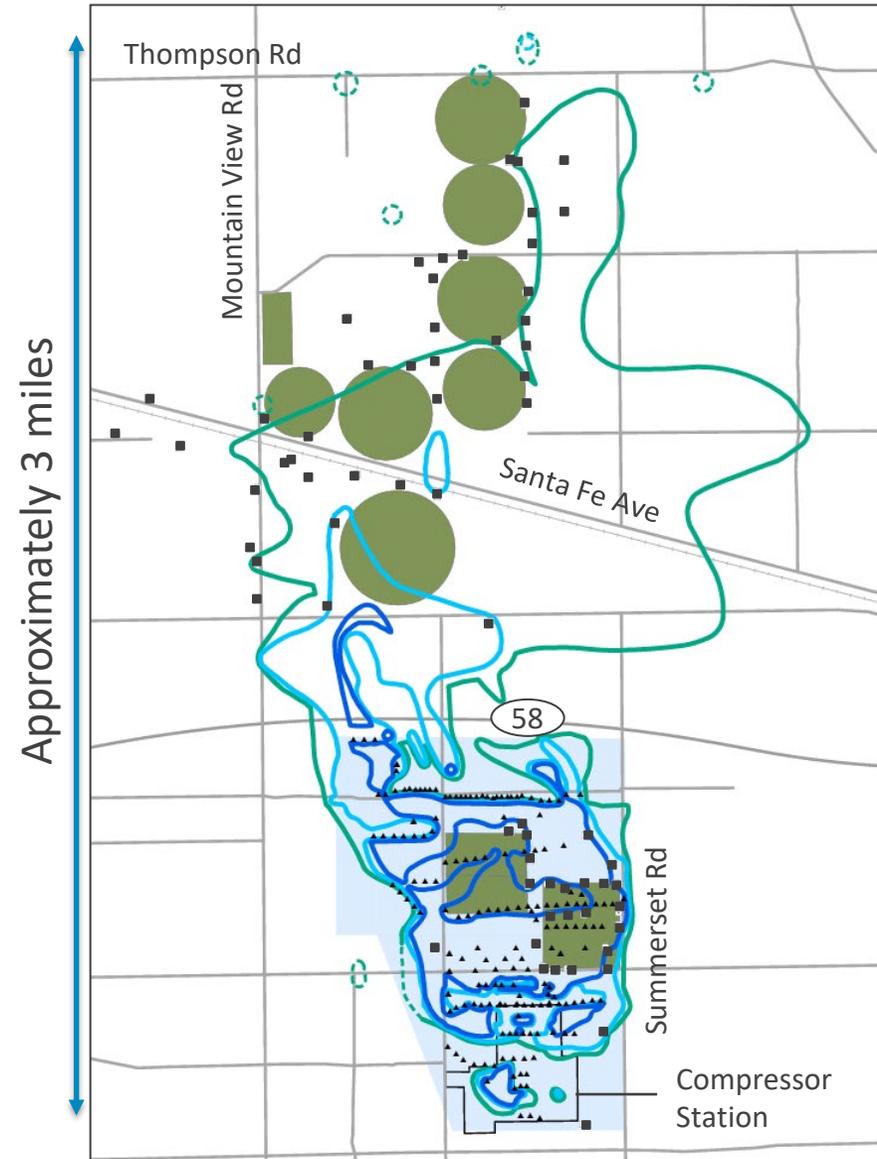
**Feasibility Study** conducted and remedy components selected

**United States Geological Survey** conducts **Background Study** and publishes findings

# Domestic Well Supply Protection

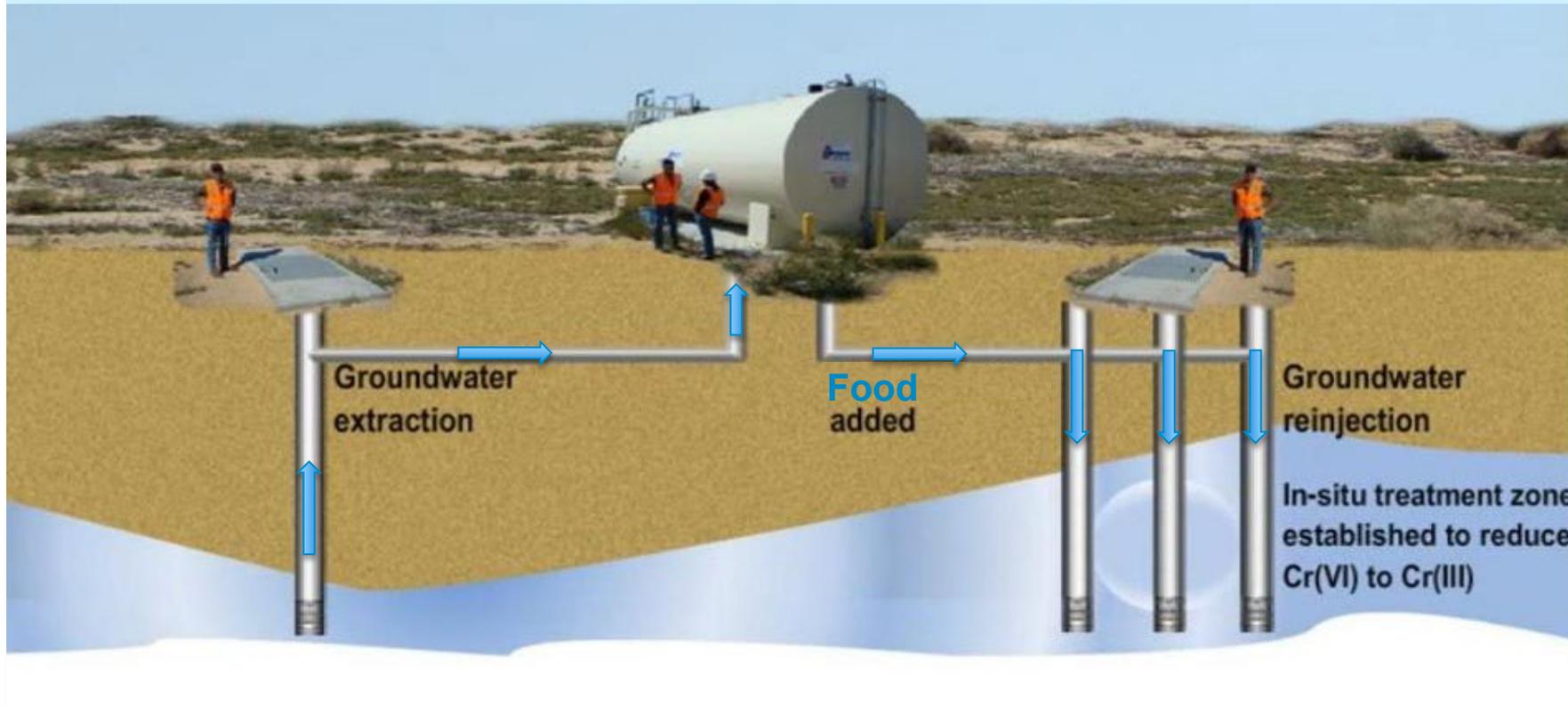
- **2015 CAO requires Cr(VI) plume containment**
- **Domestic supply well monitoring and protection programs include:**
  - 2015 CAO- Replacement water required if Cr(VI) concentrations increasing toward Cr(VI) MCL of 10 ppb
  - Mitigation program required by remediation permits- Replacement water required if a supply well is potentially or actually affected due to remediation
- **Currently chromium concentrations in all domestic wells meet safe drinking water standards**

# Groundwater Remedy Components

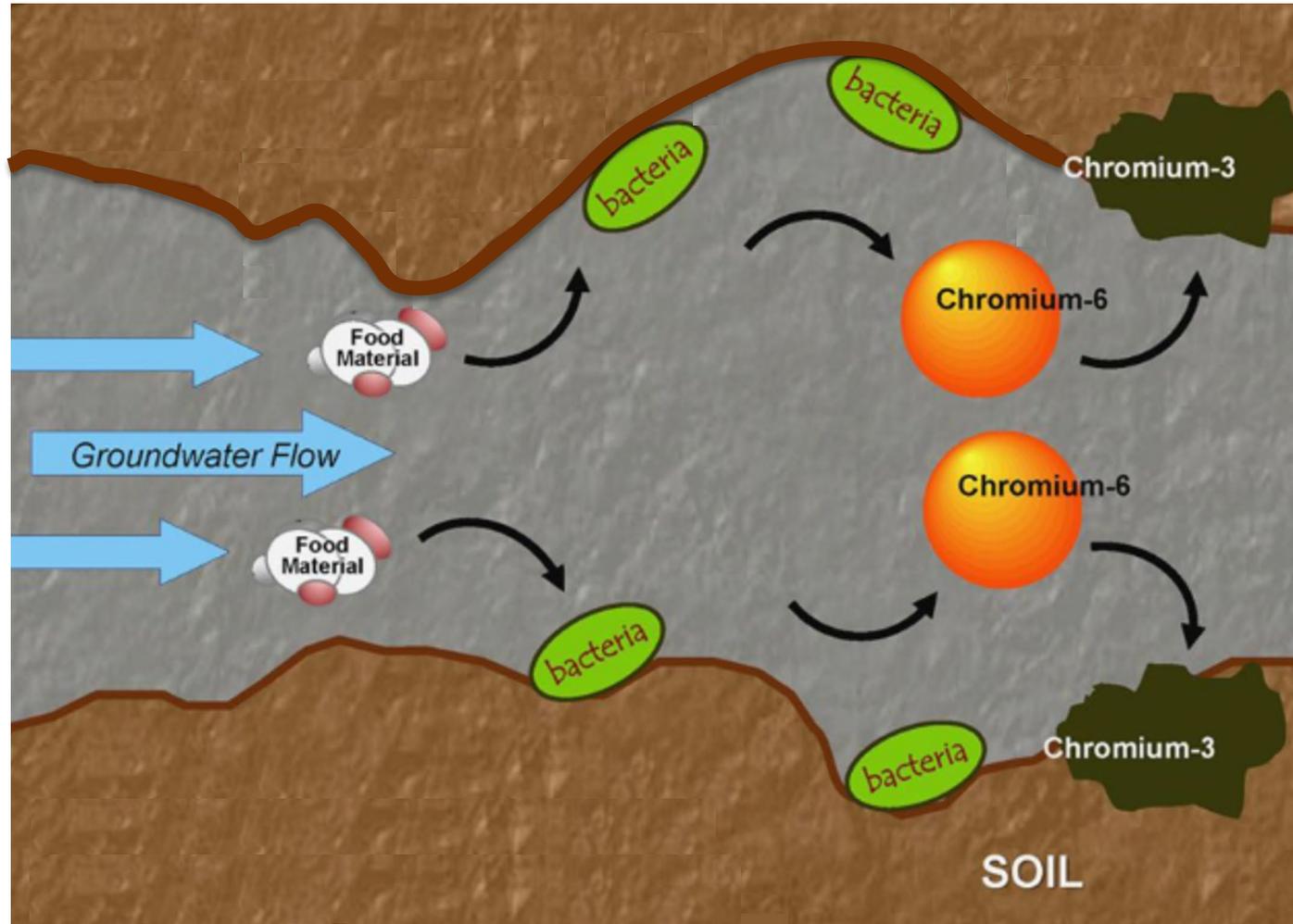


# In Situ Reactive Zones (IRZs)

Injection of food (ethanol) to the aquifer stimulates growth of naturally occurring bacteria that reduce Cr(VI)



