FINAL
FIRST FIVE-YEAR REVIEW ON GROUNDWATER REMEDY FOR PG&E TOPOCK COMPRESSOR STATION REMEDIATION PROJECT SAN BERNARDINO COUNTY, CALIFORNIA

FIGURES AND APPENDICES

Prepared For:

U.S. Department of the Interior
1849 C St, NW, Room 7308
Washington DC, DC, 20240

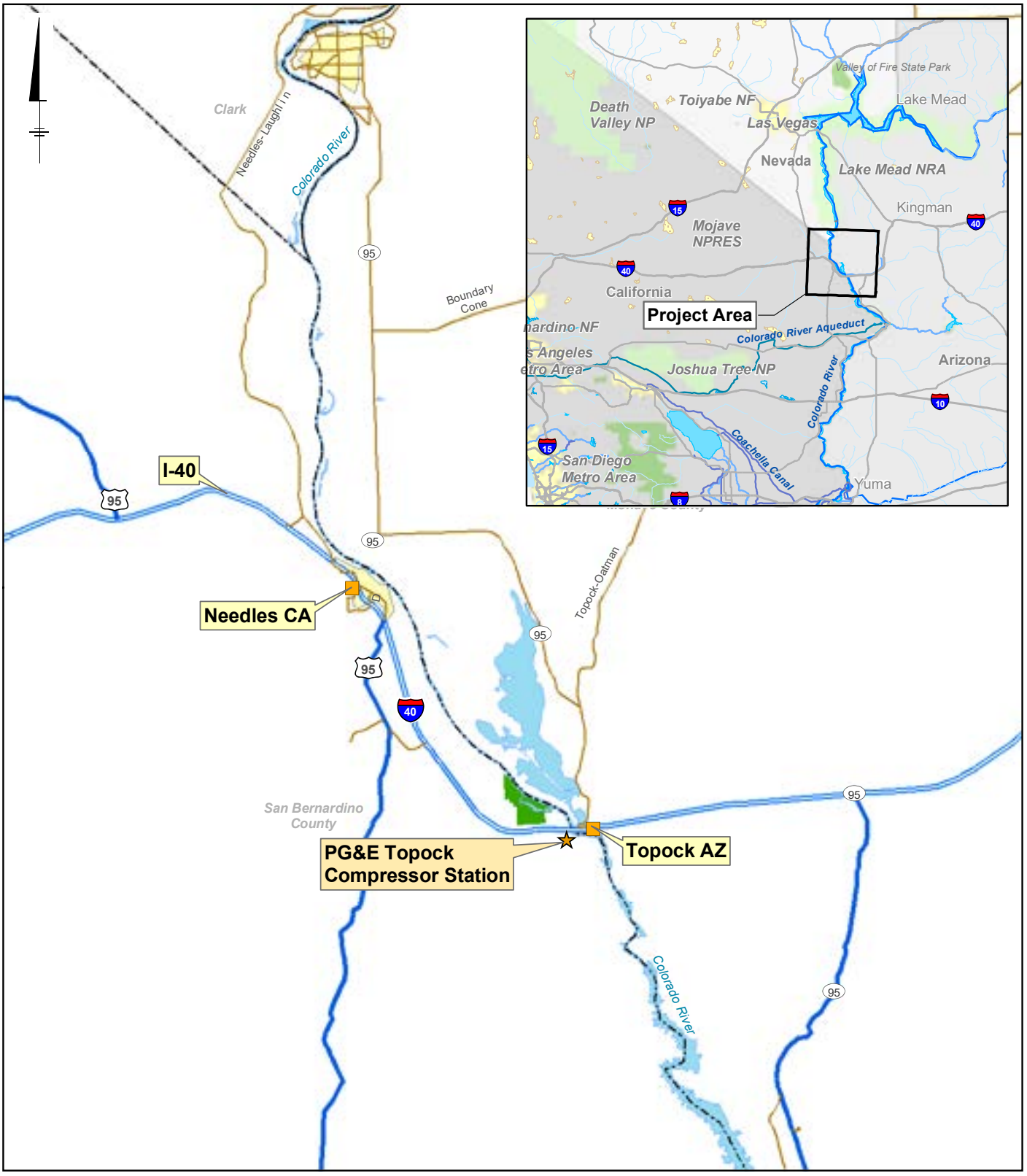
Prepared By:
BB&E, Inc.
235 E. Main Street, Suite 107
Northville, MI 48167

DECEMBER 2023

Figures

Figure 1 – Site Location Map

Source: Arcadis, 2009. *Human and Ecological Risk Assessment of Groundwater Impacted by Activities at Solid Waste Management Unit (SWMU) 1/Area of Concern (AOC) 1 and SWMU 2.* November.



NOTES:

Map Source: CH2M HILL (2005-2008)

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

HERA OF GROUNDWATER IMPACTED BY ACTIVITIES AT SWMU 1/AOC 1 AND SWMU 2

SITE LOCATION MAP

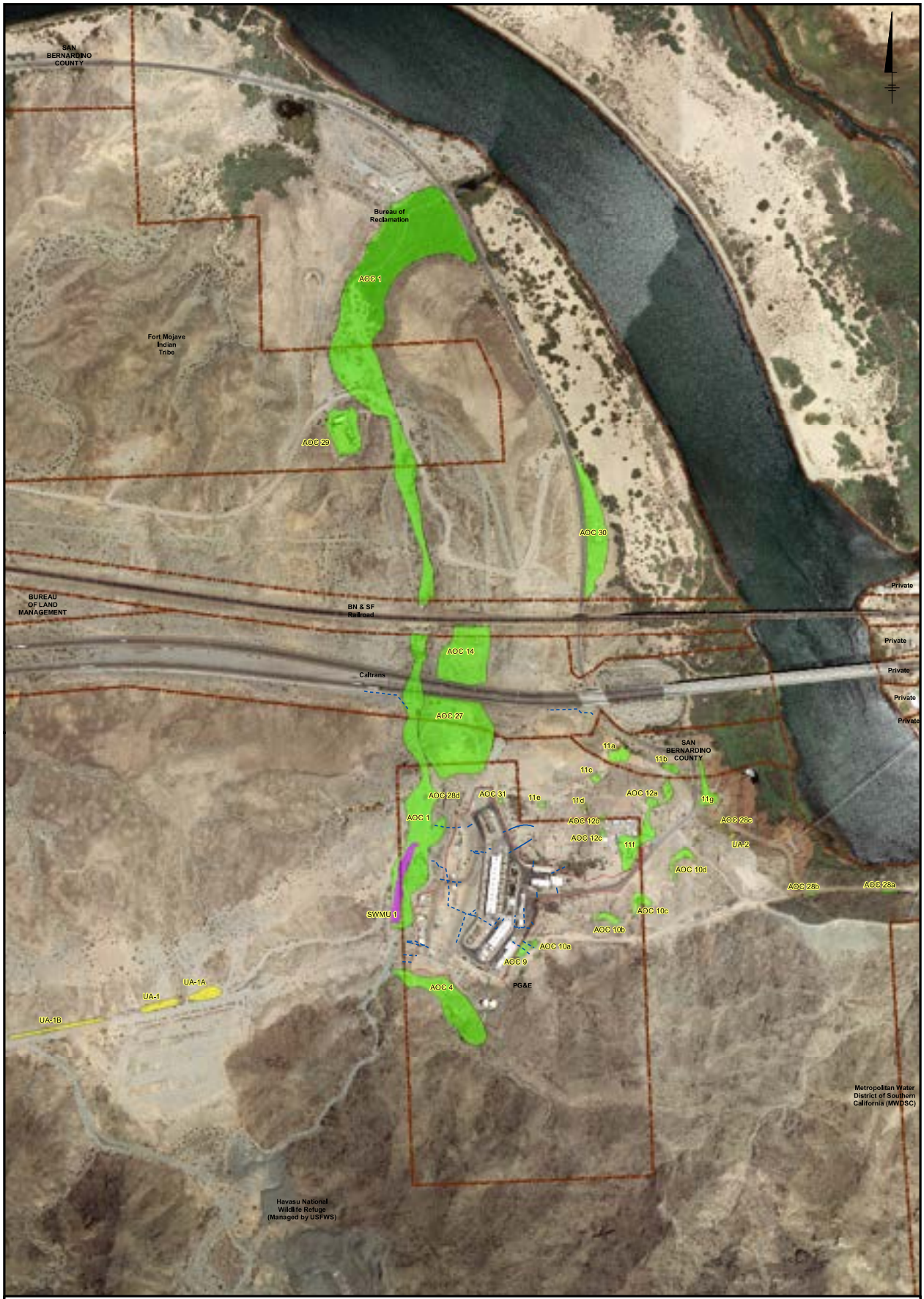
ARCADIS

FIGURE 1-1

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: TR:
Project (Project #)
Q:\PGETopock\GW_Risk\MXD\Fig_1-1_Site_Location_Map.mxd - 9/8/2009 @ 4:21:08 PM

Figure 2 – Location of SWMU 1/AOC 1 and AOC 10 Subareas 10a, 10b, 10c, and 10d

Source*:* Arcadis, 2019. *Soil Human Health and Ecological Risk Assessment Report. Topock Compressor Station, Needles, California.* October.



LEGEND

- Area of Concern (AOC)
- Solid Waste Management Unit (SWMU)
- Other Area
- Stormwater Piping Below Ground
- Stormwater Piping Above Ground
- Topock Compressor Station Fence Line
- Property Owner Area

0 390 780 Feet

Map Source: CH2M HILL (2018)

PG&E TOPOCK COMPRESSOR STATION NEEDLES, CALIFORNIA
SOIL HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

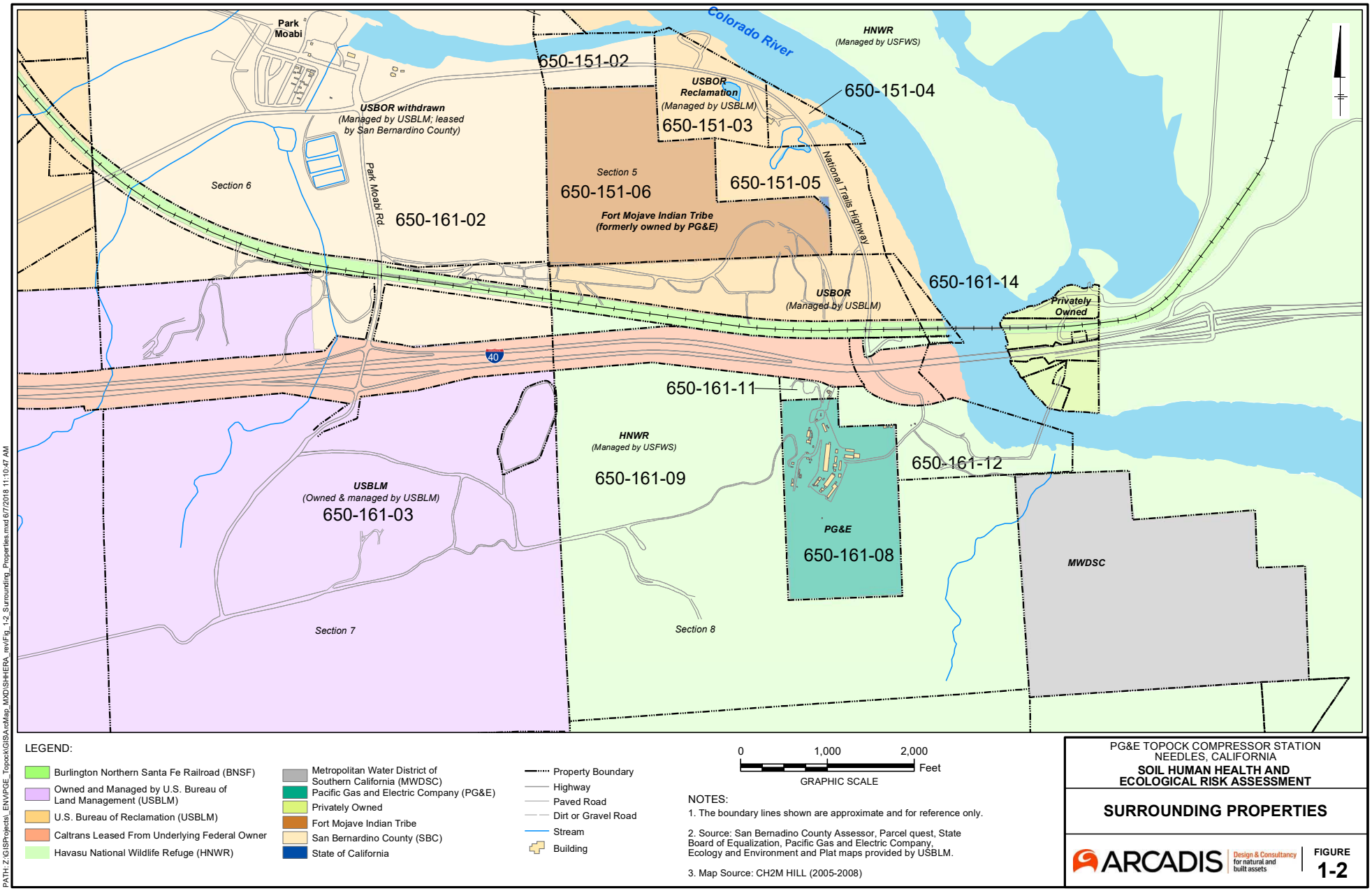
SWMUs AND AOCs (OUTSIDE THE COMPRESSOR STATION)

ARCADIS

FIGURE
2-1a

Figure 3 – Topock Site

Source*:* Arcadis, 2019. *Soil Human Health and Ecological Risk Assessment Report. Topock Compressor Station, Needles, California.* October.



LEGEND:

- Burlington Northern Santa Fe Railroad (BNSF)
- Owned and Managed by U.S. Bureau of Land Management (USBLM)
- U.S. Bureau of Reclamation (USBLM)
- Caltrans Leased From Underlying Federal Owner
- Havasu National Wildlife Refuge (HNWR)
- Metropolitan Water District of Southern California (MWDSC)
- Pacific Gas and Electric Company (PG&E)
- Privately Owned
- Fort Mojave Indian Tribe
- San Bernardino County (SBC)
- State of California
- Property Boundary
- Highway
- Paved Road
- Dirt or Gravel Road
- Stream
- Building

0 1,000 2,000 Feet

GRAPHIC SCALE

NOTES:

1. The boundary lines shown are approximate and for reference only.
2. Source: San Bernadino County Assessor, Parcel quest, State Board of Equalization, Pacific Gas and Electric Company, Ecology and Environment and Plat maps provided by USBLM.
3. Map Source: CH2M HILL (2005-2008)

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA
SOIL HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

SURROUNDING PROPERTIES

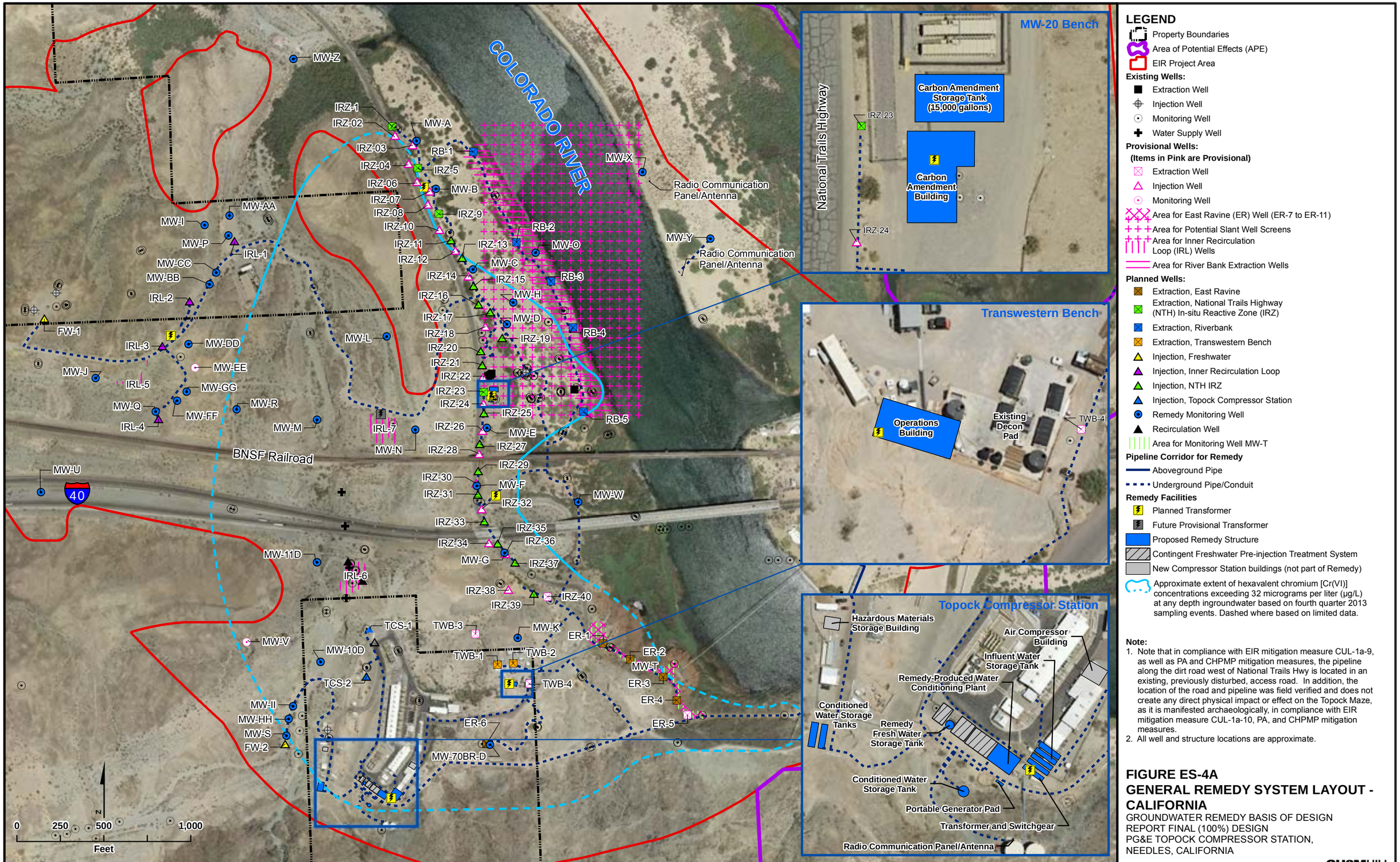
ARCADIS Design & Consultancy for natural and built assets

FIGURE 1-2

PATH: Z:\GIS\Projects_ENVPGE_Topock\GIS\ArcMap_MXD\SHHERA_revFig_1-2_Surrounding_Properties.mxd 6/7/2018 11:10:47 AM

Figure 4 - Selected Remedy Layout from Final BOD

Source*:* CH2M Hill, Inc., 2016. *Supplemental and Errata Information for the Final (100%) Design for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California.* November 18.



LEGEND

- Property Boundaries
- Area of Potential Effects (APE)
- EIR Project Area

Existing Wells:

- Extraction Well
- Injection Well
- Monitoring Well
- Water Supply Well

Provisional Wells:

(Items in Pink are Provisional)

- Extraction Well
- Injection Well
- Monitoring Well
- Area for East Ravine (ER) Well (ER-7 to ER-11)
- Area for Potential Slant Well Screens
- Area for Inner Recirculation Loop (IRL) Wells
- Area for River Bank Extraction Wells

Planned Wells:

- Extraction, East Ravine
- Extraction, National Trails Highway (NTH) In-situ Reactive Zone (IRZ)
- Extraction, Riverbank
- Extraction, Transwestern Bench
- Injection, Freshwater
- Injection, Inner Recirculation Loop
- Injection, NTH IRZ
- Injection, Topock Compressor Station
- Remedy Monitoring Well
- Recirculation Well
- Area for Monitoring Well MW-T

Pipeline Corridor for Remedy

- Aboveground Pipe
- Underground Pipe/Conduit

Remedy Facilities

- Planned Transformer
- Future Provisional Transformer
- Proposed Remedy Structure
- Contingent Freshwater Pre-injection Treatment System
- New Compressor Station buildings (not part of Remedy)
- Approximate extent of hexavalent chromium [Cr(VI)] concentrations exceeding 32 micrograms per liter (µg/L) at any depth ingroundwater based on fourth quarter 2013 sampling events. Dashed where based on limited data.

Note:

1. Note that in compliance with EIR mitigation measure CUL-1a-9, as well as PA and CHPMP mitigation measures, the pipeline along the dirt road west of National Trails Hwy is located in an existing, previously disturbed, access road. In addition, the location of the road and pipeline was field verified and does not create any direct physical impact or effect on the Topock Maze, as it is manifested archaeologically, in compliance with EIR mitigation measure CUL-1a-10, PA, and CHPMP mitigation measures.
2. All well and structure locations are approximate.

FIGURE ES-4A
GENERAL REMEDY SYSTEM LAYOUT - CALIFORNIA

GROUNDWATER REMEDY BASIS OF DESIGN
REPORT FINAL (100%) DESIGN
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL

Path: \\Brookside\GIS_SHARE\ENBG\00_Proj\P\PGE\Topock\MapFiles\2016\EIR\Design_100_Errata\FIGES-4A_BOD.mxd

Figure 5 - IRZ System Layout from First Quarter 2023 Progress Report

Source*:* Arcadis, 2023a*. First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California*. June 14.

LEGEND

- REMEDIATION WELL (EXTRACTION)
- REMEDIATION WELL (INJECTION)
- REMEDIATION WELL (NOT PLUMBED INTO SYSTEM CURRENTLY)
- BAT CAVE WASH
- PIPELINE
- REMEDY STRUCTURE

Notes:
1. NTH = National Trails Highway
2. IRZ = In-Situ Reactive Zone

N

0 625 1,250

Feet

FIRST QUARTER 2023
QUARTERLY PROGRESS REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

PARTIAL REMEDY SYSTEM LAYOUT

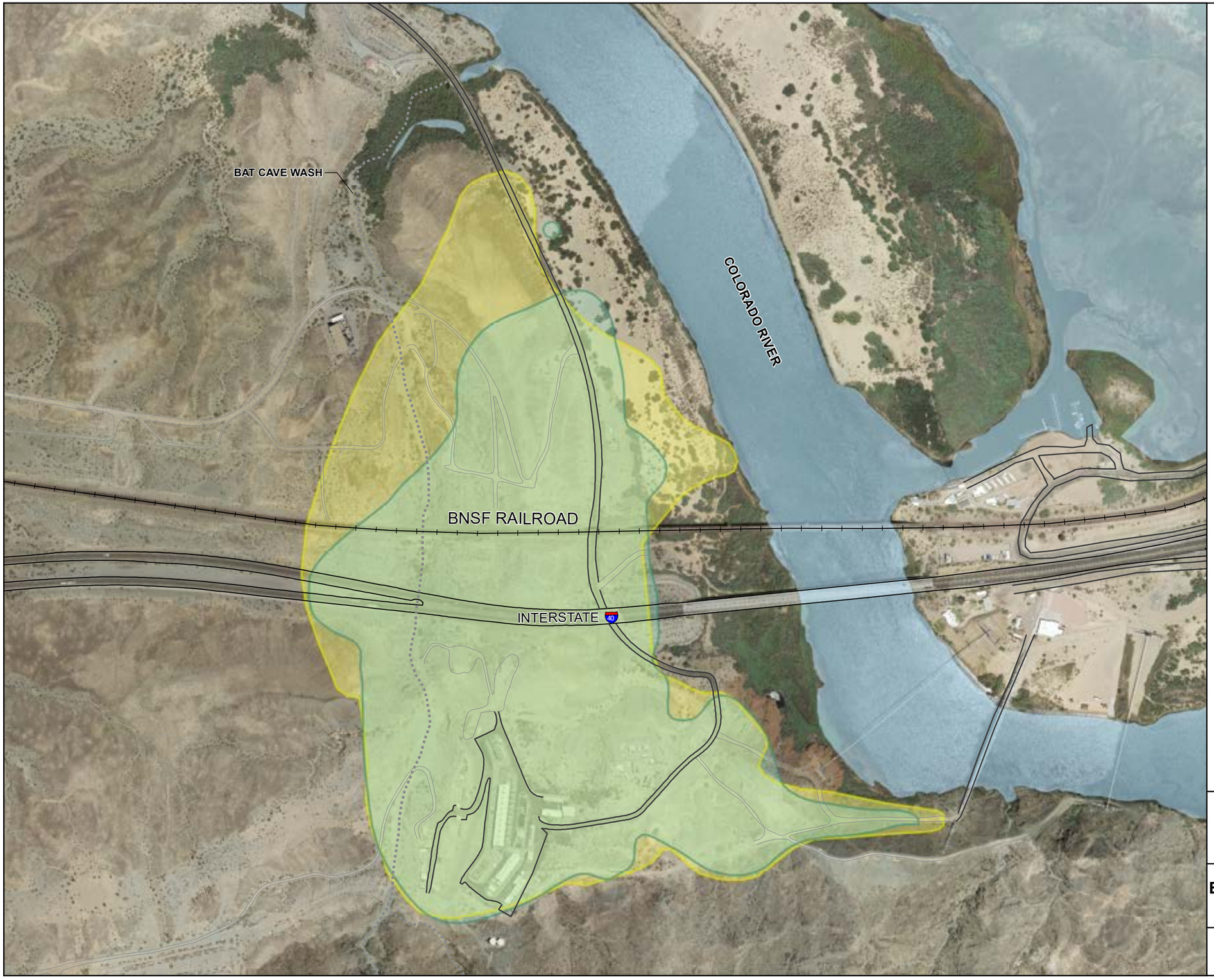
ARCADIS

FIGURE
1.1

T:_ENV\PGE_TOPOCK\GEC\MXD\GMP\1Q23\FINAL\FIGURE1.1_PARTIAL REMEDY SYSTEM LAYOUT.MXD 4/7/2023 5:38:33 PM

Figure 6 – Approximate Extent of Cr(VI) Plume in 2013 Compared to 2021

Source*:* Arcadis, 2022. *Design Modification (2022 Optimized Design) Basis for Final Groundwater Remedy.* December 2.



LEGEND

- BAT CAVE WASH
- APPROXIMATE EXTENT OF HEXAVALENT CHROMIUM CONCENTRATIONS EXCEEDING 32 MICROGRAMS PER LITER AT ANY DEPTH IN GROUNDWATER BASED ON DATA THROUGH FOURTH QUARTER 2013, AS SHOWN IN THE 2015 BOD
- APPROXIMATE EXTENT OF HEXAVALENT CHROMIUM CONCENTRATIONS EXCEEDING 32 MICROGRAMS PER LITER AT ANY DEPTH IN GROUNDWATER BASED ON DATA THROUGH SECOND QUARTER 2021

0 500 1,000

Feet

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

EXTENT OF HEXAVALENT CHROMIUM IN GROUNDWATER 2013 VERSUS 2021

ARCADIS

FIGURE
1.1

T:_ENV\PGE_TOPOCK\GEC\MXD\GMP\TOPOCK_DESIGN_DELIVERABLE_FIGURE\FINAL\FIG_1.1_EXTENT OF HEXAVALENT CHROMIUM IN GROUNDWATER 2013 VERSUS 2021.MXD 2/24/2022 4:03:18 PM

Figure 7 – 2021 Cross Section of the IRZ

Source*:* Arcadis, 2021. *Groundwater Remedy Phase 1 Interim Monitoring Plan*. October 1.

North
A

South
A’

MW-93/MW-Z
MW-35
MW-75/MW-B
IRZ-9
TW-04/MW-47
MW-97
IRZ-13
MW-76/MW-C
IRZ-15
IRZ-16
IRZ-17
IRZ-18
MW-81/MW-GG/IRZ-19
IRZ-20
IRZ-21
TW-03
IRZ-23
MW-20
IRZ-25
MW-78/MW-E
IRZ-27
IRZ-29
MW-79/MW-F
IRZ-31
MW-51/MW-26
IRZ-33
IRZ-35
MW-80/MW-G
IRZ-37
MW-21
IRZ-39
MW-71

1,000
100
32

600
500
400
300
200
100

(feet amsl)

0 250 500 750 1,000 1,250 1,500 1,750 2,000 2,250 2,500 2,750 3,000 3,250 3,500 3,750 4,(

(feet)

Hydrostratigraphic Units
- Fluvial
- Younger Alluvium
- Older Alluvium
- Weathered Bedrock
- Competent Bedrock

Cr6 Concentrations
- > 1,000 µg/L
- > 100 µg/L
- > 32 µg/L

- GP-GW (Gravel)
- SP-SW (Sand)
- GM (Silty Gravel)
- SM (Silty Sand)
- ML-MH (Silt)
- CL-CH (Clay)
- Bedrock

Vertical exaggeration 3:1.

amsl = above mean sea level
Cr6 = hexavalent chromium
µg/L = micrograms per liter
USCS = Unified Soil Classification System
NTH = National Trails Highway
IRZ = In-situ Reactive Zone

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

NTH IRZ CROSS SECTION

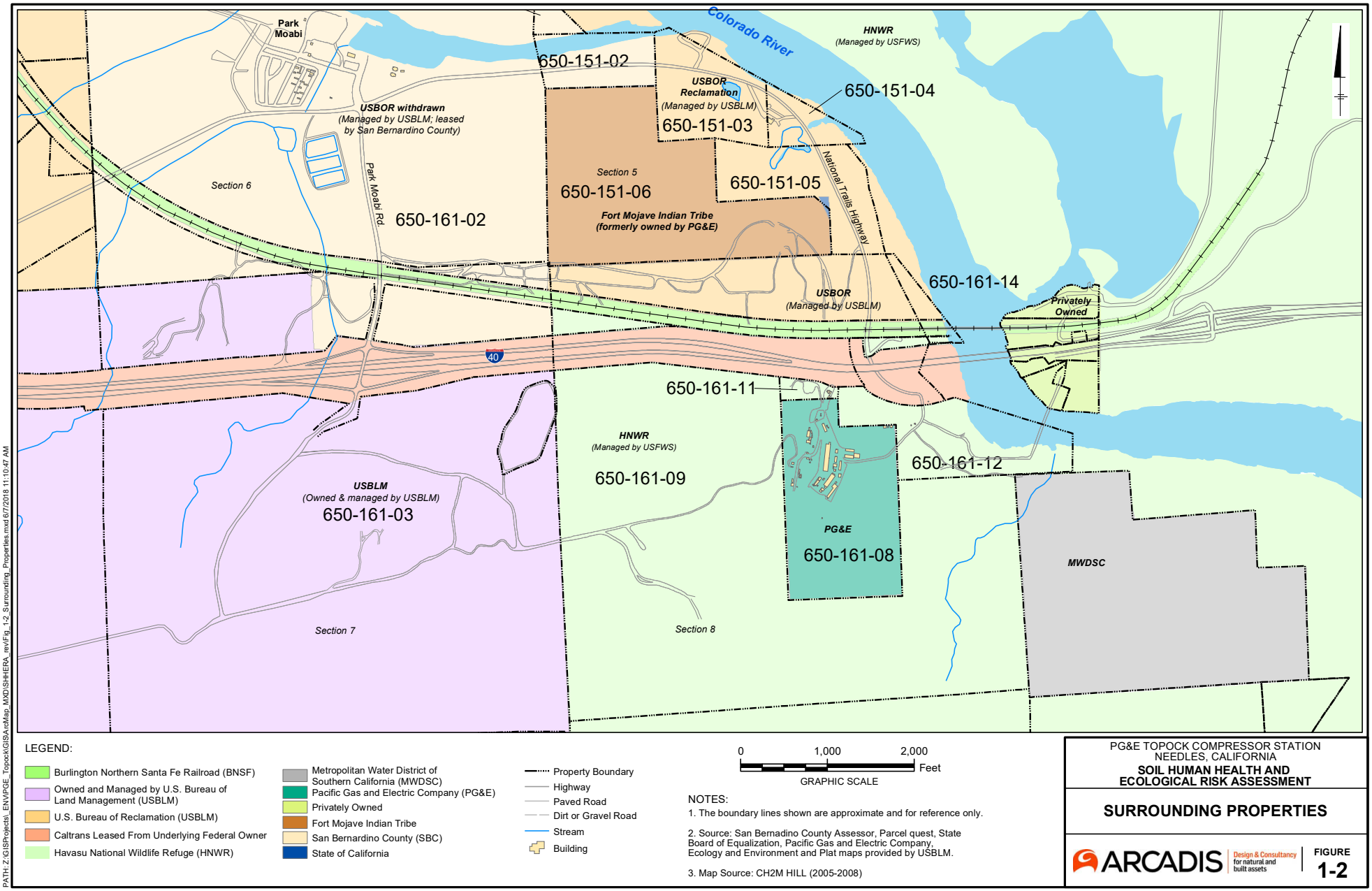
ARCADIS Design & Consultancy for natural and built assets

FIGURE
2.1

8/10/2021 5:31:26 PM

Figure 8 – Properties with Category 1 Institutional Controls

Source*:* Arcadis, 2019*. Soil Human Health and Ecological Risk Assessment Report. Topock Compressor Station, Needles, California.* October.



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- Fort Mojave Indian Tribe
- San Bernardino County (SBC)
- State of California
- Property Boundary
- Highway
- Paved Road
- Dirt or Gravel Road
- Stream
- Building

0 1,000 2,000 Feet

GRAPHIC SCALE

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PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA
SOIL HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

SURROUNDING PROPERTIES

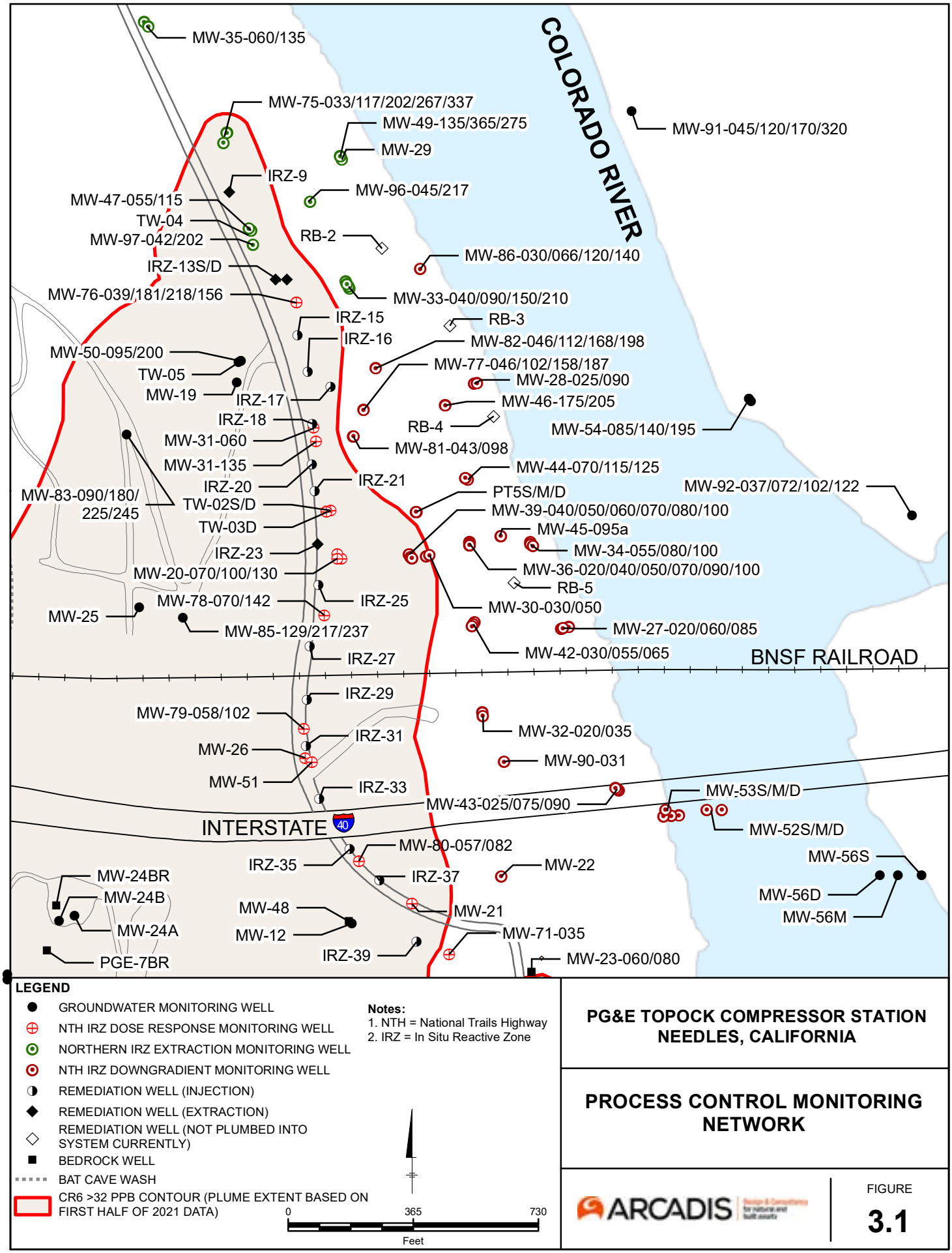
ARCADIS Design & Consultancy for natural and built assets

FIGURE 1-2

PATH: Z:\GIS\Projects_ENVPGE_Topock\GIS\ArcMap_MXD\SHHERA_revFig_1-2_Surrounding_Properties.mxd 6/7/2018 11:10:47 AM

Figure 9 – Process Control Monitoring Network

Source*:* Arcadis, 2021. *Groundwater Remedy Phase 1 Interim Monitoring Plan.* October 1.



PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

PROCESS CONTROL MONITORING NETWORK

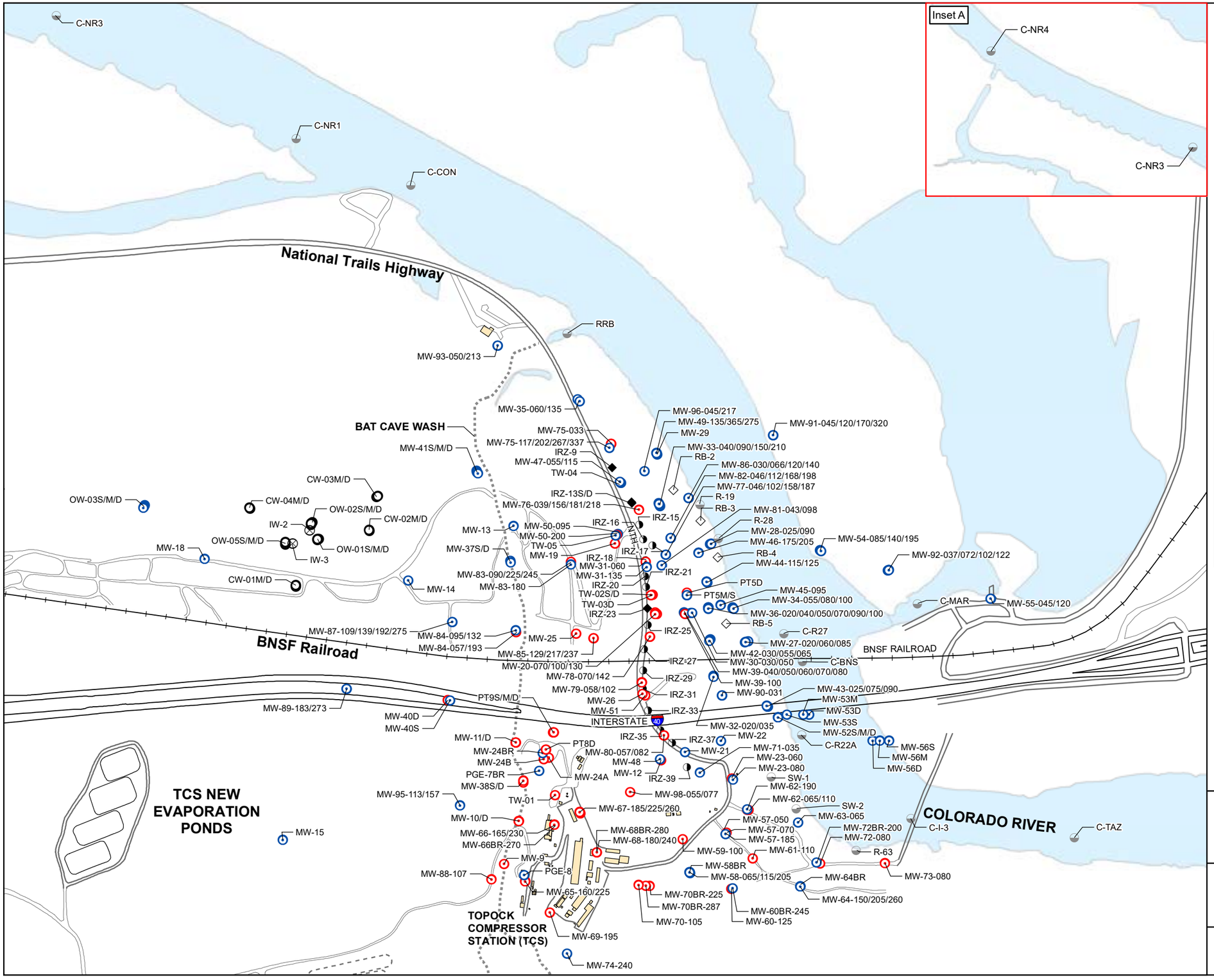
ARCADIS

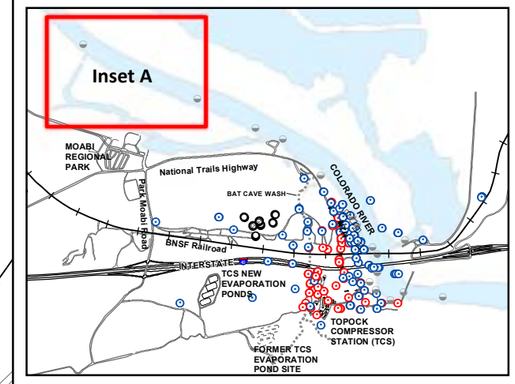
FIGURE
3.1

T:_ENV\PGE_TOPOCK\GEC\MXD\GMP\PHASE1_START_UP_PLAN\FINAL\FIGURE3-1_TOPOCK PROCESS CONTROL MONITORING WELLS.MXD 7/7/2021 10:53:20 AM

Figure 10 – Remedy Compliance Monitoring Network

Source*:* Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California.* June 14.