# The In Situ Chromium Reduction Process



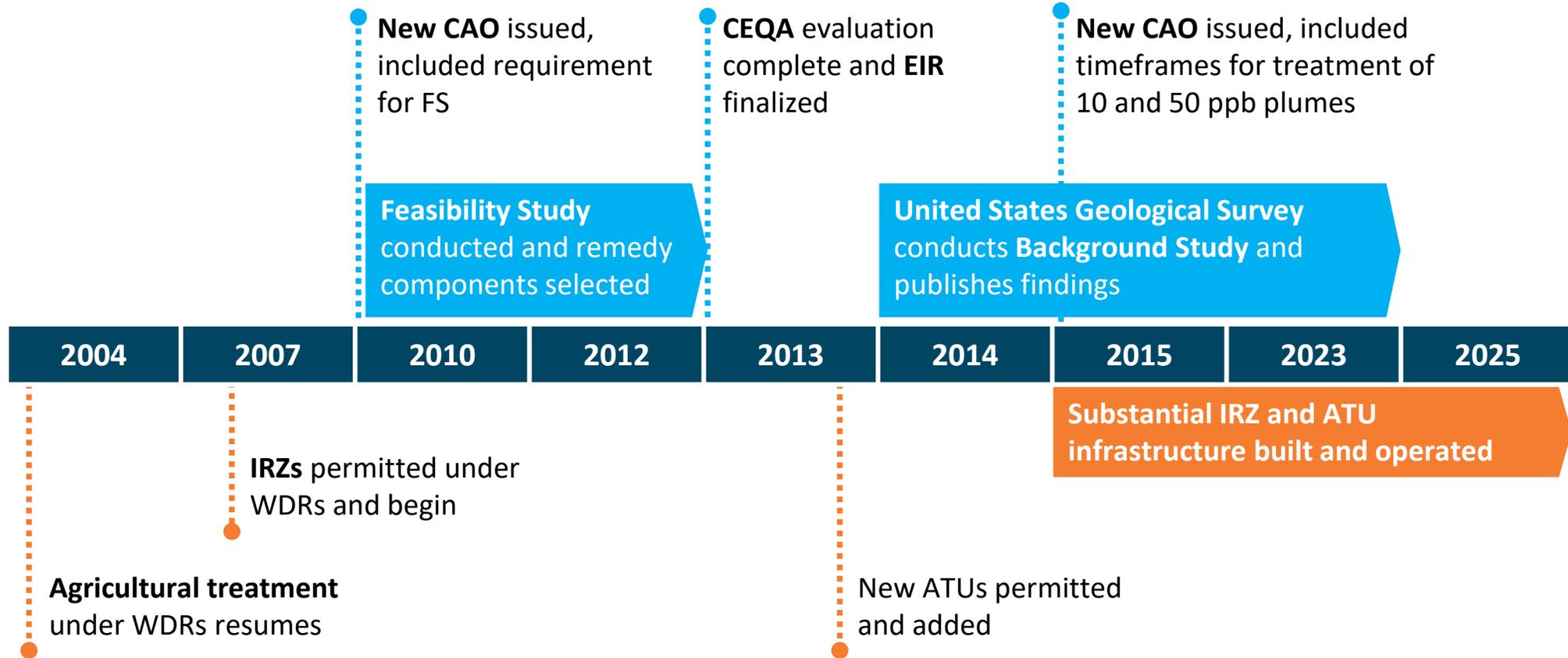
# Agricultural Treatment Units (ATUs)

- ✓ Sustainable remediation consistent with local land use
- ✓ Partner with local farmers to grow and harvest crops
- ✓ Cr(VI) reduction in the root zone
- ✓ Removes tons of nitrate
- ✓ Application via drag drip
  - Low Energy Precision Application (LEPA) system water savings of 10% over spray irrigation





# ATU and IRZ Remediation Timeline



**LEGEND:** ■ Remedy Selection Regulatory Milestones ■ ATU and IRZ Remediation Timeline



Ethanol Tank



IRZ Wellhead Equipment in Vault

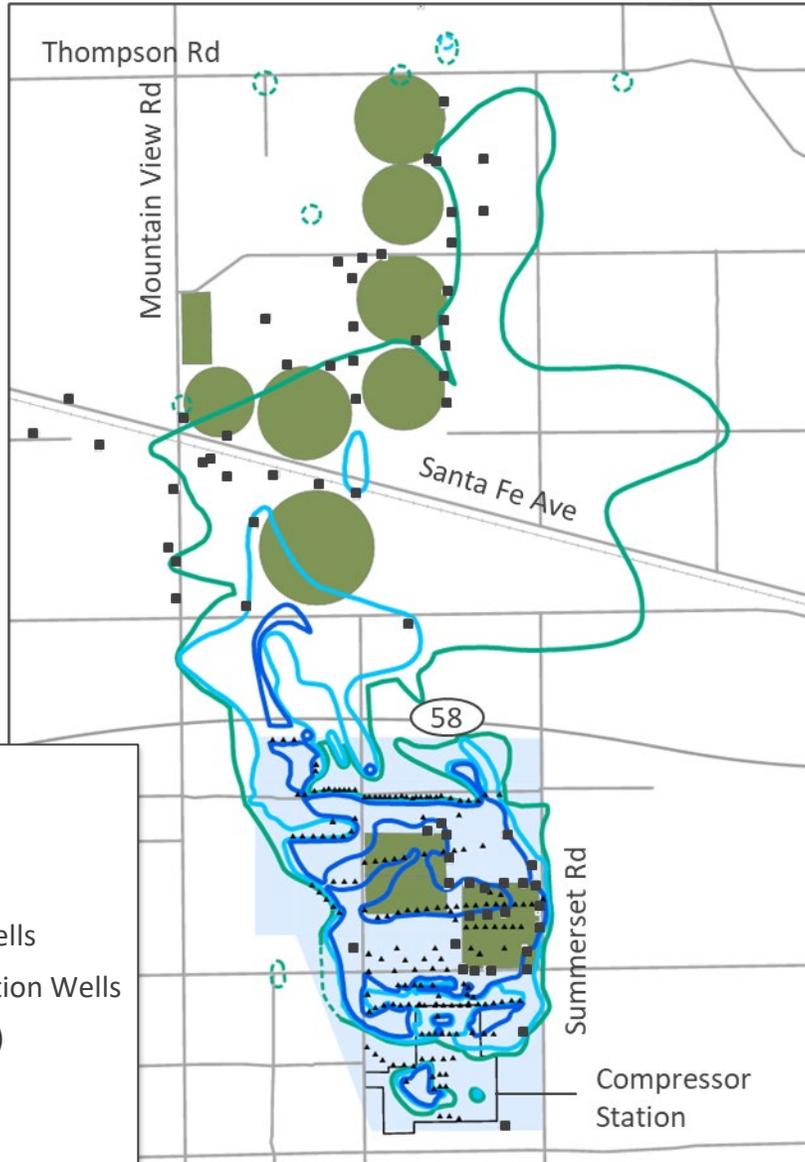


Pipelines



Extraction Wellhead

# Remedy Infrastructure



**300** acres of ATUs: 200 active, 100 followed

**68** extraction wells

**2** ethanol tanks and dosing systems

**177** IRZ recirculation wells

**~725** monitoring wells

**26** miles of pipeline

**14** miles of electrical conduit

# **ENCLOSURE 3**



# Hinkley – Groundwater Remediation Program

January 2025

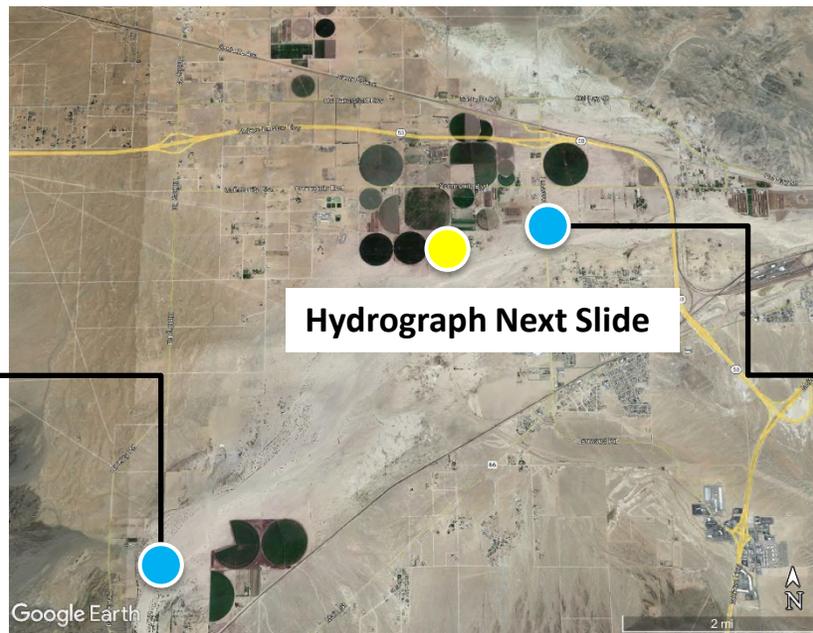
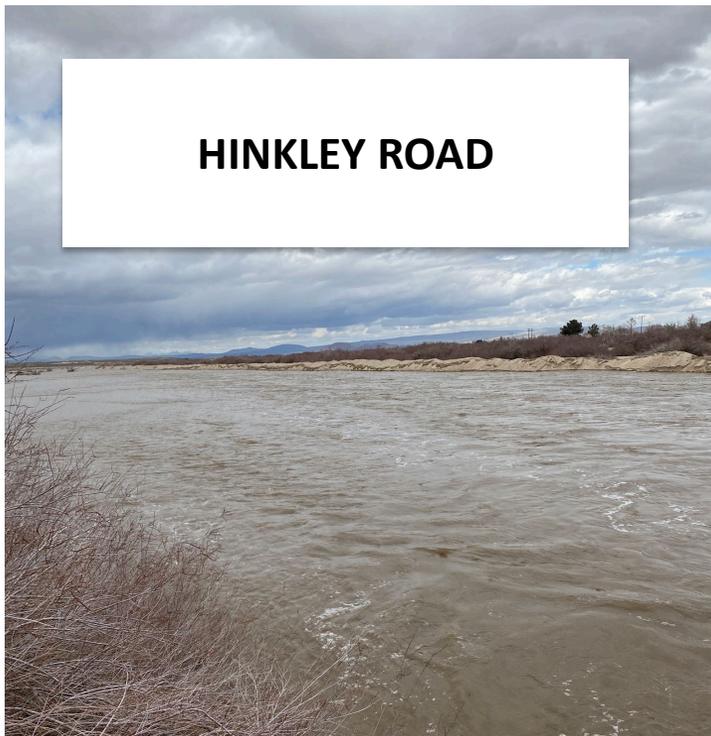