LEGEND

- REMEDIATION (INJECTION)
- REMEDIATION (EXTRACTION)
- REMEDIATION WELL (NOT PLUMBED INTO SYSTEM CURRENTLY)
- COMPLIANCE GROUNDWATER MONITORING WELL (INSIDE PLUME)
- COMPLIANCE GROUNDWATER MONITORING WELL (OUTSIDE PLUME)
- FORMER IM-3 MONITORING WELLS
- SURFACE WATER MONITORING LOCATION (INCLUDED IN REMEDY COMPLIANCE MONITORING PROGRAM)
- FORMER IM-3 INJECTION WELLS (NOT INCLUDED IN FORMER IM-3 INJECTION AREA MONITORING PROGRAM)
- BAT CAVE WASH

Notes:
1. NTH = National Trail Highway
2. IRZ = In-Situ Reactive Zone
3. IM-3 = Interim Measure 3

0 700 1,400
Feet

FIRST QUARTER 2023
QUARTERLY PROGRESS REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

REMEDY COMPLIANCE MONITORING NETWORK

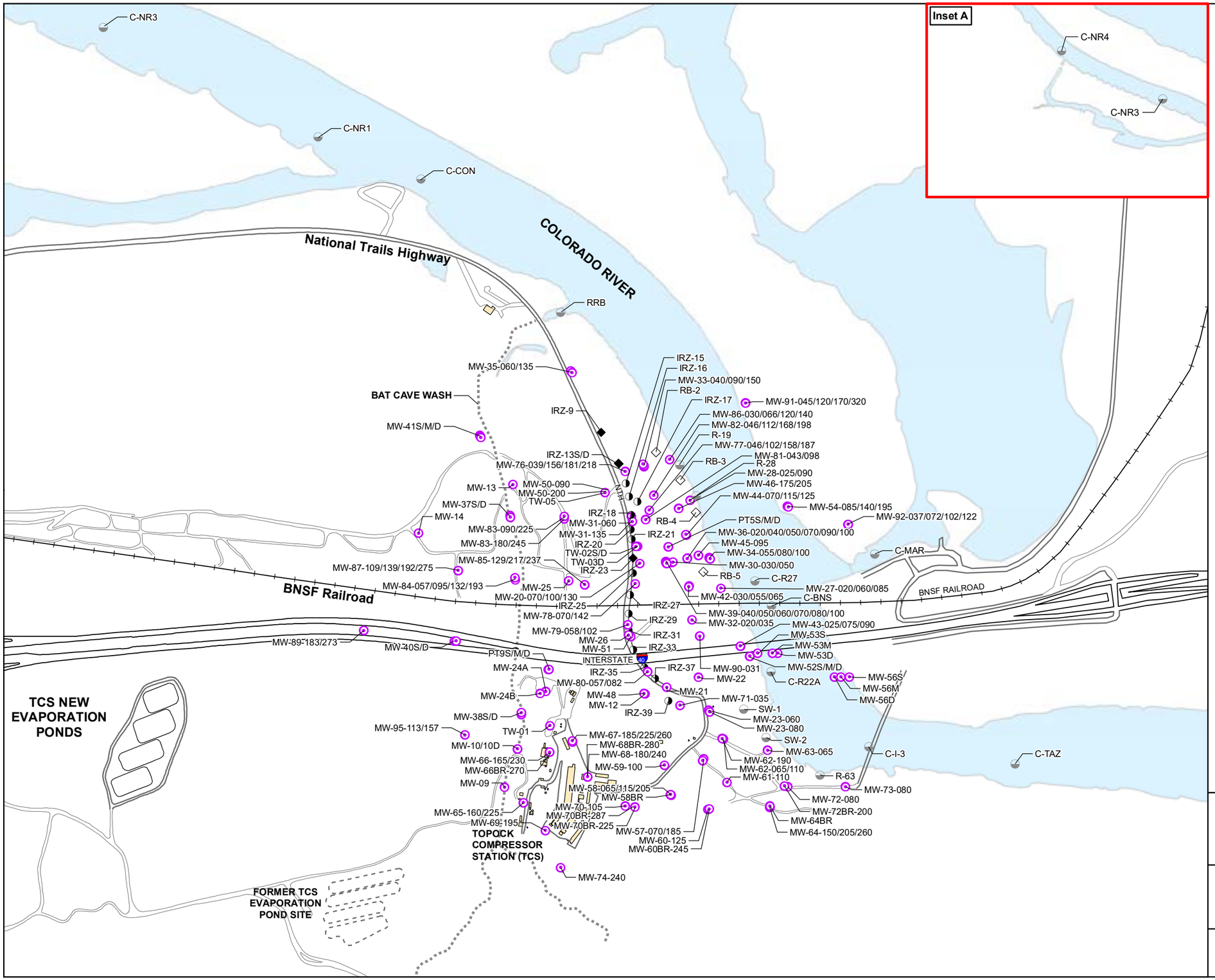
ARCADIS

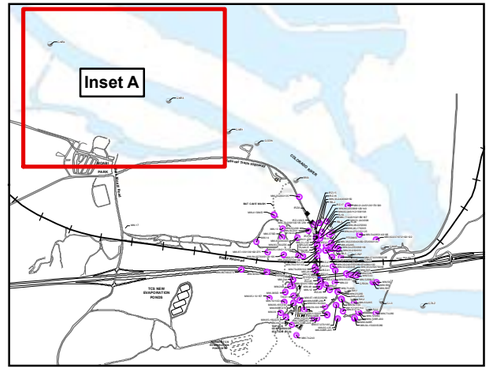
FIGURE
1.4

T:_ENV\PGE_TOPOCK\GEC\MXD\GMP\1Q23\FINAL\FIGURE1.4_REMEDY COMPLIANCE MONITORING NETWORK.MXD 4/7/2023 5:38:18 PM

Figure 11 – COPC Monitoring Network

Source*:* Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California*. June 14.





LEGEND

- REMEDIATION WELL (EXTRACTION)
- REMEDIATION WELL (INJECTION)
- REMEDIATION WELL (NOT PLUMBED INTO SYSTEM CURRENTLY)
- SURFACE WATER MONITORING LOCATION (INCLUDED IN COPC MONITORING PROGRAM)
- COPC MONITORING WELL
- BAT CAVE WASH

Notes:
1. NTH = National Trails Highway
2. IRZ = In-Situ Reactive Zone
3. COPC = Constituent of Potential Concern

0 500 1,000
Feet

FIRST QUARTER 2023
QUARTERLY PROGRESS REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

COPC MONITORING NETWORK

ARCADIS

FIGURE
1.5

T:_ENV\PGE_TOPOCK\GEC\MXD\GMP\1Q23\FINAL\FIGURE1.5_COPC MONITORING NETWORK.MXD 4/7/2023 5:38:23 PM

Appendix A

Public Notice for Five-Year Review

Daily News

Mohave Valley Daily News
Proof of Publication

STATE OF ARIZONA)
) ss
County of Mohave)

I **Sandra Kalischak,** being first duly sworn, says that during the publication of, as herein mentioned, he/she was and now is the **Legal Clerk** of the **Mohave Valley Daily News.** Five times weekly newspaper published on Sunday, Tuesday, Wednesday, Thursday, Friday of each and every week at the City of Bullhead City, in said County.
That said newspaper was printed and published as aforesaid on the following dates, to-wit:

Mohave Valley Daily News: 5/2/2023

That in the: Public Notice

of which the annex copy is a printed and true copy, is printed and inserted in each and every copy of the said newspaper printed and published on the dates aforesaid, and in the body of said newspaper and not in a supplement thereto.

Sandra Kalischak
Clerk

Subscribed and sworn to before me this

2 day of May 2023

Notary Public

My commission expire 10-13-25

WELLS W ANDREWS
Notary Public - Arizona
Mohave County
Commission # 614060
My Comm. Expires Oct 13, 2025

PUBLIC NOTICE

First Five-Year Review on Groundwater Remedy
PG&E Topock Compressor Station Remediation Project
San Bernardino County, California

The U.S. Department of the Interior (DOI), in cooperation with the California Department of Toxic Substances Control (DTSC), is beginning a Five-Year Review process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that will review the groundwater remedy implemented at the Topock Compressor Station in San Bernardino County, California. The selected remedy for groundwater includes the use of in-situ treatment with fresh water flushing for groundwater contamination associated with Solid Waste Management Unit (SWMU) 1/Area of Concern (AOC) 1 and AOC 10.

The purpose of the Five-Year Review is to ensure that the implemented remedy functions as intended and is protective of human health and the environment. These regular reviews are performed by DOI when contaminants remain at concentrations that do not allow unrestricted use of a site and unlimited exposure to site media.

Public participation is encouraged and welcomed. If you are interested in participating in the interview process, **please notify the contact personnel listed below by May 31, 2023**. The Five-Year Review Report is scheduled for completion in December 2023 and will focus on the following sites where groundwater remedial actions have been implemented.

Site Identification and Name:	*Managed by:*
SWMU 1/AOC 1 and AOC 10	DOI

FOR MORE INFORMATION

If you have any questions, or wish to participate in the interview process, please contact the following:

U.S. Department of the Interior
ECCD/OEPC Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

For more information on groundwater remedy implementation at the Topock Compressor Station, please visit the PG&E remediation website: https://topockremediation.pge.com/groundwater-activity-overview.

Publish: May 2, 2023
#69560

The Sun (San Bernardino)

THE SUN
Local. News. Matters.
sbsun.com

The Sun (San Bernardino)
473 E. Carnegie Drive, Suite 250
San Bernardino, California 92408
(909) 386-3864

0011600121

Emily Neu
235 E. Main st, Ste 107
Northville, MI 48167

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF CALIFORNIA
County of San Bernardino

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not party to or interested in the above-entitled matter. I am the principal clerk of the printer of The Sun (San Bernardino), a newspaper of general circulation, printed and published in the City of San Bernardino*, County of San Bernardino, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of County of San Bernardino, State of California, under the date of 06/20/1952, Case No. 73084. The notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

05/01/2023

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Dated at San Bernardino, California

On this 1st day of May, 2023.

Peggy Harmon
Signature

*The Sun (San Bernardino) circulation includes the following cities: [UNKNOWN LIST]

PUBLIC NOTICE

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The purpose of the Five-Year Review is to ensure that the implemented remedy functions as intended and is protective of human health and the environment. Five-Year Reviews will continue for the life of the site until hazardous substances, pollutants, or contaminants no longer remain on site at levels that do not allow for unlimited use and unrestricted exposure.

Public participation is encouraged and welcomed. If you are interested in participating in the interview process, **please notify the contact personnel listed below by May 31, 2023**. The Five-Year Review Report is scheduled for completion in December 2023 and will focus on the following sites where groundwater remedial actions have been implemented:

Site Identification and Name:	Managed by:
SWMU 1/AOC 1 and AOC 10	DOI

FOR MORE INFORMATION

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OEPC/ECCD Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

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The Sun (San Bernardino)
Published: 5/1/23

The Sun (Yuma)

AFFP
DOI PUBLIC NOTICE TOPOCK

Affidavit of Publication

STATE OF AZ } SS
COUNTY OF YUMA }

Lisa Reilly or David Fornof, being duly sworn, says:

That (s)he is Publisher or Director of Operations of the Yuma Sun, a daily newspaper of general circulation, printed and published in Yuma, Yuma County, AZ; that the publication, a copy of which is attached hereto, was in the published said newspaper on the following dates:

05/01/2023

That said newspaper was regularly issued and circulated on those dates.
SIGNED:

Publisher or Director of Operations

Subscribed to and sworn to me this 1st day of May 2023.

VIRGEN P PEREZ, Notary, Yuma County, AZ

My commission expires: May 10, 2025

OFFICIAL SEAL
VIRGEN P PEREZ
NOTARY PUBLIC - ARIZONA
YUMA COUNTY
COMM # 601885
My Comm. Expires May 10, 2025

328300 191920

BB&E, INC.
235 EAST MAIN ST, SUITE 107
NORTHVILLE MI 48167

Ad copy: _____

Call: _____

Mail to: Yuma Sun
Attention: Classified Ads
2055 S. Arizona Avenue
Yuma, AZ 85364
Fax: 928.539.6810
Email: classifieds@yumasun.com

Online at ClassifiedsinYuma.com

Online at lassifiedsin uma.com

Public Notices

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PUBLIC NOTICE

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Site Identification and Name:	*Managed by:*
SWMU 1/AOC 1 and AOC 10	DOI

FOR MORE INFORMATION

If you have any questions, or wish to participate in the interview process, please contact the following:

U.S. Department of the Interior
OEPC/ECCD Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

For more information on groundwater remedy implementation at the Topock Compressor Station, please visit the PG&E remediation website: **https://topockremediation.pge.com/groundwater-activity-overview**.
Yuma Sun: May 1, 2023 - 191920

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implemented:

Managed by:
DOI

ON

terview process, please contact the

at the Topock Compressor Station,
emediation.pge.com/groundwater-

Today’s News-Herald

Affidavit of Proof of Publication

STATE OF ARIZONA

COUNTY OF MOHAVE, ss

I, Janet Fotino, being duly sworn, says that during the publication of the notice, as herein mentioned, she was and now is an Authorized Agent of **Today's News-Herald**, a seven-times weekly newspaper published on Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday of each and every week at the City of Lake Havasu City, in Mohave County, State of Arizona. That said newspaper was printed and published as aforesaid on the following dates, to-wit:

Public Notice
First Five-Year Review on Groundwater Remedy
PG&E Topock Compressor Station

Published date(s)

May 1, 2023
May 3, 2023

of which the annexed copy is a printed and true copy, was printed and inserted in each and every copy of said newspaper, printed and published on the dates aforesaid, and in the body of said newspaper and not in a supplement thereof.

Janet Fotino

Subscribed and sworn to before me this 2nd day of June, 2023.

BRANDI LEIGH SAYLOR
Notary Public - Arizona
Mohave County
Commission # 585567
My Comm. Expires Aug 6, 2024

Notary Public

08/06/24

My Commission Expires

PUBLIC NOTICES

NOTICE OF TRUSTEE SALE TS No.: 23-001004 TSG No.: 8781965 ORIGINAL TRUSTEE SALE RECORDED ON 03/20/2023 IN THE OFFICE OF THE MOHAVE COUNTY RECORDER. NOTICE IF YOU BELIEVE THERE IS A DEFENSE TO THE TRUSTEE SALE, OR IF YOU HAVE AN OBJECTION TO THE TRUSTEE SALE, YOU MUST FILE AN ACTION AND OBTAIN A COURT ORDER PURSUANT TO RULE 65, ARIZONA RULES OF CIVIL PROCEDURE, STOPPING THE SALE NO LATER THAN 5:00 P.M. MOUNTAIN STANDARD TIME OF THE LAST BUSINESS DAY BEFORE THE SCHEDULED DATE OF THE SALE. OR YOU MAY HAVE WAIVED ANY DEFENSES OR OBJECTIONS TO THE SALE. UNLESS YOU OBTAIN AN ORDER, THE SALE WILL BE FINAL. The following legally described trust property will be sold, pursuant to the power of sale under that certain Deed of Trust recorded on 05/23/2022 in Instrument number 2022033860, records of MOHAVE County, Arizona, WILL SELL AT PUBLIC AUCTION TO HIGHEST BIDDER FOR CASH, CASHIER'S CHECK/CASH EQUIVALENT (in lawful money of the United States) On the front steps of the Mohave County Courthouse located at 401 Spring Street, Kingman, AZ 86401 on 06/22/2023 at 11:00 A.M. of said day: SEE EXHIBIT "A" ATTACHED HERETO AND INCORPORATED HEREIN FOR ALL PURPOSES. EXHIBIT A THAT PORTION OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 13, TOWNSHIP 30 NORTH, RANGE 17 WEST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MOHAVE COUNTY, ARIZONA, DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHEAST CORNER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 13, AND THE TRUE POINT OF BEGINNING; THENCE SOUTH 00 DEGREES 01 MINUTES 16 SECONDS WEST ALONG THE EAST LINE OF SAID NORTHWEST QUARTER OF THE NORTHWEST QUARTER, 293.92 FEET; THENCE NORTHEASTERLY ALONG THE ARC OF A CURVE, THE RADIUS POINT OF WHICH BEARS SOUTH 89 DEGREES 58 MINUTES 44 SECONDS EAST, 330.00 FEET DISTANT, AND WHOSE CENTRAL ANGLE IS 29 DEGREES 19 MINUTES 52 SECONDS, A DISTANCE OF 168.94 FEET TO A POINT OF REVERSE CURVE; THENCE NORTHEASTERLY ALONG THE ARC OF A CURVE, SAID CURVE HAVING A RADIUS OF 270.00 FEET AND A CENTRAL ANGLE OF 29 DEGREES 20 MINUTES 10 SECONDS, A DISTANCE OF 138.24 FEET TO A POINT ON THE NORTH LINE OF SAID SECTION 13; THENCE NORTH 89 DEGREES 59 MINUTES 03 SECONDS WEST, 76.91 FEET TO THE TRUE POINT OF BEGINNING. EXCEPT ALL COAL, OIL, GAS, AND MINERAL DEPOSITS, AS RESERVED IN INSTRUMENT RECORDED IN BOOK 64 OF DEEDS, PAGE 328. PROPERTY ADDRESS: 29995 N. ESCALANTE DR, MEADVIEW, AZ 86444 TAX PARCEL No.: 343-27-002 ORIGINAL PRINCIPAL BALANCE: $159,900.00 NAME AND ADDRESS OF BENEFICIARY: VILLAGE CAPITAL & INVESTMENT, LLC c/o Village capital and Investment 2550 Paseo Verde Parkway, Suite 100 Henderson, NV 89074 NAME AND ADDRESS OF TRUSTEE: America West Lender Services, LLC P.O. Box 23028 Tampa, FL 33623 NAME AND ADDRESS OF ORIGINAL TRUSTOR: GARY HOBSON, AN UNMARRIED MAN, 29995 N. ESCALANTE DR, MEADVIEW, AZ 86444 The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designations, if any, shown herein. Said sale will be made, but without covenant or warranty, expressed or implied, regarding title, possession, or encumbrances, to pay the unpaid principal balance of the note(s) secured by said Deed of Trust, with interest thereon as provided in said note(s) advances, if any, under the terms of said Deed of Trust, fees, charges and expenses of the Trustee. If the sale is set aside for any reason, the Purchaser at the sale shall be entitled only to a return of the deposit paid. The Purchaser shall have no further recourse against the Mortgagor, the Mortgagee or the Mortgagee's attorney. Dated: 03/17/2023 America West Lender Services, LLC P.O. Box 23028 Tampa, FL 33623 844-693-4761 DEEANN GREGORY AUTHORIZED SIGNATORY The successor Trustee appointed herein qualifies as a Trustee of the Trust Deed in the Trustee's capacity as a licensed escrow agent as required by Arizona Revised Statutes Section 33-803, Subsection (A)(i). This company may be assisting the Beneficiary to collect a debt and any information we obtain may be used for that purpose whether received orally or in writing. If available, the expected opening bid and/or postponement information may be obtained by calling the following telephone number on the day before the sale: 1-866-539-4173 or visiting https://www.hudsonandmarshall.com. NAME OF TRUSTEE'S REGULATOR: Arizona Department of Financial Institutions State Of TEXAS County Of: DALLAS Before me, Tammy Rossum on this day personally appeared DEEANN GREGORY, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she/they executed the same for the purposes and consideration therein expressed. Given under my hand and seal of office, this 03/17/2023. Tammy Rossum (Notary Seal) TAMMY ROSSUM Notary Public, State of Texas Comm. Expires 02-03-2024 Notary ID 126370400 NPP0433377 To: TODAY'S NEWS HERALD 04/19/2023, 04/26/2023, 05/03/2023, 05/10/2023

Publish: 4-19, 26; 5-3, 10, 2023 3366

NOTICE TO CREDITORS, Case #PB2023-00021 IN THE SUPERIOR COURT OF THE STATE OF ARIZONA IN AND FOR THE COUNTY OF LA PAZ In the Matter of the Estate of Lloyd Eugene Theen, Deceased. NOTICE IS HEREBY GIVEN that VIVIAN HARTLESS, LA PAZ COUNTY PUBLIC FIDUCIARY has been appointed Personal Representative of this Estate. All persons having claims against the Estate are required to present their claims within four months after the date of the first publication of this notice, or the claims will be forever barred. Claims must be presented by delivering or mailing a written statement of the claim to the Personal Representative at La Paz County Public Fiduciary C/O Vivian Hartless 1113 S. Kofa Avenue, Arizona 85344. Dated this April 11, 2023. /s/ Vivian Hartless 1113 S. Kofa Avenue, Parker, Arizona 85344, weekly.

Publish: 4-19, 26; 5-3, 2023 3369

Lloyd Eugene Theen, Decedent
Notice of Appointment
Notice to Unknown Heirs
La Paz County Public Fiduciary is appointed as Personal Representative of the estate of **Lloyd Eugene Theen** who died on **March 7, 2023** without a Will. Any and all persons seeking a determination of heir ship shall file a claim with the La Paz County Public Fiduciary at 1113 S. Kofa Avenue, Parker Arizona on or before **September 1, 2023.** In order to determine heirs or legatees, claims should include official identification and legal birth certificates.
This Probate matter is filed in the Superior Court of La Paz County, Arizona located at 1316 Kofa Ave, Parker Arizona 85344. Probate Case #PB2023-00021 /s/ Vivian Hartless La Paz County Public Fiduciary

Publish: 4-19, 26; 5-3, 2023 3370

TS#: 107653-AZ Order #: 220587094-AZ-VOI NOTICE OF TRUSTEE'S SALE The following legally described trust property will be sold, pursuant to the power of Sale under that certain Deed of Trust dated 6/12/2003 and recorded on 6/18/2003, as Instrument No. 2003049846, in Book 4547, Page 100, in the office of the County Recorder of Mohave County, Arizona. NOTICE IF YOU BELIEVE THERE IS A DEFENSE TO THE TRUSTEE SALE OR IF YOU HAVE AN OBJECTION TO THE TRUSTEE SALE, YOU MUST FILE AN ACTION AND OBTAIN A COURT ORDER PURSUANT TO RULE 65, ARIZONA RULES OF CIVIL PROCEDURE, STOPPING THE SALE NO LATER THAN 5:00 P.M. MOUNTAIN STANDARD TIME OF THE LAST BUSINESS DAY BEFORE THE SCHEDULED DATE OF THE SALE. OR YOU MAY HAVE WAIVED ANY DEFENSES OR OBJECTIONS TO THE SALE. UNLESS YOU OBTAIN AN ORDER, THE SALE WILL BE FINAL AND WILL OCCUR at public auction to the highest bidder at the below date, time and place. LOT FORTY-SEVEN (47), BLOCK FOURTEEN (14), TRACT 2139, LAKE HAVASU CITY, ARIZONA, ACCORDING TO THE PLAT THEREOF, RECORDED NOVEMBER 24, 1965, AT FEE NO. 158503, IN THE OFFICE OF THE COUNTY RECORDER OF MOHAVE COUNTY, ARIZONA. EXCEPT ALL OIL, GAS, COAL AND MINERALS, WHATSOEVER ALREADY FOUND OR WHICH MAY HEREAFTER BE FOUND IN OR UNDER SAID LAND AND ALL UNDERGROUND WATER IN, UNDER OR FLOWING THROUGH SAID LAND AND WATER RIGHTS APPURTENANT THERETO, AS RESERVED IN MESNE INSTRUMENTS OF RECORD. EXCEPT AN UNDIVIDED 1/16TH OF ALL OIL, GASES AND OTHER HYDROCARBON SUBSTANCES, COAL, OR STONE, METALS, MINERALS, FOSSILS, AND FERTILIZER OF EVERY NAME AND DESCRIPTION, TOGETHER WITH ALL URANIUM, THORIUM OR ANY OTHER MATERIAL WHICH IS OR MAY BE DETERMINED BY THE LAWS OF THE UNITED STATES, THE STATE OF ARIZONA OR DECISIONS OF COURTS TO BE PECULIARLY ESSENTIAL TO THE PRODUCTION OF FISSIONABLE MATERIALS, WHETHER OR NOT OF COMMERCIAL VALUE, AS RESERVED BY THE STATE OF ARIZONA IN 37-231, C., A.R.S. AND IN PATENT OF RECORD. COUNTY ASSESSOR'S TAX PARCEL NUMBER: 106-05-246 STREET ADDRESS or IDENTIFIABLE LOCATION: 583 KNOBHILL DR LAKE HAVASU CITY, AZ 86403 Further information related to the sale and the Subject Real Property will be made available to the public through WWW.STOXPOSTING.COM. In accordance with A.R.S. § 33-808(B), the time of sale will be between 9 a.m. and 5 p.m. at a specific place on the Subject Real Property, at the County Courthouse, or at a specific place of business of the Trustee. Sale Date: 7/6/2023 Sale Time: 12:00 PM Sale Location: AT THE SIDE STEPS OF THE MOHAVE COUNTY COURTHOUSE, LOCATED AT 401 SPRING STREET, KINGMAN, AZ 86401 ACCORDING TO THE DEED OF TRUST OR UPON INFORMATION SUPPLIED BY THE BENEFICIARY, THE FOLLOWING INFORMATION IS PROVIDED PURSUANT TO A.R.S. SECTION 33-808(C): ORIGINAL TRUSTOR: CHARLES J. REED AND PATRICIA J. REED 583 KNOBHILL DR LAKE HAVASU CITY, AZ 86403 ORIGINAL PRINCIPAL BALANCE AS SHOWN ON DEED OF TRUST: $235,500.00 CURRENT BENEFICIARY: US BANK TRUST NATIONAL ASSOCIATION, NOT IN ITS INDIVIDUAL CAPACITY BUT SOLELY AS OWNER TRUSTEE FOR VRMTG ASSET TRUST c/o FAY SERVICING, LLC 1601 LBJ Freeway, Suite 150 Farmers Branch, TX 75234 CURRENT TRUSTEE: Clear Recon Corp 3707 East Southern Avenue Mesa, AZ 85206 Phone: (866) 931-0036 Visit this Internet Web site: WWW.STOXPOSTING.COM Automated Sale Line: (844) 477-7869 Dated: 3/23/2023 CLEAR RECON CORP Hamsa Uchi, Authorized Signatory for Trustee State of California) ss. County of San Diego) On Mar 23, 2023 before me, Arlene Rodriguez Beltran Notary Public, personally appeared Hamsa Uchi who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument. I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct. WITNESS WHEREOF I hereunto set my hand and official seal. Arlene Rodriguez Beltran, My Comm. Expires Aug 1, 2026 The successor trustee appointed herein qualifies as trustee of the Trust Deed in the trustee's capacity as an Escrow Agent required by ARS Section 33-803, Subsection (A). The name of the state or federal licensing or regulatory body governing activities of the trustee is: Arizona Department of Financial Institutions.

Publish: 5-3, 10, 17, 24, 2023 3389

Articles of Incorporation have been filed in the office of the Arizona Corporation Commission for JLC Air Corp. Entity type: Domestic For-Profit (Business) Corporation. Effective Date: 04/04/2023. Entity ID: 23510451. Character of Business-Construction. The place of business is 3260 Poppy Trail Place Lake Havasu City, AZ 86406. The Statutory Agent's name is Carolyn Marie Luthern - 3260 Poppy Trail Pl, Lake Havasu City, AZ 86406. PRINCIPAL INFORMATION

Director: Carolyn Marie Luthern- 3260 Poppy Trail Place, LAKE HAVASU CITY, AZ, 86406, USA-- Date of Taking Office:
Incorporator: Carolyn Marie Luthern - 3260 POPPY TRAIL PL, LAKE HAVASU CITY, AZ, 86406, USA
President/CEO: Carolyn Marie Luthern - 3260 Poppy Trail Place, LAKE HAVASU CITY, AZ, 86406, USA
Secretary: Carolyn Marie Luthern- 3260 Poppy Trail Place, LAKE HAVASU CITY, AZ, 86406, USA
Vice-President: Joseph William Luthern- 3260 Poppy Trail Place, LAKE HAVASU CITY, AZ, 86406, USA

Publish: 4-30; 5-2, 3, 2023 3394

ARTICLES OF ORGANIZATION OF LIMITED LIABILITY COMPANY
ENTITIY NAME: VERITAS HEALTHCARE LLC
ENTITY ID: 23504338
ENTITY TYPE: Domestic Professional LLC
EFFECTIVE DATE: 03/22/2023
CHARACTER OF BUSINESS: Health Care and Social Assistance
MANAGEMENT STRUCTURE: Member- Managed
PERIOD OF DURATION: Perpetual
PROFESSIONAL SERVICES: Healthcare
STATUTORY AGENT NAME: Kemella Sillah
PHYSICAL / MAILING ADDRESS: 3949 Breakwater Lane, Lake Havasu City, AZ 86406
PRINCIPAL ADDRESS: 3949 Breakwater Lane, Lake Havasu City, AZ 86406
PRINCIPALS:
Member: Kemella Sillah – 3949 Breakwater Lane, Lake Havasu City, AZ, 86406, USA – Date of Taking Office:
ORGANIZERS: Kemella Sillah – 3949 Breakwater Lane, Lake Havasu City, AZ, 86406, USA, ks1511@georgetown.edu
SIGNATURES: Organizer: Kemella Sillah – 03/22/2023

Publish: 5-3, 4, 5, 2023 3401

NOTICE
(for publication)
ARTICLES OF ORGANIZATION HAVE BEEN FILED IN THE OFFICE OF THE ARIZONA CORPORATION COMMISSION FOR

I. Name: Havaplan Estate Planning, LLC
II. The address of the known place of business is:
9370 Thunderbird Drive
Lake Havasu City, AZ 86406
III. The name and street address of the Statutory Agent is:
Genie Martin
9370 Thunderbird Drive
Lake Havasu City, AZ 86406
A. Management of the limited liability company is vested in a manager or managers. The names and addresses of each person who is a manager AND each member who owns a twenty percent or greater interest in the capital or profits of the limited liability company are:
Genie Martin
9370 Thunderbird Drive
Lake Havasu City, AZ 86406
[x] member [x] manager

Publish: 5-3, 4, 5, 2023 3402

Water Conservation Grant Fund Solicitation

Overview:
The Water Infrastructure Finance Authority of Arizona is accepting applications for funding from the Water Conservation Grant Fund. The WCGF aims to promote voluntary water conservation programs or projects that are expected to result in long-term reductions in water use, improvements in water use efficiency, and/or improvements in water reliability.

Eligible Applicants:
- Cities, towns, counties, districts, commissions, authorities, or other public entities that are organized and exist under the statutory law of Arizona or a voter-approved charter or initiative of Arizona.
- Nongovernmental organizations that focus on water conservation or environmental protection who partner with an eligible public entity.

Eligible Use of Funds:
- Education & research programs on how to reduce water consumption, increase water efficiency or increase water reuse.
- Programs & projects for rainwater harvesting, gray water systems, efficiency upgrades, installing drought-resistant landscaping, turf removal and other practices to reduce water use.
- Programs or projects to promote groundwater recharge and improved aquifer health.
- Programs or projects to improve groundwater conservation and surface water flows.
- Landscape watershed protection, restoration, and rehabilitation, including through green infrastructure and low-impact development to conserve or augment water supplies.
- Projects facilitating coordinated water management, including groundwater storage and recovery.
- Programs or projects to reduce structural water overuse issues.
- Program implementation and administration costs for eligible programs.

Funding Source: American Rescue Plan Act (ARPA)
Funds Available: $200,000.000
Number of Awards: Multiple

Additional Information: Water conservation projects are eligible for grants of up to $250,000. Water conservation programs are eligible for grants of up to $3,000,000. Collaborations among entities and community partnerships are strongly encouraged, if appropriate.

Factors Which Applications will be Evaluated for Award Include:
- The extent to which the water conservation program or project achieves conservation benefits
- The costs and benefits of the water conservation program or project, including environmental costs and benefits.
- If the water conservation program or project is eligible for funding from other WIFA-administered funding programs.
- The ability to provide multiple benefits.
- The degree to which the water conservation program or project will maximize or leverage multiple available funding sources, including federal funding.
- The qualifications and capacity of an applicant.
- The feasibility of the water conservation program or project.
- Public comments.

Due Date for Submittal: May 19, 2023at 5:00 pm
Anticipated Award Date: Fall 2023

To apply and for additional information please contact:
Chelsea McGuire
Assistant Director – External Affairs
Water Infrastructure Finance Authority
cmcguire@azwifa.gov
602.647.4549

Publish: May 3, 2023 3395

SAN FRANCISCO
LYFT'S NEW CEO TACKLES A JOB REQUIRING SOME HEAVY LIFTING: Even before he joined Lyft's board in 2021, David Risher had taken hundreds of trips as a passenger so he felt like he knew a lot about the ride-hailing service. But he never expected to be thrust into the driver's seat at a time when Lyft was running like a jalopy. After shaking off his initial shock at being asked to replace Lyft's co-founder as CEO, Risher quickly began to shake up a company sinking in a morass of mounting losses. Shortly taking the job, Risher laid out a plan to lay off nearly 1,100 employees and plow the savings into lower fares to better compete against Uber. — *AP*

HOW MAJOR US STOCK INDEXES FARED

Stocks closed lower as shares of beleaguered banks tumbled again and worries about the economy worsened.

The rising fear sent yields sinking in the bond market Tuesday, while Wall Street waited for the Federal Reserve's latest move on interest rates and Washington edges closer to what would be a catastrophic default on U.S. government debt.

The S&P 500 fell 1.2% Tuesday, and the Dow fell 367 points. Some of the sharpest drops came from smaller- and mid-sized banks. They've been under heavy scrutiny as the banking system shows cracks under the weight of much higher interest rates.

On Tuesday:
The S&P 500 fell 48.29 points, or 1.2%, to 4,119.58.

The Dow Jones Industrial Average fell 367.17 points, or 1.1%, to 33,684.53.

The Nasdaq composite fell 132.09 points, or 1.1% to 12,080.51.

The Russell 2000 index of smaller companies fell 37.10 points, or 2.1%, to 1,732.11.

For the week:
The S&P 500 is down 49.90 points, or 1.2%.

The Dow is down 413.63 points, or 1.2%.

Wall Street roundup
Dow Jones Industrial Average
-367.17 (-1.1%)
Close 33,684.53

S&P 500
-48.29 (-1.2%)
Close 4,119.58

Nasdaq
-132.09 (-1.1%)
Close 12,080.51

Source: AP

The Nasdaq is down 146.08 points, or 1.2%.

The Russell 2000 is down 36.88 points, or 2.1%.

For the year:
The S&P 500 is up 280.08 points, or 7.3%.

The Dow is up 537.28 points, or 1.6%.

The Nasdaq is up 1,614.02 points, or 15.4%.
The Russell 2000 is down 29.14 points, or 1.7%.

CLOSING PRICES FOR CRUDE OIL, GOLD AND OTHER COMMODITIES

Benchmark U.S. crude oil for June delivery fell $4 to $71.66 a barrel Tuesday. Brent crude for July delivery fell $3.99 to $75.32 a barrel.

Wholesale gasoline for June delivery fell 11 cents $2.44 a gallon. June heating oil fell 9 cents $2.29 a gallon. June natural gas fell 11 cents to $2.21 per 1,000 cubic feet.

Gold for June delivery rose $31.10 to $2,023.30 an ounce. Silver for July delivery rose 39 cents to $25.62 an ounce and July copper fell 7 cents to $3.86 a pound.

The dollar fell to 136.69 Japanese yen from 137.48 yen. The euro rose to $1.1001 from $1.0970.

CRYPTOCURRENCY

Bitcoin: $28,718.07 (+2.71%)
Ethereum: $1,876.96 (+2.97)
Binance Coin: $322.45 (+1.70%)
XRP: $.46536187 (+0.52%)
Solana: $22.28 (+2.04%)
Cardano: $.39218400 (+1.90%)
Dogecoin: $0.07892826 (+0.42%)

Source: Coindesk.com at 3:12 p.m. Tuesday

Release Date: Wednesday, May 3, 2023

Los Angeles Times Daily Crossword Puzzle

Edited by Patti Varol and Joyce Nichols Lewis

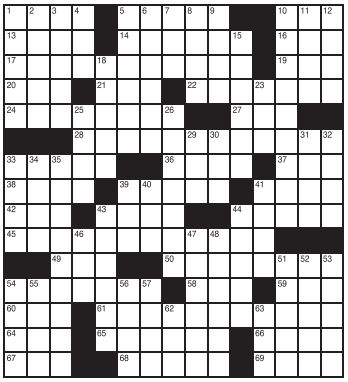
ACROSS
1 __ d'Azur: stretch of the Riviera
5 Black-and-white mammal
10 NBC skit show, familiarly
13 Declare bluntly
14 Relaxed
16 Garland that may feature kika blossoms
17 "Destructive meteorological events marked by high winds and heavy rain
19 Geologic age
20 Director Roth
21 Sun Devils sch.
22 Aquaman's staff
24 Indulgently lavish
27 Opening
28 *Phenomena created by sunlight refracting through ice crystals in clouds
33 __ voce
36 Spots for fast cash
37 Across Long
38 Consequently
39 Gives in
41 Piquancy
42 Objective
43 Achy
44 Ballet jumps
45 "Low-pressure systems also called "winter hurricanes"
49 Favorable vote
50 Be just right for
54 Altogether
58 Blasting material
59 Michael of 10-Across
60 "Excusez-__"
61 Feature of early spring and late fall, or an apt description of the answers to the starred clues?
64 Nosher's bite
65 Cream-filled pastry
66 "The __ Tour": 2023 Taylor Swift concert series
67 Flamenco cheer
68 Party leaders
69 Intro, in journalism jargon

DOWN
1 Surveyed surreptitiously
2 Plant structure with reproductive cells
3 Discussion point
4 Pasture grazer
5 Quarterback, often
6 Bring into harmony
7 Prefix for a revived music genre, e.g.
8 Move quickly
9 Genre of YouTube videos that may bring about brain tingles, for short
10 Go to bed before putting something to bed, say
11 Word on really bright Crayolas
12 Dryer fluff
15 Endorses digitally
18 Part of NPR
23 Blot
25 Matinee hrs.
26 Goes a long way
29 Had a bite
30 Sends a text, briefly
31 Viognier, e.g.
32 Droops
33 Try
34 Indiana neighbor
35 Muscle-strengthening session for a baby
39 Demurely evasive
40 Curved path
41 Piquancy
43 Not at all abundant
44 Volkswagen sedan
46 Comb creator
47 Get the better of
48 Bay Area NFLers
51 Autumn colour
52 Still to come
53 Brief
54 "Uh, guess again"
55 Wrench, e.g.
56 Scot's swimming spot
57 "Seize the day" acronym
62 __ Vegas
63 Business card no.

ANSWER TO PREVIOUS PUZZLE:

				A	S	S		T	I	E	R	A	V	A
H	U	S	K		O	P	A	L		I	S	L	E	T
I	N	T	E	R	N	A	L	A	F	F	A	I	R	S
A	S	I	D	E		L	O	C	I		N	A	T	O
L	E	N		E	L	M	S		N	A	T			
L	E	G	A	Y	A	S	S	I	S	T	A	N	T	
				A	S	P			M	T	A		O	A	S
A	J	A	R		S	C	U	B	A	S	H	O	P	S
B	E	R	G		E	L	S	A		T	E	N	E	T
E	T	C	H		D	E	E	D		E	W	E	R	S

05/03/23



By Amie Walker

05/03/23

PUBLIC NOTICE

First Five-Year Review on Groundwater Remedy
PG&E Topock Compressor Station Remediation Project
San Bernardino County, California

The U.S. Department of the Interior (DOI), in cooperation with the California Department of Toxic Substances Control (DTSC), is beginning a Five-Year Review process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that will review the groundwater remedy implemented at the Topock Compressor Station in San Bernardino County, California. The selected remedy for groundwater includes the use of in-situ treatment with fresh water flushing for groundwater contamination associated with Solid Waste Management Unit (SWMU) 1/Area of Concern (AOC) 1 and AOC 10.

The purpose of the Five-Year Review is to ensure that the implemented remedy functions as intended and is protective of human health and the environment. Five-Year Reviews will continue for the life of the site until hazardous substances, pollutants, or contaminants no longer remain on site at levels that do not allow for unlimited use and unrestricted exposure.

Public participation is encouraged and welcomed. If you are interested in participating in the interview process, **please notify the contact personnel listed below by May 31, 2023**. The Five-Year Review Report is scheduled for completion in December 2023 and will focus on the following sites where groundwater remedial actions have been implemented:

Site Identification and Name:	*Managed by:*
SWMU 1/AOC 1 and AOC 10	DOI

FOR MORE INFORMATION

If you have any questions, or wish to participate in the interview process, please contact the following:

U.S. Department of the Interior
OEPC/ECCD Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

For more information on groundwater remedy implementation at the Topock Compressor Station, please visit the PG&E remediation website: https://topockremediation.pge.com/groundwater-activity-overview.

Publish: 5-1, 3, 2023 3397

Desert Star

Needles Desert Star
Proof of Publication
(2015.5 C.C.P)

STATE OF CALIFORNIA)
) ss
County of San Bernardino)

Notice Type:**Legal**

Ad Description:

I, **Sandra Kalischak**, am a citizen of the United States and I am over the age of eighteen and not a party or interested in the above-entitled matter. I am the representative of the printer and publisher of the **NEEDLES DESERT STAR**, a weekly newspaper printed and published in the English language in the City of Needles, County of San Bernardino and adjudicated newspaper general circulation as defined by the laws of the State of California
by the Superior Court of the County of San Bernardino,State of California

That the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement
thereof on the following dates, to-wit:

Needles Desert Star: 5/3/2023

Sandra Kalischak
Representative Signature

I certify (or declare) under perjury the foregoing is ture and correct as subcribed and sworn to before me this

3 day of MAY 2023

Notary Public

My commission expire 10-13-25

PUBLIC NOTICE

First Five-Year Review on Groundwater Remedy
PG&E Topock Compressor Station Remediation Project
San Bernardino County, California

The U.S. Department of the Interior (DOI), in cooperation with the California Department of Toxic Substances Control (DTSC), is beginning a Five-Year Review process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that will review the groundwater remedy implemented at the Topock Compressor Station in San Bernardino County, California. The selected remedy for groundwater includes the use of in-situ treatment with fresh water flushing for groundwater contamination associated with Solid Waste Management Unit (SWMU) 1/Area of Concern (AOC) 1 and AOC 10.

The purpose of the Five-Year Review is to ensure that the implemented remedy functions as intended and is protective of human health and the environment. These regular reviews are performed by DOI when contaminants remain at concentrations that do not allow unrestricted use of a site and unlimited exposure to site media.

Public participation is encouraged and welcomed. If you are interested in participating in the interview process, **please notify the contact personnel listed below by May 31, 2023**. The Five-Year Review Report is scheduled for completion in December 2023 and will focus on the following sites where groundwater remedial actions have been implemented:

Site Identification and Name:	*Managed by:*
SWMU 1/AOC 1 and AOC 10	DOI

FOR MORE INFORMATION

If you have any questions, or wish to participate in the interview process, please contact the following:

U.S. Department of the Interior
ECCD/OEPC Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

For more information on groundwater remedy implementation at the Topock Compressor Station, please visit the PG&E remediation website: https://topockremediation.pge.com/groundwater-activity-overview

Publish: May 3, 2023
#69584

WELLS W ANDREWS
Notary Public - Arizona
Mohave County
Commission # 614060
My Comm. Expires Oct 13, 2025

Parker Pioneer

Affidavit of Proof of Publication

STATE OF ARIZONA

ss

COUNTY OF LA PAZ

I, **Janet Fotino**, being duly sworn, says that during the publication of the notice, as herein mentioned, she was and now is an Authorized Agent of **The Parker Pioneer**, a one-time week newspaper published on Wednesday of each and every week at the City of Parker, in La Paz County, State of Arizona. That said newspaper was printed and published as aforesaid on the following date, to-wit:

Public Notice
First Five-Year Review on Groundwater Remedy
PG&E Topock Compressor Station

Published date:

May 3, 2023

of which the annexed copy is a printed and true copy, was printed and inserted in each and every copy of said newspaper, printed and published on the date aforesaid, and in the body of said newspaper and not in a supplement thereof.

Janet Fotino

Subscribed and sworn to before me this 2nd day of June, 2023.

BRANDI LEIGH SAYLOR
Notary Public - Arizona
Mohave County
Commission # 585567
My Comm. Expires Aug 6, 2024

Notary Public

08/06/24

My Commission Expires

The following legally described trust property will be sold, pursuant to the power of sale under that certain Deed of Trust and Assignment of Rents recorded on June 16, 2021, as Instrument No. 2021-00578, in the records of La Paz County, Arizona. **NOTICE! IF YOU BELIEVE THERE IS A DEFENSE TO THE TRUSTEE SALE OR IF YOU HAVE AN OBJECTION TO THE TRUSTEE SALE, YOU MUST FILE AN ACTION AND OBTAIN A COURT ORDER PURSUANT TO RULE 65, ARIZONA RULES OF CIVIL PROCEDURE, STOPPPING THE SALE NO LATER THAN 5:00 P.M. MOUNTAIN STANDARD TIME OF THE LST BUSINESS DAY BEFORE THE SCHEDULED DATE OF THE SALE, OR YOU MAY HAVE WAIVED ANY DEFENSES OR OBJECTIONS TO THE SALE. UNLESS YOU OBTAIN AN ORDER, THE SALE WILL BE FINAL AND WILL OCCUR** at public auction to the highest bidder at the front courtyard of the La Paz County Superior Court, 1316 Kofa Avenue, Suite 607, Parker, AZ 85344 of La Paz County, Arizona on **Tuesday, June 20, 2023, at** 10:00 o'clock A.M. of said day: **Street Address:** 38180 Apache Street, Salome, Arizona 85348 **Legal Description:** Parcel No 1: Lot 2, Block 6, Amended Map of HARRIS ADDITION to the Salome Townsite, according to the plat of recorded in the office of the County Recorder of Yuma (now La Paz) County, Arizona, recorded in Book 2 of Plats, Page 39. Parcel No 2: Lot 3, Block 6, Amended Map of HARRIS ADDITION to the Salome, Townsite, according to the plat of recorded in the office of the County Recorder of Yuma (now La Paz) County, Arizona, recorded in Book 2 of Plats, Page 39. TOGETHER WITH THAT PORTION of the abandoned alleys, lying adjacent to said Lot 3, as described in Yuma County Board of Supervisors Minutes, Volume 13, Pages 139 and 196. Parcel No 3: Lots 6 and 7, Block 6, Amended Map of HARRIS ADDITION to the Salome Townsite, according to the plat of recorded in the office of the County Recorder of Yuma (now La Paz) County, Arizona, recorded in Book 2 of Plats, Page 39. TOGETHER WITH THAT PORTION of the abandoned alleys, lying adjacent to said Lots 6 and 7, as described in Yuma County Board of Supervisors Minutes, Volume 13, Pages 139 and 196. **Tax Parcel Number(s):** 304-58-033 **Original Principal Balance:** $1,500,000.00 **Name and Address of Current Beneficiary:** FZA Note Buyers, LLC, 1560 Sawgrass Corporate Parkway Suite 479, Sunrise, FL 33323 **Name and Address of Original Trustor:** Joel Natario, 10119 E Winter Sun Drive, Scottsdale, AZ 85262. **Name, Address and Phone No. of Current Trustee:** James A. Burns,4808 N 22nd Street Suite 200, Phoenix, AZ 85016 (602) 264-2261 Dated this 13th day of March , 2023./s/James A. Burns, Trustee The manner of the Trustee's qualification is that he is a member of the State Bar of Arizona based on the Arizona Revised Statutes section 33-803(A), subsection 2. The Name of the Trustee's Regulator is the State Bar of Arizona. STATE OF ARIZONA) County of Maricopa) §, SUBSCRIBED and SWORN to me before this 13th day of March, 2023, by James A. Burns, Trustee, and is authorized to sign this Notice of Trustee's Sale on behalf of FZA Note Buyers, LLC, and who is a person respecting whom I have personal knowledge of his identity and who personally appeared before me on the aforesaid date and who acknowledged to me that this is his signature that he has affixed to this Notice of Trustee's sale consisting of two (2) pages, including this Notarial Page. /s/Carole L. Domogala, Notary Public, My Commission Expires 09-18-26 Y67732
Pub dates: 4/19, 26, 5/3, & 5/10/23
Publish: 4-19, 26; 5-3, 10, 2023 7167

IN THE TRIBAL COURT OF THE COLORADO RIVER INDIAN TRIBES
CIVIL DIVISION

In re the Estate of:
Joyce Alcaida,
Decedent,
And
BELINDA RAY
Administrator.

Case No.(s) CV-PB-2022-0169
PROBATE ORDER

This is the time set for the initial Probate Hearing in this matter. Present IS BELINDA RAY
Discussion is held:
The administrator needs to open an "Estate Account" to deposit money in her mother's name.
The administrator will give notice to creditors via publication prior to the next hearing.
The Court finds that Ms. Alcaida passed without a will.
Jurisdiction is proper pursuant to CRIT Probate Code §1.102 as the decedent resided within the boundaries of the CRIT reservation at the time of his death.
The decedent has one heir: Belinda Ray.
Decedent was a widow at the time of her death and the petitioner is the only surviving child of the Decedent.
Court finds that decedent **Joyce B. Alcaida** passed on October 17, 2022.
Petitioner requires this appointment because the bank requires it for her to have access to her mother's account(s) and to deposit checks in her mother's name.
WHEREFORE the Court finds that pursuant to CRIT Probate Code Section 5.506: That **Ms. Ray** shall serve as administrator for **her mother's estate** without objection of all potential heirs. The Clerk of the Court will issue letters and orders separately

DUTIES OF THE ADMINISTRATOR

1. To take constructive or physical possession of all property of the decedent subject to the CRIT probation Code as the Court shall order, taking into consideration the interests of the person(s) who may have occupied the homestead of the decedent at the time of his or her death;
2. Within one month of appointment make an inventory and appraisement of such property and file it with the Court;
3. Within one month of the appointment, determine and file with the Court a list of all known relatives of the decedent, their ages, their relationship to the decedent, ad their whereabouts if known;
4. Subject to the approval of the Court, ascertain and pay all of the debts and legal obligations of the decedent;
5. Prosecute and defend actions for or against the estate;
6. Distribute the estate in accordance with the order of the Court and file receipts with the Court showing distribution of the estate.
7. Cause notice to creditors by publication. (See Below, Notice to Creditors)

ACCOUNTING

Pursuant **CRIT PROBATE CODE §5.509** prior to distribution of the estate, the Administrator shall file an accounting to the Court for approval, of all receipts and disbursements from the estate, showing the present status of the estate and that it is ready for distribution, and also showing the computation of any attorney's and/or Administrator's fees involved for which approval for payment is sought.

NOTICE TO CREDITORS

Pursuant **CRIT PROBATE CODE §5.507** prior to distribution of the estate the administrator shall cause notice to creditors to be posted in at least three conspicuous places on the Reservation and published for three consecutive issues in a publication of general distribution on the Reservation. Said notice shall state that creditors have 90 days from the date of the first publication of the notice to present their claims to the Administrator or Probate clerk and that only those claims so presented may be paid by the estate.
WHEREFORE IT IS ORDERED that:

8. The administrator shall file a death certificate of Ms. Alcaida. (completed)
9. The administrator shall file an inventory and appraisement of the decedent's estate.
10. List all debts that the administrator has paid for the decedent.
11. File a list of all living relatives of the decedent. (Completed)

NEXT COURT DATE: May 10, 2023 at 10:00 a.m.
DATE: March 09, 2023
/s/ Julia Vigil
Honorable Julia Vigil
Judge of the Colorado River Indian Tribes
Copies of the foregoing mailed/faxed to:
B. Ray – mail, Administrator,
PIB/Email – CRIT Legal Aid
Publish: 4-19, 26; 5-3, 2023 7168

BUCKSKIN SANITARY DISTRICT
NOTICE OF PUBLIC HEARING ON PROPOSED USER FEE RATES
FOR FY JULY 1, 2023 – JUNE 30, 2024

Pursuant to Arizona Revised Statutes Section 48-2026, Notice is hereby given to the members of the Buckskin Sanitary District, Board of Directors, and to the general public, that the Buckskin Sanitary District Board of Directors will hold a Public Hearing & Adoption Meeting, open to the public, on Wednesday, May 10, 2023, immediately following the Budget Hearing at 8832 Riverside Drive #4, Parker, AZ 85344.

Purpose of the Public Hearing: To Adopt and to Certify the User Fee Schedule for the fiscal year July 1, 2023 to June 30, 2024. FURTHER NOTICE IS HEREBY GIVEN that the Board of Directors of the District have set May 10, 2023 immediately following the Budget Hearing, for a hearing on any objections to the legality of the User Fees and to determine and review the user fees and/or method of determining such fees , or any of the previous proceedings connected herewith. The Board may consider a rate increase, $48.00 per EDU per month as well as other fees as shown in Exhibit A Fee Schedule on the website. Any person wishing to object to the establishment, continuation and /or increase or decrease of the rates may file an objection to the legality of such or to any of the previous proceedings taken in connection therewith, prior to the time fixed for the hearing, with a written notice briefly specifying the grounds of their objections. All such notices must be mailed by May 1, 2023 to the Clerk of the Board of Directors of Buckskin Sanitary District, 8832 Riverside Dr. #4, Parker, AZ 85344.
ADOPTED:
Publish: 4-26; 5-3, 2023 7176

DCS'S NOTICE OF HEARING ON MOTION FOR TERMINATION OF PARENT-CHILD RELATIONSHIP
No. S1500JD202100018
(Honorable Jessica Quickle)
IN THE SUPERIOR COURT OF THE STATE OF ARIZONA
IN AND FOR THE COUNTY OF LA PAZ
In the matter of:
ARMANI JACKSON RODRIGUEZ
d.o.b. 03/30/2018
Person under 18 years of age.
TO: MICHELLE LEANNE GRAF and CRISTIAN RODRIGUEZ-DIAZ, parents of the above-named child.
1. The Department of Child Safety, (DCS or the Department), by and through undersigned counsel, has filed a Motion for Termination of Parent-Child Relationship under Title 8, of the Arizona Revised Statutes and Rule 351 of the Arizona Rules of Procedure for the Juvenile Court.
2. The Court has set a hearing on the 11th day of July, 2023, at 3:30 p.m., at the La Paz County Superior Court, Juvenile Justice Center, 1316 Kofa Street, Parker, Arizona 85334, before the Honorable Jessica Quickle for the purpose of determining whether any parent or guardian named herein is contesting the allegations in the Motion.
3. You and your child are entitled to have an attorney present at the hearing. You may hire your own attorney or, if you cannot afford an attorney and want to be represented by an attorney, one may be appointed by the Court.
4. You have a right to appear as a party in this proceeding. You are advised that your failure to personally appear in court at the initial hearing, pretrial conference, status conference, or termination adjudication, without good cause shown, may result in a finding that you have waived your legal rights and have admitted the allegations in the Motion. In addition, if you fail to appear without good cause, the hearing may go forward in your absence and may result in termination of your parental rights based upon the record and the evidence presented to the Court.
5. If you are receiving this Notice by publication, you may obtain a copy of the Motion for Termination of Parent-Child Relationship and Notice of Hearing by submitting a written request to: CARROL S. MARTIN, Office of the Attorney General, CFP/PSS, 1800 E. Palo Verde Street, Suite B, Yuma, Arizona 85365. The assigned child safety worker is Yolanda Castanon and may be reached by telephone at (928) 854-0357.
6. Requests for reasonable accommodation for persons with disabilities must be made to the court by parties at least three working days in advance of a scheduled court proceeding and can be made by calling (928) 669-6131.
7. You have the right to make a request or motion prior to any hearing that the hearing be closed to the public.
DATED this 12th day of April, 2023.
KRISTIN K. MAYES
Attorney General
CARROL S. MARTIN
Assistant Attorney General
4/26, 5/3, 5/10, 5/17/23
CNS-3690769#
PARKER PIONEER
Publish: 4-26; 5-3, 10, 17, 2023 7169

NOTICE
(for publication)
ARTICLES OF ORGANIZATION HAVE BEEN FILED IN THE OFFICE OF THE ARIZONA CORPORATION COMMISSION FOR

I. Name: Flaming G LLC
II. The address of the known place of business is:
725 Hagley Loop
Quartzsite, AZ 85346
III. The name and street address of the Statutory Agent is:
Michael A Glover
PO Box 1346
Quartzsite, AZ 85346
B. Management of the limited liability company is reserved to the members. The names and addresses of each person who is a member are:
Michael A Glover
PO Box 1346
Quartzsite, AZ 85346
[x] member
Anita L Glover
PO Box 1346
Quartzsite, AZ 85346
[x] member
Publish: 4-26; 5-3, 10, 2023 7170

Case No. S1500PB202300024 / NOTICE OF HEARING IN PROBATE
Tiffany J. Fowers 54000 Hwy 60 Salome, AZ 85348 Pro per Christina Webster, AZCLDP #81598 Arizona Legal EASE, Inc., AZCLDP #80340
IN THE SUPERIOR COURT OF THE STATE OF ARIZONA IN AND FOR THE COUNTY OF LA PAZ
Shirley Jean Pitt, Deceased.
1. NOTICE IS GIVEN that Petitioner has filed with the Court the Following Petition and other Court documents: PETITION FOR FORMAL ADJUDICATION OF INTESTACY, DETERMINATION OF HEIRS AND APPOINTMENT OF PERSONAL REPRESENTATIVE. True and complete copies of these documents are enclosed with this notice.
2. COURT HEARING. A court hearing has been scheduled to consider the Petition and matters in the court papers as follows: Date and Time: Wednesday, June 14, 2023 @ 10:30 AM. Place: 1316 Kofa, Parker, Arizona 85344. Judicial Officer: Honorable Marcus A. Kelley.
All Participants are to call the following number (520) 222-1111 and enter participant code 005-6479#.
This notice has been given by Tiffany J. Fowers, in the capacity of Petitioner.
COPIES MAILED pursuant to ARS §§1401401-14-1403 this date to these persons, in these capacities and at these addresses: ARIZONA ATTORNEY GENERAL KRIS MAYES, OFFICE OF THE ATTORNEY GENERAL, 2005 N. Central Avenue, Phoenix, AZ 85004
Dated: 4/4/2023 /s/ Tiffany J. Fowers
Publish: 4-26; 5-3, 10, 2023 7171

NOTICE TO CREDITORS BY PUBLICATION
No. PB202300023
ARIZONA SUPERIOR COURT LA PAZ COUNTY In the Matter of the Estate of JAMES WILLIAM MARTIN, Deceased. NOTICE IS GIVEN to all creditors of the Estate that: 1. Ryan James Martin has been appointed as Personal Representative of the Estate. 2. Claims against the Estate must be presented within four months after the date of the first publication of this notice or be forever barred. 3. Claims against the Estate may be presented by delivering or mailing a written statement of the claim to Ryan James Martin, care of Brent M. Gunderson of Gunderson Law Group, P.C., 1400 East Southern Avenue, Suite 850, Tempe, AZ 85282. DATED this 18th day of April, 2023. GUNDERSON LAW GROUP, P.C. By: /s/ Brent M. Gunderson 1400 East Southern Avenue, Suite 850 Tempe, AZ 85282 Counsel for Personal Representative
5/3, 5/10, 5/17/23
CNS-3693645#
PARKER PIONEER
Publish: 5-3, 10, 17, 2023 7173

U-SAV-Storage
43998 Hwy 72, Bouse, AZ 85325
Storage Lien Sale
Owner of said Item:
Dustin McDanel
1ea. American Eagle Bus
Manager: Jack Munfrada
928-851-9220
Date of Auction 5-27-2023
Publish: 5-3, 10, 17, 24, 2023 7178

Elizabeth A. Punpayuk –
Bar No. 034548
BENESCH, SHADLE & WHITE, PLC
833 E. Plaza Circle, Suite 200
Yuma, Arizona 85365
Telephone: (928) 783-8321
Facsimile: (928) 783-4123
Email:
Attorneys for Personal Representative
DENISE M. McLAUGHLIN
IN THE SUPERIOR COURT OF THE STATE OF ARIZONA IN AND FOR THE COUNTY OF LA PAZ

In the matter of the Estate of
GERALD EDGAR SMITH aka
JERRY SMITH,
Deceased.
No. PB202300025
NOTICE TO CREDITORS
NOTICE IS HEREBY GIVEN that DENISE M. McLAUGHLIN has been appointed Personal Representative of this Estate. All persons having claims against the Estate are required to present their claims within four (4) months after the date of the first publication of this notice or the claims will be forever barred. Claims must be presented by delivering or mailing a written statement of the claim to the Personal Representative c/o Elizabeth A. Punpayuk, Benesch, Shadle & White, PLC at 833 E. Plaza Circle, Suite 200, Yuma, Arizona 85365.
DATED this 14 day of April, 2023.
/s/ Denise M. McLaughlin
DENISE M. McLAUGHLIN
Publish: 5-3, 10, 17, 2023 7181

Water Conservation Grant Fund Solicitation

Overview:
The Water Infrastructure Finance Authority of Arizona is accepting applications for funding from the Water Conservation Grant Fund. The WCGF aims to promote voluntary water conservation programs or projects that are expected to result in long-term reductions in water use, improvements in water use efficiency, and/or improvements in water reliability.

Eligible Applicants:
- Cities, towns, counties, districts, commissions, authorities, or other public entities that are organized and exist under the statutory law of Arizona or a voter-approved charter or initiative of Arizona.
- Nongovernmental organizations that focus on water conservation or environmental protection who partner with an eligible public entity.

Eligible Use of Funds:
- Education & research programs on how to reduce water consumption, increase water efficiency or increase water reuse.
- Programs & projects for rainwater harvesting, gray water systems, efficiency upgrades, installing drought-resistant landscaping, turf removal and other practices to reduce water use.
- Programs or projects to promote groundwater recharge and improved aquifer health.
- Programs or projects to improve groundwater conservation and surface water flows.
- Landscape watershed protection, restoration, and rehabilitation, including through green infrastructure and low-impact development to conserve or augment water supplies.
- Projects facilitating coordinated water management, including groundwater storage and recovery.
- Programs or projects to reduce structural water overuse issues.
- Program implementation and administration costs for eligible programs.

Funding Source: American Rescue Plan Act (ARPA)
Funds Available: $200,000,000
Number of Awards: Multiple

Additional Information: Water conservation projects are eligible for grants of up to $250,000. Water conservation programs are eligible for grants of up to $3,000,000. Collaborations among entities and community partnerships are strongly encouraged, if appropriate.

Factors Which Applications will be Evaluated for Award Include:
- The extent to which the water conservation program or project achieves conservation benefits
- The costs and benefits of the water conservation program or project, including environmental costs and benefits.
- If the water conservation program or project is eligible for funding from other WIFA-administered funding programs.
- The ability to provide multiple benefits.
- The degree to which the water conservation program or project will maximize or leverage multiple available funding sources, including federal funding.
- The qualifications and capacity of an applicant.
- The feasibility of the water conservation program or project.
- Public comments.

Due Date for Submittal: May 19, 2023 at 5:00 pm
Anticipated Award Date: Fall 2023

To apply and for additional information please contact:
Chelsea McGuire
Assistant Director – External Affairs
Water Infrastructure Finance Authority
cmcguire@azwifa.gov
480-647-6549
Publish: May 3, 2023 7177

NOTICE OF PUBLIC HEARING ON PROPOSED ANNUAL BUDGET
FOR FY JULY 1, 2023 - JUNE 30, 2024

Pursuant to Arizona Revised Statutes Section 48-2026, Notice is hereby given to the members of the Buckskin Sanitary District, Board of Directors, and to the general public, that the Buckskin Sanitary District Board of Directors will hold a Public Hearing & Adoption Meeting, open to the public, on Wednesday, May 10, 2023, at 6:00 p.m. at the Buckskin Sanitary District Offices at 8832 Riverside Drive, Parker Strip, Parker, AZ 85344.
Purpose of the Public Hearing: To Adopt and to Certify the following budget for the fiscal year July 1, 2023 to June 30, 2024. FURTHER NOTICE IS HEREBY GIVEN that the Board of Directors of the District has set May 10, 2023 at the hour of 6:00 p.m. for hearing any objections to the legality of the Budget or any of the previous proceedings connected herewith. The owners and all other persons directly interested in the Budget who had any objection to the legality of such or to any of the previous proceedings taken in connection therewith must, prior to the time fixed for the hearing, file a written notice briefly specifying the grounds of their objections. All such notices should be mailed by May 1, 2023 to the Clerk of the Board of Directors of Buckskin Sanitary District, 8832 Riverside Dr. #4, Parker, AZ 85344.

BUCKSKIN SANITARY DISTRICT ANNUAL BUDGET
JULY 1, 2023 – JUNE 30, 2024

DESCRIPTION	ADMIN FUND	PLANT FUND	TOTAL BUDGET
Revenues			
Ad Valorem Tax Levy Funds**	686,641.39		686,641.39
Monthly User Fees*		743,017.15	743,017.14
Misc Revenue*	5,000.00	6,000.00	11,000
WWTP Capacity Reserve		54,000.00	54,000
Interim Operational Funds*			
Total Revenue	691,641.39	803,017.15	1,494,658.54
Expenditures			
Employee Expenses	244,227.58	267,093	511,320.58
Sick/Vacation Accrual	14,850	2,225	17,075
Training and Travel	3,850	2,150	6,000
Office Equipment	3,000	500	3,500
Other Obligations	9,629		9,629
Dues & Subscriptions	1,417	100	1,517
Insurance	23,000	15,400	38,400
Operational Expenses	14,4000	56,975	71,375
Repairs & Maintenance	20000	82600	102,600
Chemicals		17,000	17,000
Contracted Services		49,500	49,500
Professional Services	42,900	17,657	60,557
Rent	12,810	7,290	20,100
Utilities	8,930	86,650	95,580
Capital Asset Purchases		17,000	17,000
Capital Reserve	192,627.81	180,877.15	373,504.96
Projects	100,000		100,000
Total Expenditures	691,641.39	803,017.15	1,494,658.54
**Levied Funds *Non-Levied Funds			

Significant assumptions:
Tax Calculation: Budget /Valuation = Tax Rate
User Fee Rate: $48 per EDU
Ad Valorem and User Fees paid in a timely manner.
(Detailed Budget Available upon request)
ADOPTED:
Publish: 4-26-2023 and 5-3-2023 7175

PUBLIC NOTICE

First Five-Year Review on Groundwater Remedy
PG&E Topock Compressor Station Remediation Project
San Bernardino County, California

The U.S. Department of the Interior (DOI), in cooperation with the California Department of Toxic Substances Control (DTSC), is beginning a Five-Year Review process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that will review the groundwater remedy implemented at the Topock Compressor Station in San Bernardino County, California. The selected remedy for groundwater includes the use of in-situ treatment with fresh water flushing for groundwater contamination associated with Solid Waste Management Unit (SWMU) 1/Area of Concern (AOC) 1 and AOC 10.

The purpose of the Five-Year Review is to ensure that the implemented remedy functions as intended and is protective of human health and the environment. Five-Year Reviews will continue for the life of the site until hazardous substances, pollutants, or contaminants no longer remain on site at levels that do not allow for unlimited use and unrestricted exposure.

Public participation is encouraged and welcomed. If you are interested in participating in the interview process, **please notify the contact personnel listed below by May 31, 2023**. The Five-Year Review Report is scheduled for completion in December 2023 and will focus on the following sites where groundwater remedial actions have been implemented:

Site Identification and Name:	*Managed by:*
SWMU 1/AOC 1 and AOC 10	DOI

FOR MORE INFORMATION

If you have any questions, or wish to participate in the interview process, please contact the following:

U.S. Department of the Interior
OEPC/ECCD Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

For more information on groundwater remedy implementation at the Topock Compressor Station, please visit the PG&E remediation website: https://topockremediation.pge.com/groundwater-activity-overview.

Publish: 5-3-2023 7179

Courtesy
Dylan James, left, Jovanny Marmolejo, center, and Trevor Elliott, right.

Broncs last home golf match of season sees their best team score

PARKER PIONEER

The Parker Broncs golf team had three matches last week, including their final home match of the 2023 season. That final home match saw them shoot their best team score of the season, and their sole senior posted the best score of his high school career.

On Monday, April 24, the Broncs were at Emerald Canyon and hosted Yuma Catholic and River Valley. Yuma shot a 157, River Valley shot a 179 and the Broncs took a step back with this match with a 209. Alicia Cervantez led Parker with a 50. Tillman Wedemeyer had a 52. Cadence James had a great round going, but Coach Chad McKenzie said he thought the heat crept up on her a little bit over the last three holes. Freshman Jovanny Marmolejo shot a career best 53.

"The first time Jovanny has broken 60, so a great job by him," McKenzie said

On Wednesday, April 26, the Broncs traveled to Kingman and played at Cerbat Cliffs. North Valley Christian shot a 186. Kingman Academy shot a 207 and Parker shot a 208.

"This was a two stroke improvement from the first time we played at Cerbat," McKenzie said. "We were minus two starters due to some tardy issues at school, so I was happy to see we still had a better score. Tillman Wedemeyer started out with a 9, but recovered to shoot a 49. Alicia Cervantez also started with a 9, but recovered to score a 51. Cadence James avoided the blow up holes and had a 53. Trevor Elliott had a career best 55, on a course he had never played on before, and Jovanny Marmolejo also had a 55 on his first time seeing the course."

Thursday, April 27, the Broncs played their final home match of the season at Emerald Canyon. They hosted the River Valley Dust Devils and posted their best team score of the year, 188. They edged out the Dust Devils, who finished with a 189. Tillman Wedemeyer tied his career best at 43. Dirk Maxwell had a solid 45. Cadence James broke 50 for the first time with a career low 47 and Alicia Cervantez helped out with a 53. Dylan James also had a career best 58.

"Great job by Dylan," McKenzie said. "Dylan is our only senior, so a great way to close out his home career."

THE GREAT OUTDOORS

Good news for Lake Mead

DON MARTIN
GUEST COLUMNIST

Lake Mead and the mighty Colorado River that feeds it has been subjected to a two decades long drought, and has shrunk to the lowest level since it was created way back in 1935.

But Mother Nature is a fickle lady and this year, the western slopes of the Rocky Mountains that supplies the life-giving water to the millions of downstream users has received a tremendous amount of snowpack. The snowpack is almost 160% of normal. That is enough to cause the water managers at the Bureau of Reclamation and the Department of the Interior to change the operations for water releases from Lake Powell into Lake Mead.

The water operations at Glen Canyon Dam, which holds back the water of Lake Powell, became modified after the effects of the two-decade drought was causing serious issues for Lake Mead and downstream users. Years ago, Lake Mead used to get about 10-million-acre feet of water each year, but that amount was changed to a much lesser amount with the drought. The previous plan called for 7-million-acre feet of water to be released into Lake Mead.

That water was just enough to keep the electricidal turbines at Glen Canyon functioning. Glen Canyon provides electricity to 3.2 million people in six western states. The dam produces about 5 billion kilowatts of electricity each year. However, things are changing, and for Lake Mead and Lake Powell users, it is good news.

After hydrologists figured out how much water from the melting snow would be going into the Colorado River system this year, changes in operations were ordered.

And the changes started on April 1, 2023 when higher releases of water from Lake Powell were almost doubled from what had been previously released. The BOR is planning to release 910,000-acre feet of water during the month of April.

Under the new operations plan, Lake Powell will be releasing 9.5 million-acre feet of water – that is 814 billion gallons of water into the Colorado River to flow downstream into Lake Mead by the end of the year. According to BOR officials, the amount of releases will vary from 10,533 cubic feet per second in the early morning hours, to a high of 18,533 cfs during the afternoon and evening hours.

For Lake Mead users, this will mean that the lake will rise from the current elevation of 1,047.11 feet to 1,068.05 feet by the end of December. Lake Powell will not fill up this spring, but estimations of a rise in elevation of up to 40 feet are being projected. While all of this is good news, the public should be aware of the other benefits of why this action is being done. First of all, with the tremendous surplus of water this year, this plan will give BOR the ability to balance out water being held in both lakes, and will increase the amount of water in storage at Lake Mead.

PG&E Remediation Website

Click on the boxes in the flow-chart below to view documents from each phase of the process.

PUBLIC NOTICES

Type	Downloadable Document	Publish Date	Size
	Public Notice: First Five-Year Review on Groundwater Remedy	May 1, 2023	218.91 KB
	Soil EE/CA Public Notice	May 29, 2020	67.18 KB
	Topock Project Open House Invitation for April 17 and 18, 2018	April 5, 2018	109.01 KB

PUBLIC NOTICE

First Five-Year Review on Groundwater Remedy

PG&E Topock Compressor Station Remediation Project

San Bernardino County, California

The U.S. Department of the Interior (DOI), in cooperation with the California Department of Toxic Substances Control (DTSC), is beginning a Five-Year Review process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that will review the groundwater remedy implemented at the Topock Compressor Station in San Bernardino County, California. The selected remedy for groundwater includes the use of in-situ treatment with fresh water flushing for groundwater contamination associated with Solid Waste Management Unit (SWMU) 1/Area of Concern (AOC) 1 and AOC 10.

The purpose of the Five-Year Review is to ensure that the implemented remedy functions as intended and is protective of human health and the environment. Five-Year Reviews will continue for the life of the site until hazardous substances, pollutants, or contaminants no longer remain on site at levels that do not allow for unlimited use and unrestricted exposure.

Public participation is encouraged and welcomed. If you are interested in participating in the interview process, **please notify the contact personnel listed below by May 31, 2023**. The Five-Year Review Report is scheduled for completion in December 2023 and will focus on the following sites where groundwater remedial actions have been implemented:

Site Identification and Name:	*Managed by:*
SWMU 1/AOC 1 and AOC 10	DOI

FOR MORE INFORMATION

If you have any questions, or wish to participate in the interview process, please contact the following:

U.S. Department of the Interior
OEPC/ECCD Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

For more information on groundwater remedy implementation at the Topock Compressor Station, please visit the PG&E remediation website: https://topockremediation.pge.com/groundwater-activity-overview.

What's New

Five-Year Review

The U.S. Department of the Interior (DOI), in cooperation with the California Department of Toxic Substances Control (DTSC), is beginning a Five-Year Review process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that will review the groundwater remedy implemented at the Topock Compressor Station in San Bernardino County, California.

The selected remedy for groundwater includes the use of in-situ treatment with fresh water flushing for groundwater contamination associated with Solid Waste Management Unit (SWMU) 1/Area of Concern (AOC) 1 and AOC 10.

The purpose of the Five-Year Review is to ensure that the implemented remedy functions as intended and is protective of human health and the environment. Five-Year Reviews will continue for the life of the site until hazardous substances, pollutants, or contaminants no longer remain on-site at levels that do not allow for unlimited use and unrestricted exposure.

The Public Notice for the First Five-Year Review of the Groundwater Remedy can be found here.

More information on the Five-Year Review process can be found on the Fact Sheet here.

Phase 1 of Construction of the Final Groundwater Remedy is Completed and the Remedy is Operating

Click here for the current construction activities.

Appendix B

Completed Interview Questionnaires

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: David Dias			
Title: Site Operations Manager			
Organization: PG&E			
Telephone Number: 760-903-3013			
E-mail Address: d3d6@pge.com			
Address (Street, City, State, Zip Code):			
Date: 5/10/23		Time: 10:10 AM	
Type of interview:			
Telephone ☐	Visit ☒	Other ☐	Describe Other:
Location of Visit: SPY office			
Relationship to Site:			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Operations Manager ☒
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐

Why? Going well

2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?

Please give details.

In Phase 2A & in discussions at Phase 2B (design Mod).

Budget NA, handled by Kristina Bennett.

Phase 2A: Wells ER-3 + ER-4 are going in now. Pipelines. Last through end of 2023 - beginning 2024.

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

Yes ☐ No ☒

If so, please give details.

IRZ well flooding, put in Sumps. Programatic Logic Control "brain" (PLC) moving to above ground + running to Node 3 + Node 2.
Flooding March 5, 2023, Storm event.

Damage to IRZs. No damage to wells.
Erosion to wells.

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☒ No ☐

If so, please give details.

- Covid
- Supply Chain issues - equipment + material hard to get, PLCs take months to get
- Power - TCS having issues with compressors, and had to cut ORP remedy. Had to run ORP generators for a while. No longer having issues with power.
- Storms / Mother Nature
- ISN contractors - From Bakersfield because no ISN contractors around here, causes delays.

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

Yes ☒ No ☐

Please give details.

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☐ No ☐

Please give details.

NA. Recommends Margy.

7. Is there a continuous on-site O&M presence?

Yes ☒ No ☐

If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

M-F & on-call on weekends. Kevin Ashley + Mark Golmen w/ GWP. Areadis also on-call, if needed - O&M operators.

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater remedy?

Please describe changes and impacts.

No changes.

9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years?

Yes ☐ No ☑

If so, please give details.

Nothing unexpected, just routine stuff.

10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts?

Yes ☐ No ☑

Please describe changes and resultant or desired cost savings or improved efficiency.

Built as designed.

11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

Good team & good operation team. Each member of operation team handles different area & works well. Very good communication. Very pleased with O&M group (GWS & Treads O&M Managers)

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Interview Team:			Date:
Name	Title	Organization	5/10/23
Brent Jacobs	Geologist	BB+E	
Katrice Depew	Mid-Level Env. Specialist	BB+E	

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: David Diaz			
Title: Site Operations Manager 3 years Sept			
Organization:			
Telephone Number:			
E-mail Address:			
Address (Street, City, State, Zip Code):			
Date:		Time:	
Type of interview: In person			
Telephone ☐	Visit ☐	Other ☐	Describe Other:
Location of Visit: Topock			
Relationship to Site:			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Operations Manager ☐
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐

Why?

2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?

Please give details.

In 2A Phase underway well Installation ER 344
2B Design Mod
Budget not tracked at site

Pipelines inside station thru end of Year 1st quarter of next year

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

Yes ☐ No ☐

If so, please give details.

IR2 - vaults flooded South side Hwy move PLC node 2 from wells
March 15, 2023 flooding did it damage pipeline I had to be rebuilt
remedy wise - just IR2 along NTH

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☐ No ☐

If so, please give details.

1) Covid
2) Supply chain issues
3) Power - station had power problems
   - remedy cut off first
   - generators run remedy
4) Storms now elec steady
   labor shortage not experienced

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

Yes ☒ No ☐

Please give details.

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☐ No ☐

Please give details.

NA

7. Is there a continuous on-site O&M presence?

Mon - Fri oncall if needed

Yes ☒ No ☐

If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

GWP employees - Kevin & Mark

Daniel Grecia
Brian Pround > Arcadis

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater remedy?

Please describe changes and impacts.

Not really any changes

9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years?

Yes ☐ No ☒

If so, please give details.

None just normal routine maintenance wells / pumps / etc

10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts?

Yes ☐ No ☒

Please describe changes and resultant or desired cost savings or improved efficiency.

Built as designed in BOD, no optimize

11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

Good team + operators team

Ian setup good team to handle good areas

no suggestions

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Interview Team: Name	Title	Organization	Date:
David			
Katrica			
Brent			

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: Jonathan Baxter			
Title: Arcadis Technical Expert, Engineer, Designer of Record			
Organization: Arcadis			
Telephone Number: 414- 477- 9243			
E-mail Address: jonathan.baxter@arcadis.com			
Address (Street, City, State, Zip Code): 126 N. Jefferson St., Suite 400 Milwaukee, WI 53202			
Date: 5/10/23		Time: 2:57 pm	
Type of interview:			
Telephone ☐	Visit ☒	Other ☐	Describe Other:
Location of Visit: SPY office			
Relationship to Site:			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Operations Manager ☒
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐

Why?
Operations have gone well. Good overall sentiment.

2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?

Please give details.

Phase 1 construction complete. O&M in-process, gw monitoring, air monitoring, and other O&M, maintenance to system

Phase 2A under construction ~ 60% complete. Most pipelines are complete. ER wells. Discussion over pipeline for ER wells happening currently. ER-1 has higher yield than anticipated in design. Have made some ~~mods~~ adjustments to well vaults to control equipment flow. ER wells - adjust grading/drainage.

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

~~Yes~~ ☒ No ☐

If so, please give details.

WOR variance requests include substantial changes. For example, TWB-2 drilling did not reach saturated zone, reached bedrock. Put in WOR to install TWB-3 + pipelines.

Most WOR don't affect remedy, most are adjustments made based on field conditions/observations/unknown conditions.

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☒ No ☐

If so, please give details.

- Supply chain issues with procurement
- Phase 1 contractor switch-out
- Covid shut down, demob
- Storm events:
  pipeline J in Phase 1
  pipeline I in phase 2A

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

~~Yes~~ ☒ No ☐

Please give details.

Yes, performing well, as expected.

Seeing good results. Anticipate continuing to see as South IRZ wells are back online.

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☒ No ☐

Please give details.

Decrease in hex Chrome in Floodplain / IRZ area.
Seeing indicator diproducts increasing, as expected.

7. Is there a continuous on-site O&M presence?

Yes ☒ No ☐

If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

2 Full time operators M-F. Supplemented by engineers and/or geologists as needed.
Retrain
~~Retrain~~ on SOPs as needed, at least annualy - engineers.

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater remedy?

Please describe changes and impacts.

Start Dec 21, 2021 (or 22nd) No real changes to O&M reqs. Maintenee schedule M-F Per operators. Continual adjustments to sampling program as needed.

No affect on protectiveness.

9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years?

Yes ☒ No ☐

If so, please give details.

- Power supply issues at Compressor Station. Some downtime. Commissioning process took longer than expected. Issues resolved Fall 2022/Summer.
- High-intensity storms have effected OAM (March 2022 was most that effected OAM). Were able to get wells back up & running in X # months.

10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts?

Yes ☒ No ☐

Please describe changes and resultant or desired cost savings or improved efficiency.

- Install sump pumps in IRZ. Mods to incorporate - not included in design. Being more proactive to anticipate stormwater prior to construction on well vaults.
- Now ordering further in advance, looking at lead-time issues for future construction.
- Transformers delay ~~how using~~ on Node 1 → now use Node 2 interim. Normally 5-6 months to get transformer, now has been 2 years. Will use Node 2 until transformer is received. ~~How factory~~

11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

Good communications + lots of effort on being proactive on communications. Weekly coordination calls with agencies, CWG/TWG + communications with Tribes. Good safety, tailgates every morning. Good communications on safety, traffic, etc.

Tribal monitors on site everyday, communicating activities with them.

Lots of improvements over the years. Been on project since 2007 (14 years).