**PG&E is committed to doing what's right for the Hinkley community, and we will be here until we finish the job.**

- Remediation Challenges and Responses
- Remedy Implementation 2023/2024
- Remediation Progress
- Looking Forward



**HINKLEY ROAD**

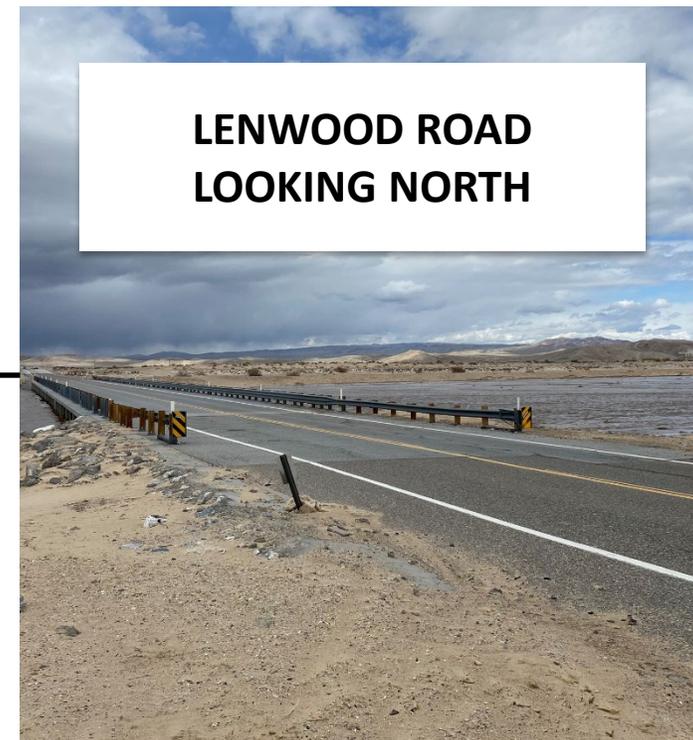


Hydrograph Next Slide

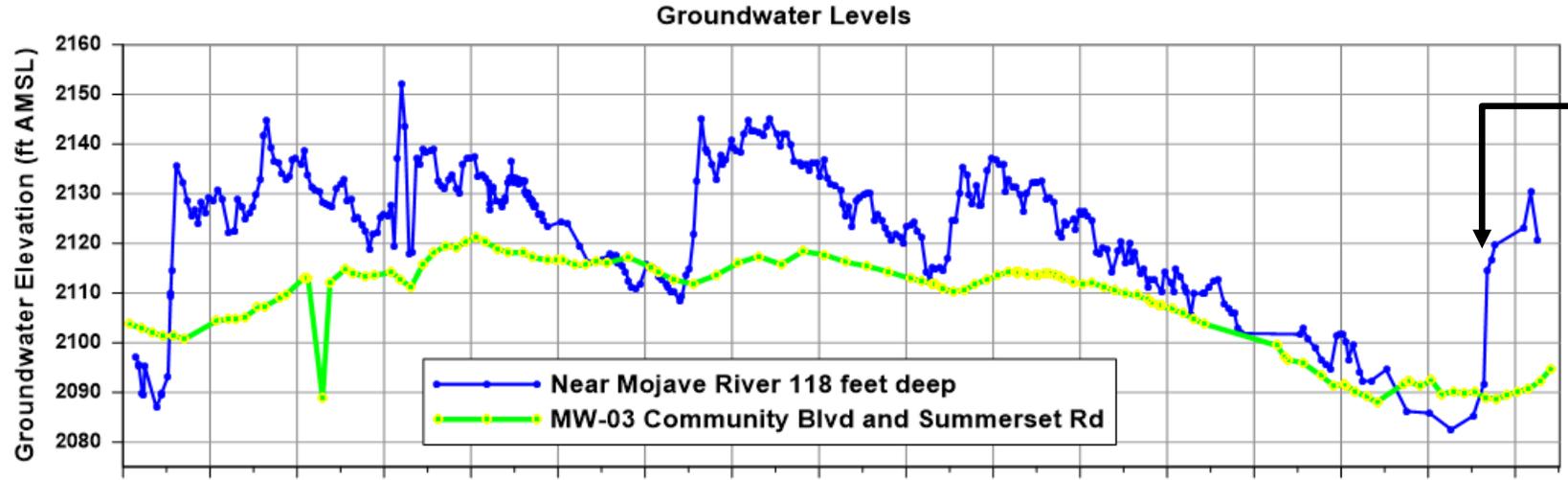
**LEGEND**

-  Picture Location
-  Hydrograph Location

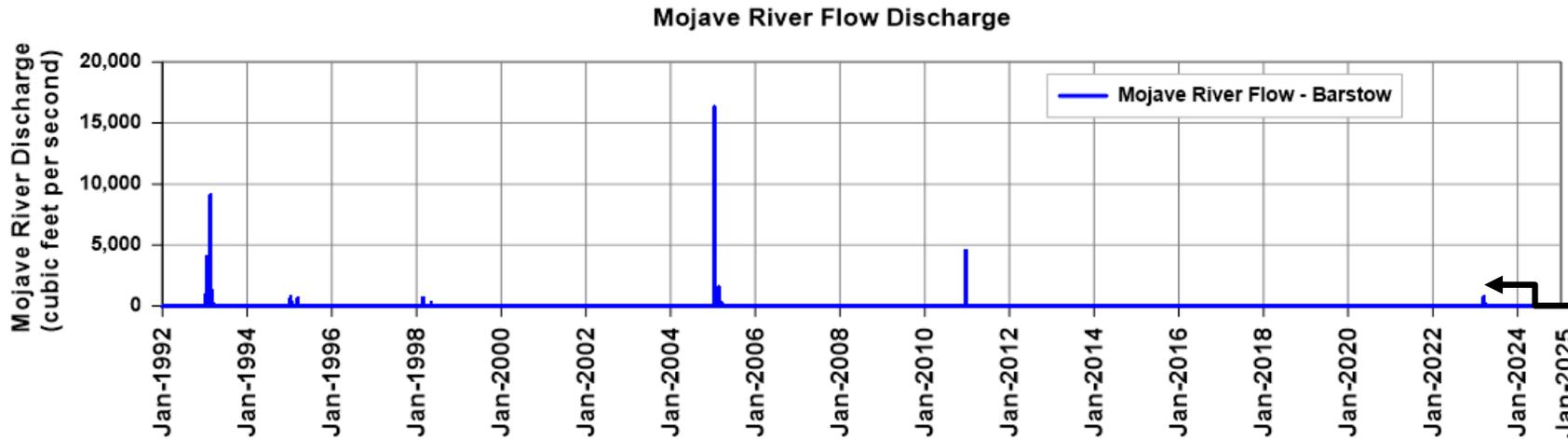
**LENWOOD ROAD  
LOOKING NORTH**



# Historical River Flow Monitoring Well Response



2023 Flow Response at Hinkley

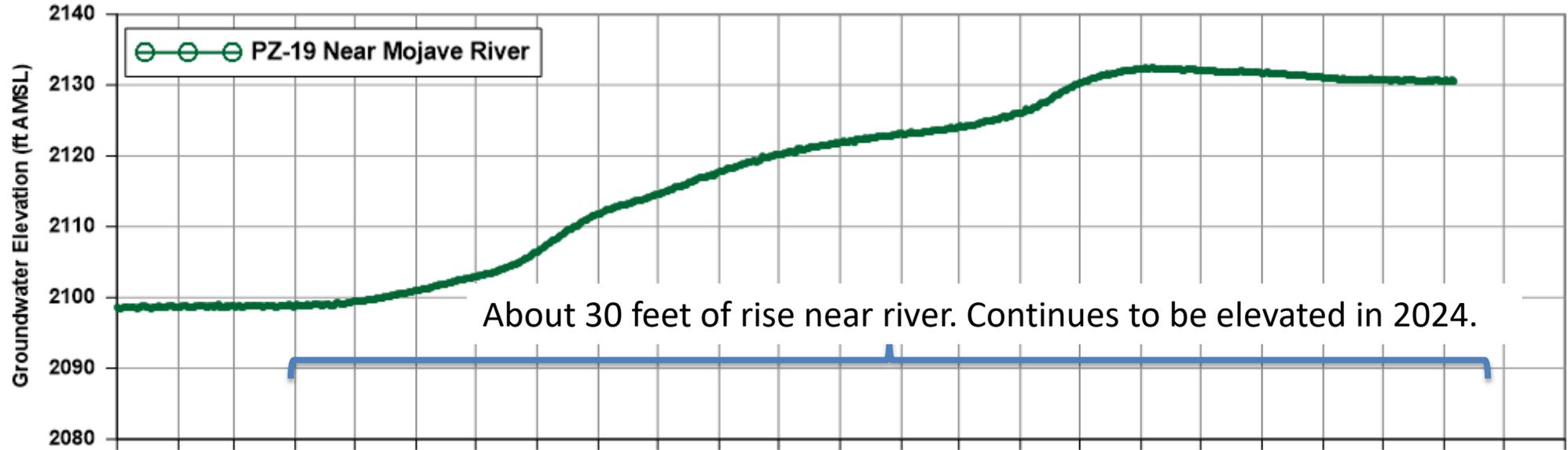


2023 Small Flow in Barstow over 2-weeks

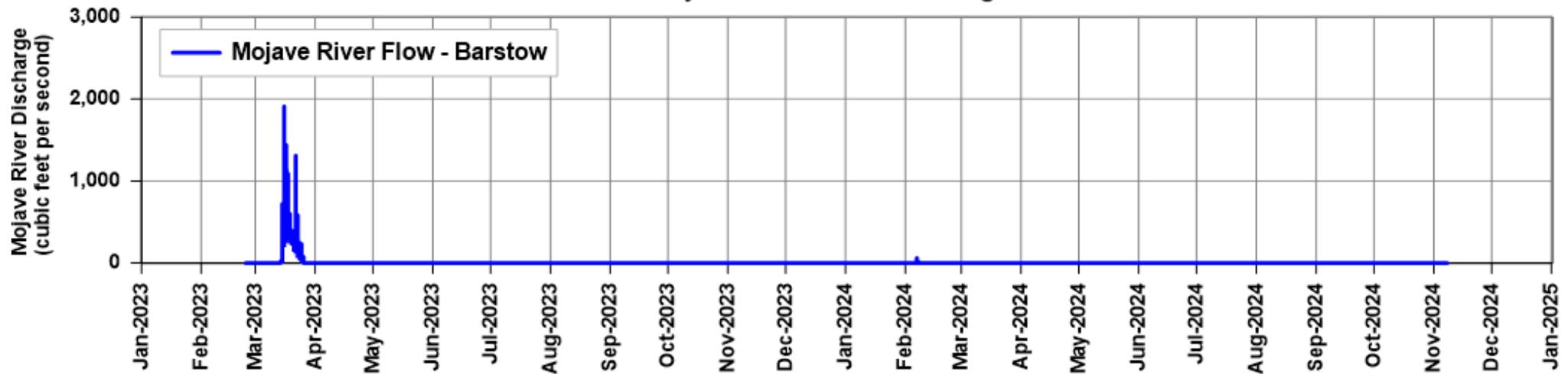


# 2023/2024 Mojave River Flow Monitoring Well Response

### Groundwater Levels

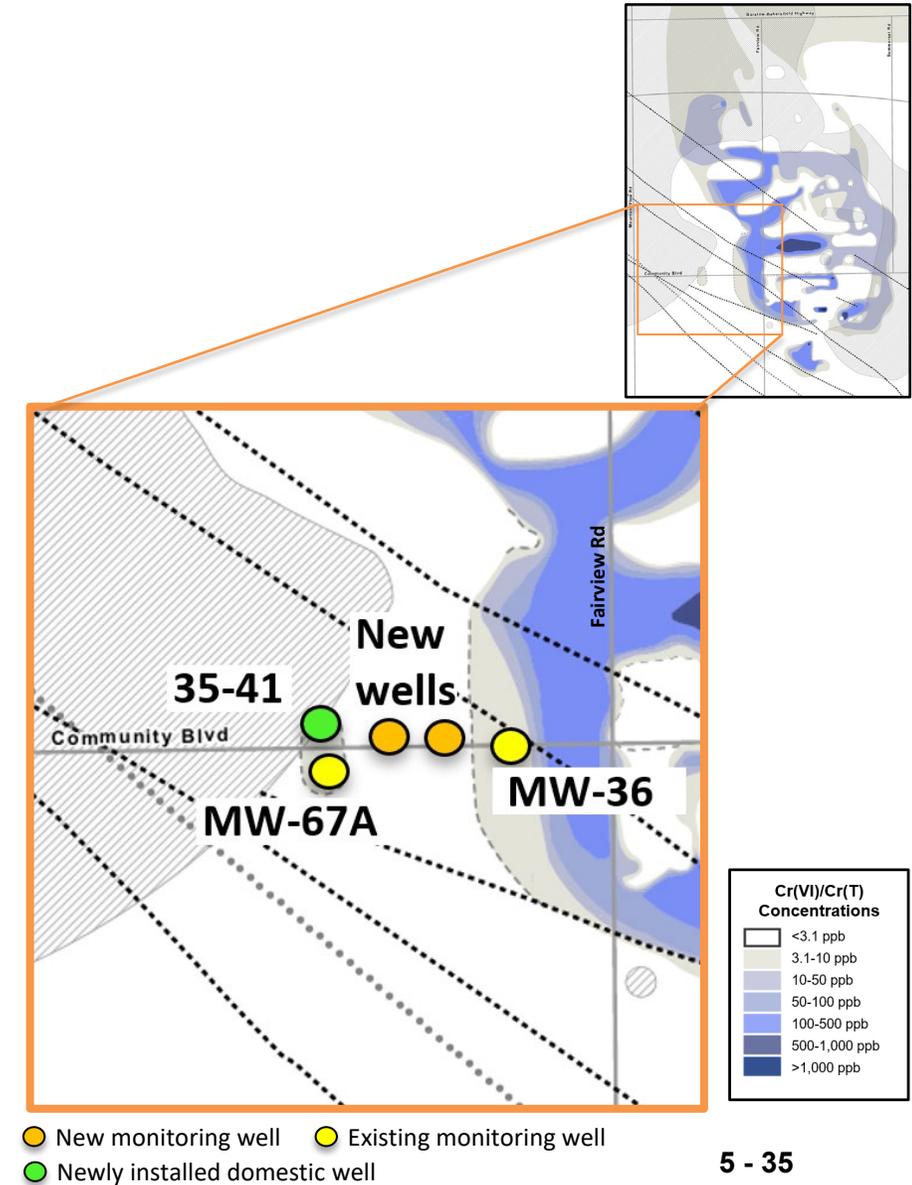


### Mojave River Flow Discharge



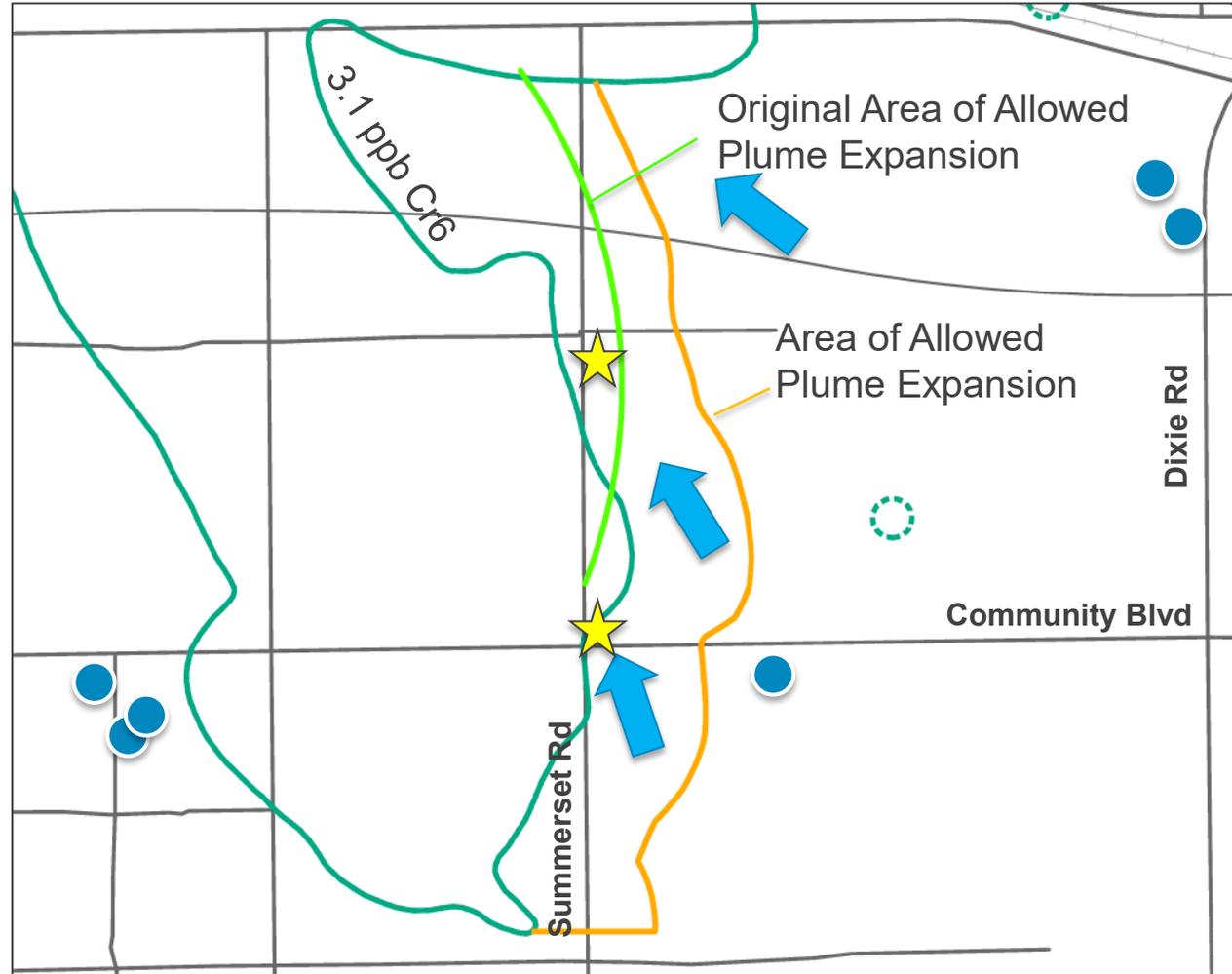
# Southwestern Boundary: Fluctuating Chromium and Response

- Fluctuating chromium concentrations have been observed in 2024 at monitoring wells MW-67A and MW-36, and newly installed domestic well 35-41.
- Tenant was immediately provided with bottled water in July following the first sample collected at 35-41.
  - Tennant will continue to be provided with bottled water.
  - Most recent results (November 2024) at domestic well 35-41 were less than 1 ppb.
- Additional monitoring wells were installed in November 2024.
- MW-67A and 35-41 continue to be sampled monthly.



# New Area of Allowed Plume Expansion for Increased IRZ Operations

New area allows for robust IRZ injections to resume in eastern confined unit



**LEGEND**

- Area of Increased Cr6 Concentration
- Groundwater Flow Direction
- Active Domestic Wells

- Installed and began sampling new monitoring wells – March 2024
- Water Board Revised CAO – May 21, 2024
- Increased injection on June 11, 2024

**In response to dynamic conditions, PG&E has actively refined, improved and enhanced their remedial efforts across 30 projects since 2015 including:**

- Installation of **112 remedial wells**
- Addition of **56 monitoring wells and piezometers**
- Undergrounding of **35,620 feet of piping**
- Placement of **24,911 feet of electrical lines**