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Interview Team:			Date:
Name	Title	Organization	5/10/23
Brent Jacobs	BB+E	Geologist	
Katrice Depew	BB+E	Mid-Level Env. Specialist	

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: Jonathan Baxter			
Title:			
Organization: Arcadis			
Telephone Number:			
E-mail Address:			
Address (Street, City, State, Zip Code):			
Date:		Time:	
Type of interview:			
Telephone ☐	Visit ☐	Other ☐	Describe Other:
Location of Visit:			
Relationship to Site:			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Operations Manager ☐
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐

Why? Operations is good. Overall impression is good

2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?

Please give details.

Phase I done & operation. O&M period

Phase 2A under construction. Schdule 50% to 60% complete

Adjustments to well vaults

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

Yes ☐ No ☒

If so, please give details.

Some Work Variances Requests #13
Drill third extraction at transwestern TW-3

Not really any changes

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☐ No ☐

If so, please give details.

1) Flood
2) Supply chain
3) Storm Events Pipeline J had to be reworked

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

Yes ☒ No ☐

Please give details.

Performing well as long as expected

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☒ No ☐

Please give details.

Decreasing of Cr^{+6} in IRZ area and floodplain

7. Is there a continuous on-site O&M presence?

Yes ☒ No ☐

If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

Continuous 2 full time operators M-F supplemented with engineers/geologist on O&M side

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater remedy?

Please describe changes and impacts.

Last 1½ year operating Dec 21, 2021 of operation. No real significant changes in O&M

9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years?

Yes ☒ No ☐

If so, please give details.

power supply from compressor station. Compressor Station finished their own projects. Power supply smooth sailing since 7-8 months. Sump pumps installed in IR2 wells prone to flooding
High intensity storms in March 2022
Getting parts to repair southern IR2 wells

10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts?

Yes ☒ No ☐

Please describe changes and resultant or desired cost savings or improved efficiency.

focus on supply chain issues ordering in advance, Looking work around of lead times.
Stormwater - sump pumps/raising vaults/grading

11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

None

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Interview Team: Name	Title	Organization	Date:

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: Steven Perry			
Title: Principal Scientist, Public Affairs Specialist			
Organization: Arcadis			
Telephone Number: 818-267-6244			
E-mail Address: Steven.Perry@arcadis.com			
Address (Street, City, State, Zip Code):			
Date: 6/7/23		Time: 0800	
Type of interview:			
Telephone ☐	Visit ☒	Other ☐	Describe Other:
Location of Visit: SPY Trailer			
Relationship to Site: @ Topeka since 2006/2007, Stakeholder Engagement			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Operations Manager ☒
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐

Why?

Successful project + construction despite complexity of cultural and topography/geology of site. Incredible involvement by Tribes at each stage / every level. Safety culture very successful. PG&E taking everything very seriously. High level of detail and thoughtfulness

2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?

Please give details.

Phase 1 up + running. Treatment barrier Dec 2021. IRZ is operating.

Well into phase 2A.

No comment on budget.

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

Yes ☑ No ☐

If so, please give details.

A lot learned during Phase I like where the plume is / Characterization.
Wells to ND deffered for example.
Mod currently in review which optimizes effectiveness based on what has been learned.
well vaults / storm water impacts - cultural / visual impacts were

cont →

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☑ No ☐

If so, please give details.
Talked about in #3.

Team has been able to overcome challenges + remedy is up and running.
Power issues.
Storm water.
Cultural discoveries, programmatic agreements, working through with Tribes.
Early on, work groups put in place + have worked -

cont. →

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

Yes ☑ No ☐

Please give details.
Yes functioning as expected.
Areadis Margy can give details.
Flexibility built into design in ability to manipulate what each well can do at any period of time.
Have been able to overcome some wells being down etc.

Yes, mass being converted to trivalent Chrome.
On track for Phase 1 operation for 1.5 years.

Cont. →

#3 Cont.

taken into consideration per request of Tribes. Have had storms. Low profile / low visual impact had to be built in design. Now in hindsight, learned storm impacts & flooding issues.

#4 Cont.

CWG, etc. Conflicts worked out from very beginning.

Leadership / decision-maker groups down to very specific working groups.

BLM staff turnover. Tribes really leave about this + has been hard with staff turnovers, leadership changes. BLM Archeologist has been very problematic for Tribes. This has been significant issue since end of Phase 1. Causes more delays.

CTF (Clearinghouse Task Force) has been very productive because Tribes can speak freely & hash out problems. CTF to build trust.

Despite challenges, remedy is Restoring not obstacles being overcome.

#5 Cont.

Im-3 will eventualy be removed in agreement with Tribes. Now Ft. Mohave land.

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☒ No ☐

Please give details.

Effective.

Sooner S. wells on IRZ up + running, the better. Could be better at showcasing progress to build confidence in showing results at Cust. etc.

7. Is there a continuous on-site O&M presence?

Yes ☒ No ☐

If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

Really good people.
Full team that communicates on a daily basis. A lot of communication + coordination, which is unusual for this type of system. This is not a passive O+M, it is very active O+M.

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater remedy?

Please describe changes and impacts.

Active and Proactive O+M. No change.
Biggest impacts are power + stormwater but this has not impacted remedy

9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years?

Yes ☒ No ☐

If so, please give details.

Power + storm water impacts weathered above.

Transition from IM-3 impacts to aquifer from decommissioning IM-3.

10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts?

Yes ☒ No ☐

Please describe changes and resultant or desired cost savings or improved efficiency.

Several. Active + proactive. Yes design has to be implemented + operated but has to be smart + has learned a lot about plume during construction.

A lot of learning on cultural aspects + differences

Sampling - increase in data which has been positive, tremendous amount of monitoring.

11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

Stakeholder + work groups have been big impact at this site. # of organizations + people involved is really big + everyone has a place to be heard.

Suggestion - everyone do their job. Lots of specialists here.

Amount of collaboration, communications, transitions in leadership has been commendable.

(cont. →)

#11 Cont.

# of touchpoints w/ PGdE, workgroups, meetings w Tribes have been very effective, otherwise things can be very combative. CWG/ TWG + trg events are expensive and time consuming but very effective.

Parties need to showcase what remedy is doing + highlight Progress. Tribes would benefit from hearing and seeing Progress shown. Currently in construction so often focus on that aspect w/out ~~showing~~ kp focusing on progress made.

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Interview Team: Name	Title	Organization	Date: 6/7/23
Brent Jacobs	Geologist	BBNE	
Katrina Depew	Env. Specialist	BBNE	

Frank Lenzo - Arcadis remediation technology & drains at IRZ

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: Margaret Gentile			
Title: Technical Expert, Vice President			
Organization: Arcadis			
Telephone Number: 510-432-6251			
E-mail Address: Margaret.gentile@arcadis.com			
Address (Street, City, State, Zip Code):			
Date: 6/8/23		Time: 0800	
Type of interview:			
Telephone ☒	Visit ☐	Other ☐	Describe Other:
Location of Visit: Teams Interview			
Relationship to Site: IRZ Technical Lead			
Regulator ☐	Landowner/ Manager/ Tenant ☐	Construction Contractor ☐	Operations Manager ☒
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐

Why?
Phase 1 operating since end of 2021. Phase 1 IRZ treatment achieving treatment of hex Chrome per design.

2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?

Please give details.

Phase 1 complete, 2A in-progress.

Phase 1 took longer than anticipated, covid & supply chain issues.

During construction, some locations were deferred to the furthest N. & have modified flow balance based on info gained during construction.

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

Yes ☐ No ☐

If so, please give details.

Tweaking design. A lot more rain & flooding damaging equipment in well vaults.

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☑ No ☐

If so, please give details.

Covid

Global supply chain issues

Implementability - large rain events, adapting system to deal with this. Power supply issues with TCS & there was some downtime, brought generators on-site to solve issue.

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

Yes ☑ No ☐

Please give details.

Yes performing well. Good chromium treatment.

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☑ No ☐

Please give details.

Q1 2023 presented at CWG. Phase 1 working as designed to treat hex Chrome. Data indicating that treatment of Chromium + Diproducts indicate treatment is working well. Biproducts are well controlled. Started system at low dose of Ethanol, ~~which is treatment design~~ going well (KD) Have increased over time, which has minimized biproduct generation. Operating below design rate. Decreasing Chromium trends. 2 locations in flood plain with increases in concentration → cont.

7. Is there a continuous on-site O&M presence?

Yes ☑ No ☐

If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

2 Full-time staff operating system + engineering support goes on-site to support as needed.

PG&E on-site staff

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater remedy?

Please describe changes and impacts.

In first year of operations. Nothing that calls into question effectiveness or remedy.

Keeping an eye on this w/ groundwater flow conditions.
Watching these 2 downgradient wells.

9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years?

Yes ☒ No ☐

If so, please give details.

Damage from rain & Power supply issue. These have been addressed.

10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts?

Yes ☑ No ☐

Please describe changes and resultant or desired cost savings or improved efficiency.

Optimizing ozone - collecting data + using to adjust ethanol injections, flowrates.

Sampling - at locations with increasing concentrations, changed sampling from quarterly to monthly.

11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

Changes in response to data is part of what we already do so nothing to add beyond that.

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Interview Team: Name	Title	Organization	Date:
Brent Jacobs	Geologist	BBrE	6/8/23
Katrice Depew	Env. specialist	BBrE	

Need copies of/info from Margy on:

✓Recent monitoring reports

✓Hex Chrome map 2017 - 2023 (pre-start through current)

✓GW model outputs - recent?

✓Calcs. from model of mass removed. How to calc./predict

✓mass removed.

Margy Responses:

- mass estimate using 3D model grid, calculate mass removed. In-development. Margy to check if they can provide to BBrE. Lack of 4th quarter report. First quarter 2023 coming out in next month.
- In design: compare trends to predictions is how this RAO would be locked out, design does not specify that this would be model/calc.
- model update report completed following Phase 1 construction. There will be another model update after 2A construction.
- Hex Chrome plume maps in monitoring reports. Fig 2.4.1
- Plume in BOD per pre-construction.

Groundwater Remedy Five-Year Review
Interview Questionnaire - General

Name: Jennifer Darcangelo			
Title: Tribal & Cultural Resource Land Consultant			
Organization: PG&E			
Telephone Number: 925-324-5171			
E-mail Address: j5d8@pge.com			
Address (Street, City, State, Zip Code):			
Date: 6/8/23		Time: 1300	
Type of interview:			
Telephone ☐	Visit ☒	Other ☐	Describe Other:
Location of Visit: SPY Trailer			
Relationship to Site: PG&E Project Arch. since 2015			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Tribunal Representative ☐
Site Neighbor ☐	Community Member ☐	General Public ☐	Stakeholder ☐
Other ☒ Describe Other: project proponent			
1. What is your overall impression of the groundwater remedy? (general sentiment)			
Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐
Why? Cleaning it up is important.			
2. What effects have groundwater remedy had on the surrounding community?			
Favorable	Neutral	Unfavorable	Unfamiliar
List specific examples of effects on the surrounding community. NA			

3. Are you aware of any unresolved community concerns regarding the groundwater remedy or its operation and administration?

Yes ☐ No ☒

If so, please give details.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?

Yes ☑ ~~No ☒~~

If so, please give details.

Ongoing OHV use in places where they shouldn't be.
OHV impact.

5. Do you feel well informed about the groundwater remedy activities and progress?

Yes ☑ No ☐

If no, then how might communications be improved?

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

No

7. <u>State and Local Government Interviewees Only</u>: Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

Yes ☐ No ☐

If so, please give details of the events and results of the responses.

NA

8. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: Is there any groundwater remedy construction planned or on-going that may be, or is currently, impacted by the site.

Yes ☐ No ☐

If so, please describe the status of construction (budget and schedule) below.

NA

9. Tennant, Owner, or Site Neighbor Interviewees Only: If the answer to question 8 was yes, have any problems been encountered which required, or will require, changes to the groundwater remedy?

Yes ☐ No ☐

NA

10. Tennant, Owner, or Site Neighbor Interviewees Only: If the answer to question 8 was yes, have any problems or difficulties been encountered which have impacted construction progress or implementability of the groundwater remedy?

Yes ☐ No ☐

If so, please describe

NA

11. Other: Include questions, comments, information on any topic related to the Sites not previously addressed.

Interview Team: Name	Title	Organization	Date:
Brent Jacobs	Geologist	BBJE	6/8/23
Katrice Depew	Env. Specialist	BBJE	

Also included #3, 4, 5 on next sheets.

3. Various methods are used to communicate the groundwater remedy project status. Such activities include CWG Meetings, TWG Meetings, and consultation opportunities. Project documents are made available via the administrative record (AR), the DTSC website, and the PG&E website. Is the timing and content of these communications adequate? Are there any improvements that can be made to project communications. If so, what? What would you propose differently?

Please give details.

Getting all info from these meetings that she needs for her role.

4. Cultural and Historic Preservation in the project area are very important to the tribes. The CHPMP Meetings, tribal monitors, and work area pre-screening are some methods that are currently employed to manage Cultural and Historic Preservation. Have these methods been adequate to manage tribal concerns? If not, why not? What would you propose differently?

Please give details.

Overall yes. Early on had some communication issues but has been ~~resolved~~ improved especially with discovery Protocol.
Communication has been very important, both informal and formal communications.

5. How has the project allowed the tribes to educate others on the Cultural and Historic Preservation aspects of the site? Are there opportunities for improvement? If so, what?

Please give details.

Worker Env Awareness Training (WEAT) training video done by tribes. Contractors & crews have become more sensitive & have a deeper understanding of cultural sensitivities

6. Another way the tribes have been involved with the groundwater remedy is by reviewing and providing comments on documents. Has adequate time been given for reviews and addressing comments? Is there a process to request extensions for document reviews? If so, is it adequate?

If so, please give details.

Groundwater Remedy Five-Year Review
Interview Questionnaire - General

Name: Aaron Yue and Christopher Guerre			
Title: Senior Hazardous Substances Engineer and Senior Engineering Geologist			
Organization: California Department of Toxic Substances Control			
Telephone Number: (714) 484-5439			
E-mail Address: aaron.yue@dtsc.ca.gov christopher.guerre@dtsc.ca.gov			
Address (Street, City, State, Zip Code): 5796 Corporate Ave, Cypress, California 90630			
Date:		Time:	
Type of interview:			
Telephone ☐	Visit ☒	Other ☐	Describe Other:
Location of Visit: PG&E Topock Compressor Station			
Relationship to Site:			
Regulator ☒	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Tribunal Representative ☐
Site Neighbor ☐	Community Member ☐	General Public ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☐	Neutral ☐	Unfavorable ☒	Unfamiliar ☐

The 2015 basis of design (BOD) was approved based on the static configuration of the plume in 2013. Although the technology of In-situ reduction of hexavalent chromium should, in theory, be capable of treating the groundwater contamination at PG&E Topock, the proper execution of the technology remains vital to the success of the remedy. The BOD consists of three major components for the remedy. The In-situ Reactive Zone (IRZ), the Inner Recirculation Loop (IRL), and the freshwater flushing. Because the plume condition has not been static, with the operation of the Interim Measure pump and treat system between 2005 through 2021, the mass of hexavalent chromium in the northern section of the plume has been reduced substantially. DTSC believes that a modification of the remedy design for efficiency appears appropriate, but only after careful considerations, evaluations, and following the proper remedy modification administrative process.

Currently, the construction and operation of the "In-situ Treatment with Freshwater Flushing" remedy is significantly behind schedule when compared to the BOD projection. Not all the remedy components have been built and operational even after nearly 5 years of construction. Since the remedy is not fully built and it is still missing significant components, a conventional assessment of its functionality and extent of protectiveness cannot be made. Therefore, it is our determination that the remedy is not functioning as designed at this point. Moreover, with the pending remedy modification, there is great uncertainty on what will be built and how well the modified remedy will function and perform.

At the time of remedy adoption in April 2018, DTSC anticipated completion of remedy construction within five years. Although the IRZ components have been installed, the system has operated inconsistently due to initial electrical supply issues and the system had to undergo frequent repairs due to design oversight that did not consider storm water infiltration and accumulation in subgrade structures. Damages from storm water infiltration shorted the electrical controls within well and electrical vaults forcing the in-situ portion of the remedial system to be shut down several times and for extended periods for repairs. Supply constraints for replacement parts also contributed to additional delays. Because of intermittent outages, the reductant injection component of the remedy has not operated consistently enough to determine success as well as how it responds to the other remedy components (i.e., freshwater and IRL flushing). Although the latest quarterly report suggests that some reduction of hexavalent chromium is taking place, the ability to completely reduce the plume along the IRZ as designed remains undetermined. Of course, for the remedy to function properly, the plume upgradient of the IRZ must be flushed through the IRZ, but no injection wells are currently operating to accomplish this significant fundamental task.

The majority of the freshwater injection component of the remedy has yet to be built. PG&E is currently reconsidering the source of the freshwater. Instead of using freshwater from well HNWR-1A as outlined in the BOD, PG&E is proposing a new supply well to be installed by Southwest Water Company. The construction of most freshwater supply infrastructures has been scheduled to the latter part of the remedy construction pending review and agency approval of a proposed modified remedy. Furthermore, PG&E has found the BOD design to be inefficient based on updated groundwater modeling. As part of the remedy modification proposal, PG&E is proposing a freshwater injection well (FW-04) in the MW-V (MW-95) area and will remove FW-01, however, the Tribes currently object to this area due to its proximity to the Topock Maze though it is located within the EIR Project Area. As stated, there are currently no operating freshwater injection wells in place. This is due to geologic conditions, characterization, and cultural concerns associated with the freshwater injection wells located to the west near Bat Cave Wash and in the vicinity of the Topock Maze.

Operation of freshwater injection well FW-02B is still being evaluated since hexavalent chromium was detected in the well above background levels after installation. Geological complexities and cultural concerns have hampered progress on the west side of the plume by Bat Cave Wash where the project approaches the culturally sensitive Maze area. The main problem is due to minimal characterization of the western portion of the groundwater plume to minimize intrusions in this area in response to Tribal concerns. Freshwater injection well FW-02B may or may not be in a clean zone upgradient of the chromium plume. Installation of additional wells further west are technically important to delineate the extent of the plume, but due to Tribal cultural impact concerns, well installation will face significant Tribal resistance. Remediation of a groundwater plume is challenging if the extent of contamination is unknown. Equally problematic is meeting the Remedial Action Objective to not expand the plume boundary if monitoring wells cannot be placed beyond and

upgradient of the western edge of the plume. Without viable areas to install groundwater wells and associated infrastructure (e.g., injection pipelines), the freshwater injection concept in the Bat Cave Wash area becomes problematic. Alternative remedy design may be needed to successfully control the hydraulic movements of the groundwater plume (e.g., extract water from the station and pull the western edge of the plume towards the east until the western margin is defined with certainty).

Similar to the freshwater injection infrastructures, the IRL components have also not been installed based on PG&E's desire to modify the remedy. Based on the BOD, there should be a protective IRL for the remedy to safeguard against unforeseen chromium concentrations or by-product formation that threatens the aquifer and possibly the Colorado River. PG&E notified agencies in early June 2023 that the concentration of hexavalent chromium has increased in the floodplain east of the IRZ 23 extraction well. Although there are some theories on the root cause, this issue demonstrates that there are still significant uncertainties regarding cleanup of the chromium plume within the floodplain east of the IRZ despite the extensive well network in place and modeling of the plume. Currently, no recirculation system has been built and the remedy modification appears to have abandoned the IRL concept for hydraulic control down gradient of the IRZ in the floodplain in favor of reducing infrastructure and cost.

From an aesthetic/cultural perspective, the groundwater remedy has been more aesthetically striking than conceptualized in the BOD. Examples include several above ground electrical nodes that resembles kiosks/huts that are the size of a shed, numerous locator stakes are placed in the flood plain, access roads appear excessively wide in the floodplain including the elevated southern end of the IRZ line that goes under the freeway and railroad. The access road to provisional well TWB-3 and associated well pad appear aesthetically significant which defy cultural concerns. The graded roads to MW-V (MW-95) and FW-02B are substantive. The road for pipelines I and J had to be asphalt paved on slope for erosional control since other engineering alternatives were unsuccessful against storm damages. Asphalt pavement of roads was not envisioned in the BOD. Huge gabions for erosional control were constructed along Pipeline B to reduce surface water erosion that has damaged newly constructed pipelines and improved access roads. Long black storm drainpipes are draped over the slope of the Pipeline-B Road that contrast with the surrounding landscape. The temporary main water supply line is supposed to be an underground line according to the BOD but has remained above ground for almost five years. Rock armor was used in the gully slope east of the Transwestern Bench and was not anticipated in the BOD. South of the laydown/former CHQ area, a large cement/rock energy dissipator feature was constructed downstream of the railroad culverts. The neighboring Soils Processing Yard has been enlarged due to the concurrent Non-Time Critical Removal Action (NTCRA) soil removal activities which was not envisioned during the presentation of the BOD.

PG&E maintains that the remedy must be flexible so that the reductant injection rates, concentration, and duration would all be continuously adjusted under "adaptive

management." This approach, however, does not provide for a clear roadmap or measurable short-term goals to determine if the remedy is operating within expectations. With two key components of the remedy (IRL and Freshwater Flushing) having yet to be constructed, plus the continuing cultural/aesthetic impacts, and the additional uncertainties associated with the outcome of PG&E's remedy modification, DTSC's impression of the current remedy condition is unfavorable. DTSC is concerned with the extent to which remedy components may change and if the modified remedy will enhance groundwater cleanup or be less protective of the environment including unforeseen potential impacts to the cultural and biological landscape.

Although the overall impression of the remedy is unfavorable, PG&E has followed and complied with all required mitigation measures adopted for the project. PG&E has continued to employ Tribal Monitors during ground disturbing activities and has been accommodating to Tribal concerns. Furthermore, the safety record during this past five years of construction and operation has been exemplary.

2. What effects have groundwater remedy had on the surrounding community?

Favorable	Neutral	Unfavorable ☒	Unfamiliar

List specific examples of effects on the surrounding community.

- Construction activities increased traffic within a regional park for public recreation. Increasing risk of public safety. The longer the construction takes, the longer the potential impact.

- Although infrastructures were approved and Tribes have been consulted on the potential impacts, it is undeniable that the remedy has and will continue to impact the cultural landscape.

- Incursions by the public (e.g., via recreational vehicles) into more remote areas may be increased due to remedy construction and associated improved road access. Increased activity could impact cultural landscapes and biological environments. For example, recreational vehicles were noted in Bat Cave Wash a couple years ago driving into the MW-V (MW-95) area near the Topock Maze for the first time. Public incursions into the floodplain area would be assumed to increase over time due to the drivable roads constructed for the remedy where only soft dune sand was present before.

3. Are you aware of any unresolved community concerns regarding the groundwater remedy or its operation and administration?

Yes ☒ No ☐

If so, please give details.

The Tribes will continue to be concerned about the extent of change and disturbance to their cultural landscape. One item that remains to be worked out is the final disposition of some of the removed isolates gathered by PG&E as part of the remedy and investigation activities. Tribes, PG&E and BLM are currently in discussion on this issue.

To our knowledge, the community around the Topock Marina (Topock 66 Resort) has not been notified of PG&E's proposed, currently unapproved remedy modification to increase the pumping rate and share the Topock 2/3 water supply between the groundwater remedy, the station, and the community. The Topock 66 Resort has begun construction of a four-story 48 room hotel. The hotel will add to the water demand from the local water purveyor (Southwest Water Company) and, therefore, also on the Topock 2/3 water supply wells. No other water source is available for the community or the compressor station other than the Topock 2/3 wells and PG&E has raised concern in the past that over-pumping the wells could up-cone saline water at depth and adversely affect the water quality for all that use it. If the water goes bad, there is no backup well online for the community. The available water usage and associated potential impacts to the community must be carefully reviewed and considered.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?

Yes ☒ No ☐

There was an incident where a contractor's truck was stolen, and a police chase ensued. Ultimately the truck was crashed, and the suspect was apprehended. PG&E's contractor, Groundwater Partners, would likely be able to provide more information on this incident.

Please note that PG&E hired a security company to patrol the area and should be consulted regarding this question as they would be most knowledgeable regarding trespassing, emergencies, vandalism, and other incidents that might not be shared with agencies.

5. Do you feel well informed about the groundwater remedy activities and progress? Yes ☒ No ☐
If no, then how might communications be improved? Although PG&E has continued weekly coordination meetings with the agencies, there have been times when agencies are caught off-guard of the activities on site. As an example, PG&E did notify agencies that there will be road access improvements leading to well MW-V (MW-95); however, the notification did not clearly describe the scope or extent of work. When witnessed on site, the grading was substantially larger in scale than envisioned when compared to the pre-graded access road. Another example was detection of elevated hexavalent chromium during development of FW-02B. Without consulting with the agencies, PG&E conducted a large-scale injection test which obliviated the elevated chromium detection and destroyed the ability to evaluate the actual western extent of the chromium plume; thereby hindering the ability to consider if the remedy needs to be modified. PG&E must provide an adequate level of communication before taking independent actions that could have serious consequences.

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

- PG&E should expedite the proposed groundwater remedy modifications to the best extent possible. Drawn-out and disconnected changes over the years create a loss of continuity and focus by all parties involved and adversely impacts remedy schedule. The longer the remedy construction takes, the more the site conditions may change naturally (e.g., plume location and concentrations, weathering of surface features and drainage patterns) which may cause scope creep of some construction activities, including storm water management and erosional controls. Nevertheless, project changes and proposals need to be comprehensive so the totality of the changes can be assessed.

- PG&E needs to implement better system integration controls and utilize better engineering designs to overcome electrical failures that have resulted in significant down time along the IRZ line. Some repair and testing times have been slow. Likewise, procurement and delivery of specialty equipment also contributed to extensive delays.

- PG&E needs to engineer protective controls and long-term solutions to address site erosion from torrential rainstorms as storm water run-off often uncover buried utilities especially along slopes or incise steep slopes. There have also been rain events during the middle of construction that washed out pipelines and utilities along significant lengths requiring project activities to be repeated (e.g., Pipeline I and J). Asphaltic pavement has been used in some instances but was not envisioned in the BOD.

- If possible, groundwater wells should not be installed in active washes (e.g., Bat Cave Wash and East Ravine) due to potential for well destruction and flooding from storm events. Many wells should be protected from flooding (e.g., installation of deeper aprons, ensure water-tight expansion caps are always maintained and operating properly) since flooding of wells can change the redox conditions in the vicinity of the well and allow nonrepresentative data to be collected (e.g., A well may produce non-detect hexavalent chromium laboratory results when hexavalent chromium may actually exist in that portion of the aquifer monitored).

- PG&E could do better with housekeeping and pick up of small construction trash and other items left behind from site activities.

7. <u>State and Local Government Interviewees Only</u>: Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

Yes ☒ No ☐

If so, please give details of the events and results of the responses.

Historic groundwater wells from the 1950's were installed to assess the water supply for the station but have since been lost and not properly abandoned according to current well standards. Well 4 (aka TCS-4) was a temporary water supply well installed in 1951 that was also lost. TCS-4 was found to have been converted into a waste injection well in 1964. A well investigation found TCS-4 in Bat Cave Wash and identified significant contamination associated with it. A violation was issued by the county to properly decommission the old wells, but PG&E has been slow and reluctant to respond and has not located or decommissioned any of the other historic wells known to have existed in the past. Without knowing the current condition of these wells, where some of them are located, or how they were designed and constructed, the potential impacts they may impart to groundwater is unknown as they may act as conduits for contaminant migration and adversely short-circuit hydraulic flow paths. In addition, if any of these other historic water wells were also converted to waste injection wells, then additional soil and groundwater contamination may also exist.

8. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: Is there any groundwater remedy construction planned or on-going that may be, or is currently, impacted by the site.

Yes ☐ No ☐

If so, please describe the status of construction (budget and schedule) below.
NA

9. Tennant, Owner, or Site Neighbor Interviewees Only: If the answer to question 8 was yes, have any problems been encountered which required, or will require, changes to the groundwater remedy?

Yes ☐ No ☐

NA

10. Tennant, Owner, or Site Neighbor Interviewees Only: If the answer to question 8 was yes, have any problems or difficulties been encountered which have impacted construction progress or implementability of the groundwater remedy?

Yes ☐ No ☐

If so, please describe

NA

11. Other: Include questions, comments, information on any topic related to the Sites not previously addressed.

The BOD's adaptive management approach creates an uncertainty in evaluating the success or effectiveness of the remedy. Intermediary goals should have been established, but PG&E and agencies were unsuccessful in defining these conditions. PG&E has continued to evaluate changes to the design which also leads to uncertainty regarding the remedy.

PG&E continues to struggle with infrastructure damage due to rain events. PG&E should take a proactive review of all design features which includes methods to protect against rain and water damage. DTSC cautions the installation of wells in active washes in the future, if options are available, since several existing wells on-site have either been damaged or inundated by storm water in the past.

Groundwater Remedy Five-Year Review
Interview Questionnaire - General

Interview Team: Name	Title	Organization	Date:

Groundwater Remedy Five-Year Review
Interview Questionnaire - General

Name: MAURICIO SANTOS			
Title: ENGINEER			
Organization: THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA			
Telephone Number: 909-392-5495			
E-mail Address: msantos@mwdh2o.com			
Address (Street, City, State, Zip Code): 700 Moreno Ave. La Verne, CA 91750			
Date: 6/30/2023		Time: 10:00 AM	
Type of interview: 5 YEAR REVIEW			
Telephone ☐	Visit ☐	Other WRITTEN ■	Describe Other:
Location of Visit: N/A			
Relationship to Site:			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Tribunal Representative ☐
Site Neighbor X ☐	Community Member ☐	General Public ☐	Stakeholder X ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☐	Neutral ■	Unfavorable ☐	Unfamiliar ☐

Why? The remedy is promising, but not enough time has elapsed to be able to make a full judgment.

2. What effects have groundwater remedy had on the surrounding community?

Favorable	Neutral X	Unfavorable	Unfamiliar

List specific examples of effects on the surrounding community.

The remedy is still early in operation, so any effects are not really able to be seen at this point. However, land disturbance due to well drilling is an issue for other stakeholders.

3. Are you aware of any unresolved community concerns regarding the groundwater remedy or its operation and administration?

Yes ☒ No ☐

If so, please give details.

PG&E has proposed a modification to the remedy that has raised some concerns with other groups. The intent of the modification is to reduce infrastructure construction and land disturbance. However, there are some questions regarding the modification simply moving around site disturbance areas. There also appears to be an over-reliance on well water from Arizona.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?

Yes ☒ No ☐

If so, please give details.

There has been flooding of well vaults from rains that left wells inoperable until the vaults could be pumped out and the wells serviced.

There was also a storm drain in Bat Cave Wash that ruptured in 2022. PG&E had to rush to repair it. In doing so, it did not consult with other groups.

In addition, there was the COVID-19 pandemic from 2020 to 2023.

5. Do you feel well informed about the groundwater remedy activities and progress?

Yes ☒ No ☐

If no, then how might communications be improved?

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

There was the flooding in Bat Cave Wash, where the compressor station rushed to repair storm drains. PG&E Compressor Station staff were in charge of repairs, and PG&E remediation staff was not involved. This resulted in other stakeholders not being aware of the work that was performed until a CWG/TWG meeting was held. There could be improvement in how emergency work is communicated to stakeholders.

7. <u>State and Local Government Interviewees Only</u>: Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

Yes ☐ No ☐

If so, please give details of the events and results of the responses.

8. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: Is there any groundwater remedy construction planned or on-going that may be, or is currently, impacted by the site.

Yes ■ No ☐

If so, please describe the status of construction (budget and schedule) below.

The site is ancestral land to the project's tribal stakeholders. Any construction requires prior tribal stakeholder concurrence and monitoring,

9. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems been encountered which required, or will require, changes to the groundwater remedy?

Yes ■ No ☐

There have been instances where site conditions were not what was expected, forcing the design to move infrastructure where it had not been considered before.

Additional time will be needed to ensure the remedy is operating as engineered and will not produce by-products or lack treatment in areas that could threaten the water quality of the Colorado River.

10. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems or difficulties been encountered which have impacted construction progress or implementability of the groundwater remedy?

Yes ■ No ☐

If so, please describe

There have been delays to archaeological finds, but nothing that has delayed the project significantly.

Since it is early in remedy operation, no changes have been necessary yet. However, Metropolitan expects issues will arise during the long-term operation of the remedy that will necessitate changes.

11. <u>Other:</u> Include questions, comments, information on any topic related to the Sites not previously addressed.

Interview Team:			Date:
Name	Title	Organization	

Groundwater Remedy Five-Year Review
Interview Questionnaire - General

Name: Veronica Dickerson			
Title: OEPC/ECCD Topock Program Manager			
Organization: DOI			
Telephone Number: 440-665-0915			
E-mail Address: veronica_dickerson@ios.doi.gov			
Address (Street, City, State, Zip Code):			
Date: 7/6/2023		Time: 10:30 AM EST	
Type of interview:			
Telephone ☒	Visit ☐	Other ☐	Describe Other:
Location of Visit:			
Relationship to Site:			
Regulator ☒	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Tribunal Representative ☐
Site Neighbor ☐	Community Member ☐	General Public ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☐	Neutral ☒	Unfavorable ☐	Unfamiliar ☐

Why?

It's too early to tell what the overall impression of the groundwater remedy is. Some successes have been accomplished but the remedy has not been fully implemented.

2. What effects have groundwater remedy had on the surrounding community?

Favorable	Neutral	Unfavorable	Unfamiliar

List specific examples of effects on the surrounding community.

No complaints have been received from neighbors in the surrounding community.

From a stakeholder perspective, the groundwater remedy has had an unfavorable effect on the tribes, largely due to the location of the site. The location is in an area of cultural and historical significance to the tribes.

3. Are you aware of any unresolved community concerns regarding the groundwater remedy or its operation and administration?

Yes ☒ No ☒

If so, please give details.

No, not aware of any unresolved community concerns.

From a stakeholder perspective, there are outstanding requests from the tribes to PG&E.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?

Yes ☒ No ☐

If so, please give details.

Various incidents are included in monthly reports. Incidents have included loss of power, weather, human error, etc.

Agencies were not notified by PG&E prior to freshwater flushing at FW-02b. Agencies were notified after the fact.

5. Do you feel well informed about the groundwater remedy activities and progress?

Yes ☒ No ☐

If no, then how might communications be improved?

PG&E's communication with agencies has been very good, especially during the weekly coordination calls.

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

It is too soon to tell. Elements of O&M are in place but there hasn't been a lot of training for the staff that are managing the remedy.

7. <u>State and Local Government Interviewees Only</u>: Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

Yes ☐ No ☐

If so, please give details of the events and results of the responses.

NA

8. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: Is there any groundwater remedy construction planned or on-going that may be, or is currently, impacted by the site.

Yes ☐ No ☐

If so, please describe the status of construction (budget and schedule) below.

NA

9. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems been encountered which required, or will require, changes to the groundwater remedy?

Yes ☐ No ☐

NA

10. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems or difficulties been encountered which have impacted construction progress or implementability of the groundwater remedy?

Yes ☐ No ☐

If so, please describe

NA

11. <u>Other:</u> Include questions, comments, information on any topic related to the Sites not previously addressed.

No other comments.

Interview Team:			Date: 7/6/23
Name	Title	Organization	
Brent Jacobs	Geologist	BB&E, Inc.	
Katrice Depew	Mid-Level Env. Specialist	BB&E, Inc.	

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: Iain Baker			
Title: Manager, Chromium Remediation			
Organization: PG&E			
Telephone Number: 415-314-8530			
E-mail Address: i x b j @ p g e . c o m			
Address (Street, City, State, Zip Code): 300 Lakeside Drive, Oakland CA 94612			
Date: 7/7/2023		Time: 1230	
Type of interview:			
Telephone ☐	Visit ☐	Other ☒	Describe Other: Typed Answers
Location of Visit: San Francisco CA			
Relationship to Site:			
Regulator ☒	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Operations Manager ☐
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other [X] Describe Other: Manager overseeing project			

1. What is your overall impression of the groundwater remedy? (general sentiment)

Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐

Phase 1 of construction has been completed and an IRZ has started to be established along National Trails Highway. The effectiveness of the remedy will be more clear when all construction has been completed and the full remedy can be implemented

2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?

Phase 1 of construction has been completed and an IRZ has started to be established along National Trails Highway. Phase 2a is currently in progress has been somewhat delayed due to overlap with the NTCRA project. Phase 2b is also delayed due to ongoing discussions on a PG&E proposed modification to reduce required impacts and infrastructure and complete the clean up in a faster timeframe

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

Yes ☒ No ☐

Not really a problem but as we began construction it was determined that the plume footprint was much smaller than the plume footprint the design was based on. Therefore, infrastructure at the northern portion of the system was not installed. Additionally, it was determined that the plume was split into two lobes vertically and therefore infrastructure targeting the area between the two lobes was not required

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☐ No ☐

See above answer to number 3

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

Yes ☒ No ☐

The portions of the remedy that have been constructed and are operational are generally performing as expected. It is difficult to assess how the system is performing because the full remedy has not been constructed and operated yet.

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☒ No ☐

Contaminant levels are decreasing in the immediate vicinity of the IRZ wells where reducing conditions have been established. Significant reduction in plume mass will not be achieved until the entire system has been constructed and the freshwater push can be implemented.

7. Is there a continuous on-site O&M presence?

Yes ☒ No ☐

There are two fulltime contractors onsite that support O&M of the constructed portion of the system.

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater remedy?

Not that I am aware of.

9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years? Yes ☒ No ☐
Yes we have had issues with flooding of the IRZ vaults during large scale storms on several occasions.
10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts? Yes ☒ No ☐
PG&E believes that based on the smaller plume footprint there is an opportunity to make modifications to the remedy which would minimize the amount of infrastructure and therefore result in less construction at the site. We have submitted a proposal to the agencies to complete that modification
11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
If so, please give details.

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Interview Team: Name	Title	Organization	Date:

Groundwater Remedy Five-Year Review
Interview Questionnaire - General

Name: August Potor			
Title: Archaeologist			
Organization: BLM-LHFO			
Telephone Number: (928)505-1255			
E-mail Address: a p o t o r @ b l m . g o v			
Address (Street, City, State, Zip Code): 1785 Kiowa Ave. Lake Havasu City, AZ 86403			
Date: 7/11/23		Time: 9:20AM	
Type of interview: Email			
Telephone ☐	Visit ☐	Other ☐	Describe Other:
Location of Visit:			
Relationship to Site: BLM Arch			
Regulator ☐	Landowner/ Manager/ Tennant ☒	Construction Contractor ☐	Tribunal Representative ☐
Site Neighbor ☐	Community Member ☐	General Public ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)			
Favorable ☐	Neutral ☒	Unfavorable ☐	Unfamiliar ☐
Why? Seems well run and I have no issues.			

2. What effects have groundwater remedy had on the surrounding community?			
Favorable	Neutral X	Unfavorable	Unfamiliar
List specific examples of effects on the surrounding community. I don't live in the area, so I don't know what the local community thinks.			

3. Are you aware of any unresolved community concerns regarding the groundwater remedy or its operation and administration?

Yes ☐ No ☒

If so, please give details.
NA

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?

Yes ☐ No X

If so, please give details.
N/A

5. Do you feel well informed about the groundwater remedy activities and progress?

Yes ☒ No ☐

If no, then how might communications be improved?

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
If so, please give details. Nope
7. <u>State and Local Government Interviewees Only</u>: Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? Yes ☐ No ☒
If so, please give details of the events and results of the responses.
8. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: Is there any groundwater remedy construction planned or on-going that may be, or is currently, impacted by the site. Yes ☐ No ☒
If so, please describe the status of construction (budget and schedule) below.

9. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems been encountered which required, or will require, changes to the groundwater remedy? Yes ☐ No ☒
10. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems or difficulties been encountered which have impacted construction progress or implementability of the groundwater remedy? Yes ☐ No ☒
If so, please describe
11. <u>Other:</u> Include questions, comments, information on any topic related to the Sites not previously addressed.

Interview Team:			Date:
Name	Title	Organization	

Groundwater Remedy Five-Year Review
Interview Questionnaire - General

Name: Ron Nuckles			
Title: AFM			
Organization: Lake Havasu Field Office BLM			
Telephone Number: 928-505-1248			
E-mail Address: rnuckles@blm.gov			
Address (Street, City, State, Zip Code): 1785 Kiowa Ave., Lake Havasu City, AZ, 86403			
Date: 7/11/2023		Time: 2pm	
Type of interview: Written			
Telephone ☐	Visit ☐	Other ☒	Describe Other:
Location of Visit:			
Relationship to Site:			
Regulator ☐	Landowner/ Manager/ Tennant ☒	Construction Contractor ☐	Tribunal Representative ☐
Site Neighbor ☐	Community Member ☐	General Public ☐	Stakeholder ☐
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)			
Favorable ☐	Neutral ☒	Unfavorable ☐	Unfamiliar ☐
Why? *I've seen other remedies similar to this and I'm not convinced they work 100% of the time. There's a lot to risk with a plan that isn't guaranteed to remedy this issue. Considering the plan is to flood underground water resources to hopefully push the contamination toward the river which provides drinking water for the entire Southwestern United States.*			

2. What effects have groundwater remedy had on the surrounding community?			
Favorable	Neutral X	Unfavorable	Unfamiliar
List specific examples of effects on the surrounding community. *There has been a lot of construction near a resort community which does have an impact.*			

3. Are you aware of any unresolved community concerns regarding the groundwater remedy or its operation and administration? Yes ☐ No ☒
If so, please give details.
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? Yes ☐ No x
If so, please give details.
5. Do you feel well informed about the groundwater remedy activities and progress? Yes ☒ No ☐
If no, then how might communications be improved?

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details. *Communication and safety relayed from the project is top notch. Folks from that organization communicate frequently and are easy to talk to when questions pop up.*

7. <u>State and Local Government Interviewees Only</u>: Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

Yes ☐ No ☒

If so, please give details of the events and results of the responses.

8. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: Is there any groundwater remedy construction planned or on-going that may be, or is currently, impacted by the site.

Yes ☐ No ☐

If so, please describe the status of construction (budget and schedule) below.

9. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems been encountered which required, or will require, changes to the groundwater remedy? Yes ☐ No ☐
10. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems or difficulties been encountered which have impacted construction progress or implementability of the groundwater remedy? Yes ☐ No ☐
If so, please describe
11. <u>Other:</u> Include questions, comments, information on any topic related to the Sites not previously addressed.

Interview Team:			Date:
Name	Title	Organization	

Groundwater Remedy Five-Year Review
Interview Questionnaire - General

Name: Nichole Osuch			
Title: Environmental Scientist/Project Manager			
Organization: Arizona Department of Environmental Quality			
Telephone Number: 602-771-4847			
E-mail Address: o s u c h . n i c h o l e @ a z d e q . g o v			
Address (Street, City, State, Zip Code): 1110 West Washington Street Phoenix, Arizona 85007			
Date: 7-13-2023		Time:	
Type of interview:			
Telephone ☐	Visit ☐	Other ☐	Describe Other:
Location of Visit:			
Relationship to Site:			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Tribunal Representative ☐
Site Neighbor ☐	Community Member ☐	General Public ☐	Stakeholder ☒
Other ☐ Describe Other:			
1. What is your overall impression of the groundwater remedy? (general sentiment)			
Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐
Why? The remedy is in place, working, and cleaning up the groundwater contamination.			
2. What effects have groundwater remedy had on the surrounding community?			
Favorable	Neutral	Unfavorable	Unfamiliar
List specific examples of effects on the surrounding community. The surrounding community has the knowledge and comfort a remedy is in place to clean up the groundwater contamination and eliminate any threats to human health and the environment.			

3. Are you aware of any unresolved community concerns regarding the groundwater remedy or its operation and administration?

Yes ☐ No ☒

If so, please give details.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?

Yes ☐ No ☒

If so, please give details.

5. Do you feel well informed about the groundwater remedy activities and progress?

Yes ☒ No ☐

If no, then how might communications be improved?

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
If so, please give details. None at this time.
7. <u>State and Local Government Interviewees Only</u>: Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? Yes ☐ No ☒
If so, please give details of the events and results of the responses.
8. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: Is there any groundwater remedy construction planned or on-going that may be, or is currently, impacted by the site. Yes ☐ No ☐
If so, please describe the status of construction (budget and schedule) below.

9. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems been encountered which required, or will require, changes to the groundwater remedy?

Yes ☐ No ☐

10. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems or difficulties been encountered which have impacted construction progress or implementability of the groundwater remedy?

Yes ☐ No ☐

If so, please describe

11. <u>Other:</u> Include questions, comments, information on any topic related to the Sites not previously addressed.

Nothing at this time.

Interview Team:			Date:
Name	Title	Organization	

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: Kristina Bonnett			
Title: Technical Project Manager			
Organization: PG&E			
Telephone Number: 628-219-8380			
E-mail Address: kaby@pge.com			
Address (Street, City, State, Zip Code): Mailing Address: P.O. Box 337 Needles, CA 92363			
Date: July 24 2023		Time: 9:15 am	
Type of interview:			
Telephone ☐	Visit ☐	Other ☒	Describe Other: written response
Location of Visit: n/a			
Relationship to Site:			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Operations Manager ☐
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other ☒ Describe Other: PG&E Project Manager			
1. What is your overall impression of the groundwater remedy? (general sentiment)			
Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐
Why? The final groundwater remediation is proceeding with construction and operation as designed.			
2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?			
Please give details. The groundwater remediation construction is tracking to the latest schedule provided at the May CWG.			

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

Yes ☐ No ☐

If so, please give details.

This is an operational question. Please refer to the operations subject matter experts.

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☐ X No ☐

If so, please give details.

The Covid pandemic began in March 2020, during Phase 1 of the groundwater remedy construction. The key difficulties experienced as a result: construction demobilization followed with a slower-paced staggered re-start to construction, as well as material procurement delays. Phase 2a construction has continued to experience extended lead times for some materials.

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

Yes ☐ No ☐

Please give details.

This is an operational question. Please refer to the operations subject matter experts.

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☐ No ☐

Please give details.

This is an operational question. Please refer to the operations subject matter experts.

7. Is there a continuous on-site O&M presence?

Yes ☐ No ☐

If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

This is an operational question. Please refer to the operations subject matter experts.

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater remedy?

Please describe changes and impacts.

This is an operational question. Please refer to the operations subject matter experts.

9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years?

Yes ☐ No ☐

If so, please give details.

This is an operational question. Please refer to the operations subject matter experts.

10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts?

Yes ☐ No ☐

Please describe changes and resultant or desired cost savings or improved efficiency**.**

This is an operational question. Please refer to the operations subject matter experts.

11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

None.

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Interview Team:			Date:
Name	Title	Organization	

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: Steven D. Martz			
Title: Independent Quality Assurance Manager - for oversight of the final remedy construction			
Organization: Jacobs			
Telephone Number: 303 408-9325			
E-mail Address: S t e v e n . m a r t z @ j a c o b s . c o m			
Address (Street, City, State, Zip Code): 4803 Wagontrail Court, Parker CO 80134			
Date: 07/27/2023		Time: 4:44PM Mountain Time	
Type of interview: On Paper – filled out form			
Telephone ☐	Visit ☐	Other ☒	Describe Other:
Location of Visit: Home			
Relationship to Site: Independent QA Manager - for oversight of the final remedy construction & overall Jacobs Quality oversight for PG&E contracts			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☒	Operations Manager ☐
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other ☐ Describe Other:			
1. What is your overall impression of the groundwater remedy? (general sentiment)			
Favorable ☐	Neutral ☒	Unfavorable ☐	Unfamiliar ☐
Why? As the Independent QA Manager, my team and I must remain "Independent" and "Neutral". My Team and I issued a Topock Final Remedy Construction Phase 1 Completion Report that documents the Independent QA Oversight's critique of the site construction activities. As is normal, deficiencies, nonconformances, and Work Variance Requests occur during construction, but as long as they are 1) documented, 2) dispositioned, 3) corrected, and 4) approved, then the final construction condition can be deemed acceptable. To the best of Independent QA's knowledge, through Phase 1, no outstanding conditions to the specifications exist. Phase 2 and beyond are currently being monitored.			
2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?			

Please give details. Independent QA cannot provide details for the PG&E/Contractor's budget or schedule. However, Independent QA's budget for oversight of the work is within the allowable limits.

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

Yes ☒ No ☐

If so, please give details.

As mentioned before, my Team and I issued a Topock Final Remedy Construction Phase 1 Completion Report that documents the Independent QA Oversight's critique of the site construction activities. As is normal, deficiencies, nonconformances, and Work Variance Requests occur during construction, but as long as they are 1) documented, 2) dispositioned, 3) corrected, and approved, then the final construction condition can be deemed acceptable. To the best of Independent QA's knowledge, through Phase 1, no outstanding conditions to the specifications exist. Phase 2 and beyond are currently being monitored.

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☐ No ☒

If so, please give details.

Not to Independent QA's knowledge.

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

Yes ☒ No ☐

Please give details.

As mentioned before, my Team and I issued a Topock Final Remedy Construction Phase 1 Completion Report that documents the Independent QA Oversight's critique of the site construction activities. As is normal, deficiencies, nonconformances, and Work Variance Requests occur during construction, but as long as they are 1) documented, 2) dispositioned, 3) corrected, and approved, then the final construction condition can be deemed acceptable. To the best of Independent QA's knowledge, through Phase 1, no outstanding conditions to the specifications exist. Phase 2 and beyond are currently being monitored.

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☐ No ☐

Please give details.

This is outside of Independent QA's oversight. Our Independent QA's oversight scope is for construction oversight and final commissioning only and not interpretation of the operating data.

7. Is there a continuous on-site O&M presence?

Yes ☒ No ☐

If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

This is outside of Independent QA's oversight. Our Independent QA's oversight scope is for construction oversight and final commissioning only and not interpretation of the operating data or O&M.

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater

remedy?
Please describe changes and impacts. Again - This is outside of Independent QA's oversight. Our Independent QA's oversight scope is for construction oversight and final commissioning only and not interpretation of the operating data or O&M.
9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years? Yes ☐ No ☐
If so, please give details. Again - This is outside of Independent QA's oversight. Our Independent QA's oversight scope is for construction oversight and final commissioning only and not interpretation of the operating data or O&M.
10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts? Yes ☐ No ☐
Please describe changes and resultant or desired cost savings or improved efficiency**.** **Again - This is outside of Independent QA's oversight.**

11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
If so, please give details. Please see my responses under Question No. 1 above.

Interview Team:			Date: 07/27/2023
Name	Title	Organization	
Steven D. Martz	Independent QA Manager	Jacobs	

Groundwater Remedy Five-Year Review
Interview Questionnaire – Operations Managers

Name: John Glass			
Title: Principal Technical Remediation Consultant			
Organization: PG&E			
Telephone Number: 628-219-4369			
E-mail Address: F 2 G 5 @ p g e . c o m			
Address (Street, City, State, Zip Code): 300 Lakeside Dr, Oakland, CA 94612			
Date: July 28, 2023		Time: 1130	
Type of interview:			
Telephone ☐	Visit ☐	Other ☒	Describe Other: Fill out questionnaire
Location of Visit: N/A			
Relationship to Site:			
Regulator ☐	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Operations Manager ☒
Tribunal Representative ☐	Community Member ☐	Site Neighbor ☐	Stakeholder ☐
Other ☐ Describe Other:			
1. What is your overall impression of the groundwater remedy? (general sentiment)			
Favorable ☐	Neutral ☒	Unfavorable ☐	Unfamiliar ☐
Why? Only Phase 1 has been installed and operating to date. Phase 2A is currently being constructed and no decision has been made on the Phase 2B modification proposal. As the groundwater remedy is not fully constructed it's tough to give it favorable or unfavorable rating.			
2. What is the current status of groundwater remedy construction (e.g., budget and schedule)?			

Please give details.
I can't comment on Phase 1 and Phase 2A schedules as they were set before my time. I do know the Phase 2B was scheduled to start in 2023, but it's looking like 2024 pending a decision on Phase 2B design modification.

3. Have any problems been encountered which required, or will require, changes to the design of the groundwater remedy?

Yes ☒ No ☐

If so, please give details.
Phase 2A infrastructure – FW-02 installation location

Currently there is a Phase 2B design modification pending a decision.

4. Have any problems or difficulties been encountered which have impacted Groundwater remedy construction progress or implementability?

Yes ☐ No ☐

If so, please give details.
I can only speak to Phase 2A and 2B, as I was not here for the installation of Phase 1.

Phase 2A – Storm damage during installation impacted schedule. Adaptive management for the installation of FW-02. The first alterative location for FW-02 did not reveal a large enough zone for injection and basalt was shallower then planned. After several months of stakeholder engagement, a second alternative location for FW-02 (FW-02B) was identified, however FW-02B has not been connected yet as the placement of required AS compliance monitoring wells has not been approved and agency concern that FW-02B is not on the edge of the Cr6 plume.

Phase 2B – No decision on the modification proposal at the time of this interview.

5. Is the groundwater remedy functioning as expected? How well is the groundwater remedy performing?

Yes ☐ No ☒

Please give details.
Only Phase 1 infrastructure has been installed and is operating. Phase 2A infrastructure has only been partially installed and is currently not operating. Phase 2B installation has not been started, pending a response to the Phase 2B modification request.

6. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Increasing?

Yes ☒ No ☐

Please give details.
Phase 1 - IRZ area wells are showing treatment and decreasing levels. As the rest of the groundwater remedy (Phase 2A and 2B) has not been constructed yet, I am only commenting on Phase 1 infrastructure.

7. Is there a continuous on-site O&M presence?

Yes ☒ No ☐

If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities. Yes, there is a continuous on-site O&M presence conducting daily, weekly and monthly monitoring and maintenance activities along with a scheduled well rehabilitation program.

8. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since groundwater remedy start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the groundwater

remedy?

Please describe changes and impacts.

Stormwater infiltration has been a big change since startup. Various improvements (raising vault height, sump pumps, moving well control components out of the vaults) have been made to protect the operation of the injection and extraction wells at the 20 Bench.

9. Have there been unexpected O&M difficulties or costs at the site since groundwater remedy start-up or in the last five years?

Yes ☒ No ☐

If so, please give details.

Since the IRZ startup (Phase 1) there were challenges connecting to the TCS power, but that has been resolved. There have been a couple large storms in 2022 and 2023 that have damaged groundwater remedy infrastructure.

10. Have there been opportunities to optimize remedy construction, O&M, or sampling efforts?

Yes ☒ No ☐

Please describe changes and resultant or desired cost savings or improved efficiency**.**

Phase 2B modification proposal will reduce the amount of infrastructure to install and O&M over the life-cycle of the remedy. Based on modeling the clean-up is showing to be quicker.

11. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
If so, please give details. The remedy installation and O&M was happening during COVID-19 and post COVID-19 timeframes with staff and supply chain challenges. I feel the PG&E and subcontractor management team have done a good job navigating these challenges.

Interview Team:			Date:
Name	Title	Organization	

Groundwater Remedy Five-Year Review
Interview Questionnaire - General

Name: David Vigil			
Title: Senior Environmental Scientist (Supervisory)			
Organization: California Department of Fish and Wildlife			
Telephone Number: 760-922-4928			
E-mail Address: David.vigil@wildlife.ca.gov			
Address (Street, City, State, Zip Code): Mail: PO Box 2160, Blythe, CA 92226, Physical: 17041 S. Lovekin Blvd., Blythe, CA 92225			
Date: 7/28/23		Time: 1520	
Type of interview: Written Questionnaire			
Telephone ☐	Visit ☐	Other ☒	Describe Other: email
Location of Visit: N/A			
Relationship to Site: Trustee and Responsible Agency			
Regulator ☒	Landowner/ Manager/ Tennant ☐	Construction Contractor ☐	Tribunal Representative ☐
Site Neighbor ☐	Community Member ☐	General Public ☐	Stakeholder ☒
Other ☐ Describe Other:			

1. What is your overall impression of the groundwater remedy? (general sentiment)			
Favorable ☒	Neutral ☐	Unfavorable ☐	Unfamiliar ☐
Why? When I first started working as an Environmental Scientist for CDFW and becoming familiar with this project was in the year 2012. Since then, I have had the opportunity to provide comments and guidance to identify mitigation measures to minimize or avoid impacts to less than significant for listed species and the habitat in which they depend on.			

2. What effects have groundwater remedy had on the surrounding community?			
Favorable	Neutral	Unfavorable	Unfamiliar X
Unfortunately, I have not attended any scoping meetings where the public or members of the community have provided input on their concerns or issues. I promoted to a supervisory position in 2015 and then would assign staff to represent CDFW and participate. Richard Kim and Alexander Funk have been designated CDFW's Environmental Scientist representatives. They have both moved on in their careers and I have started to re-engage.			

3. Are you aware of any unresolved community concerns regarding the groundwater remedy or its operation and administration?

Yes ☒ No ☐

If so, please give details.

The only thing that comes to mind is regarding a mesquite tree that potentially may be contaminated because the roots may have come in contact with the layer of soil that contains an unknown layer of white powder. Some are requesting to remove the tree and others want the tree to remain in place.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?

Yes ☐ No X

If so, please give details.

5. Do you feel well informed about the groundwater remedy activities and progress?

Yes ☒ No ☐

If no, then how might communications be improved?

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

If so, please give details.

I feel very well informed with meeting dates, updates, links to information, very well organized, very good job with task of converting documents to ADA compliant. Lead agency does an excellent job and goes above and beyond to accommodate the requests and needs of everyone and all participants.

7. <u>State and Local Government Interviewees Only</u>: Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

Yes X No ☐

If so, please give details of the events and results of the responses.

Only general requests to conduct work outside of the general work area. They may not be considered incidents or apply here but the requests require a review and response from our office to approve work to be done outside of the general work area.

8. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: Is there any groundwater remedy construction planned or on-going that may be, or is currently, impacted by the site.

Yes ☐ No ☐

If so, please describe the status of construction (budget and schedule) below.

9. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems been encountered which required, or will require, changes to the groundwater remedy? Yes ☐ No ☐
10. <u>Tennant, Owner, or Site Neighbor Interviewees Only</u>: If the answer to question 8 was yes, have any problems or difficulties been encountered which have impacted construction progress or implementability of the groundwater remedy? Yes ☐ No ☐
If so, please describe
11. <u>Other:</u> Include questions, comments, information on any topic related to the Sites not previously addressed. **None**

Interview Team:			Date:
Name	Title	Organization	

Appendix C

Five-Year Review Presentation

BB&E
CONSULTING ENGINEERS
& PROFESSIONALS

First Five-Year Review on Groundwater Remedy

PG&E Topock Compressor Station Remediation Project
San Bernardino County, California

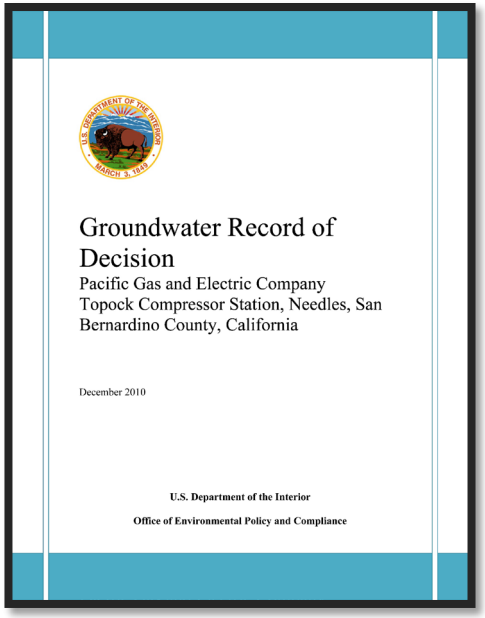
Presented by:
Katrice Depew & Brent Jacobs, BB&E, Inc.
9 May 2023

Introduction

- DOI, in cooperation with DTSC, is beginning a Five-Year Review (FYR) process under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).
- The FYR will review the groundwater remedy implemented at the PG&E Topock Compressor Station.
- Construction of the selected remedy began in October of 2018, triggering the start of the FYR period.
- This is the first FYR of the groundwater remedy.

Selected Remedy

The December 2010 Record of Decision (ROD) identified the selected remedy for Solid Waste Management Unit (SWMU) 1/Area of Concern (AOC) 1 and AOC 10 as in-situ treatment with fresh water flushing for the treatment of hexavalent chromium in groundwater.



Selected Remedy

The selected remedy includes:

- Construction of an In-Situ Reactive Zone ("IRZ") along National Trails Highway using a line of wells that may be used as both injection and extraction wells to circulate groundwater and distribute an organic carbon source to promote bacteriological reduction of the hexavalent chromium to trivalent chromium.

- Flushing accomplished through a combination of potable water injection and injection of carbon amended water in wells upgradient of the plume.

- Extraction wells near the Colorado River to provide hydraulic capture of the plume, accelerate cleanup of the floodplain, and enhance the flow of contaminated groundwater through the IRZ line.

- Bedrock extraction wells in the eastern (downgradient) end of the East Ravine to provide hydraulic capture of contaminated groundwater in bedrock. Extracted water will be conditioned and managed using the same active conditioning system that will be used to condition and manage contaminated groundwater extracted from the Alluvial Aquifer.

- Institutional controls to restrict surface land use and prevent the use of groundwater.

- Monitored natural attenuation as a long-term component to address residual hexavalent chromium that may remain in recalcitrant portions of the aquifer after in-situ treatment.

FYR Purpose

- A FYR determines if the selected remedy is/remains protective of human health and the environment.
- If issues affecting protectiveness are found during the FYR, recommendations are made to address these issues.
- A FYR evaluates 3 major questions:
  - **Are the exposure levels and remedial action objectives used at the time of the remedy selection still valid?**
  - **Is the remedy functioning/being constructed as intended?**
  - **Has any other information surfaced that could affect the protectiveness of the remedy?**

FYR Process

There are 6 components to performing a FYR:

1. Community Involvement & Notification

   - The DOI will notify potentially interested parties of the initiation and completion of the FYR. Notifications and the completed FYR Report will be available to the public at the Site's information repositories.

2. Document Review

   - The DOI will review remedy decision documents, monitoring and maintenance reports, and technical memoranda.

3. Data Review & Analysis

   - The DOI will review sampling and monitoring plans and results from monitoring activities, operations and maintenance reports, or other documentation of remedy performance

FYR Process

There are 6 components to performing a FYR (continued):

4. Site Inspections
   - The DOI will conduct visual confirmation and documentation of the conditions of the remedy, applicable sites, and surrounding areas
5. Site Interviews
   - The DOI will conduct interviews with various stakeholders to obtain additional information about a site's status, and/or identify remedy issues.

Individuals interested in being interviewed must notify Ms. Veronica Dickerson by May 31, 2023.

6. Protectiveness Determinations
   - The DOI will evaluate information gathered during the Document Review, Data Review & Analysis, Site Inspections, Site Interviews, as well as climate change data to determine if the remedy is protective of human health and the environment.

FYR Schedule

- Public Notice: May 1, 2023
- Request for Interview Period: May 1 - 31, 2023

Individuals interested in being interviewed must notify Ms. Veronica Dickerson by May 31, 2023.

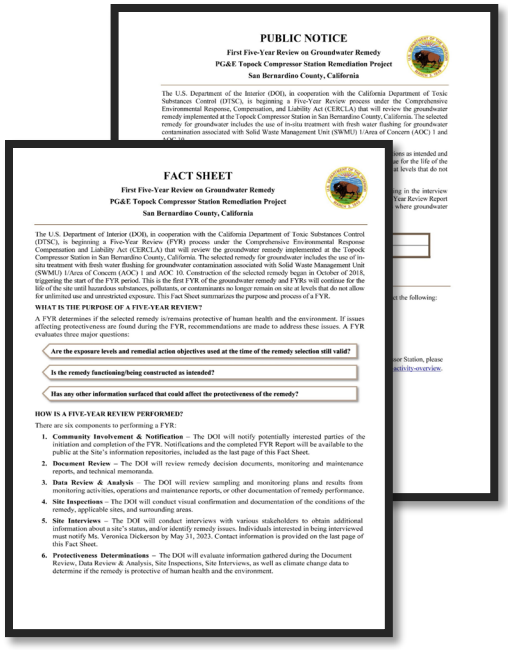
U.S. Department of the Interior
OEPC/ECCD Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

- Interview Period: June 1 – July 31, 2023
- FYR Report Completion: December 31, 2023

Additional Information

Additional information on the FYR & groundwater remedy can be found:

- Public Notice
- Fact Sheet
- Document Library
  PG&E remediation website:
  https://topockremediation.pge.com/documents
  - Final Groundwater CMS/FS for SWMU 1/AOC 1 and AOC 10 dated December 16, 2009
  - Groundwater Record of Decision dated December 2010
  - Final Environmental Impact Report (EIR) dated January 2011
  - Final EIR Addendum No.1 dated 2013
  - Final Subsequent EIR for the Groundwater Remedy dated April 24, 2018
  - Basis of Design Report/ Final (100%) Design Submittal and Construction/Remedial Action Work Plan for the Final Groundwater Remedy 100% Design dated November 18, 2015 & Addendums



PUBLIC NOTICE

First Five-Year Review on Groundwater Remedy
PG&E Topock Compressor Station Remediation Project
San Bernardino County, California

The U.S. Department of the Interior (DOI), in cooperation with the California Department of Toxic Substances Control (DTSC), is beginning a Five-Year Review process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that will review the groundwater remedy implemented at the Topock Compressor Station in San Bernardino County, California. The selected remedy for groundwater includes the use of in-situ treatment with fresh water flushing for groundwater contamination associated with Solid Waste Management Unit (SWMU) 1/Area of Concern (AOC) 1 and

FACT SHEET

First Five-Year Review on Groundwater Remedy
PG&E Topock Compressor Station Remediation Project
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WHAT IS THE PURPOSE OF A FIVE-YEAR REVIEW?

A FYR determines if the selected remedy is/remains protective of human health and the environment. If issues affecting protectiveness are found during the FYR, recommendations are made to address these issues. A FYR evaluates three major questions:

- Are the exposure levels and remedial action objectives used at the time of the remedy selection still valid?
- Is the remedy functioning/being constructed as intended?
- Has any other information surfaced that could affect the protectiveness of the remedy?

HOW IS A FIVE-YEAR REVIEW PERFORMED?

There are six components to performing a FYR:

1. **Community Involvement & Notification** – The DOI will notify potentially interested parties of the initiation and completion of the FYR. Notifications and the completed FYR Report will be available to the public at the Site's information repositories, included as the last page of this Fact Sheet.
2. **Document Review** – The DOI will review remedy decision documents, monitoring and maintenance reports, and technical memoranda.
3. **Data Review & Analysis** – The DOI will review sampling and monitoring plans and results from monitoring activities, operations and maintenance reports, or other documentation of remedy performance.
4. **Site Inspections** – The DOI will conduct visual confirmation and documentation of the conditions of the remedy, applicable sites, and surrounding areas.
5. **Site Interviews** – The DOI will conduct interviews with various stakeholders to obtain additional information about a site's status, and/or identify remedy issues. Individuals interested in being interviewed must notify Ms. Veronica Dickerson by May 31, 2023. Contact information is provided on the last page of this Fact Sheet.
6. **Protectiveness Determinations** – The DOI will evaluate information gathered during the Document Review, Data Review & Analysis, Site Inspections, Site Interviews, as well as climate change data to determine if the remedy is protective of human health and the environment.

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The purpose of the Five-Year Review is to ensure that the implemented remedy functions as intended and is protective of human health and the environment. Five-Year Reviews will continue for the life of the site until hazardous substances, pollutants, or contaminants no longer remain on site at levels that do not allow for unlimited use and unrestricted exposure.

Public participation is encouraged and welcomed. If you are interested in participating in the interview process, **please notify the contact personnel listed below by May 31, 2023**. The Five-Year Review Report is scheduled for completion in December 2023 and will focus on the following sites where groundwater remedial actions have been implemented:

Site Identification and Name:	***Managed by:***
SWMU 1/AOC 1 and AOC 10	DOI

FOR MORE INFORMATION

If you have any questions, or wish to participate in the interview process, please contact the following:

U.S. Department of the Interior
OEPC/ECCD Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

For more information on groundwater remedy implementation at the Topock Compressor Station, please visit the PG&E remediation website: https://topockremediation.pge.com/groundwater-activity-overview.

FACT SHEET

First Five-Year Review on Groundwater Remedy

PG&E Topock Compressor Station Remediation Project

San Bernardino County, California

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SITE HISTORY

The PG&E Topock Compressor Station is located adjacent to the Colorado River in eastern San Bernardino County, about 12 miles southeast of Needles, California. The Station plays a vital role in moving natural gas into California to serve millions of business and residential customers.

To prevent corrosion of cooling tower equipment and to assist in the control of algae, fungi, and/or bacteria, additives containing chromium were historically used in cooling tower process water. The existing chromium contamination in groundwater near the Station is attributable to past discharges of wastewater from Station operations into the Former Percolation Bed in Bat Cave Wash, designated as Solid Waste Management Unit (SWMU) 1 and the area around the Former Percolation Bed, designated as Area of Concern (AOC) 1, and within the East Ravine, designated as AOC 10.

SELECTED REMEDY

In December 2010, the DOI issued a Record of Decision (ROD) identifying the selected remedy for SWMU 1/AOC 1 and AOC 10 as in-situ treatment with fresh water flushing for the treatment of hexavalent chromium in groundwater.

The selected remedy includes:	Construction of an In-Situ Reactive Zone ("IRZ") along National Trails Highway using a line of wells that may be used as both injection and extraction wells to circulate groundwater and distribute an organic carbon source to promote bacteriological reduction of the hexavalent chromium to trivalent chromium.
	Flushing accomplished through a combination of potable water injection and injection of carbon amended water in wells upgradient of the plume.
	Extraction wells near the Colorado River to provide hydraulic capture of the plume, accelerate cleanup of the floodplain, and enhance the flow of contaminated groundwater through the IRZ line.
	Bedrock extraction wells in the eastern (downgradient) end of the East Ravine to provide hydraulic capture of contaminated groundwater in bedrock. Extracted water will be conditioned and managed using the same active conditioning system that will be used to condition and manage contaminated groundwater extracted from the Alluvial Aquifer.
	Institutional controls to restrict surface land use and prevent the use of groundwater.
	Monitored natural attenuation as a long-term component to address residual hexavalent chromium that may remain in recalcitrant portions of the aquifer after in-situ treatment.

REMEDY IMPLEMENTATION

Design and implementation of the selected remedy for groundwater includes design and construction of the remedy, followed by operations, maintenance, and monitoring to assure the remedy is performing as designed.

Design: DOI conditionally approved the Final (100%) Design for the groundwater remedy on April 3, 2018 and DTSC conditionally approved it on April 24, 2018.

Construction: Construction and startup of the groundwater remedy is proceeding in phases:

Phase 1

Construction initiation began on October 2, 2018. Phase 1 included construction of NTH IRZ and supporting components, monitoring wells, and riverbank wells. On December 22, 2021, startup began for Phase 1 including startup of NTH IRZ system operation, maintenance, and monitoring.

Phase 2A

Construction began in March 2022 and is currently ongoing. Phase 2A includes construction of the TCS recirculation loop, freshwater injection well FW-2 and associated arsenic monitoring wells and pipelines.

Phase 2B

Will include construction of the inner recirculation loop, freshwater injection well FW-1 and monitoring wells in the uplands, Arizona facilities to convey water from freshwater supply well (HNWR-1A) in Arizona to California, and remaining TCS facilities and pipelines.

Additional information on the groundwater remedy can be found in the December 2009 CMS/FS; the January 31, 2011 Final Groundwater EIR; the 2013 EIR Addendum; the 100% Design and addendums; and the 2018 Final Subsequent EIR for the groundwater remedy, which can all be found in the Document Library on the PG&E remediation website: https://topockremediation.pge.com/documents

COMMUNITY NOTIFICATION

Notification of the initiation and completion of the FYR will be published in the following locations:

Daily News	Mojave, CA
Sun	San Bernardino, CA
Sun	Yuma, AZ
Today's News-Herald	Lake Havasu City, AZ
Desert Star	Needles, CA
Pioneer	Parker, AZ
PG&E Remediation Website	https://topockremediation.pge.com/documents

INFORMATION REPOSITORY

Notifications & the completed FYR Report will be available to the public at the following information repositories:

California Department of Toxic Substances Control (DTSC)	5796 Corporate Ave, Cypress, CA 90630 Contact: Julie Johnson (714) 484-5337, Jone Barrio (714) 484-5336
Chemehuevi Indian Reservation	1990 Palo Verde Drive, Havasu Lake, California 92363 Contact: (760) 858-4219
Colorado River Indian Tribes Library	26600 Mohave Road, Parker, AZ 85344 Contact: (928) 669-1332
Golden Shores Community	13136 S. Golden Shores Parkway, Topock, AZ 86436 Contact: (928) 768-2235
Lake Havasu City Library	1770 North McCulloch Blvd, Lake Havasu City, AZ 86403 Contact: (928) 453-0718
Needles Branch Library	1111 Bailey Ave, Needles, CA 92362 Contact: (760) 326-9255
Parker Public Library	1001 Navajo Ave, Parker, AZ 85344 Contact: (928) 669-2622
PG&E Remediation Website	https://topockremediation.pge.com/documents

U.S. Department of the Interior
OEPC/ECCD Topock Program Manager
ATTN: Ms. Veronica Dickerson
Phone: (440) 665-0915
Email: veronica_dickerson@ios.doi.gov

Appendix D

Site Visits Photo Logs

Five-Year Review Site Inspection May 10-11, 2023

Photo 1: Carbon Amendment Building at MW-20 Bench.

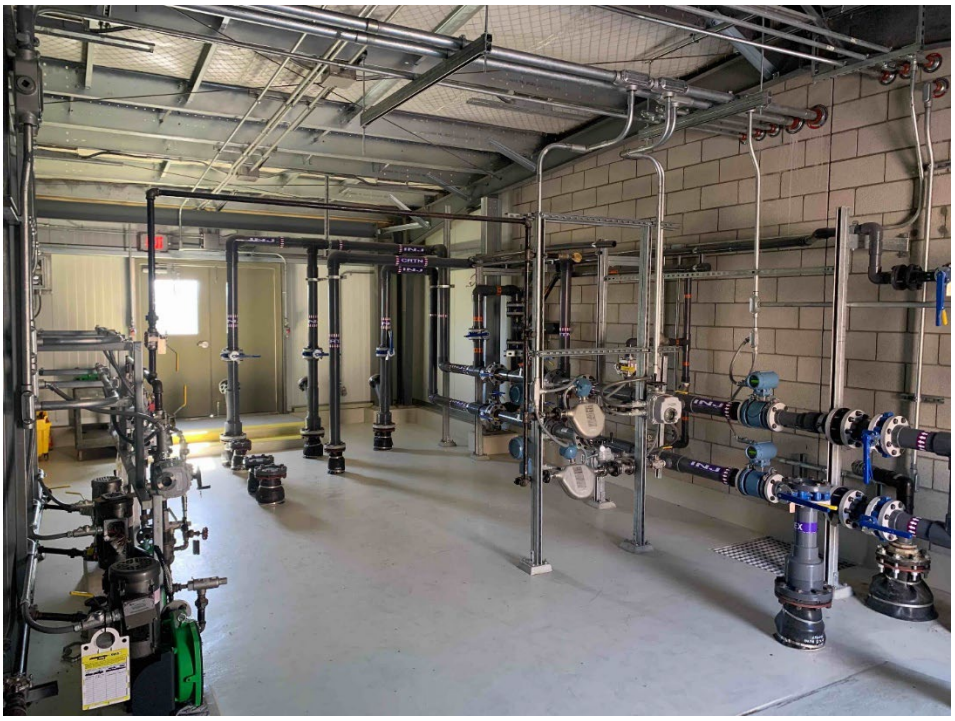

Photo 2: Carbon Amendment Room in Carbon Amendment Building.

Photo 3: Well Maintenance Room in Carbon Amendment Building.

Photo 4: In-Situ Reactive Zone (IRZ) Monitoring Technology at the Operations Room in Carbon Amendment Building.

Photo 5: Location of Water Conditioning System at Topock Compressor Station (TCS) Tank Farm.

Photo 6: Location of Water Conditioning System at TCS Tank Farm.

Photo 7: Location of Water Conditioning System at TCS Tank Farm.

Photo 8: Location of Water Conditioning System at TCS Tank Farm.

Photo 9: View of Interim Measures (IM) No. 3.

Photo 10: View of IM No. 3.

Photo 11: View of IM No. 3.

Photo 12: View of IM No. 3.

Photo 13: View of IM No. 3.

Photo 14: View of IM No. 3.

Photo 15: East Ravine Area of Concern (AOC) 10 facing the Colorado River to the East.

Photo 16: Western End of East Ravine Excavation facing TCS to the North.

Photo 17: East Ravine AOC 10-4.

Photo 18: Mesquite Tree in East Ravine AOC 10-4.

Photo 19: Bat Cave Wash facing to the South.

Photo 20: Construction Activities for Pipeline I-2 in Bat Cave Wash.

Photo 21: Construction Activities for Pipeline I-2 in Bat Cave Wash.

Photo 22: End of Bat Cave Wash facing north towards I-40.

Photo 23: Road to MW-24 Bench, Showing Area that was Washed Out during March 2023 Storm Event.

Photo 24: Groundwater Sampling being Conducted at Freshwater Injection Well FW-02B, Installed during Phase 2A Construction.

Photo 25: Location of ER-01.

Photo 26: Location or ER-02.

Photo 27: Well Development being Conducted at ER-03 during Phase 2A Construction.

Photo 28: Well Development being Conducted at ER-04 during Phase 2A Construction.

Photo 29: Location of Injection Well TCS-2, as part of TCS Recirculation Loop.

Photo 30: Well Rehabilitation being Conducted at IRZ-27.

Photo 1: Original Location of Soil Processing Yard (SPY) Trailer Headquarters, Moved per Work Variance Request #3.

Photo 2: In Situ Reactive Zone (IRZ) Well Vaults near MW-20 Bench.

Photo 3: Location of Future Office Trailer on Transwestern Bench.

Photo 4: Location of Future Office Trailer on Transwestern Bench.

Photo 5: View of Vegetation Restoration Area.

Photo 6: View of Vegetation Restoration Area.

Photo 7: View of Vegetation Restoration Area.

Photo 8: View of Vegetation Restoration Area.

Photo 9: Backfill and Compaction at East Ravine Area of Concern (AOC) 10-2.

Photo 10: Backfill and compaction at East Ravine AOC 10-2.

Photo 11: Backfill and Compaction at East Ravine AOC 10-2.

Photo 12: View of Soil Processing Yard (SPY).

Photo 13: View of SPY.

Photo 14: View of SPY.

Photo 15: View of Evaporation Ponds on BLM-Managed Property.

Photo 16: Signage Restricting Off Highway Vehicle (OHV) traffic on BLM-Managed Property.

Photo 17: Signage Restricting OHV traffic on BLM-Managed Property.

Photo 1: “Topock Remediation Project” and “Attention ATV and Other OHV Users” Informational Signs Observed on BLM-Managed Property near intersection of Park Moabi Road and National Trails Highway.

Photo 2: Sign Posting Observed for Off-Highway Vehicle (OHV) Restrictions on BLM-Managed Property along IM No. 3 Road.

Photo 3: Location of Evaporation Ponds on BLM-Managed Property.

Photo 4: "Keep Out" Sign and Locked Gate Observed at Evaporation Ponds on BLM-Managed Property.

Photo 5: Fenced-in Vegetation Restoration Area Observed on BLM-Managed Property.

Photo 6: Barricades and Signage Limiting Access to Construction Zone
in the Floodplain in BLM-Managed Property.

Photo 7: "No Trespassing" Sign Observed on Havasu National Wildlife Refuge (HNWR) Land on Road Entering Quarry.

Photo 8: "Archaeological Site in this Area" Sign Observed Demarcating Maze in HNWR.

Photo 9: Location of Interim Measures (IM) No. 3 on
Fort Mojave Indian Tribe (FMIT) property.

Photo 10: Fresh Water Injection Well Area on FMIT Property,
along IM No. 3 Road.

Photo 11: Old Fence Observed Along IM No. 3 Road on FMIT Property.

Photo 12: Fencing, Gates, and Signage Restricting Access to
PG&E Topock Compressor Station (TCS).

Photo 13: Fencing, Gates, and Signage Restricting Access to PG&E TCS.

Photo 14: Groundwater Partners observed repairing Well Vault for IRZ-18.

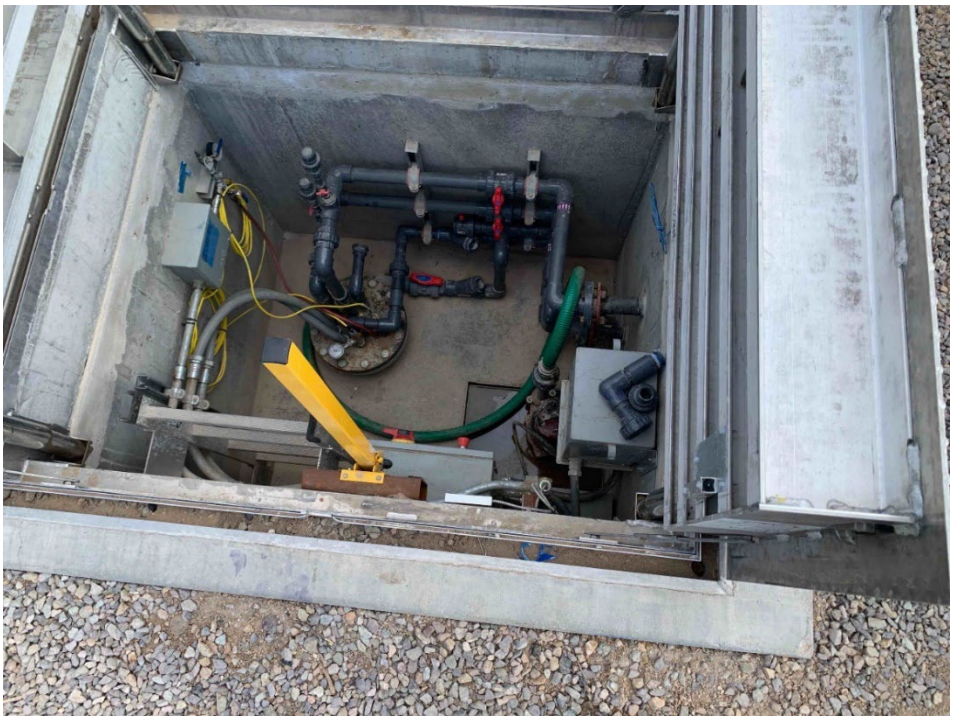

Photo 15: Groundwater Partners Observed Repairing Control Vault for IRZ-18.

Photo 16: Location of IRZ-23. IRZ System is Shutdown During Mechanical Work at Carbon Amendment Building on MW-20 Bench.

Photo 17: Location of ER-1 and ER-2.

Photo 18: Location of ER-3 and ER-4.

Photo 19: Location of Area of Concern (AOC) 10-1 in East Ravine looking to the East.

Photo 20: AOC 10-2 in East Ravine looking to the East.