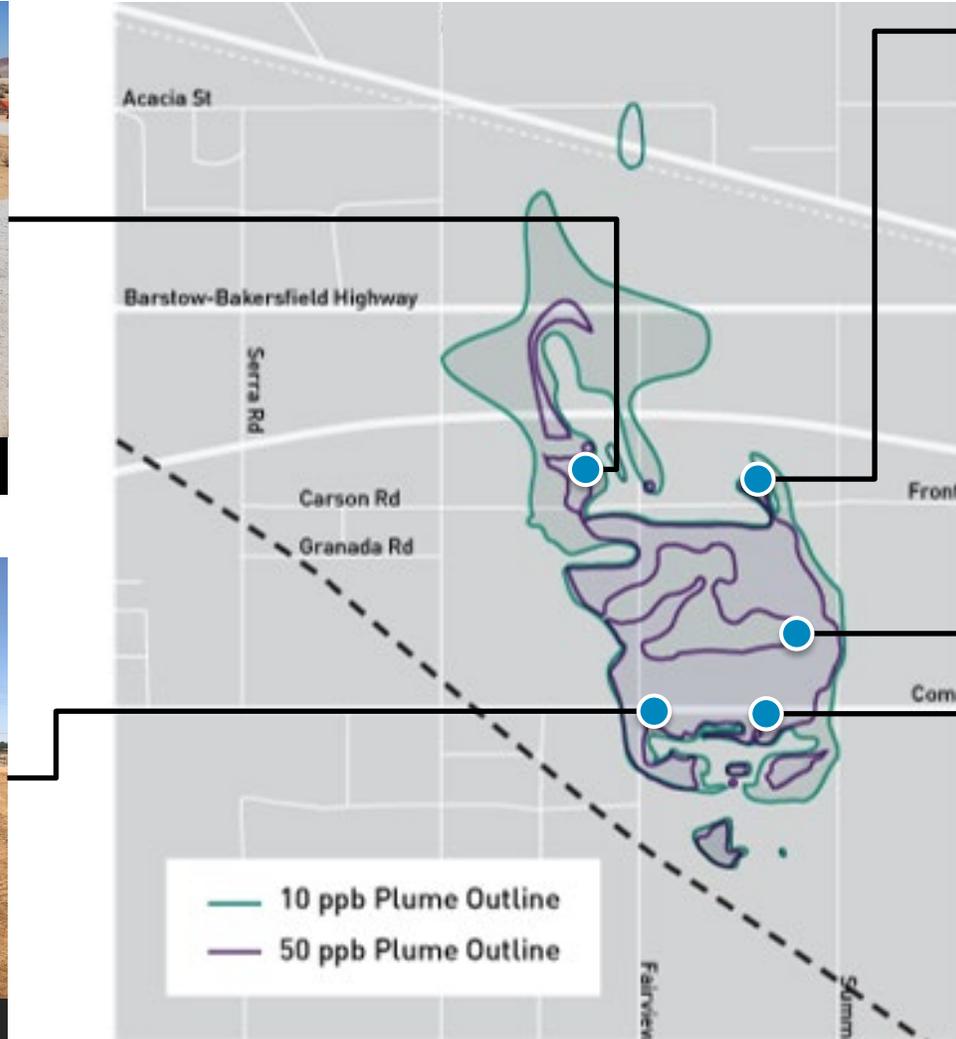
# 2023-2024 Remedy Enhancements



Western Central Area IRZ Construction



Western SCRIA IRZ Construction



East Central Area IRZ Construction



Southern ATU Extraction Well Installation



Northeastern Source Area IRZ Construction

# Continued Progress on the Plume

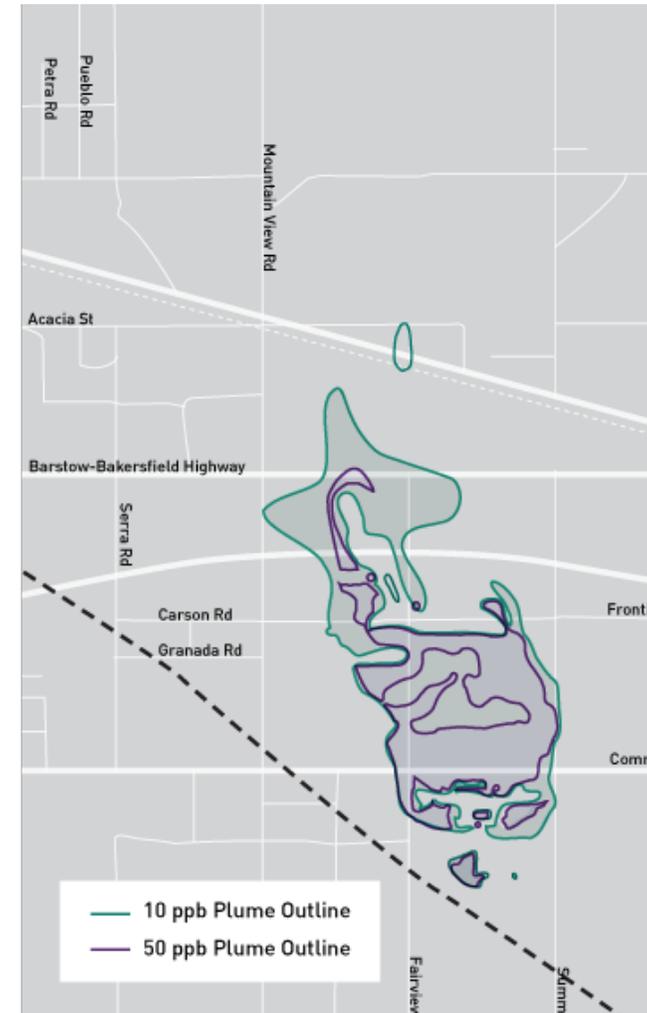
August 2004



Fourth Quarter 2017

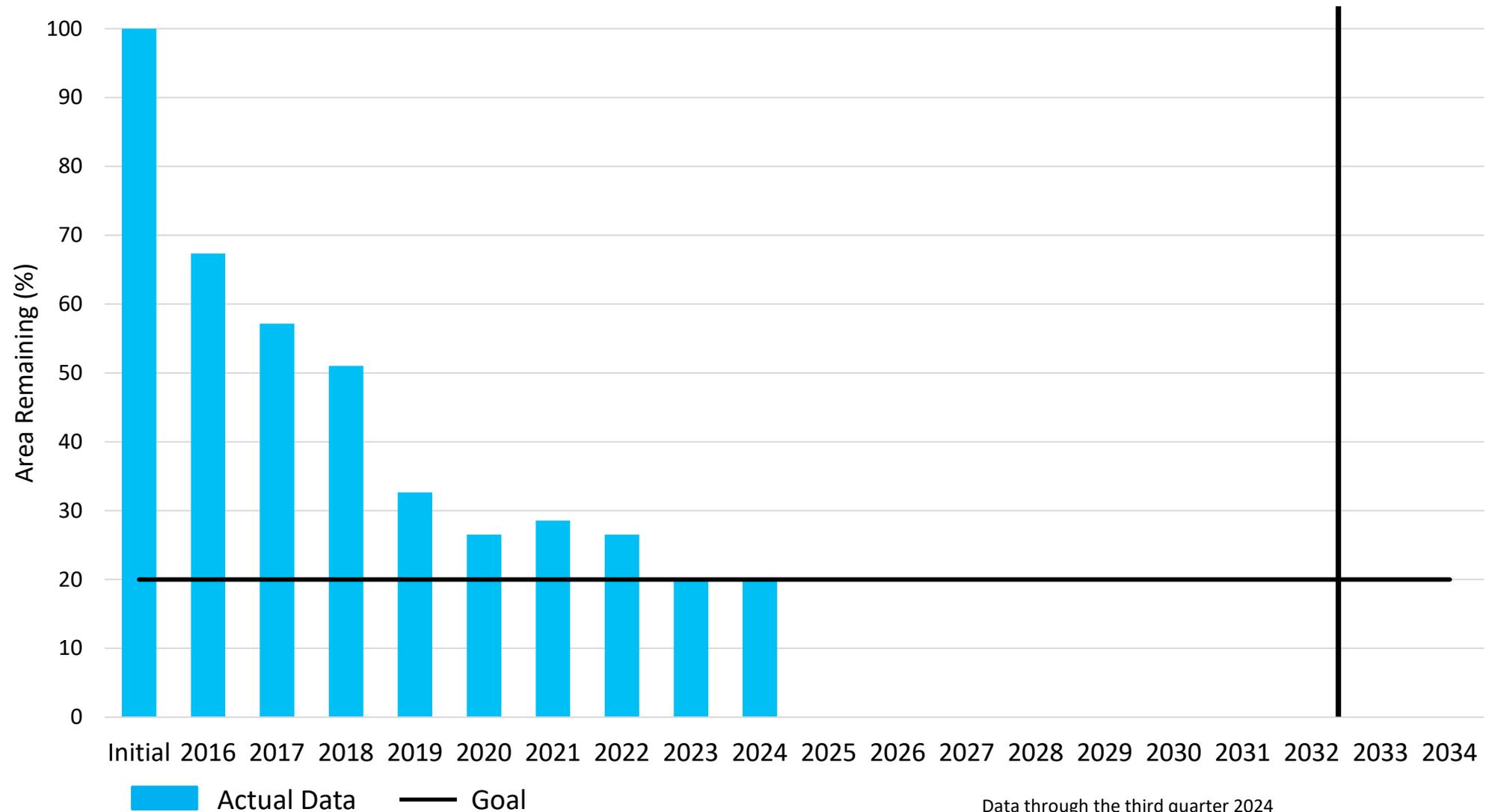


Third Quarter 2024





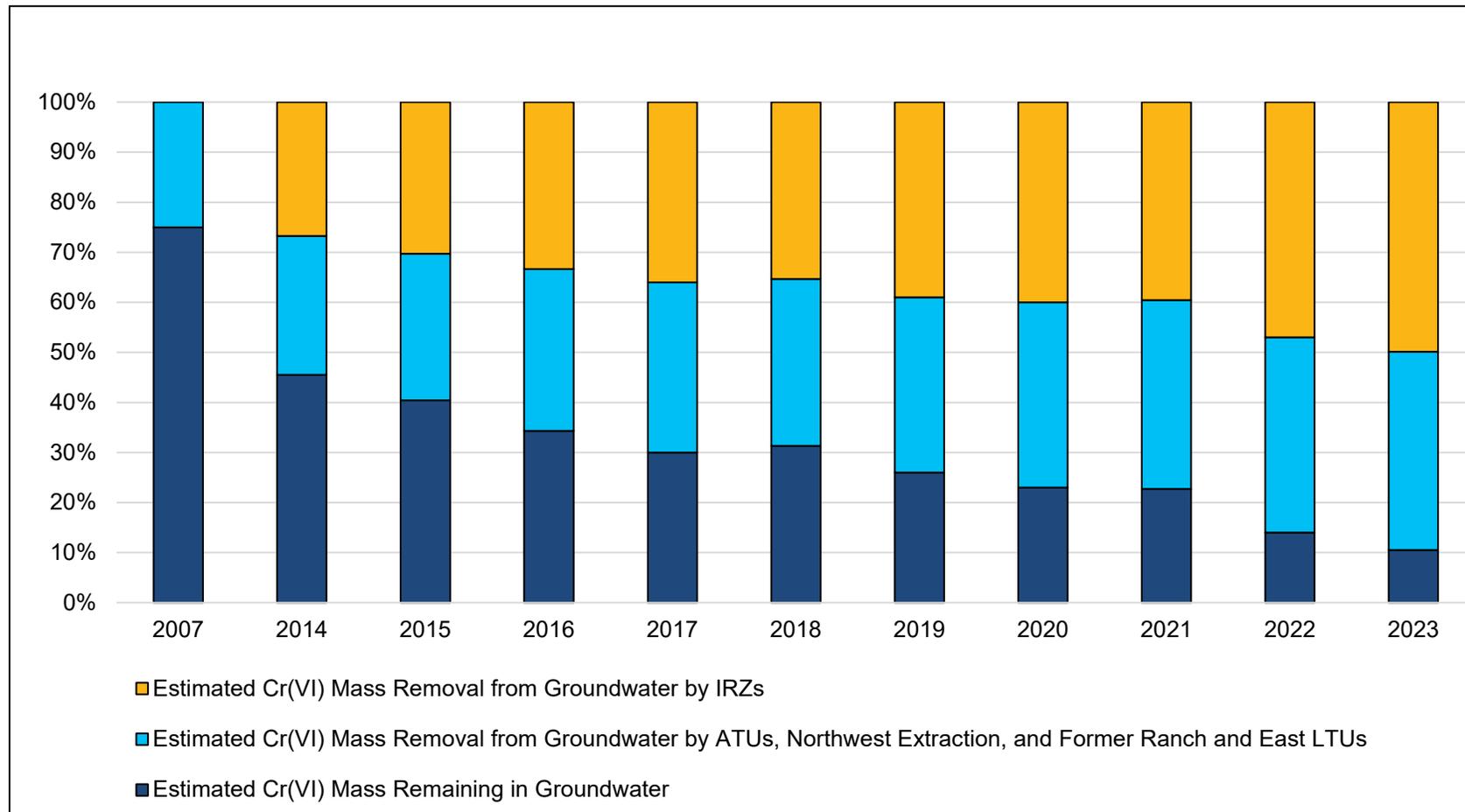
# Progress Toward 10 ppb Remedial Goal: 2032