Photo 21: Equipment in East Ravine area being Properly Stored on Plastic Sheeting when Not in Use.

Photo 22: View of Bat Cave Wash looking North towards I-40.

Photo 23: PG&E and Arcadis Leading Site Walk for
Proposed Floodplain Extraction Well PTI-1D.

Photo 24: Location of HHW 14E/I, where PTI-1D will Connect into IRZ System.

Photo 25: Location of Laydown Yard.

Photo 26: Trucks and Equipment Properly Stored on Plastic Sheeting in Laydown Yard when Not in Use.

Photo 27: Observed Groundwater Partners Soil Screening AOC 1-3 Pile at Soil Processing Yard (SPY).

Photo 28: SPY Soil Piles Noted to Be Well Organized, Separated, and Well-Marked.

Photo 29: Observed Clay being Separated into Stockpile at SPY.

Appendix E

Site Inspection Checklist

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: PG&E Topock Compressor Station
Date of Inspection: August 9-10, 2023
Location and Region: Needles, CA, Region 9
EPA ID: CAT080011729
Agency, office, or company leading the Five-Year Review: DOI in conjunction with BB&E, Inc.
Weather and temperature: 107 degrees Fahrenheit, sunny.
Remedy Includes: Institutional controls, access controls, in-situ treatment

II. INTERVIEWS

Multiple interviews were conducted as part of this five-year review. Details provided on completed interview questionaries.

III. ACCESS AND INSTITUTIONAL CONTROLS

Area: BOR (Managed by BLM and USFWS) Impacted Parcels

A. Fencing: Generally, areas not fenced with exception of vegetation restoration areas, which were fenced and locked. Several gates in place to limit OHV traffic in sensitive areas. Evaporation ponds have a fence and locked gate. Gates secured.

B. Other Access Restrictions: Signage for OHV restricted areas observed. Signs appear in new condition. “Topock Remediation Project” and “Attention ATV and Other OHV Users” informational signs observed at intersection of Park Moabi Road and National Trails Highway.

C. Institutional Controls (ICs)

   a. Implementation and Enforcement
      i. Site conditions imply ICs properly implemented: Not Applicable
      ii. Site conditions imply ICs being fully enforced: Not Applicable
      iii. Type of monitoring: Not Applicable
      iv. Frequency: Not Applicable
      v. Responsible party/agency: Not Applicable
      vi. Contact: Not Applicable
      vii. Reporting is up to date: Not Applicable
      viii. Reports are verified by the lead agency: Not Applicable
      ix. Specific requirements in deed or decision document have been met: Yes
      x. Violations have been reported: No known violations have been reported.
   b. Adequacy: ICs in the form of a restrictive covenant are not implemented for federally administered parcels. ICs are to be specified in the BLM Resource Management Plan (BLM, 2007). No new groundwater wells for purposes other than site investigation and remediation activities as directed by DTSC and DOI were observed.

D. General

   a. Vandalism and trespassing: No vandalism evident.
   b. Land use changes on site: None observed.

c. Land use changes off site: None observed.

Area: Havasu National Wildlife Refuge (Managed by USFWS)

A. Fencing: No fencing observed.

B. Other Access Restrictions: Only signs observed were "no trespassing" sign along road to quarry and "archaeological site in this area" demarcating Maze in HNWR.

C. Institutional Controls (ICs)

a. Implementation and Enforcement
   i. Site conditions imply ICs properly implemented: Not Applicable
   ii. Site conditions imply ICs being fully enforced: Not Applicable
   iii. Type of monitoring: Not Applicable
   iv. Frequency: Not Applicable
   v. Responsible party/agency: Not Applicable
   vi. Contact: Not Applicable
   vii. Reporting is up to date: Not Applicable
   viii. Reports are verified by the lead agency: Not Applicable
   ix. Specific requirements in deed or decision document have been met: Yes
   x. Violations have been reported: No known violations have been reported.

b. Adequacy: ICs in the form of a restrictive covenant are not implemented for federally administered parcels. ICs are to be specified in the Comprehensive Management Plan (USFWS, 1994). No new groundwater wells for purposes other than site investigation and remediation activities as directed by DTSC and DOI were observed.

D. General

a. Vandalism and trespassing: No vandalism evident.
b. Land use changes on site: None observed.
c. Land use changes off site: None observed.

Area: FMIT Impacted Parcels

A. Fencing: Old fencing observed along IM No. 3 roadway in one area. IM No. 3 facility is fenced off. No other fencing observed.

B. Other Access Restrictions: Signage observed on gate restricting access to IM No. 3 facility. No other signage observed. No access restrictions observed.

C. Institutional Controls (ICs)

a. Implementation and Enforcement
   i. Site conditions imply ICs properly implemented: No
   ii. Site conditions imply ICs being fully enforced: No
   iii. Type of monitoring: Monitoring does not appear to be being conducted.
   iv. Frequency: Monitoring does not appear to be being conducted.
   v. Responsible party/agency: PG&E

vi. Contact: Not available.
vii. Reporting is up to date: No
viii. Reports are verified by the lead agency: No
ix. Specific requirements in deed or decision document have been met: No
x. Violations have been reported: No known violations have been reported.

b. Adequacy: A formal IC process/policy for FMIT parcel 650-151-06 could not be found. PG&E retains easement of this property until remedy completion. FMIT unavailable for interview. No new groundwater wells for purposes other than site investigation and remediation activities as directed by DTSC and DOI were observed.

D. General

a. Vandalism and trespassing: No vandalism evident.
b. Land use changes on site: None observed.
c. Land use changes off site: None observed.

Area: BNSF Rail Impacted Parcels

A. Fencing: Fencing observed in good condition near railroad along National Trails Highway.

B. Other Access Restrictions: No signage observed.

C. Institutional Controls (ICs)

a. Implementation and Enforcement
i. Site conditions imply ICs properly implemented: See note on adequacy.
ii. Site conditions imply ICs being fully enforced: See note on adequacy.
iii. Type of monitoring: Monitoring does not appear to be being conducted.
iv. Frequency: Monitoring does not appear to be being conducted.
v. Responsible party/agency: BNSF
vi. Contact: Not available.
vii. Reporting is up to date: Not available.
viii. Reports are verified by the lead agency: Not available.
ix. Specific requirements in deed or decision document have been met: See note on adequacy.
x. Violations have been reported: No known violations have been reported.

b. Adequacy: According to site personnel, PG&E leases BNSF property in order to operate their installed remedy infrastructure. This land lease restricts PG&E from installing anything additional on the property. If PG&E wishes to install additional remedy infrastructure, they must apply for an additional land lease or lease amendment with BNSF.

D. General

a. Vandalism and trespassing: No vandalism evident.
b. Land use changes on site: None observed. No new groundwater wells for purposes other than site investigation and remediation activities as directed by DTSC and DOI were observed.
c. Land use changes off site: None observed.

Area: PG&E Impacted Parcels

A. Fencing: Gates secured. Fencing in good condition.

B. Other Access Restrictions: Signage observed. Limited access to property through gate. Entrance monitored by attendant. Security guard observed near TCS on Transwestsern Bench.

C. Institutional Controls (ICs)

   a. Implementation and Enforcement
      i. Site conditions imply ICs properly implemented: Yes
      ii. Site conditions imply ICs being fully enforced: Yes
      iii. Type of monitoring: Self-reporting
      iv. Frequency: Annual Certificate of Compliance
      v. Responsible party/agency: PG&E submits to DTSC
      vi. Contact: DTSC, Aaron Yue, Project Manager, (714) 484-5439
      vii. Reporting is up to date: Yes
      viii. Reports are verified by the lead agency: Yes
      ix. Specific requirements in deed or decision document have been met: Yes
      x. Violations have been reported: No known violations have been reported.
   b. Adequacy: ICs are adequate. No new groundwater wells for purposes other than site investigation and remediation activities as directed by DTSC and DOI were observed.

D. General

   a. Vandalism and trespassing: No vandalism evident.
   b. Land use changes on site: None observed.
   c. Land use changes off site: None observed.

IV. GENERAL SITE CONDITIONS

A. Roads: Roads adequate. Roads appeared to be maintained.

B. Other Site Conditions: The Topock Site is generally open with easy public access. The Site is along a major highway as well as historic Route 66. The TCS and active construction sites have fencing that limit access, however, most other areas are open to the public.

V. GROUNDWATER REMEDIES

A. Monitoring Data

   a. Monitoring data: Is routinely submitted on time and is of acceptable quality.
   b. Monitoring data suggests: Contaminant concentrations are declining.

B. Groundwater Extraction Wells, Pumps, Pipelines

   a. Pumps, wellhead plumbing, and electrical: Good condition. Electrical components in a number of IRZ wells along NTH were moved to aboveground locations to avoid future damage caused by storm event flooding.

b. Extraction system pipelines, valves, valve boxes, and other appurtenances: Good condition.
c. Spare parts and equipment: Unknown.

C. Surface Water Collection Structures, Pumps, and Pipelines: Not Applicable

D. Treatment System

a. Additive: Ethanol
b. Electrical enclosures and panels: Good condition. Updates made to IRZ following electrical damage caused during March 2023 storm event flooding.
c. Tanks, vaults, storage vessels: Good condition.
d. Discharge structures and appurtenances: Not Applicable
e. Treatment buildings: Good condition, chemicals and equipment properly stored.
f. Monitoring wells: Properly secured and locked, functioning, routinely samples, good condition.

E. Monitored Natural Attenuation: Not Applicable

VI. OVERALL OBSERVATIONS

A. Implementation of the Remedy: Function of Remedy defined in ROD, Final BOD, and described in detail in Five-Year Review Report. Construction of the Remedy is ongoing. Construction areas were well marked with fencing and signage.

B. Adequacy of O&M: See **Section 2.5** and **Section 4.2** of the Five-Year Review Report.

C. Early Indicators of Potential Remedy Problems: See **Section 6** of the Five-Year Review Report.

D. Opportunities for Optimization: See **Section 6** of the Five-Year Review Report.

Appendix F

Supporting Information

Appendix F-1

Tables

Table 2 Applicable or Relevant and Appropriate Requirements (ARARs)

Source: Department of the Interior, 2010. *Groundwater Record of Decision Pacific Gas and Electric Company Topock Compressor Station, Needles, San Bernardino County, California*. December.

Table 2. Applicable or Relevant and Appropriate Requirements (ARARs) and other factors To Be Considered (TBCs)

Appendix A - Corrective Measures Study/Feasibility Study Report for Chromium in Groundwater, PG&E Topock Compressor Station, Needles, California

Note: Only substantive requirements of the statutes and regulations listed here must be attained for on-site remedial actions. Compliance with administrative, procedural, and permitting requirements of these statutes and regulations is not required for on-site actions.

FEDERAL REQUIREMENTS			
	ARAR or TBC and Citation	**Determination**	**Description and Applicability**
CHEMICAL-SPECIFIC			
1.	Federal Safe Drinking Water Act • 42 USC § 300f, *et seq.* • 40 CFR 141 -- Subpart F– Maximum Contaminant Level Goals (MCLGs)	ARAR Relevant and Appropriate	MCLGs are not federally enforceable drinking water standards, but CERCLA § 121(d) identifies MCLGs as relevant and appropriate requirements.
2.	Federal Safe Drinking Water Act • 42 USC § 300g-1 • 40 CFR 141 -- Subpart G – National Primary Drinking Water Regulations (MCLs)	ARAR Relevant and Appropriate	These MCLs are relevant and appropriate standards, which establish the maximum permissible level of contaminants (eg. Chromium) in sources (or potential sources) of drinking water. MCLs may be applicable where water at a CERCLA site is delivered through a public water supply system.

3.	Federal Water Pollution Control Act (CWA) • 33 USC §§ 1251-1387 • 40 CFR 131.38	ARAR Applicable	These are federally promulgated Water Quality Standards for surface waters. Such water quality standards include specific criteria for water bodies in California, including standards for Hexavalent Chromium.
4.	Occupational Safety and Health Act • 29 USC § 651, *et seq.* • 29 CFR 1910.1026	TBC	This Act provides standards for workers engaged in field activities associated with remedial actions under the NCP, including occupational exposure to Hexavalent Chromium. Pursuant to the NCP preamble, OSHA standards are not ARARs but may be included as TBCs.
LOCATION-SPECIFIC			
5.	Federal Land Policy and Management Act (FLPMA) • 43 USC § 1701, *et seq.* • 43 CFR 2800	ARAR Applicable	In managing public lands, BLM is directed to take any action necessary to prevent unnecessary or undue degradation of the lands. Actions taken on the public land (i.e. BLM-managed land) portions of the Topock site should provide the "optimal balance between authorized resource use and the protection and long-term sustainability of sensitive resources."
6.	U.S. Department of Interior, Bureau of Land Management, *Approved Resource Management Plan and Final Environmental Impact Statement*, May 2007	TBC	The Resource Management Plan provides further direction on how FLPMA requirements will be satisfied.
7.	National Wildlife Refuge System Administration Act, as amended • 16 USC §§ 668dd-ee • 50 CFR Part 27	ARAR Applicable	This Act governs the use and management of National Wildlife Refuges. The Act requires that FWS evaluate ongoing and proposed activities and uses to ensure that such activities are appropriate and compatible with both the mission of the overall National Wildlife Refuge System, as well as the specific purposes for which the Havasu National Wildlife Refuge was established. The Topock site includes portions of the Havasu National Wildlife Refuge. Prior to selection of a remedial action by DOI/FWS, that remedial action must be found by the Refuge Manager to be both an appropriate use of the Refuge and compatible with the mission of the Refuge and the Refuge System as a whole. Any remedial action proposed

			to be implemented on the Refuge that was not selected by DOI/FWS would be subject to the formal appropriate use/compatibility determination process.
8.	Executive Order 8647; 6 FR 593	TBC	This Executive Order establishes the Havasu National Wildlife Refuge and describes the purposes for which it was created.
9.	Appropriate Use Policy • 603 FW 1	TBC	This policy elaborates on the appropriate uses of a National Wildlife Refuge, ensuring that such uses contribute to fulfilling the specific refuge's purposes and the National Refuge System's mission.
10.	Compatibility Policy • 603 FW 2	TBC	This policy specifies the guidelines for determining the compatibility of proposed uses of a National Wildlife Refuge. This determination is done once a proposed use is deemed appropriate (see number 9 above).
11.	Lower Colorado River National Wildlife Refuges, Comprehensive Management Plan (1994-2014)	TBC	The Comprehensive Management Plan provides further direction on how compliance with the National Wildlife Refuge System Administration Act, as amended, shall be achieved.
12.	Fish and Wildlife Conservation Act • 16 USC §§ 2901-2911	TBC	Federal departments and agencies are encouraged to utilize their authority to conserve nongame fish and wildlife and their habitats and assist States in the development of their conservation plans.
13.	Fish and Wildlife Coordination Act • 16 USC §§ 661-667e • 40 CFR 6.302(g)	ARAR Applicable	This Act requires that any federally-funded or authorized modification of a stream or other water body must provide adequate provisions for conservation, maintenance, and management of wildlife resources and their habitat. Necessary measures should be taken to mitigate, prevent, and compensate for project-related losses of wildlife resources. Any remedial action selected for the Topock site that includes any modification of a water body will be subject to these requirements.

14.	National Historic Preservation Act • 16 USC § 470, *et seq.* • 40 CFR 6.301(b) • 36 CFR 800.1, *et seq.*	ARAR Applicable	This statute and the implementing regulations direct federal agencies to consider the effects of their undertakings on historic properties included in or eligible for inclusion in the National Register of Historic Places and to consult with certain parties before moving forward with the undertaking. The agency must determine, based on consultation, if an undertaking's effects would be adverse and consider feasible and prudent alternatives that could avoid, mitigate, or minimize such adverse effects on a National Register or eligible property. The agency must then specify how adverse effects will be avoided or mitigated or acknowledge that such effects cannot be avoided or mitigated. The Topock site includes historic properties in or eligible for inclusion in the National Register and remedial action selected for the Topock site qualifies as an undertaking pursuant to the NHPA. Measures to avoid or mitigate adverse effects of any selected remedial action that are adopted by the agency through consultation must be implemented by the remedial action to comply with the NHPA.
15.	National Register Bulletin 38	TBC	Guidelines for evaluating and documenting traditional cultural properties.
16.	Preservation Brief 36	TBC	Guidelines for planning, treating, and managing historic landscapes.
17.	National Archaeological and Historic Preservation Act • 16 USC § 469, *et seq.* • 36 CFR 65 • 40 CFR 6.301(c)	ARAR Applicable	This statute requires the evaluation and preservation of historical and archaeological data which might otherwise be irreparably lost or destroyed through any alteration of terrain as a result of federal construction projects or a federally-licensed activity. The Topock site includes historical and archaeological data. Any remedial action selected for the Topock site must include measures for the evaluation and preservation of historical and archaeological data that might be lost or destroyed as a result of the remedial action.
18.	Archaeological Resources Protection Act • 16 USC § 470aa-ii, *et seq*. • 43 CFR 7.1, *et seq.*	ARAR Applicable	This statute provides for the protection of archeological resources located on public and tribal lands. The Act establishes criteria which must be met for the land manager's approval of any excavation or removal of archaeological resources if a proposed activity involves soil disturbances. The Topock site includes archaeological resources on public land. Any remedial action selected for the Topock site must satisfy the criteria applicable to excavation or removal of archaeological resources that might be affected as a result of the remedial action.

19.	Historic Sites Act • 16 USC §§ 461-467 • 40 CFR 6.301(a)	ARAR Applicable	Pursuant to this Act, federal agencies are to consider the existence and location of historic sites, buildings, and objects of national significance using information provided by the National Park Service to avoid undesirable impacts upon such landmarks. The Topock site includes areas which are considered historic sites. Undesirable impacts on these sites that might result from any remedial action selected for the Topock site will be evaluated and mitigated to the maximum extent practicable.
20.	Executive Order No. 11593	TBC	This Order directs the Federal Agencies to initiate measures for the protection and enhancement of the cultural environment. These measures include assuring that steps are taken to make records, drawings, and/or maps and have such items deposited in the Library of Congress when, as the result of a Federal action, a property listed on the National Register of Historic Places is to be substantially altered.
21.	Native American Graves Protection and Repatriation Act (NAGPRA) • 25 USC § 3001, *et seq.* • 43 CFR 10.1, *et seq.*	ARAR Applicable	NAGPRA establishes requirements regulating the removal and trafficking of human remains and cultural items, including funerary and sacred objects. The Topock site may contain human remains. If remediation activities result in the discovery of Indian human remains or related objects, NAGPRA requirements must be met.
22.	American Indian Religious Freedom Act • 42 USC § 1996, *et seq.*	ARAR Relevant and Appropriate	The United States must "protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise [their] traditional religions…" Any remedial action selected for the Topock site must satisfy this requirement.
23.	Executive Order No. 13007	TBC	In managing federal lands, the United States "shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and (2) avoid adversely affecting the physical integrity of such sacred sites."
24.	Executive Order No. 13175	TBC	Federal Agencies are to conduct regular and meaningful consultation and collaboration with tribal officials in the development and implementation of Federal policies that have tribal implications.

25.	Executive Order No. 12898	TBC	Federal agencies shall conduct "activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities, because of their race, color, or national origin."
26.	Executive Order No. 13352	TBC	The Department of Interior shall, to the extent permitted by law, "implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation."
27.	Resource Conservation and Recovery Act • 42 USC § 6901, *et.seq.* • 40 CFR 264.18	ARAR Applicable	These regulations promulgated under RCRA establish Seismic and Floodplain considerations which must be followed for treatment, storage, or disposal facilities constructed, operated, or maintained within certain distances of fault lines and floodplains. Portions of the Topock site are located on or near a 100-year floodplain.
28.	Floodplain Management and Wetlands Protection • 40 CFR § 6.302(a) & (b) • 40 CFR 6, Appendix A	ARAR Applicable	Before undertaking an action, agencies are required to perform certain measures in order to avoid the long and short term impacts associated with the destruction of wetlands and the occupancy and modification of floodplains and wetlands. The regulation sets forth requirements as means of carrying out the provisions of Executive Orders 11988 and 11990.
29.	Executive Order 11988 – Floodplain Management	TBC	Executive Order 11988 requires evaluation of the potential effects of actions that take place in a floodplain to avoid, to the extent possible, adverse impacts.
30.	Executive Order 11990 -- Responsibilities of Federal Agencies to Protect Wetlands	TBC	Executive Order 11990 requires that potential impacts to wetlands be considered, and as practical, destruction, loss, or degradation of wetlands be avoided.

ACTION-SPECIFIC			
31.	Federal Safe Drinking Water Act • 42 USC §300f, *et seq.* Part C – Protection of Underground Sources of Drinking Water • 40 CFR 144 -148	ARAR Applicable	These Underground Injection Control Regulations assure that any underground injection performed on-site will not endanger drinking water sources. Substantive requirements include, but are not limited to, regulation of well construction and well operation. These requirements will be applicable if underground injection is proposed as a part of a site remedy.
32.	Federal Water Pollution Control Act (Clean Water Act) • 33 USC § 1344 • 40 CFR 230.10	ARAR Applicable	This section of the Clean Water Act prohibits certain activities with respect to on-site wetlands and waterways. No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed activity which would have less adverse impact to the aquatic ecosystem.
33.	Federal Water Pollution Control Act (Clean Water Act) • 33 U.S.C. § 1342 • 40 CFR 122 • 40 CFR 125	ARAR Applicable	These National Pollutant Discharge Elimination System (NPDES) requirements regulate discharges of pollutants from any point source into waters of the United States.
34.	Federal Water Pollution Control Act (Clean Water Act) • 40 CFR 122.26	ARAR Applicable	These regulations define the necessary requirements with respect to the discharge of storm water under the NPDES program. These regulations will apply if proposed remedial actions result in storm water runoff which comes in contact with any construction activity from the site remediation.
35.	River and Harbor Act of 1899 • 33 USC §§ 401 and 403	ARAR Applicable	This Act prohibits the creation of any obstruction in navigable waters, in addition to banning activities such as depositing refuse, excavating, filling, or in any manner altering the course, condition, or capacity of navigable waters. These requirements will apply if proposed activities at the Topock site have the potential of affecting any navigable waters on the site.

36.	Colorado River Front Work and Levee System Act • 44 Stat. 1010 (1927)	TBC	Any proposed remediation activities shall not interfere with the water operations or related water management activities and responsibilities of the Bureau of Reclamation.
37.	Clean Air Act • 42 USC §§ 7401, *et seq.* National Ambient Air Quality Standards (NAAQS) • 40 CFR 50	TBC	These ambient air quality standards define levels of air quality to protect the public health. NAAQSs are not enforceable in and of themselves, but they may be used as guidance if remediation activities create potential air quality impacts.
38.	Clean Air Act • 42 USC §§ 7401, *et seq.* National Emission Standards for Hazardous Air Pollutants (NESHAP) • 40 CFR 61 • 40 CFR 63	ARAR Applicable	NESHAPs are regulations which establish emissions standards for certain hazardous air pollutants (HAPs) identified in the regulations. NESHAPs will apply if remediation activities on the site produce identified HAP emissions.
39.	Religious Freedom Restoration Act • 42 USC § 2000bb	ARAR Applicable	Pursuant to this Act, the government shall not substantially burden a person's exercise of religion, unless the application of the burden is in furtherance of a compelling government interest, and it is the least restrictive means of furthering that interest. To constitute a "substantial burden" on the exercise of religion, a government action must (1) force individuals to choose between following the tenets of their religion and receiving a governmental benefit or (2) coerce individuals to act contrary to their religious beliefs by the threat of civil or criminal sanctions. If any remedial action selected imposes a substantial burden on a person's exercise of religion, it must be in furtherance of a compelling government interest and be the least restrictive means of achieving that interest.
40.	Endangered Species Act of 1973 • 16 USC §§ 1531-1544	ARAR	The ESA makes it unlawful to remove or "take" threatened and endangered plants and animals and protects their habitats by prohibiting certain activities. Examples of such species in or around the Topock site may include, but are not limited to, southwestern

	• 50 CFR 402	Applicable	willow flycatcher, Mojave Desert tortoise, Yuma clapper rail, Colorado pike minnow, razorback sucker, and bonytail chub. Any remedial action selected for the Topock site will not result in the take of, or adverse impacts to, threatened and endangered species or their habitats, as determined based on consultation with the Fish and Wildlife Service under section 7 of the ESA.

41.	Migratory Bird Treaty Act • 16 USC §§ 703-712	ARAR Applicable	This Act makes it unlawful to "take, capture, kill," or otherwise impact a migratory bird or any nest or egg of a migratory bird. The Havasu National Wildlife Refuge, which is part of the Topock site, was created as a refuge and breeding ground for migratory birds and other wildlife, therefore, there is potential for contact with migratory birds during proposed remediation activities. Any remedial action selected for the Topock site will be designed and implemented so as to not take, capture, kill, or otherwise impact a migratory bird, nest, or egg.
42.	Executive Order 13186: Responsibilities of Federal Agencies To Protect Migratory Birds	TBC	This Order directs executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act, including supporting the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
ARIZONA REQUIREMENTS			
	ARAR or TBC and Citation	**Determination**	**Description and Applicability**
LOCATION-SPECIFIC			

43.	Archeological Discoveries • A.R.S. § 41-841 through 847	ARAR	This Act prohibits any person from knowingly excavating on Arizona State or State agency owned land which is a historic or prehistoric ruin, burial ground, archaeological or paleontological site. These requirements will apply if the selected remedy involves excavation in Arizona.
44.	Historic Preservation • A.R.S. § 41-865	ARAR	This Act restricts any person from disturbing human remains or funerary objects on land owned or controlled by the State. These requirements will apply if the selected remedy involves excavation in Arizona.
ACTION-SPECIFIC			
45.	Arizona Well Standards • A.A.C. R-12-15-850	ARAR	These requirements on the placement of wells will apply if the selected remedy includes placement of wells in Arizona.
46.	Design criteria for treatment units • A.A.C. R18-5-(501-502)	ARAR	These minimum design criteria will apply if the selected remedy includes construction of a groundwater treatment plant.
47.	Requirements for wells, groundwater withdrawal, treatment, and reinjection • A.R.S. §45-454.01	ARAR	This statute exempts new well construction, withdrawal, treatment, and reinjection into a groundwater aquifer as a part of a CERCLA Remedial Action from the requirements of the Arizona Groundwater Code, except that they must comply with the substantive requirements of A.R.S. 45-594, 45-595, 45-596, and 45-600. If groundwater that is withdrawn is not reinjected into the aquifer, the groundwater shall be put to reasonable and beneficial use.

48.	Well construction standards • A.R.S. §45-594 and 595	ARAR	These provisions identify the well construction standards and requirements for new well construction in the State of Arizona. These requirements will apply if the selected remedy involves the construction of wells in Arizona.
49.	Notice of intention to drill • A.R.S. §45-596	ARAR	Substantive requirements will apply if the selected remedy involves the construction of wells in Arizona.
50.	Report by driller • A.R.S. §45-600	ARAR	Substantive requirements will apply if the selected remedy involves the construction of wells in Arizona.
51.	Arizona Remedial Action Requirements • A.R.S. §49-282.06(A)(2)	ARAR	Any treatment of groundwater must be conducted in a manner to provide for the maximum beneficial use of the waters of the state.

CALIFORNIA REQUIREMENTS			
	ARAR or TBC and Citation	**Determination**	**Description and Applicability**
CHEMICAL-SPECIFIC			
52.	California Safe Drinking Water Act • Title 22, CCR, Div 4, Ch 15, §64431, §64444	ARAR Applicable	Maximum Contaminant Levels (MCLs) which shall not be exceeded in the water supplied to the public. California state MCLs for drinking water standards are more stringent than primary federal standards.
53.	Secondary MCLs list for drinking water • Title 22, CCR, Div 4, Ch 15, §64449	ARAR Relevant and Appropriate	State secondary MCLs for drinking water standards are more stringent than federal standards. These secondary MCLs are relevant and appropriate standards, which establish the maximum permissible level of contaminants in sources (or potential sources) of drinking water. These secondary MCLs would be applicable if water at the site was used as drinking water and delivered through a community water supply system.
54.	Characteristics of Hazardous Waste • Title 22, CCR, Div 4.5, Ch 11, Article 3, §66261.20- §66261.24	TBC	These criteria do not establish substantive requirements, but instead describe the analysis by which waste is determined to be hazardous. These regulations outline Toxicity Characteristic Leaching Procedure (TCLP) regulatory levels, persistent and bioaccumulative toxic substances total threshold limit concentrations (TTLC), and soluble threshold limit concentration (STLC).
55.	Groundwater and vadose zone protection standards • Title 22, CCR, Div 4.5, Ch 15, Article 6,	ARAR Applicable	RCRA hazardous waste Interim Status TSD facilities shall comply and ensure that hazardous constituents entering the groundwater, surface water, and soil from a regulated unit do not exceed the concentration limit from contaminants of concern in the uppermost aquifer underlying the waste management area beyond the point of

	§66265.94		compliance.
56.	State Water Quality Control Policy Porter-Cologne Water Quality Control Act (California Water Code Sections 13140, *et seq.*)	TBC	
57.	Regional Water Quality Control Plan Objectives Porter-Cologne Water Quality Control Act (California Water Code Sections 13240, 13241)	TBC	
58.	Regional Water Quality Control Plan Implementation Porter-Cologne Water Quality Control Act (California Water Code Sections 13242)	TBC	
59.	*Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities* DTSC Human and Ecological Risk Division July 1996	TBC	
60.	*Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities* DTSC Human and Ecological Risk Division July 1992	TBC	
61.	*Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual – Interim Final (EPA/540/1-89/002)* United States Environmental Protection Agency December 1989	TBC	

62.	*Selecting Inorganic Constituents As Chemicals Of Potential Concern At Risk Assessments At Hazardous Waste Sites And Permitted Facilities* DTSC Final Policy, February 1997	TBC	

LOCATION-SPECIFIC			
63.	Seismic and Floodplain standards • Title 22, CCR, Div 4.5, Ch 14, Article 2, §66264.18	ARAR Relevant and Appropriate	These standards are relevant and appropriate for TSD facilities constructed, operated, or maintained within certain distances of fault lines, floodplains, or the maximum high tide.
64.	*Drilling, Coring, Sampling and Logging at Hazardous Substance Release sites* Guidance Manual for Ground Water Investigations, Cal/EPA, July 1995	TBC	
65.	*Reporting Hydrogeologic Characterization Data at Hazardous Substance Release sites* Guidance Manual for Ground Water Investigations, Cal/EPA, July 1995	TBC	
66.	*Guidelines for Hydrogeologic Characterization of Hazardous Substance Release Sites, Volume 1 & 2,* Cal/EPA, July 1995	TBC	
67.	*Aquifer Testing for Hydrogeologic Characterization* Guidance Manual for Ground Water Investigations, Cal/EPA, July 1995	TBC	
68.	*Application of Borehole Geophysics at Hazardous Substance Release Sites* Guidance Manual for Ground Water Investigations, Cal/EPA, July 1995	TBC	

69.	*Ground Water Modeling for Hydrogeologic Characterization* Guidance Manual for Ground Water Investigations Cal/EPA, July 1995	TBC	
70.	*Monitoring Well Design and Construction for Hydrogeologic Characterization* Guidance Manual for Ground Water Investigations, Cal/EPA, July 1995	TBC	
71.	*Advisory – Active Soil Gas Investigation* DTSC/CRWQCB-Los Angeles Region, January 2003	TBC	
72.	*Representative Sampling of Ground Water for Hazardous Substances,* Cal/EPA, July 1995	TBC	
73.	*Accumulating Hazardous Waste at Generator Sites,* Cal/EPA, July 1995	TBC	
ACTION-SPECIFIC			
74.	Hazardous Waste Control Act (HWCA) Standards applicable to generators of hazardous waste • Title 22, CCR, Div 4.5, Ch 12, Article 1, §66262.11	ARAR Applicable	Owners or operators who generate waste shall determine whether waste is a hazardous waste. Applicable for any operation where waste is generated. The determination of whether wastes generated during remedial activities are hazardous shall be made when the wastes are generated.
75.	Hazardous Waste Control Act (HWCA) • Title 22, CCR, Div 4.5, Ch 12, Article 1, §66262.12	ARAR Applicable	A generator shall not treat, store, dispose of, transport or offer for transportation, hazardous waste without having received an identification number. Substantive requirements will be applicable for any operation where waste is generated. The determination of whether wastes generated during remedial activities

			are hazardous shall be made when the wastes are generated.
76.	Hazardous Waste Control Act (HWCA) Standards for owners and operators of hazardous waste transfer and TSD facilities • Title 22, CCR, Div 4.5, Ch 14, Article 2	ARAR Applicable	Establish requirements for a hazardous waste treatment facility to have a plan for waste analysis, develop a security system, conduct regular inspections, provide training to facility personnel, and use a quality assurance program during construction. The requirements may be applicable if CERCLA response action includes treatment, storage, or disposal as defined under RCRA, or may be relevant and appropriate if the requirements address problems or situations sufficiently similar to the specific circumstances at the site that their usage will be well suited.
77.	Hazardous Waste Control Act (HWCA) Standards applicable to generators of hazardous waste • Title 22, CCR, Div 4.5, Ch 12, Article 2, §66262.20, §66262.22	ARAR Applicable	A generator of hazardous waste who transports or offers hazardous waste for transportation shall prepare a manifest. Substantive requirements will be applicable for any operation where waste is generated. The determination of whether wastes generated during remedial activities are hazardous shall be made when the wastes are generated.
78.	Hazardous Waste Control Act (HWCA) Standards applicable to generators of hazardous waste • Title 22, CCR, Div 4.5, Ch 12, Article 3, §66262.30, §66262.31, §66262.32, §66262.33	ARAR Applicable	Before transporting hazardous waste or offering hazardous waste for transportation off-site, the generator must do the following in accordance with DOT regulations: package the waste, label and mark each package of hazardous waste, and ensure that the transport vehicle is correctly placarded.
79.	Hazardous Waste Control Act (HWCA) Standards applicable to generators of hazardous waste • Title 22, CCR, Div 4.5, Ch 12, Article 3, §66262.34	ARAR Applicable	Requirements with respect to accumulation of waste on-site.

80.	Hazardous Waste Control Act (HWCA) Standards applicable to generators of hazardous waste • Title 22, CCR, Div 4.5, Ch 12, Article 4, §66262.40, §66262.41	ARAR Applicable	Establishes requirements for record keeping of manifests, test results, waste analyses, and Biennial Reports. Any substantive requirements shall be attained.
81.	Corrective Action • Title 22, CCR, Div 4.5, Ch 14, Article 6, §66264.100 (a) through (d), (f), (g)(1), and (h)	ARAR Relevant and Appropriate	The owner or operator is required to take corrective action under Title 22, CCR, §66264.91 to remediate releases from the regulated unit and to ensure that the regulated unit achieves compliance with the water quality protection standard. Substantive technical requirements are potentially relevant and appropriate for remedial action including groundwater monitoring.
82.	Corrective action for Waste Management Units • Title 22, CCR, Div 4.5, Ch 14, Article 6, §66264.101	ARAR Relevant and Appropriate	The owner or operator is required to take corrective action to remediate releases from any solid or hazardous waste management unit at the facility to protect public health and the environment. Substantive technical requirements are potentially relevant and appropriate for remedial action including groundwater monitoring.
83.	Closure and post-closure care • Title 22, CCR, Div 4.5, Ch 14, Article 7, §66264.111, §66264.112, §66264.115 through 120	ARAR	Owners and operators shall close a facility and perform post-closure care when contaminated subsurface soil cannot be practically removed or decontaminated. Contaminated soil, residues, or groundwater from remedial action at a site will achieve clean closure; otherwise, post-closure care requirements will be relevant and appropriate.

84.	Use and management of containers • Title 22, CCR, Div 4.5, Ch 14, Article 9	ARAR Applicable	Containers used for the transfer or storage of hazardous waste must be in good condition, compatible with the waste, kept closed except to add or remove materials and be inspected weekly. The area used to store the containers must provide adequate secondary containment and be designed with runoff controls. Also, appropriate closure of the containers must take place.
85.	Tank systems • Title 22, CCR, Div 4.5, Ch 14, Article 10	ARAR Applicable	The remedial activities may involve storage and/or treatment in tanks. These tanks are required to have secondary containment, be monitored and inspected, be provided with overfill and spill protection controls, and operated with adequate freeboard. Also, appropriate closure must take place.
86.	Waste piles • Title 22, CCR, Div 4.5, Ch 14, Article 12	ARAR Applicable	The waste piles should be placed upon a lined foundation or base with a leachate system, protected from precipitation and wind dispersal, designed to prevent run on and run off. Also, closure and post-closure care requirements. Remedial action may involve soil excavation and the compiling of soil in a temporary waste pile. This requirement is applicable if the excavated waste meets RCRA hazardous waste criteria.
87.	Landfills • Title 22, CCR, Div 4.5, Ch 14, Article 14	ARAR Relevant and Appropriate	The requirements for landfills include the design and operation, action leakage rate, monitoring and inspection, response actions, surveying and recordkeeping and closure and post-closure care.
88.	Miscellaneous Units • Title 22, CCR, Div 4.5, Ch 14, Article 16	ARAR Applicable	Applies to waste management unit not otherwise regulated under RCRA. It may include pumps, auxiliary equipment, air strippers, etc. The substantive requirements include design, construction, operation, maintenance and closure of the unit that will ensure protection of human health and the environment. The actions include general inspections for safety and operation efficiency, testing and maintenance of the equipment (including testing of warning systems). Applicable if pumps are used for extraction and treatment of leachate that meets RCRA hazardous waste criteria.

89.	Land Disposal Restrictions (LDR) for RCRA wastes and non-RCRA wastes • Title 22, CCR, Div 4.5, Ch 18, Articles 1, 3, 4, 10, 11	ARAR Applicable	Movement of hazardous waste to new locations and placed in or on land will trigger LDR. General applicability, dilution prohibited, waste analysis and record keeping, and special rules apply for wastes that exhibit a characteristic waste. Best Demonstrated Available Technology (BDA) standards for each hazardous constituent in each listed waste, if residual is to be disposed. Utilize treatment standards table when necessary. Where applicable, hazardous waste generated from remedial activities must comply with LDR and meet the treatment standards or notify the disposal facility of the treatment standards before disposal at an appropriate offsite disposal facility.
90.	Hazardous Waste Control Act (HWCA) Standards for owners and operators of hazardous waste transfer and TSD facilities • Title 22, CCR, Div 4.5, Ch 14, Articles 3 and 4	ARAR Applicable	Establish requirements for a facility to plan for emergency conditions. In addition, the design and operation of the facility must be done to prevent releases. Other requirements include testing and maintenance of equipment and incorporation of communication and alarm systems and contingency plan. The requirements may be applicable if CERCLA response action includes treatment, storage, or disposal as defined under RCRA, or may be relevant and appropriate if the requirements address problems or situations sufficiently similar to the specific circumstances at the site that their usage will be well suited.
91.	Hazardous Waste Control Act (HWCA) Groundwater monitoring and response • Title 22, CCR, Div 4.5, Ch 14, Article 6, §66264.91 (a) and (c)	ARAR Relevant and Appropriate	Owners or operators of a RCRA surface impoundment, waste pile, land treatment unit, or landfill shall conduct a monitoring and response program for each regulated unit. Substantive technical requirements are potentially relevant and appropriate for remedial action including groundwater monitoring.
92.	Hazardous Waste Control Act (HWCA) Monitoring • Title 22, CCR, Div 4.5, Ch 14, Article 6, §66264.97 (b), (c), (d) and (e)(1) through (e)(5)	ARAR Relevant and Appropriate	Requirements for monitoring groundwater, surface water, and vadose zone. Substantive technical requirements are potentially relevant and appropriate for remedial action including groundwater monitoring.

93.	Hazardous Waste Control Act (HWCA) Detection Monitoring • Title 22, CCR, Div 4.5, Ch 14, Article 6, §66264.98	ARAR Relevant and Appropriate	Requires the owner or operator of a regulated unit to develop a detection monitoring program that will provide reliable indication of a release. Substantive technical requirements are potentially relevant and appropriate for remedial action including groundwater monitoring.
94.	Hazardous Waste Control Act (HWCA) Evaluation Monitoring • Title 22, CCR, Div 4.5, Ch 14, Article 6, §66264.99	ARAR Relevant and Appropriate	Requires the owner or operator of a regulated unit to develop an evaluation monitoring program that can be used to assess the nature and extent of a release from the unit. Substantive technical requirements are potentially relevant and appropriate for remedial action including groundwater monitoring.
95.	Discharges of Waste to Land • Title 23 CCR, Div 3, Ch 15	ARAR Relevant and Appropriate	The regulations in this chapter pertain to water quality aspects of hazardous waste discharge to land, establishing waste and site classifications and waste management requirements for waste treatment, storage, or disposal in landfills, surface impoundments, waste piles, and land treatment facilities. Requirements in this chapter are minimum standards for proper management of each waste category. Pursuant to Section 2511 (Exemptions), because this remediation constitutes actions taken by public agencies to cleanup unauthorized releases of waste, these regulations will only apply if the proposed remedial activities include (1) removal of waste from the immediate place of release, or (2) keeping some contamination in place.
96.	Consolidated Regulations for Storage, Treatment, Processing, or Disposal of Solid Waste • Title 27 CCR, Div 2, Subdivision 1	ARAR Relevant and Appropriate	The regulations in this subdivision (promulgated by the State Water Resources Control Board (SWRCB)) pertain to water quality aspects of discharges of solid waste to land for treatment, storage, or disposal. Pursuant to Section 20090 (Exemptions), because this remediation constitutes actions taken by public agencies to cleanup unauthorized releases of waste, these regulations will only apply if the proposed remedial activities include (1) removal of waste from the immediate place of release, or (2) keeping some contamination in place.

97.	Requirements for land-use covenants • Cal. Code Regs. Title 22, § 67391.1	ARAR Applicable	This regulation requires appropriate restrictions on use of property in the event that a proposed remedial alternative results in hazardous materials remaining at the property at levels which are not suitable for unrestricted use of the land. This is an ARAR with respect to PG&E-owned land at the Topock site.
98.	California Water Code Section 13801(c) • California Well Standards, Bulletin 74-90 (Supplement to Bulletin 74-81)	ARAR Applicable	These standards for water, cathodic, and monitoring wells will be applicable if the remediation requires use of such wells.
99.	State Water Resources Control Board Resolution No. 88-63 Adoption of Policy Entitled "Sources of Drinking Water"	ARAR Applicable	With certain exceptions, all surface and ground waters of the State of California are to be considered suitable, or potentially suitable, for municipal or domestic water supply. The Regional Water Quality Control Board and State Water Resources Board have designated the beneficial use of the ground and surface waters in the Topock Site area as "municipal and domestic water supply." This designation is set forth in the Basin Plan.
100.	Water Quality Control Plan; Colorado River Basin-Region 7, June 2006 (Basin Plan)	ARAR Applicable	This Basin Plan designates the Colorado River and the Colorado Hydrologic unit as having the beneficial use of "MUN" (or, municipal or domestic water supply). The Basin Plan also prescribes General Surface Water Objectives and Ground Water Objectives, in addition to Specific Surface Water Objectives for the Colorado River, which include a flow-weighted average annual numeric criterion for salinity for the portion of the Colorado River on the Topock Site of 723 mg/L. This TDS value must not be exceeded in any remedial alternative being considered.
101.	State Water Resources Control Board Resolution No. 68-16 ("Antidegradation Policy") Statement of Policy with respect to Maintaining High Quality of Waters in California	ARAR Applicable	Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

102.	State Water Resources Control Board Resolution No. 92-49 Policies and Procedures for investigation and Cleanup and Abatement of Discharges under Water Code Section 13304	ARAR Relevant and Appropriate	Section III.A of this Resolution states that the Regional Water Board shall" "concur with any investigative and abatement proposal which the discharger demonstrates and the Regional Water Board finds to have a substantial likelihood to achieve compliance within a reasonable time frame…"
103.	State Water Resources Control Board Resolution No. 77-1 Policy with Respect to Water Reclamation in California	TBC	
104.	*Transportation Plan* Preparation Guidance for Site Remediation DTSC, May 1994	TBC	

Table 2.1-1 Final Remediation Well Design Parameter Summary:

National Trails Highway IRZ Wells

Source: CH2M Hill, 2015a. *Basis of Design Report/Final (100%) Design Submittal for the Final Groundwater Remedy, Appendix L, Volume 1 O&M Manual, PG&E Topock Compressor Station, Needles, California*. November 18.

TABLE 2.1-1
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PG&E Topock Compressor Station, Needles, California

Well Location ID[a]	Final Injection/Extraction Rate per Model Layer (gpm)			Final Well Screen Length (feet)	Model Layer Saturated Thickness (feet)	Final Well Depiction	Final Well Count	Final Future Provisional Well Count	Final Well Coordinates[e]	
	Nominal	Minimum	Maximum						X	Y
IRZ-8									*7615501.9*	*2103615.0*
Layer 1	*0*	*0*	*6*	*60*	*84*	*Dual Screen Well*	*0*	*1*		
Layer 2	*0*	*0*	*6*	*60*	*81*					
Layer 3	*0*	*0*	*6*	*60*	*84*	*Dual Screen Well*	*0*	*1*		
Layer 4	*0*	*0*	*6*	*40*	*51*					
IRZ-9 (Extraction)[b]									7615566.3	2103560.8
Layer 1	40	20	80	130	81	Dual Screen Well	1	0		
Layer 2					75					
Layer 3	40	20	80	120	80					
Layer 4					50					
IRZ-10									*7615569.3*	*2103470.4*
Layer 1	*0*	*0*	*6*	*40*	*69*	*Dual Screen Well*	*0*	*1*		
Layer 2	*0*	*0*	*6*	*40*	*65*					
Layer 3	*0*	*0*	*6*	*40*	*68*	*Dual Screen Well*	*0*	*1*		
Layer 4	*0*	*0*	*6*	*40*	*49*					
IRZ-11									7615636.2	2103409.1
Layer 1	10	0	20	40	65	Dual Screen Well	1	0		
Layer 2	10	0	20	40	62					
Layer 3	10	0	20	40	66	Dual Screen Well	1	0		
Layer 4	10	0	20	40	51					
IRZ-12									*7615660.2*	*2103350.8*
Layer 1	*0*	*0*	*6*	*40*	*60*	*Dual Screen Well*	*0*	*1*		
Layer 2	*0*	*0*	*6*	*40*	*57*					
Layer 3	*0*	*0*	*6*	*40*	*59*	*Dual Screen Well*	*0*	*1*		
Layer 4	*0*	*0*	*6*	*40*	*51*					
IRZ-13									7615701.7	2103307.1
Layer 1	9	0	20	40	54	Dual Screen Well	1	0		
Layer 2	9	0	20	40	52					
Layer 3	9	0	20	40	59	Dual Screen Well	1	0		
Layer 4	9	0	20	40	53					
IRZ-14									*7615736.7*	*2103202.5*
Layer 1	*0*	*0*	*6*	*40*	*55*	*Dual Screen Well*	*0*	*1*		
Layer 2	*0*	*0*	*6*	*40*	*53*					
Layer 3	*0*	*0*	*6*	*40*	*50*	*Dual Screen Well*	*0*	*1*		
Layer 4	*0*	*0*	*6*	*30*	*44*					

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	Nominal	Minimum	Maximum						X	Y
IRZ-15									7615766.3	2103145.6
Layer 1	7	0	15	40	49	Dual Screen Well	1	0		
Layer 2	7	0	15	40	48					
Layer 3	7	0	15	40	48	Dual Screen Well	1	0		
Layer 4	7	0	15	30	43					
IRZ-16									7615794.5	2103038.2
Layer 1	6	0	15	40	51	Dual Screen Well	1	0		
Layer 2	6	0	15	40	49					
Layer 3	6	0	15	30	42	Dual Screen Well	1	0		
Layer 4	6	0	15	20	36					
IRZ-17									7615861.5	2102994.3
Layer 1	7	0	15	40	51	Dual Screen Well	1	0		
Layer 2	7	0	15	40	49					
Layer 3	7	0	15	30	39	Dual Screen Well	1	0		
Layer 4	7	0	15	20	33					
IRZ-18									*7615834.1*	*2102912.4*
Layer 1	*0*	*0*	*6*	*40*	*51*	*Dual Screen Well*	*0*	*1*		
Layer 2	*0*	*0*	*6*	*40*	*49*					
Layer 3	*0*	*0*	*6*	*20*	*30*	*Dual Screen Well*	*0*	*1*		
Layer 4	*0*	*0*	*6*	*15*	*23*					
IRZ-19									7615930.4	2102847.0
Layer 1	7	0	13	35	44	Dual Screen Well	1	0		
Layer 2	7	0	13	30	41					
Layer 3	7	0	13	20	28	Dual Screen Well	1	0		
Layer 4	7	0	13	15	24					
IRZ-20									7615807.6	2102769.2
Layer 1	4	0	13	35	47	Dual Screen Well	1	0		
Layer 2	4	0	13	30	42					
Layer 3	4	0	13	15	24	Dual Screen Well	1	0		
Layer 4	4	0	13	10	20					
IRZ-21									7615816.0	2102691.5
Layer 1	5	0	10	40	48	Dual Screen Well	1	0		
Layer 2	5	0	10	20	29					
Layer 3	5	0	10	10	18	Dual Screen Well	1	0		
Layer 4	5	0	10	15	26					

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	Nominal	Minimum	Maximum						X	Y
IRZ-22									*7615820.0*	*2102619.3*
Layer 1	*0*	*0*	*6*	*35*	*44*	*Dual Screen Well*	*0*	*1*		
Layer 2	*0*	*0*	*6*	*15*	*27*					
Layer 3	*0*	*0*	*6*	*10*	*19*	*Dual Screen Well*	*0*	*1*		
Layer 4	*0*	*0*	*6*	*15*	*27*					
IRZ-23 (Extraction)[b]									7615824.9	2102534.9
Layer 1					33					
Layer 2					28					
Layer 3	100	40	160	70	24	Single Screen Well (Layers 2, 3, & 4)[d]	1	0		
Layer 4					24					
IRZ-24									*7615822.2*	*2102468.3*
Layer 1	*0*	*0*	*13*	*40*	*31*					
Layer 2					*28*	*Dual Screen Well*	*0*	*1*		
Layer 3	*0*	*0*	*13*	*40*	*26*					
Layer 4					*25*					
IRZ-25									7615826.1	2102415.6
Layer 1	8	0	18	40	29					
Layer 2					27	Dual Screen Well	1	0		
Layer 3	8	0	18	40	26					
Layer 4					24					
IRZ-26									*7615818.5*	*2102313.7*
Layer 1	*0*	*0*	*13*	*40*	*28*					
Layer 2					*26*	*Dual Screen Well*	*0*	*1*		
Layer 3	*0*	*0*	*13*	*40*	*24*					
Layer 4					*24*					
IRZ-27									7615801.3	2102238.9
Layer 1	8	0	18	40	27					
Layer 2					25	Dual Screen Well	1	0		
Layer 3	8	0	18	40	23					
Layer 4					24					
IRZ-28									*7615797.9*	*2102180.2*
Layer 1	*0*	*0*	*13*	*40*	*26*					
Layer 2					*24*	*Dual Screen Well*	*0*	*1*		
Layer 3	*0*	*0*	*13*	*40*	*23*					
Layer 4					*22*					

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	Nominal	Minimum	Maximum						X	Y
IRZ-29									7615792.5	2102082.5
Layer 1	7	0	15	40	25	Dual Screen Well	1	0		
Layer 2					22					
Layer 3	7	0	15	35	21					
Layer 4					20					
IRZ-30									*7615780.6*	*2102010.8*
Layer 1	*0*	*0*	*13*	*40*	*26*	*Dual Screen Well*	*0*	*1*		
Layer 2					*20*					
Layer 3	*0*	*0*	*13*	*30*	*19*					
Layer 4					*18*					
IRZ-31									7615790.6	2101947.0
Layer 1	6	0	13	35	26	Dual Screen Well	1	0		
Layer 2					16					
Layer 3	6	0	13	25	16					
Layer 4					16					
IRZ-32									*7615812.9*	*2101863.3*
Layer 1	*0*	*0*	*13*	*30*	*21*	*Dual Screen Well*	*0*	*1*		
Layer 2					*14*					
Layer 3	*0*	*0*	*13*	*20*	*14*					
Layer 4					*13*					
IRZ-33									7615828.1	2101792.5
Layer 1	4	0	13	25	17	Dual Screen Well	1	0		
Layer 2					14					
Layer 3	4	0	13	20	14					
Layer 4					11					
IRZ-34									*7615853.9*	*2101667.0*
Layer 1	*0*	*0*	*26*	*35*	*13*	*Single Screen Well (All Layers)*	*0*	*1*		
Layer 2					*12*					
Layer 3					*12*					
Layer 4					*10*					
IRZ-35									7615903.6	2101664.7
Layer 1	6	0	15	30	10	Single Screen Well (All Layers)	1	0		
Layer 2					10					
Layer 3					10					
Layer 4					10					

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	Nominal	Minimum	Maximum						X	Y
IRZ-36									*7615948.8*	*2101605.7*
Layer 1					*7.4*					
Layer 2	*0*	*0*	*25*	*25*	*7.6*	*Single Screen Well (All Layers)*	*0*	*1*		
Layer 3					*7.6*					
Layer 4					*7.6*					
IRZ-37									7616003.9	2101554.6
Layer 1					5.7					
Layer 2	4	0	10	20	5.9	Single Screen Well (All Layers)	1	0		
Layer 3					5.9					
Layer 4					5.9					
IRZ-38									*7615965.2*	*2101400.4*
Layer 1					*5.0*					
Layer 2	*0*	*0*	*25*	*15*	*5.3*	*Single Screen Well (All Layers)*	*0*	*1*		
Layer 3					*5.3*					
Layer 4					*5.3*					
IRZ-39									7616112.5	2101375.6
Layer 1					2.8					
Layer 2	4	0	5	10	3.1	Single Screen Well (All Layers)	1	0		
Layer 3					3.1					
Layer 4					3.1					
IRZ-40 (Extraction)									*7616191.5*	*2101358.0*
Layer 1					*1.7*					
Layer 2	*0*	*0*	*25*	*5*	*2.0*	*Single Screen Well (All Layers)*	*0*	*1*		
Layer 3					*2.0*					
Layer 4					*2.0*					
Extraction Total:	**300**	**200[c]**	**400[c]**	**---**	**---**	**---**	**4**	**1**	**---**	**---**
Injection Total:	**300**	**200[c]**	**400[c]**	**---**	**---**	**---**	**24**	**30**	**---**	**---**

Notes:

Gray Italics denote future provisional wells.

gpm = gallons per minute

[a] Number of wells, total screen intervals, and screen depth placement at each well location ID are for purposes of the final (100%) design submittal and may be modified during installation. One well location ID may consist of multiple wells or screens, and one well screen interval may include more than one model layer. A maximum of two discrete screen intervals will be included per individual well. Dual screen wells will consist of one well with two discreet screen intervals separated by a packer. Some well location IDs include two dual screen wells which will be installed in separate boreholes.

[b] Wells are constructed with a dedicated pump for each well screen with the intervals separated using a pneumatic packer.

[c] Individual well minimum and maximum flow rates are provided herein. However, the total aggregate extraction/injection flow rates are limited to 200 gpm at minimum flows and 400 gpm at maximum flows.

[d] Extraction well design and operation will target extraction of groundwater from all four model layers without being screened across all layers.

[e] Coordinates listed are North American Datum 1983 State Plane Ground Coordinates, Zone 5 (NAD1983, State Plane, California, V, FIPS, 0405) rounded to the nearest 0.1 foot. Coordinates are for purposes of the final (100%) design submittal and may be modified during installation.

Table 2-4 Summary of Cumulative Percent Completeness of Key Phase 2 Construction Activities

Source: Jacobs, 2023. *June 2023 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California*. June.

Table 2-4. Summary of Cumulative Percent Completeness of Key Phase 2 Construction Activities
June 2023 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
PG&E Topock Compressor Station, Needles, California

Activity	% Complete	Cumulative Status of Phase 2 Construction Activities (as of June 30, 2023)
Extraction and Injection Well Installation	80%	• Pilot holes for TWB-1, -2, -3, TCS-1, -2, FW-02A, and FW-02B have been drilled. • TWB-2 was not a viable location for extraction and was abandoned. • A temporary well was installed at TWB-1 followed by well development and step testing. Results showed that TWB-1 is a viable location for an extraction well. A larger diameter extraction well was installed in August and developed and tested in September/October. • No aquifer was present at FW-02 alternate location. Drill casing was left in place at FW-02 alternate. Evaluation of the data was performed and potential alternate locations have been identified and presented to agencies and stakeholders on May 6 and May 18, 2022. A site walk was held on June 23 to view the identified potential alternate locations. An additional site walk was held on July 14 to view the location FW-02A' and to discuss implementation details. In mid-August, a pilot hole was drilled at the FW-02A' location which was subsequently renamed FW-02B. The location is viable for the freshwater injection well. In October, the pilot hole was over-drilled. In November, an injection well was installed and developed. • ER-1 and ER-2 were drilled, installed, developed, and tested. Sediment was observed at the bottom of ER-2 during development in early June. A bung was installed in ER-2 to prevent further sediment infiltration and allow for completion of development. Based on performance of these wells during well development, additional 48-hour step testing will be conducted at both extraction well locations in early November. • A pilot hole for TWB-3 was drilled. The observed lithology and aquifer thickness showed that TWB-3 is expected to be a viable extraction well. The extraction well was installed in August and developed and tested in September/October. • Final well designs were completed for injection/extraction wells TWB-1 & -3, TCS-1 & -2, and FW-02B. • Pump for groundwater sampling at PGE-07BR was stuck in the well. The stuck pump retrieved, cleaned, and reset to the appropriate depth needed for sampling. In addition, a drop tube was installed to collect water level measurements without needing to remove the pump. The pump was tested prior to reinstallation but was not operating during groundwater sampling and will retested in July. The pump and tubing were replaced in August. • Monitoring well MW-70BR-225 was renamed as ER-6 to function as an extraction well. ER-6 was developed and a step test was conducted to appropriately size the future pump. The step test was unable to be completed in May due to equipment malfunctions. The step test was completed in July. • TCS-1 has been drilled and testing (including injectivity testing) are complete. TCS-2 has been drilled underwent development and testing in October/November. • Downhole camera survey completed on wells TCS-1, TCS-2, TWB-1, TWB-3 and FW-02B in December. • A pilot hole for ER-04 was drilled in March and the extraction well was installed in April. • A pilot hole for ER-03 and the extraction well was installed in May. • Extraction wells ER-03 and ER-04 were developed and tested in May. A downhole camera survey was also completed in May. • The PVC casing was cut down at both ER-03 and ER-04, and both wells were temporarily covered with steel plates in June.
Extraction and Injection Well Downhole Installation	20%	• Engineer drawings of each downhole set up have been completed. • Pumps have been procured for all wells installed in 2022. Pumps will be procured for ER-3 and ER-04 following completion of those wells.

Activity	% Complete	Cumulative Status of Phase 2 Construction Activities (as of June 30, 2023)
Pipeline Installation Inside TCS	97%	• Pipeline excavation activities have been completed on pipelines M1/2/2', I1, L3, N1, K1, and M5/6 (formerly M3/M4/M5). • Duct bank reinforcing steel placement completed on pipelines M1/2/2', I1, M5/6, L3, N1, and K1. • Duct bank concrete encasement has been completed on pipelines M1/2/2', I1, L3, N1, K1, and M5/6. • Duct bank conduit installation completed on pipelines M1/2/2', I1, M5/6, N1, K1, and L3. • TCS-1 pre-cast concrete vault excavation and placement completed. • TCS-1 pre-cast concrete vault backfill has been completed. • TCS-2 pre-cast concrete vault excavation and placement has been completed. • TCS-2 pre-cast concrete vault backfill has been completed. • TCS-1 and TCS-2 pre-cast concrete HDPE and conduit penetration coring has been completed. • TCS-1 and TCS-2 pre-cast concrete vault interior mechanical has been completed. • TCS-1 and TCS-2 concrete vault sloped floor installation has been completed. • Pipeline HDPE force main installation completed on pipelines M1/2/2', I1, N1, K1, M5/6, and L3. • Trench backfill has been completed on pipelines M1/2/2', I1, L3, N1, K1, and M5/6. • TCS-1 and TCS-2 pre-cast vault lid installation has been completed. • Pipeline contractor completed demobilization. • Pre-cast vault ladder and safety arm installation has been completed.
Pipeline Installation Outside TCS	75%	• Pipeline G mobilization has been completed. • Pipeline G temporary road construction has been completed. • Pipeline G vegetation removal and site grading has been completed. • Pipeline G HDPE forcemain installation has been completed. • Pipeline G conduit and pull box installation has been completed. • Pipeline G final road construction has been completed. • Pipeline E1 mobilization has been completed. • Pipeline E1 site setup and utility location has been completed. • Pipeline E1 TWB-1 extraction vault excavation and placement has been completed. • Pipeline E1 HDPE and conduit trench excavation has been completed. • Pipeline E1 HDPE force main installation has been completed. • Pipeline E1 conduit and pull box installation has been completed. • Pipeline E1 trench backfill has been completed. • Pipeline E3 mobilization has been completed. • Pipeline E3 site setup and utility location completed. • Pipeline E3 HDPE and conduit trench excavation has been completed. • Pipeline E3 HDPE force main installation has been completed. • Pipeline E3 conduit and pull box installation has been completed. • Pipeline E3 TWB-3 extraction vault excavation and placement has been completed. • Pipeline E3 trench backfill has been completed. • Pipeline C11 mobilization has been completed.

Activity	% Complete	Cumulative Status of Phase 2 Construction Activities (as of June 30, 2023)
		• Pipeline C11 site setup and utility location completed. • Pipeline C11 HDPE and conduit trench excavation has been completed. • Pipeline C11 HDPE force main installation has been completed. • Pipeline C11 conduit and pull box installation has been completed. • Pipeline C11 meter and well vault excavation and placement has been completed. • Pipeline C11 trench backfill has been completed. • Pipeline I2 mobilization has been completed. • Pipeline I2 site setup and utility location has been completed. • Pipeline I2 HDPE and conduit trench excavation has been completed. • Pipeline I2 HDPE force main installation has been completed. • Pipeline I2 conduit and pull box installation has been completed. • Pipeline I2 trench backfill has been completed. • Pipeline I2 roadway backfill and grading has been completed. • Pipeline contractor site cleanup and demobilization has been initiated.
Remedy Electrical Work	10%	• Conductor and fiber pull inside TCS has been completed. • Conductor and Fiber pull outside TCS (from Electrical Node 2 to well RB-5) has been completed. • Conductor and Fiber pull outside TCS (from Node 2 pull box to wells TWB-1 and TWB-3) has been completed. • Additional pull box and conduit installation at the TCS Tank Farm completed. • Node 1 transformer and control pad excavation has been completed. • Node 1 transformer and control pad subgrade and backfill has been completed. • Node 1 transformer and control pad conduit installation has been completed. • Node 1 transformer and control pad grounding system has been completed. • Node 1 transformer and control pad form and rebar installation has been completed. • Additional conduit installation at the TCS Tank Farm has been initiated.

Note:

Duct bank is a group of pipes through which electrical conduits/wires are pulled through.

Table 2-3 Summary of Work Variance Requests

Source: Jacobs, 2023. *June 2023 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California*. June.

Table 2-3. Summary of Work Variance Requests

June 2023 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup

PG&E Topock Compressor Station, Needles, California

WVR Number	Brief Description of Work Variance Request	Approval Dates
1	This WVR addressed PG&E's proposed modification to the brine tanks containment for use by the remedy, specifically: • **Upgrade the existing lined containment to concrete** - The original synthetic liner material has degraded from exposure to ultraviolet light, heat, and abrasion and must be replaced. PG&E proposed to replace the synthetic-lined containment (including K-rails) with a concrete containment to support the groundwater remedy. The concrete color will be desert tan, and information on this proposed concrete color will be submitted to the agencies for review. The proposed concrete material will be similar to the material of the truck lane in the final remedy design (refer to Appendix E of the Final Basis of Design Report [CH2M, 2015a], Section 033 00, Cast-In-Place Concrete). • **Shorten the length of the containment** - This containment will have the same height as the existing containment, but with a slightly smaller footprint (the length is 5 feet shorter). This smaller footprint still meets the required volume for a secondary containment and allows for more space for remedy construction at the tight MW-20 bench.	DOI approved WVR #1 on June 22, 2018 DTSC approved WVR #1 on July 5, 2018
2	PG&E proposed to relocate the tie-in point for remedy construction water to an aboveground location inside TCS and below the TCS Water Storage Tanks. This is to eliminate the risk of damaging the existing pressurized 6-inch water line and to avoid any interference with PG&E Gas Operations control of the TCS's water supply. The WVR addressed this relocation, specifically: • Relocate the construction water tie-in point to an aboveground location below the TCS Water Storage Tanks, inside TCS – The final design calls for the temporary construction water line to hot-tap into the existing 6-inch steel water line just as the line turns southwest to continue to TCS. PG&E proposed to move the tie-in point to an aboveground valve manifold, located below the TCS Water Storage Tanks in the boneyard area. • Extend the temporary construction water line to the new tie-in point, along Pipeline 300A access road – The planned 4-inch HDPE temporary construction water line will be extended, following the route of the Pipeline 300A access road, to the new tie-in point inside TCS. This pipeline extension is approximately 1,950 feet and is also made of 4-inch HDPE. The pipe will be laid on ground surface and to the south of the 6-inch water line where possible. At the crossing with the Southern California Gas pipeline access road, the pipeline will be at grade with fill to allow for vehicle crossing.	DOI/DTSC approved WVR #2 on August 29, 2018
3	PG&E proposed changes within the CHQ fence line to avoid/minimize the overall amount of soil disturbance during construction, reduce the number of truck trips to haul wastewater, and allow for additional working space within the yard. There are no proposed changes to the CHQ footprint nor its fence line. The specifics are described as follows: • Relocate the decontamination pad from the western fence to the northern fence (near the western corner). Based on recent survey data collected during construction, the difference in ground elevation between northern and southern end of the pad is about 4 feet. Moving the pad to the northern fence would eliminate the difference in ground elevation and reduce the amount of soil disturbance by at least 80 cubic yards. • Bring the remedy-produced wastewater tank from belowground to aboveground, increase the tank volume from 1,000 to 2,500 gallons, and place the aboveground, double-walled tank adjacent to the decontamination pad. The change from belowground to aboveground reduces the amount of soil disturbance by at least 50 cubic yards. The change to a bigger tank will reduce the amount of truck trips needed to haul wastewater. The placement of the tank adjacent to the decontamination pad allows for the pad to function as a secondary containment for the haul truck during off-loading of the wastewater. • Defer construction of the underground sewage tanks. Deferral of the underground tanks reduces the overall amount of soil disturbance by at least 800 cubic yards. All sanitary wastes will be managed in aboveground sewage tanks (similar to the ones currently used for the SPY trailers) or portable toilets. • Swap the location of the construction trailers and the sunshade and change the configuration of the sunshade from a rectangle to a square. This change will allow for more working space within the CHQ. All functions that would occur in the Workshop/Sampling Processing building will be conducted in the construction trailers.	DOI/DTSC approved WVR #3 on January 4, 2019

WVR Number	Brief Description of Work Variance Request	Approval Dates
4	PG&E proposed to revise a segment of Pipeline C near the I-40 bridge, to meet the permit requirement in Caltrans Encroachment Permit No. 08-18-6-MW-0533. The revision involves relocating a small segment of Pipeline C to within National Trails Highway to meet a minimum distance of 10 feet from current and future I-40 bridge footings. The treatment measure specified for Segment X of National Trails Highway in the Cultural and Historic Property Management Plan will be implemented during installation of this pipeline segment.	DOI/DTSC approved WVR #4 on May 14, 2019
5	PG&E proposed to phase the remedy-produced water conditioning system within the approved footprint inside TCS.	DOI and DTSC approved WVR #5 on July 19 and July 22, 2019, respectively.
6	In early October 2018, PG&E conducted a geotechnical investigation along the Pipeline F alignment on the entrance road to the TCS and the adjacent hill side. Based on the geotechnical results, the construction contractor (PIVOX) indicated that soldier piles and lagging would be required for temporary shoring. Over 40 soldier piles would be installed by drilling using a 330-sized excavator or larger. A 330-sized excavator has a general width of 11 feet, and counter weight clearance of approximately 4 feet. During operation, this rig would occupy a minimum 15 to 16 feet width of the TCS entrance road for about 12 days. The paved width of the road is between 22 to 24 feet in the area of shoring (per review of the location via Google Earth). Assuming a minimum clearance of 1 foot (which is still less than the recommended clearance) from any operating equipment, there will be approximately 5 to 8 feet of available lane width for access by TCS traffic. Large vehicles (tractor-trailers, delivery trucks, construction equipment) will likely not be able to pass by the active operation, and passenger vehicles may also not be able to pass the active operation in locations where the road narrows. Also, the excavator cannot be repositioned while soldier piles are being drilled. In sum, access to TCS will be severely restricted for about 12 days. This is not acceptable for Compressor Station operations. Therefore, PG&E proposed to realign Pipeline F (starting from segment F3) along the approved alignment of Pipelines B and J. Construction of Pipelines F, B, and J would occur in the same alignment and at the same time.	DOI and DTSC approved WVR #6 on May 21 and May 22, 2019, respectively.
7	This WVR proposed the following changes to remedy infrastructure at the CHQ and SPY. a) Locate all temporary office and break trailers at the SPY. PG&E proposed to keep the three existing office trailers at their current locations in the SPY and add two additional office trailers and one break trailer for workers. The additional trailers will be equipped with aboveground sewage tanks, similar to the existing trailers. They will also be powered by Needles Electric. This will require the original SPY fence line to be extended south/southwest to encompass these trailers and the original truck entrance from National Trails Highway to the access road east of SPY. Neither changes reduce the overall area available for soil storage. b) Eliminate the workshop/sample processing building at the CHQ. The function planned for this building will be moved to the Carbon Amendment building at the MW-20 Bench. Removal of this building reduces the amount of soil disturbance by approximately 334 cubic yards. c) Eliminate the sunshade at the CHQ. The function for the sunshade will be replaced by the break trailer for the workers. Removal of the sunshade reduces the amount of soil distance (i.e., installation of the footings) by approximately 14 cubic yards. d) Convert the utility pad at the CHQ to a smaller transformer/electrical panel pad. With the relocation of the six trailers to SPY and elimination of the workshop/sample processing building, PG&E proposed to convert the utility pad to smaller pad for a smaller transformer/electrical panel to serve the remaining trailers at the CHQ. This reduces the amount of soil disturbance by approximately 61 cubic yards.	DOI and DTSC approved WVR #7 on June 14, 2019.
8	On September 12, 2019, PG&E proposed a WVR to change the alignment of pipeline segment C6 on the eastern slope of the MW-20 Bench. The purpose of the WVR is to reduce the amount of soil disturbance, reduce the number of plants to be removed, reduce the safety risks associated with construction atop the MW-20 bench, and reduce the hazards associated with operation at the MW-20 bench during construction.	DTSC and DOI approved WVR #8 on October 4 and 8, 2019, respectively.
9	On March 20, 2020, and at DTSC's direction, PG&E submitted a WVR to relocate MW-A and convert IRZ-11 to a monitoring well.	DTSC and DOI approved WVR #9 on April 24, 2020.

WVR Number	Brief Description of Work Variance Request	Approval Dates
10	On December 1, 2021, PG&E proposed a WVR to revise the following pipeline alignments for constructability and safety during Phase 2A construction, as well as future operations and maintenance: 1. Outside the Compressor Station i. Realign Pipeline C18 in East Ravine. ii. Realign Pipeline I1 in Bat Cave Wash. 2. Inside the Compressor Station i. Consolidate piping/conduits (L1/L2/D1/D2) in the southern area of TCS into a common utility corridor ii. Realign Pipeline L3 to connect to Pipeline K.	DTSC and DOI approved WVR #10 on January 6 and 7, 2022, respectively.
11	On January 11, 2022, PG&E proposed a WVR for new mitigation planting areas in the floodplain. The purpose of the WVR is to propose new mitigation planting areas that are better suited for the mitigation plantings than some earlier identified areas.	DOI and DTSC approved WVR #11 on January 14 and 19, 2022, respectively.
12	The extraction well TWB-3 was a provisional well in the remedy design, therefore a pipeline associated with this well was not specified in the design. On September 23, 2022, PG&E submitted a WVR to add a pipeline (and conduits) to connect TWB-3 to the groundwater remedy. In addition, the WVR proposes the deferral of construction of the Operations Building on the TWB.	DTSC and DOI approved WVR #12 on October 19 and 20, 2022, respectively.

Source: CH2M HILL, Inc. (CH2M). 2015a. Basis of Design Report/Final (100%) Design Submittal for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California. November 18.

CHQ = Construction Headquarters

DOI = Department of the Interior

DTSC = California Department of Toxic Substances Control

HDPE = high-density polyethylene

PG&E = Pacific Gas and Electric

SPY = Soil Processing Yard

TCS = Topock Compressor Station

WVRs = Work Variance Request

Table 2.1 NTH IRZ System Operational Overview

Source: Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California*. June 14.

Table 2.1
NTH IRZ System Operational Overview
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Month	Recirculated Groundwater Extraction Volume (gal)	Recirculated Groundwater Injection Volume (gal)	Average Injection Flow Rate, During Operation (gpm)	Average Extraction Flow Rate, During Operation (gpm)	Ethanol Injection Volume (gal)	Run Time (hours)[a]	Run Time (percent)[b]
December 2021	307,610	312,416	93.0	91.6	84.0	56	8
January 2022	790,773	807,489	62.9	61.6	195	214	29
February 2022	615,500	634,662	63.0	61.1	136	168	25
March 2022	4,154,763	4,226,217	113	112	186	621	83
April 2022	2,732,956	2,834,615	84	81	74	561	78
May 2022	3,528,183	3,670,117	122	117	153	501	67
June 2022	4,985,560	5,141,918	134	130	121	640	89
July 2022	2,151,883	2,195,991	146	143	47	250	34
August 2022	175,420	178,017	80	79	24	37	5
September 2022	4,345,920	4,512,708	119	115	198	631	88
October 2022	5,500,913	5,422,240	130	132	342	696	94
November 2022	4,596,408	4,800,837	125	119	341	641	89
December 2022	5,085,254	5,311,392	127	121	558	699	94
January 2023	4,195,826	4,392,918	123	117	671	597	80
February 2023	3,746,816	3,934,596	112	106	582	587	87
March 2023	3,190,747	3,394,823	85	80	388	668	90 (only 7 injection well intervals operated after storm event)

Notes:

1. The difference between extraction and injection volume is a reflection of flow totalizer accuracy.

[a] Run time in hours is calculated from extraction well operating hours over the course of the month

[b] Percent run time is calculated from extraction operating well hours divided by the total hours in the month x 100%.

Abbreviations:

-- = not applicable
gal = gallon
gpm = gallon(s) per minute
IRZ = In-Situ Reactive Zone
NTH = National Trails Highway

Table 2.2 Summary of NTH IRZ System Discharges to Groundwater

Source: Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California.* June 14.

Table 2.2
Summary of NTH IRZ System Discharges to Groundwater
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-15	Upper	Injection	Jan-22	--	--	--	--	--
IRZ-15	Upper	Injection	Feb-22	--	--	--	--	--
IRZ-15	Upper	Injection	Mar-22	--	--	--	--	--
IRZ-15	Upper	Injection	Apr-22	--	--	--	--	--
IRZ-15	Upper	Injection	May-22	--	--	--	--	--
IRZ-15	Upper	Injection	Jun-22	--	--	--	--	--
IRZ-15	Upper	Injection	Jul-22	--	--	--	--	--
IRZ-15	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-15	Upper	Injection	Sep-22	--	--	--	--	--
IRZ-15	Upper	Injection	Oct-22	--	--	--	--	--
IRZ-15	Upper	Injection	Nov-22	--	--	--	--	--
IRZ-15	Upper	Injection	Dec-22	--	--	--	--	--
IRZ-15	Upper	Injection	Jan-23	--	--	--	--	--
IRZ-15	Upper	Injection	Feb-23	--	--	--	--	--
IRZ-15	Upper	Injection	Mar-23	209,677	22	547	74	6.4
IRZ-15	Lower	Injection	Jan-22	--	--	--	--	--
IRZ-15	Lower	Injection	Feb-22	--	--	--	--	--
IRZ-15	Lower	Injection	Mar-22	--	--	--	--	--
IRZ-15	Lower	Injection	Apr-22	--	--	--	--	--
IRZ-15	Lower	Injection	May-22	--	--	--	--	--
IRZ-15	Lower	Injection	Jun-22	--	--	--	--	--
IRZ-15	Lower	Injection	Jul-22	--	--	--	--	--
IRZ-15	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-15	Lower	Injection	Sep-22	--	--	--	--	--
IRZ-15	Lower	Injection	Oct-22	--	--	--	--	--
IRZ-15	Lower	Injection	Nov-22	--	--	--	--	--
IRZ-15	Lower	Injection	Dec-22	--	--	--	--	--
IRZ-15	Lower	Injection	Jan-23	--	--	--	--	--
IRZ-15	Lower	Injection	Feb-23	--	--	--	--	--
IRZ-15	Lower	Injection	Mar-23	--	--	--	--	--
IRZ-16	Upper	Injection	Jan-22	47,945	11	150	20	5.3
IRZ-16	Upper	Injection	Feb-22	3,011	--	10	1	5.0
IRZ-16	Upper	Injection	Mar-22	188,133	8.8	610	82	5.1
IRZ-16	Upper	Injection	Apr-22	201,577	6.0	521	72	6.4
IRZ-16	Upper	Injection	May-22	159,085	6.5	495	67	5.4
IRZ-16	Upper	Injection	Jun-22	204,790	5.3	634	88	5.4
IRZ-16	Upper	Injection	Jul-22	75,254	1.8	250	34	5.0
IRZ-16	Upper	Injection	Aug-22	12,202	1.6	37	5	5.5
IRZ-16	Upper	Injection	Sep-22	192,188	7.9	628	87	5.1
IRZ-16	Upper	Injection	Oct-22	202,307	13	695	93	4.9
IRZ-16	Upper	Injection	Nov-22	188,414	14	600	83	5.2

Table 2.2
Summary of NTH IRZ System Discharges to Groundwater
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-16	Upper	Injection	Dec-22	216,201	23	696	94	5.2
IRZ-16	Upper	Injection	Jan-23	179,946	28	577	78	5.2
IRZ-16	Upper	Injection	Feb-23	93,902	13	320	48	4.9
IRZ-16	Upper	Injection	Mar-23	184,780	28	652	88	4.7
IRZ-16	Lower	Injection	Jan-22	83,007	21	139	19	10
IRZ-16	Lower	Injection	Feb-22	5,621	--	10	1	9.4
IRZ-16	Lower	Injection	Mar-22	368,922	17	608	82	10
IRZ-16	Lower	Injection	Apr-22	344,997	11	521	72	11
IRZ-16	Lower	Injection	May-22	308,301	13	494	66	10
IRZ-16	Lower	Injection	Jun-22	415,866	10	633	88	11
IRZ-16	Lower	Injection	Jul-22	155,662	3.3	250	34	10
IRZ-16	Lower	Injection	Aug-22	22,502	3.0	37	5	10
IRZ-16	Lower	Injection	Sep-22	400,331	17	629	87	11
IRZ-16	Lower	Injection	Oct-22	444,263	28	695	93	11
IRZ-16	Lower	Injection	Nov-22	406,317	29	600	83	11
IRZ-16	Lower	Injection	Dec-22	386,647	46	593	80	11
IRZ-16	Lower	Injection	Jan-23	368,129	59	579	78	11
IRZ-16	Lower	Injection	Feb-23	175,091	24	306	46	10
IRZ-16	Lower	Injection	Mar-23	391,682	60	669	90	10
IRZ-17	Upper	Injection	Jan-22	61,929	15	153	21	6.7
IRZ-17	Upper	Injection	Feb-22	3,761	--	10	1	6.3
IRZ-17	Upper	Injection	Mar-22	253,824	12	636	85	6.7
IRZ-17	Upper	Injection	Apr-22	260,224	7.1	560	78	7.7
IRZ-17	Upper	Injection	May-22	206,311	8.7	484	65	7.1
IRZ-17	Upper	Injection	Jun-22	246,831	5.9	634	88	6.5
IRZ-17	Upper	Injection	Jul-22	95,763	2.0	250	34	6.4
IRZ-17	Upper	Injection	Aug-22	14,714	1.9	37	5	6.6
IRZ-17	Upper	Injection	Sep-22	248,873	10	630	88	6.6
IRZ-17	Upper	Injection	Oct-22	260,134	16	695	93	6.2
IRZ-17	Upper	Injection	Nov-22	253,938	18	603	84	7.0
IRZ-17	Upper	Injection	Dec-22	265,579	27	699	94	6.3
IRZ-17	Upper	Injection	Jan-23	123,531	21	317	43	6.5
IRZ-17	Upper	Injection	Feb-23	208,093	32	591	88	5.9
IRZ-17	Upper	Injection	Mar-23	247,211	38	668	90	6.2
IRZ-17	Lower	Injection	Jan-22	126,137	30	153	21	14
IRZ-17	Lower	Injection	Feb-22	7,626	--	10	1	13
IRZ-17	Lower	Injection	Mar-22	511,032	24	632	85	13
IRZ-17	Lower	Injection	Apr-22	450,449	12	558	78	13
IRZ-17	Lower	Injection	May-22	361,052	15	480	65	13
IRZ-17	Lower	Injection	Jun-22	521,889	12	635	88	14
IRZ-17	Lower	Injection	Jul-22	202,016	4.5	250	34	13