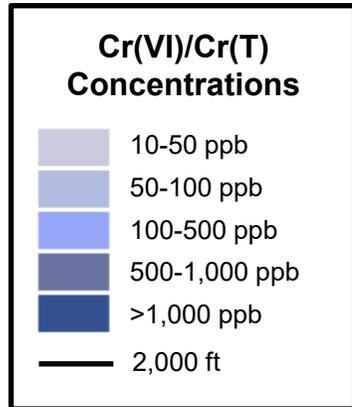
Data through the third quarter 2024

Area calculated per CAO MRP Requirement IV method

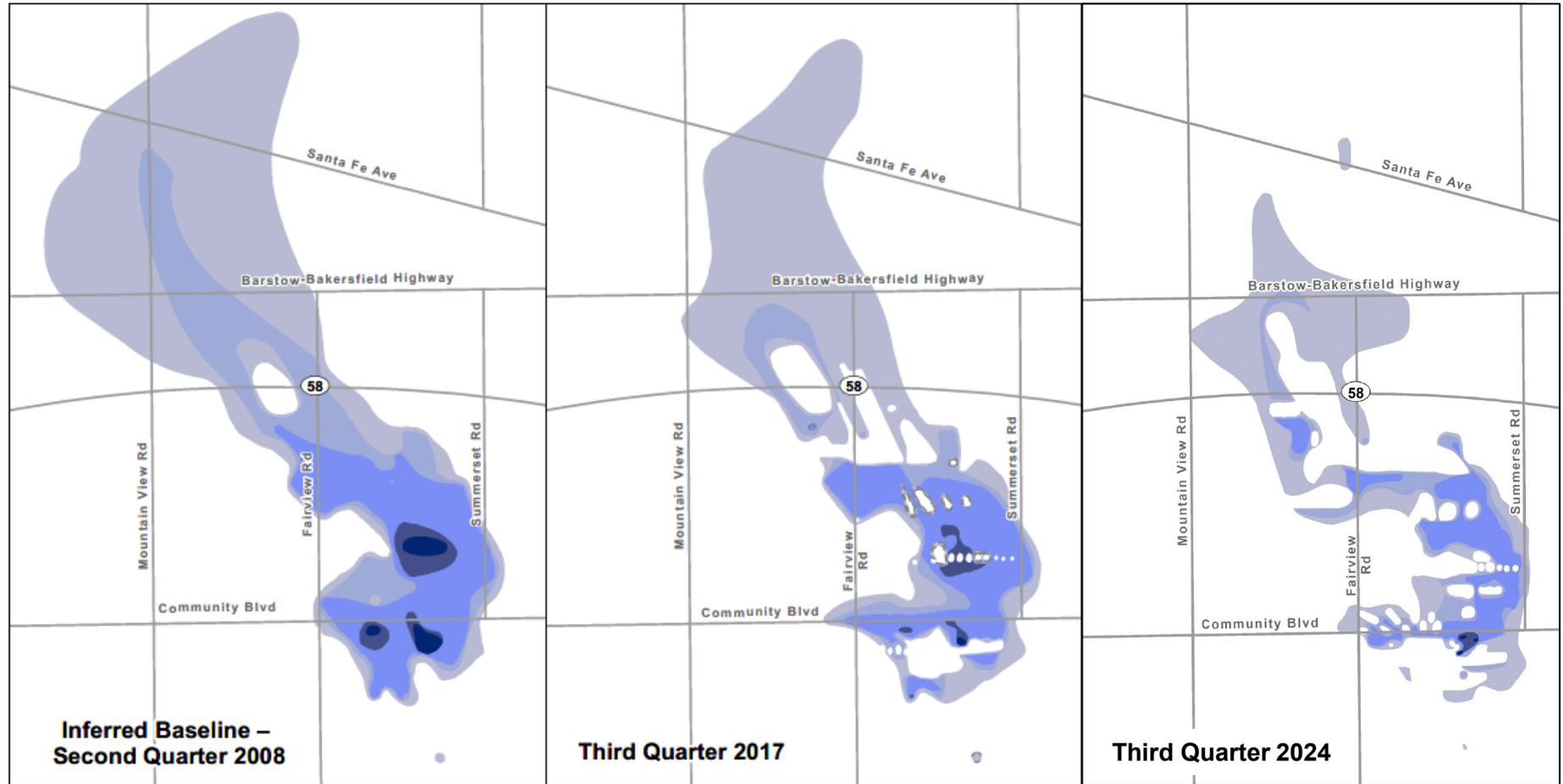
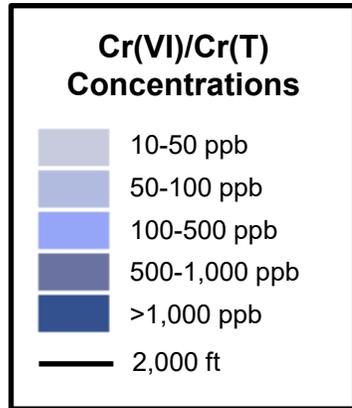
## Estimated Mass Removal from Groundwater



## Shallow Zone of the Upper Aquifer



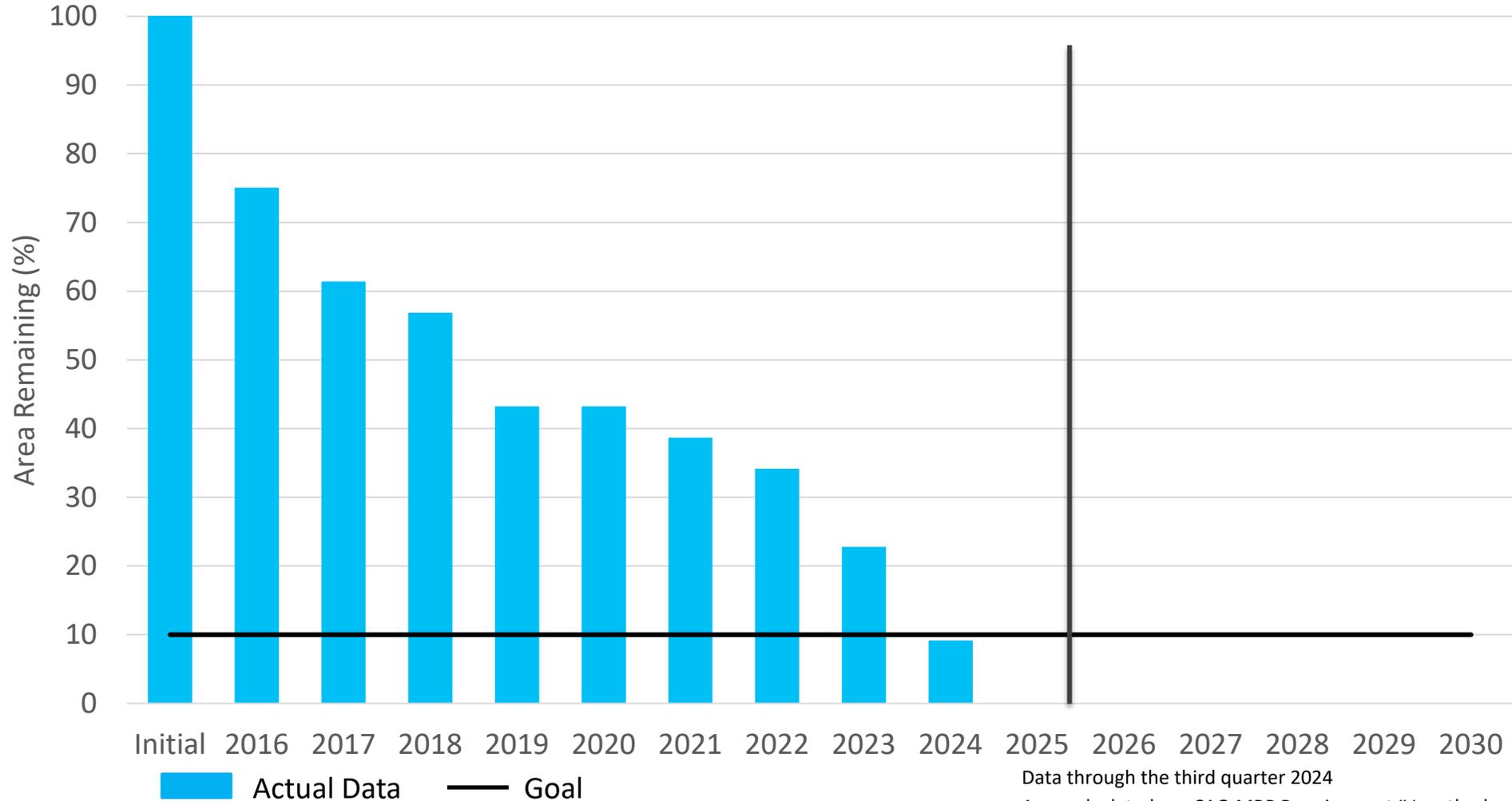
## Deep Zone of the Upper Aquifer





# Achievement of 50 ppb Remedial Goal: 2025

The 50 ppb remedial goal was successfully met in 2024, with a >90% a reduction in area with concentrations greater than 50 ppb in comparison to 2015.



Data through the third quarter 2024  
Area calculated per CAO MRP Requirement IV method



# Community Commitment

**PG&E continues its strong commitment to the community through local hiring, sustainable practices, and community partnerships.**

## PG&E Supporting Our Local Community

- \$5,000 Charitable Contribution to support the Hinkley Community Center
- Continued partnerships with local farmers
- Educational tours with local community colleges and industry professionals
- 1 COVID and Flu Vaccination Event
- 1 Community Clean-up Event

PG&E's Workforce Development continues to help young adults gain experience by working directly on the project and be a part of the remediation efforts:

- Participants obtain valuable hands-on work experience and over 6 professional certifications
- Nearly 100% job placement rate upon completion and over 126 participants since 2011



*Hinkley volunteer member distributes turkey to community member during a holiday food drive.*



*Participants in the Workforce Development Program are hard at work improving community spaces.*

- Continued implementation of mitigation measures in accordance with permits and the EIR to protect domestic wells.
- Currently all domestic wells contain chromium below safe drinking water standards.
- PG&E is committed to working with the community and Water Board as we continue to improve and adapt our remedial approach, including a CAO revision with an appropriate cleanup level based on the USGS background study.
- PG&E will continue treating the highest concentrations of chromium 6 in the near-term, while sustainably treating and managing lower concentrations for the next several decades.

# **ENCLOSURE 4**





# Pacific Gas and Electric Company Hinkley Compressor Station

## Recent Project & Regulatory History

JANUARY 2025

2004

**Agricultural treatment** at former Desert View Dairy permitted/begins; plant sampling and groundwater data taken since then.

2007

**In-situ treatment permitted/begins** after several years of bench-scale and field pilots.

2010-11

2010: **Feasibility Study and multiple addenda** are prepared and go through public comment and approval.

2011: **Community Advisory Committee** (CAC) Initiated.

2011: **Cleanup & Abatement Order** requiring whole house replacement water is issued and in place until 2015 CAO issued.

2011: **Independent Review Panel** (IRP) set up to provide independent advice to the CAC – Project Navigator is selected as lead advisor/coordinator.

2013-14

2013: **California Environmental Quality Act**/Environmental Impact Report finalized in advance of 2015 Cleanup and Abatement Order (CAO).

2014: **United States Geological Survey Background Study** scope of work approved. Study completion was anticipated in 2019.

2014: **California State Water Resources Control Board** Issues new MCL for hexavalent chromium of 10 parts per billion; in 2017 it is rescinded, and a new regulatory process is initiated.

2014: **Additional agricultural treatment** is permitted:

- Environmental Impact Report Mitigation Measure implementation begins

2015

**Final Cleanup and Abatement Order** issued after multiple years of development and comment. Key items include:

- Cleanup Goals
- Ongoing Requirement for funding the IRP Manager to advise community
- Domestic Well Monitoring

2016

**Additional agricultural treatment** units brought online, and in-situ treatment expanded.

2017-24

2017: **Remediation Operation/Optimization Continues:**

- Impact of fault splays identified and better understood
- Drought concerns identified and managed
- Numerous in-situ treatment additions and plume core treatment, with almost 90% mass removed from groundwater in comparison with what remains
- 90% of the 50 ppb plume treated, as measured by CAO metrics, in 2024

2023: **USGS completes the Background Study**-defining the potential area containing PG&E's chromium and providing background values for the site.

2024: **California State Water Resources Control Board** Issues hexavalent chromium MCL at 10 parts per billion.



# **ENCLOSURE 5**



# IRP Manager's 2024 Community Outreach Summary

Prepared by

IRP Manager Team

Dr. Raudel Sanchez, Mr. Anthony Vu, Ms. Margaret DeAngelis,  
Ms. Lorena Barahona, Dr. Ian A. Webster

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Wednesday, January 29, 2025

# How the IRP Manager Team Performs Community Outreach

The IRP Manager's team interfaces with community stakeholders in three ways

### 1. Relationships

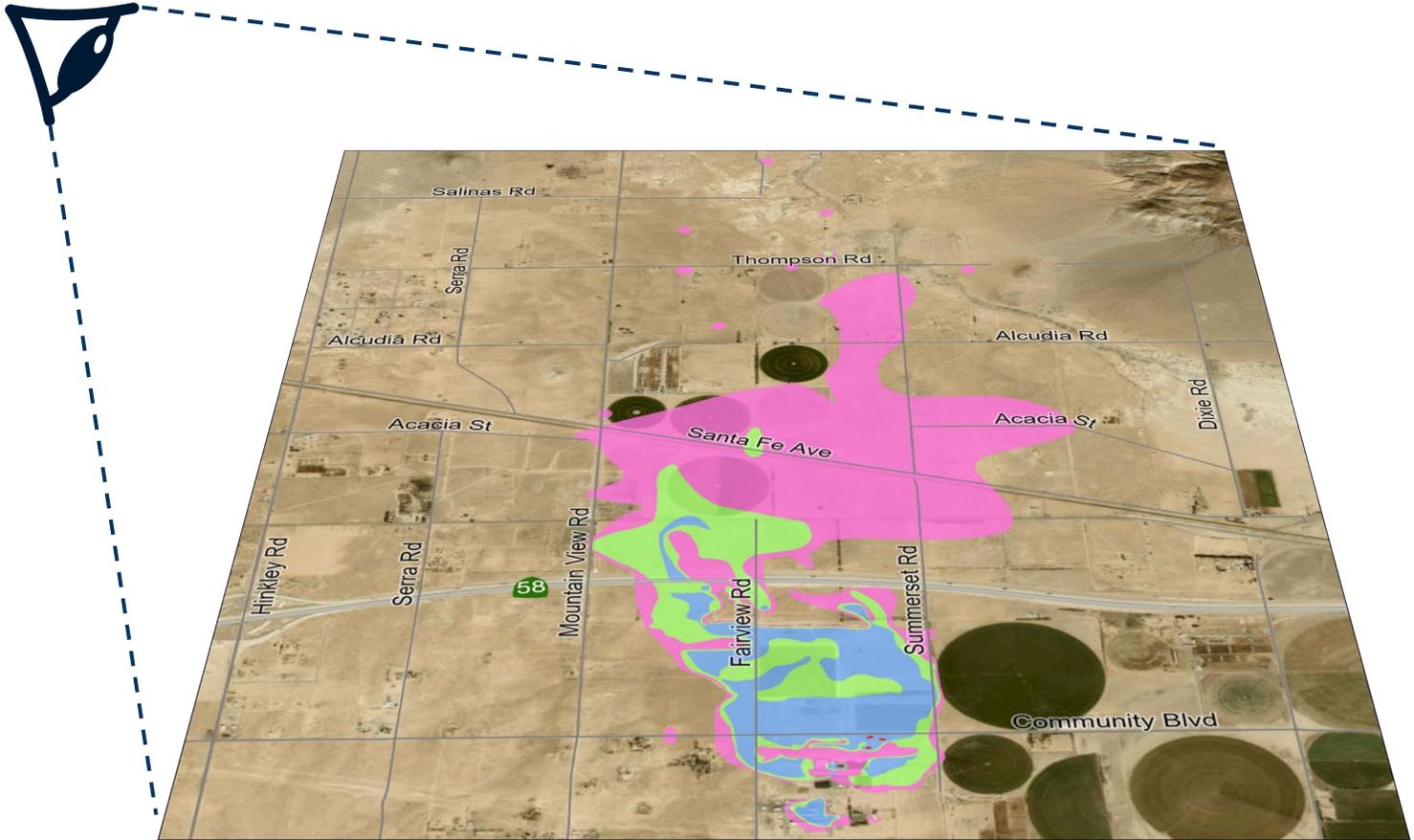
- Reputation for delivering fact -based information
- One on Ones with timely follow -up
- Relationships built over our tenure
- Accurate media reporting and outreach
- Persistence and Attitude

### 2. Technical

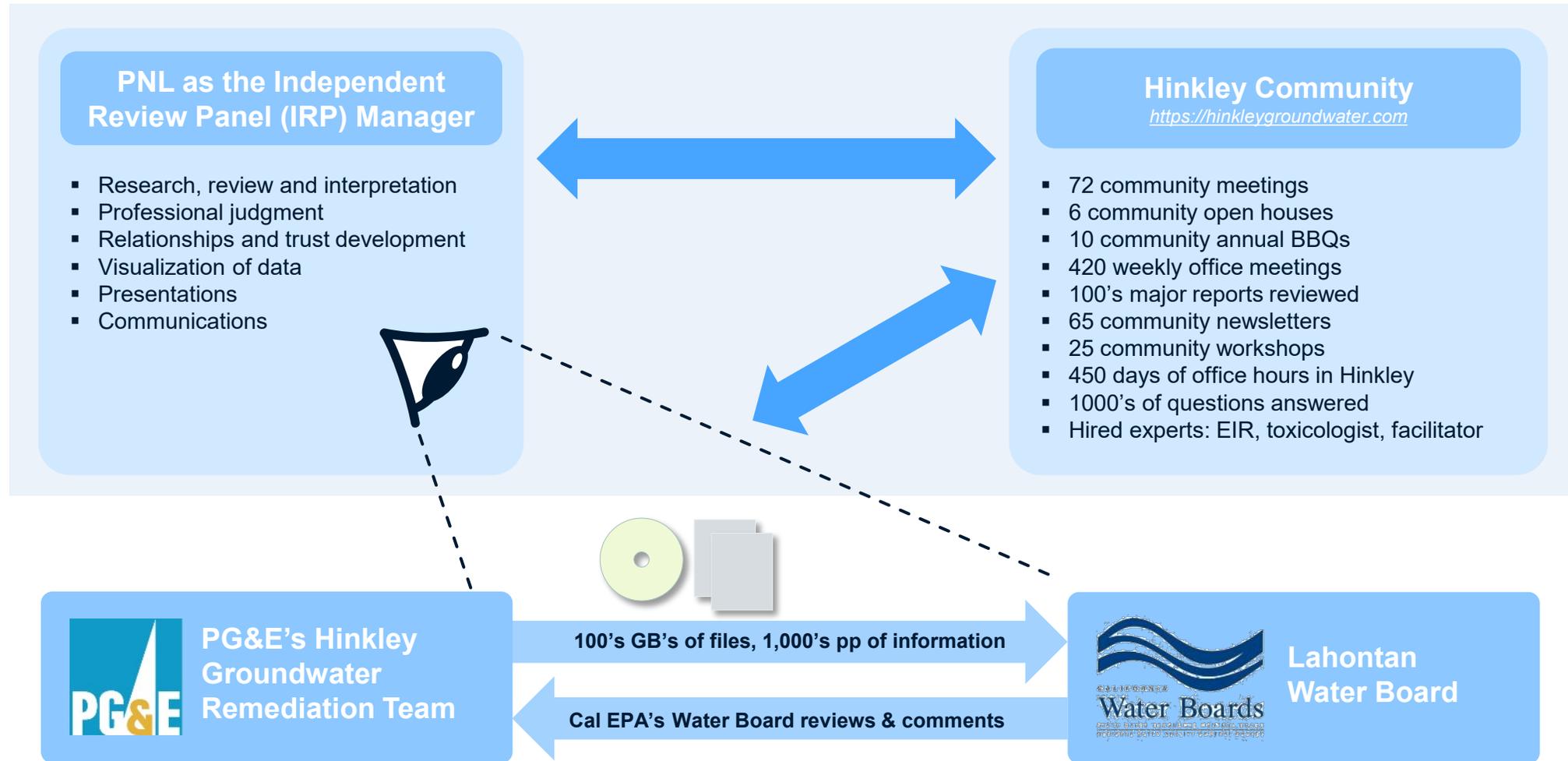
- Third party data review, analysis and feedback
- Translating complex science and data into understandable visuals
- Photo reports, visual descriptions
- Newsletters, fact sheets
- Website ([www.HinkleyGroundwater.com](http://www.HinkleyGroundwater.com))
- Project knowledge
- Technical Working Group participation

### 3. Physical

- Meetings - Be Visible
- Community Sponsored Events
- IRP Office - Backroom/Models
- Use of Local Resources
- Field Trips



# IRP Manager's Community Outreach Efforts to Date



# Outreach in 2024 Was Focused on Two Topics

## 1. Amended CAO No.R6V-2015-0068-A1




Lahontan Regional Water Quality Control Board  
 May 21, 2024

WDID No. 6B369107001  
 6B361403002  
 6B360804007

Iain Baker  
 Pacific Gas and Electric Company  
 77 Beale Street, B28P  
 San Francisco, CA 94105  
[ibj@pge.com](mailto:ibj@pge.com)

**Amended Cleanup and Abatement Order No. R6V-2015-0068-A1, Requiring Pacific Gas and Electric Company to Clean Up and Abate Waste Discharges of Total and Hexavalent Chromium to the Groundwaters of the Mojave Hydrologic Unit, San Bernardino County**

The Lahontan Regional Water Quality Control Board (Water Board) Executive Officer is amending Cleanup and Abatement Order (CAO) No. R6V-2015-0068 (CAO Amendment; Enclosure 1). The CAO Amendment increases the Area of Allowed Plume Expansion by 1000-feet to the east, reduces the concentration from 4 parts per billion (ppb) to 3.1 ppb hexavalent chromium allowed to migrate laterally to the east into the Area of Allowable Plume Expansion, and increases monitoring and domestic well sampling along the plume expansion boundary from quarterly to monthly. The CAO Amendment also removes the requirement for the submittal of hard copy reports and technical documents, as all documents are submitted electronically via GeoTracker, and includes incidental and administrative changes. A public review comment period from November 22, 2023, through February 7, 2024, was held for comments on the proposed CAO Amendment. Comments received and Water Board responses to comments are enclosed (Enclosure 2).

The Amended CAO R6V-2015-0068-A1 is available on GeoTracker at: <https://geotracker.waterboards.ca.gov/?url=1hvgn>

Water Board staff look forward to continuing to work with PG&E. If you have any questions, please contact Amanda Lopez, Engineering Geologist, at ([amanda.lopez@waterboards.ca.gov](mailto:amanda.lopez@waterboards.ca.gov)) or (760) 241-7373 or Christina Guerra, Senior Engineering Geologist, at ([christina.guerra@waterboards.ca.gov](mailto:christina.guerra@waterboards.ca.gov)) or (760) 241-7333.

  
 Jan Zimmerman, PG  
 Supervising Engineering Geologist  
 DR. AMY HURNEL, CHAIR | MICHAEL R. PLAZIAR, PG, EXECUTIVE OFFICER  
 2501 Lake Tahoe Blvd., So. Lake Tahoe, CA 96150 | 15085 Amargosa Rd., Bldg 2 - Suite 210, Victorville CA 92384  
[www.waterboards.ca.gov/rlahontan](http://www.waterboards.ca.gov/rlahontan)

## 2. PG&E’s Background Study Value Evaluation



John Glass  
 Chromium Technical Remediation Principal  
 300 Lakeside Drive  
 Oakland CA 94612  
 (628) 219-1369 (cell)  
[Frederick.Glass@pge.com](mailto:Frederick.Glass@pge.com)

May 15, 2024

Jan Zimmerman  
 Christina Guerra  
 Amanda Lopez  
 California Regional Water Quality Control Board, Lahontan Region  
 2501 Lake Tahoe Boulevard  
 South Lake Tahoe, California 96150

**Subject: Hexavalent Chromium Background Value Evaluation, Pacific Gas and Electric Company**  
 Hinkley Compressor Station, Hinkley, California

Dear Jan Zimmerman, Christina Guerra, and Amanda Lopez:

Pacific Gas and Electric Company (PG&E) is in the process of an aggressive remediation of hexavalent chromium (Cr(VI)) in groundwater from the release of Cr(VI)-bearing wastewater generated during operation of the Hinkley Compressor Station in Hinkley, California, from 1952 to 1964. As the California Regional Water Quality Control Board, Lahontan Region (Water Board) is aware, Cr(VI) is present in groundwater naturally, and beginning in 2016, the United States Geologic Survey (USGS) conducted a background study to understand the geologic, hydrogeologic, and geochemical factors that create naturally occurring Cr(VI) in the Hinkley Valley and Water Valley groundwater basins. In 2023, the USGS completed the study and published the findings in a final report entitled *Natural and Anthropogenic (Human-Made) Hexavalent Chromium, Cr(VI), in Groundwater Near a Mapped Plume, Hinkley, California* (Background Report; Izbicki 2023). Based on the findings of the study, the USGS defined the extent of the area where Cr(VI) from PG&E’s release may be present and provided a set of scientifically defensible estimates of background Cr(VI) concentrations, as detailed in the Background Report.

In a letter entitled *Request for Proposal to Evaluate Hexavalent Chromium Background Values*, the Water Board requested an evaluation of the set of background values as cleanup level(s) for groundwater (Water Board 2024). This correspondence is submitted in response. The following topics are discussed in addition to perspective on the overall cleanup framework in response to the Background Report (Izbicki 2023):

- Discussion and Summary of Values in the Background Report
- Recommended Cleanup Value
- Plume Contouring Considerations
- Protection of Domestic Wells

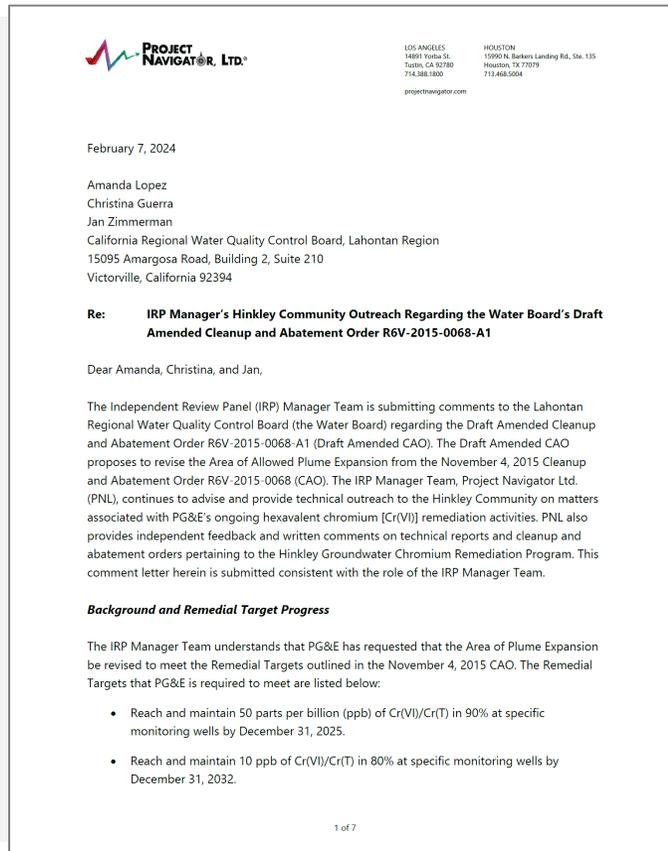
Under Water Board direction, PG&E has made tremendous progress at the site in the last two decades, removing 89 percent of the chromium from groundwater, containing the plume, and shrinking the plume’s footprint. The framework for the remediation to continue in a sustainable and environmentally-friendly manner considers both the recent work completed by the USGS and the very recent (April 2024) promulgation of the California MCL for Cr(VI) at a level of 10 ppb.

1

IRP Manager Team responding to question from Hinkley Community regarding the Draft CAO No.R62015-0068-A1. Amanda Lopez from the Water Board providing additional response to Hinkley Community member's question.



# IRP Manager Team Submitted Formal Comments to the Water Board Regarding the Amended CAO No.R6V-2015-0068 -A1



- IRP Manager Team submitted formal comments to the Water Board on February 7, 2024
- Most community members did not object to the Amended CAO but have a few suggestions
- Monitoring wells in the Area of Allowed Plume Expansion sampled more frequent at the start
- Participation of community members in the early stage of the upcoming CAO

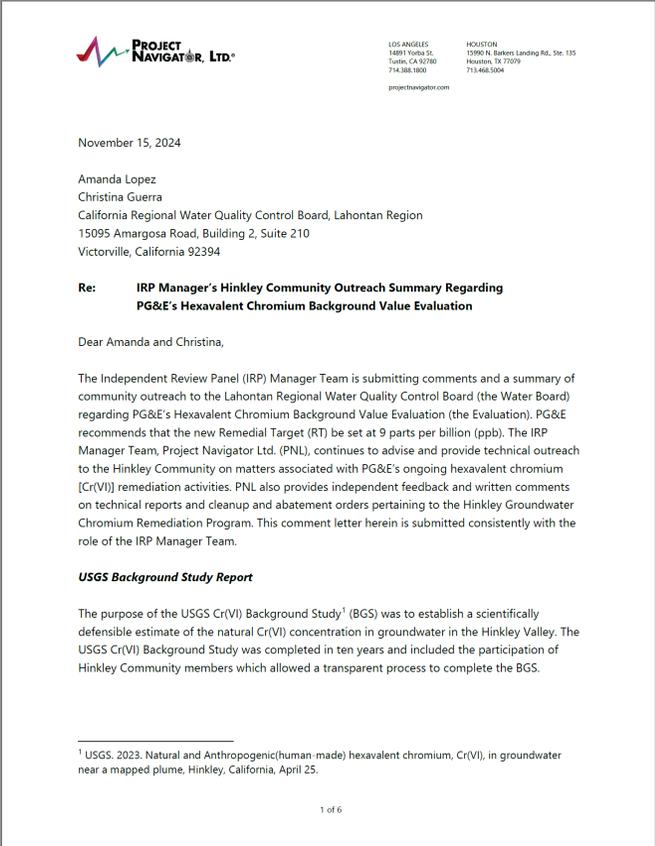
# On September 26, 2024, the IRP Manager Team hosted a workshop to go over the PG&E's Cr(VI) Background Value Evaluation. The Washington Post was in attendance for their upcoming article.



# On October 24, 2024, the IRP Manager Team hosted the Hinkley Community Meeting to discuss PG&E's Cr(VI) Value Evaluation.



# IRP Manager Team Submitted Formal Comments to the Water Board on PG&E's Cr(VI) Background Value Evaluation



- IRP Manager Team submitted formal comments to the Water Board on November 15, 2024
- Community members generally in agreement that 9ppb was too high and did not reflect the results of the USGS Background Study
- Suggested that PG&E complete a Feasibility Study on the different background numbers
- Recommend the creation of a CAO Committee

# Summary

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- IRP Manager Team focused technical outreach in 2024 on the Amended CAO and PG&E's Cr(VI) Background Value Evaluation
- IRP Manager Team submitted comment letters on February 7 and November 15, 2024
- Community members participated in meetings/workshops and provided feedback to the Water Board
- IRP Manager Team will continue to conduct outreach with the Hinkley Community