Table 2.2
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IRZ-17	Lower	Injection	Aug-22	29,479	3.9	37	5	13
IRZ-17	Lower	Injection	Sep-22	519,697	22	629	87	14
IRZ-17	Lower	Injection	Oct-22	537,554	35	695	93	13
IRZ-17	Lower	Injection	Nov-22	414,384	29	583	81	12
IRZ-17	Lower	Injection	Dec-22	397,147	42	670	90	9.9
IRZ-17	Lower	Injection	Jan-23	161,918	28	319	43	8.5
IRZ-17	Lower	Injection	Feb-23	256,180	39	589	88	7.2
IRZ-17	Lower	Injection	Mar-23	173,037	26	666	90	4.3
IRZ-18	Upper	Injection	Jan-22	57,708	14	150	20	6.4
IRZ-18	Upper	Injection	Feb-22	3,581	--	10	1	6.0
IRZ-18	Upper	Injection	Mar-22	237,093	9.6	598	80	6.6
IRZ-18	Upper	Injection	Apr-22	134,493	2.9	221	31	10
IRZ-18	Upper	Injection	May-22	204,232	8.1	497	67	6.8
IRZ-18	Upper	Injection	Jun-22	222,597	5.6	635	88	5.8
IRZ-18	Upper	Injection	Jul-22	82,479	1.4	250	34	5.5
IRZ-18	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-18	Upper	Injection	Sep-22	250,454	11	619	86	6.7
IRZ-18	Upper	Injection	Oct-22	287,310	18	691	93	6.9
IRZ-18	Upper	Injection	Nov-22	231,786	16	621	86	6.2
IRZ-18	Upper	Injection	Dec-22	163,169	18	508	68	5.4
IRZ-18	Upper	Injection	Jan-23	230,695	35	600	81	6.4
IRZ-18	Upper	Injection	Feb-23	140,867	17	370	55	6.3
IRZ-18	Upper	Injection	Mar-23	80,539	13	206	28	6.5
IRZ-18	Lower	Injection	Jan-22	124,878	30	152	20	14
IRZ-18	Lower	Injection	Feb-22	7,496	--	10	1	12
IRZ-18	Lower	Injection	Mar-22	441,208	17	598	80	12
IRZ-18	Lower	Injection	Apr-22	133,829	3.6	221	31	10
IRZ-18	Lower	Injection	May-22	355,640	14	497	67	12
IRZ-18	Lower	Injection	Jun-22	500,638	12	636	88	13
IRZ-18	Lower	Injection	Jul-22	188,924	3.9	250	34	13
IRZ-18	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-18	Lower	Injection	Sep-22	510,878	21	620	86	14
IRZ-18	Lower	Injection	Oct-22	535,482	34	696	94	13
IRZ-18	Lower	Injection	Nov-22	507,976	34	624	87	14
IRZ-18	Lower	Injection	Dec-22	423,143	47	517	69	14
IRZ-18	Lower	Injection	Jan-23	490,939	74	602	81	14
IRZ-18	Lower	Injection	Feb-23	283,957	39	418	62	11
IRZ-18	Lower	Injection	Mar-23	151,097	23	207	28	12
IRZ-20	Upper	Injection	Jan-22	48,376	12	151	20	5.3
IRZ-20	Upper	Injection	Feb-22	2,701	--	9	1	5.0
IRZ-20	Upper	Injection	Mar-22	202,257	10	630	85	5.4

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IRZ-20	Upper	Injection	Apr-22	253,197	6.9	560	78	7.5
IRZ-20	Upper	Injection	May-22	132,019	5.9	472	63	4.7
IRZ-20	Upper	Injection	Jun-22	197,493	5.0	632	88	5.2
IRZ-20	Upper	Injection	Jul-22	80,078	1.7	250	34	5.3
IRZ-20	Upper	Injection	Aug-22	12,232	1.6	37	5	5.5
IRZ-20	Upper	Injection	Sep-22	196,161	8.4	624	87	5.2
IRZ-20	Upper	Injection	Oct-22	250,695	16	695	93	6.0
IRZ-20	Upper	Injection	Nov-22	237,842	17	604	84	6.6
IRZ-20	Upper	Injection	Dec-22	257,431	27	675	91	6.4
IRZ-20	Upper	Injection	Jan-23	153,460	21	416	56	6.1
IRZ-20	Upper	Injection	Feb-23	163,940	27	451	67	6.1
IRZ-20	Upper	Injection	Mar-23	221,486	34	661	89	5.6
IRZ-20	Lower	Injection	Jan-22	93,639	22	152	20	10
IRZ-20	Lower	Injection	Feb-22	5,767	--	10	1	9.6
IRZ-20	Lower	Injection	Mar-22	388,733	19	631	85	10
IRZ-20	Lower	Injection	Apr-22	384,225	10	559	78	11
IRZ-20	Lower	Injection	May-22	288,041	12	477	64	10
IRZ-20	Lower	Injection	Jun-22	384,856	9.4	633	88	10
IRZ-20	Lower	Injection	Jul-22	160,316	3.4	250	34	11
IRZ-20	Lower	Injection	Aug-22	22,592	3.0	37	5	10
IRZ-20	Lower	Injection	Sep-22	388,169	16	625	87	10
IRZ-20	Lower	Injection	Oct-22	440,740	28	695	93	11
IRZ-20	Lower	Injection	Nov-22	413,854	29	604	84	11
IRZ-20	Lower	Injection	Dec-22	439,559	47	692	93	11
IRZ-20	Lower	Injection	Jan-23	224,399	33	409	55	9
IRZ-20	Lower	Injection	Feb-23	282,155	48	451	67	10
IRZ-20	Lower	Injection	Mar-23	360,442	56	676	91	9
IRZ-21	Upper	Injection	Jan-22	--	--	--	--	--
IRZ-21	Upper	Injection	Feb-22	--	--	--	--	--
IRZ-21	Upper	Injection	Mar-22	--	--	--	--	--
IRZ-21	Upper	Injection	Apr-22	--	--	--	--	--
IRZ-21	Upper	Injection	May-22	--	--	--	--	--
IRZ-21	Upper	Injection	Jun-22	--	--	--	--	--
IRZ-21	Upper	Injection	Jul-22	--	--	--	--	--
IRZ-21	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-21	Upper	Injection	Sep-22	--	--	--	--	--
IRZ-21	Upper	Injection	Oct-22	--	--	--	--	--
IRZ-21	Upper	Injection	Nov-22	--	--	--	--	--
IRZ-21	Upper	Injection	Dec-22	--	--	--	--	--
IRZ-21	Upper	Injection	Jan-23	--	--	--	--	--
IRZ-21	Upper	Injection	Feb-23	--	--	--	--	--

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Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-21	Upper	Injection	Mar-23	--	--	--	--	--
IRZ-21	Lower	Injection	Jan-22	--	--	--	--	--
IRZ-21	Lower	Injection	Feb-22	--	--	--	--	--
IRZ-21	Lower	Injection	Mar-22	--	--	--	--	--
IRZ-21	Lower	Injection	Apr-22	--	--	--	--	--
IRZ-21	Lower	Injection	May-22	--	--	--	--	--
IRZ-21	Lower	Injection	Jun-22	--	--	--	--	--
IRZ-21	Lower	Injection	Jul-22	--	--	--	--	--
IRZ-21	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-21	Lower	Injection	Sep-22	--	--	--	--	--
IRZ-21	Lower	Injection	Oct-22	--	--	--	--	--
IRZ-21	Lower	Injection	Nov-22	--	--	--	--	--
IRZ-21	Lower	Injection	Dec-22	--	--	--	--	--
IRZ-21	Lower	Injection	Jan-23	--	--	--	--	--
IRZ-21	Lower	Injection	Feb-23	--	--	--	--	--
IRZ-21	Lower	Injection	Mar-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Jan-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Feb-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Mar-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Apr-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	May-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Jun-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Jul-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Aug-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Sep-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Oct-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Nov-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Dec-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Jan-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Feb-23	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Mar-23	--	--	--	--	--
IRZ-25	Lower	Injection	Jan-22	--	--	--	--	--
IRZ-25	Lower	Injection	Feb-22	--	--	--	--	--
IRZ-25	Lower	Injection	Mar-22	--	--	--	--	--
IRZ-25	Lower	Injection	Apr-22	--	--	--	--	--
IRZ-25	Lower	Injection	May-22	--	--	--	--	--
IRZ-25	Lower	Injection	Jun-22	--	--	--	--	--
IRZ-25	Lower	Injection	Jul-22	--	--	--	--	--
IRZ-25	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-25	Lower	Injection	Sep-22	--	--	--	--	--
IRZ-25	Lower	Injection	Oct-22	--	--	--	--	--
IRZ-25	Lower	Injection	Nov-22	--	--	--	--	--

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Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-25	Lower	Injection	Dec-22	--	--	--	--	--
IRZ-25	Lower	Injection	Jan-23	--	--	--	--	--
IRZ-25	Lower	Injection	Feb-23	--	--	--	--	--
IRZ-25	Lower	Injection	Mar-23	--	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	Jan-22	103,663	27	154	21	11
IRZ-27	Upper / Upper Middle	Injection	Feb-22	113,867	25	169	25	11
IRZ-27	Upper / Upper Middle	Injection	Mar-22	395,578	15	594	80	11
IRZ-27	Upper / Upper Middle	Injection	Apr-22	160,844	3.6	232	32	12
IRZ-27	Upper / Upper Middle	Injection	May-22	336,518	14	495	67	11
IRZ-27	Upper / Upper Middle	Injection	Jun-22	425,095	9.5	633	88	11
IRZ-27	Upper / Upper Middle	Injection	Jul-22	164,460	3.4	250	34	11
IRZ-27	Upper / Upper Middle	Injection	Aug-22	--	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	Sep-22	304,227	14	410	57	12
IRZ-27	Upper / Upper Middle	Injection	Oct-22	473,082	30	695	93	11
IRZ-27	Upper / Upper Middle	Injection	Nov-22	401,552	30	595	83	11
IRZ-27	Upper / Upper Middle	Injection	Dec-22	439,279	44	661	89	11
IRZ-27	Upper / Upper Middle	Injection	Jan-23	267,621	40	419	56	11
IRZ-27	Upper / Upper Middle	Injection	Feb-23	383,975	56	585	87	11
IRZ-27	Upper / Upper Middle	Injection	Mar-23	177,753	12	314	42	9
IRZ-27	Lower	Injection	Jan-22	47,797	12	154	21	5.2
IRZ-27	Lower	Injection	Feb-22	53,661	12	167	25	5.4
IRZ-27	Lower	Injection	Mar-22	190,998	7.1	594	80	5.4
IRZ-27	Lower	Injection	Apr-22	82,801	1.9	232	32	5.9
IRZ-27	Lower	Injection	May-22	152,496	6.2	495	67	5.1
IRZ-27	Lower	Injection	Jun-22	238,803	5.3	633	88	6.3
IRZ-27	Lower	Injection	Jul-22	109,216	2.3	250	34	7.3
IRZ-27	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-27	Lower	Injection	Sep-22	183,269	8.9	409	57	7.5
IRZ-27	Lower	Injection	Oct-22	291,064	18	695	93	7.0
IRZ-27	Lower	Injection	Nov-22	258,032	19	595	83	7.2
IRZ-27	Lower	Injection	Dec-22	297,470	29	663	89	7.5
IRZ-27	Lower	Injection	Jan-23	187,983	29	419	56	7.5
IRZ-27	Lower	Injection	Feb-23	261,555	39	588	88	7.4
IRZ-27	Lower	Injection	Mar-23	138,665	9.4	316	42	7.3
IRZ-29	Upper	Injection	Jan-22	740	--	3	0.40	4.1
IRZ-29	Upper	Injection	Feb-22	50,817	12	157	23	5.4
IRZ-29	Upper	Injection	Mar-22	121,397	5.2	388	52	5.2
IRZ-29	Upper	Injection	Apr-22	71,497	1.6	241	33	4.9
IRZ-29	Upper	Injection	May-22	155,773	6.6	475	64	5.5
IRZ-29	Upper	Injection	Jun-22	236,587	5.4	632	88	6.2
IRZ-29	Upper	Injection	Jul-22	112,028	2.5	249	33	7.5

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IRZ-29	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-29	Upper	Injection	Sep-22	--	--	--	--	--
IRZ-29	Upper	Injection	Oct-22	--	--	--	--	--
IRZ-29	Upper	Injection	Nov-22	--	--	--	--	--
IRZ-29	Upper	Injection	Dec-22	205,250	23	408	55	8.4
IRZ-29	Upper	Injection	Jan-23	307,780	51	601	81	8.5
IRZ-29	Upper	Injection	Feb-23	143,630	20	302	45	7.9
IRZ-29	Upper	Injection	Mar-23	147,814	9.8	318	43	7.7
IRZ-29	Lower	Injection	Jan-22	3,450	--	5	1	12
IRZ-29	Lower	Injection	Feb-22	70,677	16	158	24	7.5
IRZ-29	Lower	Injection	Mar-22	167,369	7.4	389	52	7.2
IRZ-29	Lower	Injection	Apr-22	92,461	2.0	243	34	6.3
IRZ-29	Lower	Injection	May-22	200,840	7.9	497	67	6.7
IRZ-29	Lower	Injection	Jun-22	306,910	7.2	637	88	8.0
IRZ-29	Lower	Injection	Jul-22	145,421	3.1	250	34	9.7
IRZ-29	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-29	Lower	Injection	Sep-22	--	--	--	--	--
IRZ-29	Lower	Injection	Oct-22	--	--	--	--	--
IRZ-29	Lower	Injection	Nov-22	--	--	--	--	--
IRZ-29	Lower	Injection	Dec-22	269,253	30	408	55	11
IRZ-29	Lower	Injection	Jan-23	340,843	55	605	81	9
IRZ-29	Lower	Injection	Feb-23	176,202	26	301	45	10
IRZ-29	Lower	Injection	Mar-23	191,367	12	316	42	10
IRZ-31	Upper	Injection	Jan-22	2,620	--	4	1	11
IRZ-31	Upper	Injection	Feb-22	60,855	15	160	24	6.3
IRZ-31	Upper	Injection	Mar-22	141,661	6.2	389	52	6.1
IRZ-31	Upper	Injection	Apr-22	91,150	1.9	247	34	6.2
IRZ-31	Upper	Injection	May-22	180,400	7.6	476	64	6.3
IRZ-31	Upper	Injection	Jun-22	286,700	6.3	633	88	7.5
IRZ-31	Upper	Injection	Jul-22	128,465	3.0	250	34	8.6
IRZ-31	Upper	Injection	Aug-22	19,769	2.6	37	5.0	8.9
IRZ-31	Upper	Injection	Sep-22	313,406	14	586	81	8.9
IRZ-31	Upper	Injection	Oct-22	367,228	23	695	93	8.8
IRZ-31	Upper	Injection	Nov-22	287,841	22	543	75	8.8
IRZ-31	Upper	Injection	Dec-22	373,064	38	691	93	9.0
IRZ-31	Upper	Injection	Jan-23	247,762	39	474	64	8.7
IRZ-31	Upper	Injection	Feb-23	305,888	45	588	88	8.7
IRZ-31	Upper	Injection	Mar-23	147,354	8.8	314	42	7.8
IRZ-31	Lower	Injection	Jan-22	3,380	--	5	0.67	11
IRZ-31	Lower	Injection	Feb-22	60,795	14	161	24	6.3
IRZ-31	Lower	Injection	Mar-22	144,199	6.4	389	52	6.2
IRZ-31	Lower	Injection	Apr-22	90,213	1.9	247	34	6.1

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IRZ-31	Lower	Injection	May-22	172,157	7.4	474	64	6.1
IRZ-31	Lower	Injection	Jun-22	283,737	6.1	632	88	7.5
IRZ-31	Lower	Injection	Jul-22	137,303	2.9	250	34	9.2
IRZ-31	Lower	Injection	Aug-22	20,210	2.6	37	5.0	9.1
IRZ-31	Lower	Injection	Sep-22	316,969	14	586	81	9.0
IRZ-31	Lower	Injection	Oct-22	357,619	23	695	93	8.6
IRZ-31	Lower	Injection	Nov-22	282,636	21	546	76	8.6
IRZ-31	Lower	Injection	Dec-22	375,126	38	691	93	9.0
IRZ-31	Lower	Injection	Jan-23	248,563	40	473	64	8.8
IRZ-31	Lower	Injection	Feb-23	304,637	45	588	88	8.6
IRZ-31	Lower	Injection	Mar-23	140,347	8.1	314	42	7.4
IRZ-33	Upper	Injection	Jan-22	560	--	2	0.27	4.7
IRZ-33	Upper	Injection	Feb-22	42,259	10	158	24	4.5
IRZ-33	Upper	Injection	Mar-22	97,704	4.2	389	52	4.2
IRZ-33	Upper	Injection	Apr-22	--	--	--	--	--
IRZ-33	Upper	Injection	May-22	92,191	3.1	160	22	9.6
IRZ-33	Upper	Injection	Jun-22	199,182	4.2	634	88	5.2
IRZ-33	Upper	Injection	Jul-22	86,053	1.8	250	34	5.7
IRZ-33	Upper	Injection	Aug-22	12,923	1.7	37	5.0	5.8
IRZ-33	Upper	Injection	Sep-22	202,884	9.0	590	82	5.7
IRZ-33	Upper	Injection	Oct-22	237,922	15	695	93	5.7
IRZ-33	Upper	Injection	Nov-22	219,324	15	632	88	5.8
IRZ-33	Upper	Injection	Dec-22	141,118	15	398	53	5.9
IRZ-33	Upper	Injection	Jan-23	200,646	27	578	78	5.8
IRZ-33	Upper	Injection	Feb-23	196,782	29	586	87	5.6
IRZ-33	Upper	Injection	Mar-23	81,299	4.8	313	42	4.3
IRZ-33	Lower	Injection	Jan-22	480	--	2	0.27	4.0
IRZ-33	Lower	Injection	Feb-22	41,839	9.8	158	24	4.4
IRZ-33	Lower	Injection	Mar-22	97,074	4.2	389	52	4.2
IRZ-33	Lower	Injection	Apr-22	--	--	--	--	--
IRZ-33	Lower	Injection	May-22	119,857	6.1	395	53	5.1
IRZ-33	Lower	Injection	Jun-22	198,892	4.2	633	88	5.2
IRZ-33	Lower	Injection	Jul-22	95,088	1.9	250	34	6.3
IRZ-33	Lower	Injection	Aug-22	11,394	1.7	33	4.4	5.8
IRZ-33	Lower	Injection	Sep-22	218,254	9.5	590	82	6.2
IRZ-33	Lower	Injection	Oct-22	262,987	16	695	93	6.3
IRZ-33	Lower	Injection	Nov-22	235,350	16	634	88	6.2
IRZ-33	Lower	Injection	Dec-22	145,332	15	398	53	6.1
IRZ-33	Lower	Injection	Jan-23	218,603	30	578	78	6.3
IRZ-33	Lower	Injection	Feb-23	211,466	31	586	87	6.0
IRZ-33	Lower	Injection	Mar-23	122,490	8.0	314	42	6.5

Table 2.2
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Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-35	Upper	Injection	Jan-22	800	--	2	0.27	6.7
IRZ-35	Upper	Injection	Feb-22	51,887	12	158	24	5.5
IRZ-35	Upper	Injection	Mar-22	118,638	5.1	387	52	5.1
IRZ-35	Upper	Injection	Apr-22	76,787	1.7	190	26	6.7
IRZ-35	Upper	Injection	May-22	156,513	6.4	327	44	8.0
IRZ-35	Upper	Injection	Jun-22	170,729	5.5	427	59	6.7
IRZ-35	Upper	Injection	Jul-22	114,697	2.4	249	33	7.7
IRZ-35	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-35	Upper	Injection	Sep-22	167,806	9.6	366	51	7.6
IRZ-35	Upper	Injection	Oct-22	299,152	18	695	93	7.2
IRZ-35	Upper	Injection	Nov-22	295,939	20	638	89	7.7
IRZ-35	Upper	Injection	Dec-22	326,679	31	679	91	8.0
IRZ-35	Upper	Injection	Jan-23	271,265	37	578	78	7.8
IRZ-35	Upper	Injection	Feb-23	195,571	29	426	63	7.7
IRZ-35	Upper	Injection	Mar-23	141,918	9.5	313	42	7.6
IRZ-37	Upper	Injection	Jan-22	380	--	2	0.27	3.2
IRZ-37	Upper	Injection	Feb-22	31,301	7.0	153	23	3.4
IRZ-37	Upper	Injection	Mar-22	76,904	3.4	383	51	3.3
IRZ-37	Upper	Injection	Apr-22	60	--	0.3	0.04	3.3
IRZ-37	Upper	Injection	May-22	88,691	4.4	405	54	3.6
IRZ-37	Upper	Injection	Jun-22	100,323	1.3	425	59	3.9
IRZ-37	Upper	Injection	Jul-22	62,768	1.3	249	33	4.2
IRZ-37	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-37	Upper	Injection	Sep-22	99,142	5.6	366	51	4.5
IRZ-37	Upper	Injection	Oct-22	174,701	11	695	93	4.2
IRZ-37	Upper	Injection	Nov-22	165,652	12	638	89	4.3
IRZ-37	Upper	Injection	Dec-22	189,945	18	674	91	4.7
IRZ-37	Upper	Injection	Jan-23	156,072	22	578	78	4.5
IRZ-37	Upper	Injection	Feb-23	119,166	19	465	69	4.3
IRZ-37	Upper	Injection	Mar-23	80,268	5.3	313	42	4.3
IRZ-39	Upper	Injection	Jan-22	--	--	--	--	--
IRZ-39	Upper	Injection	Feb-22	17,140	2.9	72	11	4.0
IRZ-39	Upper	Injection	Mar-22	83,493	4.0	384	52	3.6
IRZ-39	Upper	Injection	Apr-22	5,811	0.15	37	5.1	2.6
IRZ-39	Upper	Injection	May-22	--	--	--	--	--
IRZ-39	Upper	Injection	Jun-22	--	--	--	--	--
IRZ-39	Upper	Injection	Jul-22	--	--	--	--	--
IRZ-39	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-39	Upper	Injection	Sep-22	--	--	--	--	--
IRZ-39	Upper	Injection	Oct-22	--	--	--	--	--
IRZ-39	Upper	Injection	Nov-22	--	--	--	--	--

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IRZ-39	Upper	Injection	Dec-22	--	--	--	--	--
IRZ-39	Upper	Injection	Jan-23	12,763	2.0	159	21	1.3
IRZ-39	Upper	Injection	Feb-23	31,539	4.3	540	80	1.0
IRZ-39	Upper	Injection	Mar-23	5,597	0	164	22	0.6
IRZ-9	Upper	Extraction	Jan-22	207,010	--	66	8.9	52
IRZ-9	Upper	Extraction	Feb-22	--	--	--	--	--
IRZ-9	Upper	Extraction	Mar-22	612	--	1	0.13	10
IRZ-9	Upper	Extraction	Apr-22	420	--	0.2	0.02	44
IRZ-9	Upper	Extraction	May-22	1,189	--	0.3	0.04	66
IRZ-9	Upper	Extraction	Jun-22	2,649	--	1.0	0.14	44
IRZ-9	Upper	Extraction	Jul-22	--	--	--	--	--
IRZ-9	Upper	Extraction	Aug-22	--	--	--	--	--
IRZ-9	Upper	Extraction	Sep-22	5,087	--	1.5	0.21	57
IRZ-9	Upper	Extraction	Oct-22	3,928	--	1.5	0.20	44
IRZ-9	Upper	Extraction	Nov-22	620,626	--	182	25	57
IRZ-9	Upper	Extraction	Dec-22	--	--	--	--	--
IRZ-9	Upper	Extraction	Jan-23	307,046	--	100	13	51
IRZ-9	Upper	Extraction	Feb-23	58,437	--	17	2.56	57
IRZ-9	Upper	Extraction	Mar-23	30,590	--	8	1.12	61
IRZ-13D	Lower	Extraction	Jan-22	--	--	--	--	--
IRZ-13D	Lower	Extraction	Feb-22	--	--	--	--	--
IRZ-13D	Lower	Extraction	Mar-22	937,033	--	391	53	40
IRZ-13D	Lower	Extraction	Apr-22	353,835	--	220	31	27
IRZ-13D	Lower	Extraction	May-22	728,432	--	472	63	26
IRZ-13D	Lower	Extraction	Jun-22	1,071,385	--	630	88	28
IRZ-13D	Lower	Extraction	Jul-22	469,048	--	250	34	31
IRZ-13D	Lower	Extraction	Aug-22	16,196	--	15	2.0	18
IRZ-13D	Lower	Extraction	Sep-22	1,107,871	--	616	86	30
IRZ-13D	Lower	Extraction	Oct-22	1,416,084	--	695	93	34
IRZ-13D	Lower	Extraction	Nov-22	1,055,303	--	544	76	32
IRZ-13D	Lower	Extraction	Dec-22	1,389,277	--	661	89	35
IRZ-13D	Lower	Extraction	Jan-23	962,725	--	434	58	37
IRZ-13D	Lower	Extraction	Feb-23	872,383	--	585	87	25
IRZ-13D	Lower	Extraction	Mar-23	491,660	--	330	44	25
IRZ-13S	Upper	Extraction	Jan-22	--	--	--	--	--
IRZ-13S	Upper	Extraction	Feb-22	--	--	--	--	--
IRZ-13S	Upper	Extraction	Mar-22	674,317	--	391	53	29
IRZ-13S	Upper	Extraction	Apr-22	491,289	--	241	33	34
IRZ-13S	Upper	Extraction	May-22	1,115,829	--	470	63	40
IRZ-13S	Upper	Extraction	Jun-22	1,594,436	--	629	87	42
IRZ-13S	Upper	Extraction	Jul-22	697,982	--	250	34	47
IRZ-13S	Upper	Extraction	Aug-22	220	--	0.2	0.027	18
IRZ-13S	Upper	Extraction	Sep-22	891,370	--	364	51	41

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IRZ-13S	Upper	Extraction	Oct-22	1,745,715	--	695	93	42
IRZ-13S	Upper	Extraction	Nov-22	1,329,795	--	577	80	38
IRZ-13S	Upper	Extraction	Dec-22	1,405,225	--	672	90	35
IRZ-13S	Upper	Extraction	Jan-23	973,076	--	434	58	37
IRZ-13S	Upper	Extraction	Feb-23	986,523	--	532	79	31
IRZ-13S	Upper	Extraction	Mar-23	726,270	--	330	44	37
IRZ-23	Lower	Extraction	Jan-22	583,763	--	148	20	66
IRZ-23	Lower	Extraction	Feb-22	615,500	--	168	25	61
IRZ-23	Lower	Extraction	Mar-22	2,542,801	--	621	83	68
IRZ-23	Lower	Extraction	Apr-22	1,887,412	--	543	75	58
IRZ-23	Lower	Extraction	May-22	1,682,733	--	476	64	59
IRZ-23	Lower	Extraction	Jun-22	2,317,090	--	634	88	61
IRZ-23	Lower	Extraction	Jul-22	984,853	--	250	34	66
IRZ-23	Lower	Extraction	Aug-22	159,004	--	37	5.0	72
IRZ-23	Lower	Extraction	Sep-22	2,341,592	--	627	87	62
IRZ-23	Lower	Extraction	Oct-22	2,335,186	--	696	94	56
IRZ-23	Lower	Extraction	Nov-22	1,590,684	--	449	62	59
IRZ-23	Lower	Extraction	Dec-22	2,290,752	--	649	87	59
IRZ-23	Lower	Extraction	Jan-23	1,952,979	--	541	73	60
IRZ-23	Lower	Extraction	Feb-23	1,829,473	--	516	77	59
IRZ-23	Lower	Extraction	Mar-23	1,942,227	--	673	90	48

Abbreviations:
-- = not applicable
gal = gallon
gpm = gallons per minute
ID = identification
IRZ = In-Situ Reactive Zone
NTH = National Trails Highway

Table 2-5 Summary of Releases Occurred During Groundwater Construction

Source: Jacobs, 2023. *June 2023 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California*. June.

Table 2-5. Summary of Releases Occurred During Groundwater Remedy Construction

June 2023 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup

PG&E Topock Compressor Station, Needles, California

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
10/8/2018	MW-L	Weight of drill mud tub and drilling activity caused the ground to cave in, which formed a void. Shifting ground made the seal weak causing the seal to leak, causing a release onto ground.	Mixture of freshwater and aquifer water	2 gallons	Three 5-gallon buckets of impacted soil was removed and placed into drilling spoil bin.	More thorough inspections of seal on mud tub
10/10/2018	MW-L	Pressure from the drilling activity caused aquifer/ freshwater water to push up, around the casing and the seal causing a release.	Mixture of freshwater and aquifer water	1 to 2 gallons	About .0.5 gallon of impacted soil was removed and placed into drilling spoil bin.	Moving forward bentonite will be used in the hole created by hand clearing for utilities and a 7-inch conductor casing will be drilled through the bentonite to create a tight seal.
1/10/2019	Access dirt road east of SPY	Hydraulic hose ruptured at the rear of a roll off truck (during a lift), resulting in hydraulic fluid contacting surface soil.	Hydraulic fluid	1/2 pint	About 1.5 gallon of impacted soil was removed and taken to IM3 for pickup by next milk run.	
2/27/2019	Floodplain	Hydraulic hose on a skid steer ruptured, resulting in oil on floodplain sand.	Hydraulic fluid	6 to 7 ounces	An approximate 2 square shovels with 3/4 full of impacted sand was removed and placed into a 5 gallon bucket. The 5-gallon bucket was taken to IM3 for pick up by next milk run.	Continue to do inspection of equipment prior to use.
2/27/2019	MW-N	Shifting ground weakened seal around mud tub, causing the seal to leak and release water onto the ground.	Mixture of freshwater and aquifer water	Not available	Approximately 10 gallons of impacted soil removed and placed into drilling spoil bin.	Site prep to include soil compaction before drilling. Seal will be inspected during each day and upon setup.
4/9/2019	IRZ-20	A “blowout” occurred where water in the borehole discharged out the annular space, and onto ground.	Mixture of freshwater and aquifer water	20 gallons	Cr6 tested at IM3, result was ND. Impacted soil left in place.	Drill methodology changed to avoid another "blowout".
4/11/2019	MW-20 Bench	Wastewater storage frac tank overtopped during water transfer operation.	Drilling wastewater	5 to 10 gallons	Cr6 tested at IM3, result was ND. Soil left in place.	Better coordination with well construction support team and water level will be measured using water level tube.

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
5/29/2019	MW-20 Bench	Wastewater from a storage frac tank leaked into the tank containment, and then onto the ground because part of the containment had collapsed.	Drilling wastewater	200 gallons	Cr6 test at IM3, result was 8.1 ppb. Impacted soil left in place.	Notified subcontractors that no one is to adjust or remove piping and hose manifolds. Regular inspections to be conducted. A pipe rack will be used for better housekeeping of hoses.
5/31/2019	Floodplain	Hydraulic hose on a backhoe ruptured resulting in oil on the ground.	Hydraulic fluid	12 ounces	Area cleaned with absorbent pads and approximately 0.4 gallon of impacted sand was removed/placed in bucket. The bucket was taken to IM3 for pick up by next milk run.	Equipment taken out of service and repaired
8/7/2019	RB-4	The metal band that secured the fitting inside a discharge hose leaked onto ground. The hose was part of the wastewater service line for the river bank wells.	A mixture of freshwater and aquifer water	0.5 gallons	Impacted sand left in place.	Installed catch/spill containment to encompass all hose connections and fittings at the connection points. Tee installed to discharge hose to connect at 90 degree angle instead of 180.
8/27/2019	RB-3	Wastewater leaked into containment during water transfer operation. Water released onto ground from a separation between two fiber rolls in the containment wall.	A mixture of freshwater and aquifer water	5 gallons	Impacted sand left in place.	Fiber rolls reinstalled without gap. Stand down with crew to emphasis BMPs and SWPPP refresher.
9/6/2019	Pipeline B	Hydraulic oil leaked from excavator.	Hydraulic oil	2 to 4 ounces	Impacted soil removed and taken to IM3 for pick up by next milk run.	
9/11/2019	Northern fence line of CHQ	A loose seal on the hydraulic cylinder that raises/lowers the dump bed caused a hydraulic oil leak onto ground.	Hydraulic oil	3 to 5 ounces	One 5-gallon of impacted rocks were collected and took to IM3 for pickup by next milk run.	Reviewed BMP with crew in tailboard.
9/20/2019	Floodplain access road from RB-5 to RB-2	Leak from construction truck	Hydraulic oil	3 to 4 ounces	Approximately 4 cubic feet of impacted sand and absorbent pads were placed in a bucket and taken to IM-3 for pickup in next milk run.	Inspect work area before leaving area.
9/27/2019	Pipeline B	Hydraulic oil leaked from pickup truck.	Hydraulic oil	2 ounces	Impacted soil was removed and taken to IM-3 for pickup in next milk run.	

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
11/2/2019	MW-Y	Hydraulic line ruptured during placement of stabilizing mats.	Hydraulic oil	Not available	Impacted sand was removed and taken to IM-3.	
12/12/2019	Pipeline C7	Fuel leaked from a fuel cap of a front end loader that was not tightened correctly.	Fuel	Not available	Impacted soil removed and placed in three 55 gallon drums. Drums taken to IM-3 for disposal with milk run.	Retraining of personnel on post fueling equipment inspections.
1/9/2020	Pipeline B	Hydraulic oil leaked from hydraulic hammer onto ground.	Hydraulic fluid	3 drops	Cleanup of impacted rocks (6 rocks) performed under TCS direction and given to TCS for disposal.	Reminder of situation awareness that allowed team to catch leak early.
1/9/2020	MW-20 Bench	Wastewater leaked from a valve during transfer operation, and onto ground.	Drilling wastewater	1/4 gallon	Impacted soil removed and placed into drilling spoil bin.	Containment and absorbent pads placed under leaky valve, main valve to tank closed, and the line was pumped off. Valve relocated to within containment and tightened.
2/6/2020	MW-20 Bench	Freshwater released onto ground during a water transfer operation	Freshwater	5 gallons	Impacted soil left in place.	Discussion with team about opening overflow valve and monitor the spill bucket from the overflow valve on the water truck tank as a visual indicator that the tank is full.
2/18/2020	Pipeline B access road	Hydraulic oil leak occurred from the engine bay of a pickup truck.	Hydraulic fluid	Not available	Impacted soil removed and taken to IM-3 for pickup in next milk run.	Discussion with team about proper inspection of site pickup trucks.
2/20/2020	SPY	Antifreeze/water released from a passenger vehicle parked at the SPY.	Antifreeze/water	Not available	Impacted rocks (5-gallon) removed and disposed offsite.	Vehicle removed from project site. PG&E ordered all vehicles to stop for physical inspections.
2/21/2020	Bat Cave Wash access road	Hydraulic oil leaked from vehicle on access road to Bat Cave Wash.	Hydraulic fluid	Several drops	Impacted soil removed and taken to IM-3 for pickup in next milk run.	Truck removed from site. PG&E brought on board 3rd party inspector following week to perform thorough inspections of each heavy duty vehicle on site.
5/15/2020	MW-20 Bench	Antifreeze released from a forklift onto ground.	Antifreeze	2 ounces	Impacted rocks were removed.	Heavy equipment inspection checklist emphasized and reviewed with team.

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
6/8/2020	MW-20 Bench	Cutting oil inside the electrician's conex box flowed out and dripped to the ground. No containment was present beneath the cutting machine.	Cutting oil	3 to 4 ounces	About 2 pounds of impacted soil was removed and taken to IM-3 for pickup in next milk run.	Cutting machine placed on containment.
6/16/2020	MW-20 Bench	Fuel leaked from a fuel cap of a construction vehicle, that was not tightened correctly.	Fuel	Not available	Impacted soil was removed/placed in a 5-gallon bucket and taken to IM-3 for pickup in next milk run.	Proper fueling procedures discussed with subcontractor.
7/1/2020	Pipeline J	Concrete washout water leaked from containment and released onto ground.	Concrete wash out water	Not available	About 1/2 cubic yard of impacted soil removed and transported to SPY for classification per SMP.	Use new plastic.
7/11/2020 to 7/12/2020	C19 staging area	Grease melted from an arm knuckle of a backhoe and onto the ground	Grease	Not available	Less than 10 ounces of impacted soil was removed and taken to IM-3 for pickup in next milk run.	
6/29/2021	NTH	Diesel fuel leaked from a fuel cap on a water truck while on NTH	Diesel	Not available	Approximately two 5-gallon buckets of impacted soil was removed and brought to SPY.	Reviewed fueling procedures with crew.
6/22/2021	MW-20 Bench	Antifreeze leak from skid steer	Antifreeze	Not available	Affected soil was removed and placed in buckets and brought to SPY.	
6/14/2021	IRZ-39 well vault	Extracted groundwater from TW-01 released onto ground during startup of the aquifer test.	TW-01	A few hundred gallons	TW-1 data showed 1400ppb of Cr6. Impacted soil was excavated and placed on plastic. Sample submitted for lab.	Test suspended and quality control review conducted.
3/23/2022	TWB-2	A hydraulic line broke during the process of retrieving stuck drill casing from the borehole and hydraulic fluid leaked onto the soil hopper, mud tub, and well casing, as well as surrounding ground.	Hydraulic fluid	1/4 cup	Stained gravel removed and fluid in mud tub soaked up with absorbent pads and all placed into 5 gallon bucket. The bucket was taken to IM3 for pickup in next milk run.	
4/26/2022	Transwestern Bench	Drilling wastewater stored in frac tank leaked onto the tank's containment. Water in contained released onto ground through pin holes in the containment.	Drilling wastewater	Three gallons	Impacted soil will be removed when the leaked tank and containment are removed.	Inspection of tanks and liners prior to putting them into service.

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
5/4/2022	ER-2	A hydraulic line ruptured during drilling at the ER-2 location (on the Refuge) and due to high winds at the time, hydraulic fluid sprayed droplets on field crew, equipment, nearby creosote plants, wooden rails, temporary water line, and the ground	Hydraulic fluid	Unknown	Impacted area (nearby bluff, ground) and creosote plants were decontaminated/ sprayed with Simple Green. Oil spots on the temporary water line was wiped down.	The crew will add a better protective spiral or rubber wrap that fits tighter to the hose. This type of wrap is thicker than the current cloth wrap, will give better protection, and allow for easier visual inspection of normal wear and tear.
5/11/2022	Floodplain at C9 north, near 12-kV electrical vault	A dump truck hauling soil for the revegetation project made a U-turn near the C9 North area and bumped into the 12-kV electrical vault. The truck diesel tank leaked and spilled diesel fuel on the ground and into the electrical vault.	Diesel fuel	15 gallons	About 8 cubic yards of impacted soil was excavated and contained in 39 55-gallon drums. The drums were picked up for offsite disposal. A confirmation soil sample was collected close to the southeast corner of the 12-kv electrical vault where most of the impacted soil was removed for TPH analysis. TPH results are below soil management screening levels. Based on lab results, the excavated area was backfilled with soil from the SPY. Once the impacted soil was removed, the inside of the electrical vault was inspected. A diesel sheen was observed on top of existing water inside the vault. An approximate 200 gallons of water/diesel was removed from the electrical vault and contained in four 55-gallon drums. The drums were picked up for offsite disposal.	Traffic delineators and red rope were placed across the road to prevent traffic from trying to turn around at the end of the road. The project team's daily tailboard meetings will continue to include reminders and discussion on designated work areas and egress and regress areas and a description of delineation (wattles, tape, cones, ropes, etc.) for areas not to enter.
7/22/2022	TCS-2	While lifting a soil bin onto a transport truck, some water inside the bin spilled onto the plastic containment below and splashed onto nearby equipment.	Drilling wastewater	Minimal	The contractor removed all wet areas visible on the ground and cleaned up the affected equipment. The affected soil was put into the soil bin.	Soil bins will be inspected prior to lifting onto truck. If water is present and has a potential to spill outside of the bin, the water will be removed prior to lifting the bin.

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
9/2/2022	FW-02B	While backfilling at FW-02B, the seal on the mud tub broke releasing drilling and purge water onto secondary containment (plastic) and the ground (mostly on the drilling pad and a minor amount onto the ground about 2 feet south of the drilling pad).	Drilling wastewater	About 2 gallons	About 2 gallons of wet soil outside of the drill pad was removed and put into the FW-02 drilling soil bin. The wet soil on the pad was not removed since this pad will be built up for the dual rotary rig	During morning rig inspections of the mud tub, the mud tub seal around the conductor casing will similarly be inspected. In the event that the seal is seen as compromised (cracks, material is beginning to look dry), a stop work will be utilized, the lead driller will be alerted and additional bentonite chips will be used to reinforce the mud tub seal.
11/23/2022	IRZ-23 Well Vault	A pipe flange broke in the IRZ-23 well vault causing extracted groundwater from IRZ-9 and IRZ-13 to accumulate in the vault. The system alarm programing shut down the IRZ system, as water reached a high level mark in the vault. The Operator bypassed the alarms, which re-started the system, causing the extracted groundwater to overflow from the IRZ-23 well vault and onto ground.	Untreated groundwater from IRZ-9 and IRZ-13	1,400 gallons	Proposed surface soil sample locations were submitted to the agencies on 11/29/22 to assist in decision making regarding cleanup. After receipt of the Bureau of Reclamation (BOR)'s concurrence on 11/30/22, soil samples were collected on 12/2/22 and submitted to the laboratory. BOR is the landowner where the release occurred. A summary of the soil sampling results and a comparison to background and baseline soil data are included at the end of this table. Results were discussed with regulatory agencies on 1/10/23. Based on data and the comparative analysis, PG&E recommended that no further action is necessary for the release. BOR provided concurrence on 1/10/23. DTSC provided a conditional concurrence on 1/13/23. DOI provided concurrence on 1/17/23.	The existing SOP was updated to include additional details on communication protocols and operational procedures for post-alarm startup and operation of the IRZ system. Operators was trained on the updated SOP on 12/13/22.

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
2/18/2023	MW-20 Bench, north of the frac tanks secondary containment structure	An automated valve had closed, dead-heading an operating submersible pump in IRZ-15 which led to a gasket on a flange connection discharging spray.	Backwash water from IRZ-15	500 gallons (100 gallons sprayed outside of the containment structure, 400 gallons were inside the structure)	The released water inside the secondary containment structure was pumped into the frack tanks for processing through the Remedy-produced Water Conditioning Tank Farm. No standing water was observed by O&M personnel arrived on-scene on 2/18/23. A sample of the backwash water was immediately collected to determine next steps for soil cleanup. Results of the released water discussed with regulatory agencies on 2/28/23, showed concentrations of Cr at 73 ug/L or ppb, Cr6 at 68 ppb, Arsenic below reporting limit of 0.1 ppb, and low levels of COPCs (Selenium, Molybdenum). Due to the low levels of contaminants in the released water, the ongoing IRZ O&M activities at the MW-20 Bench, and the MW-20 Bench designation as an Area of Concern (AOC) in the RFI/RI, PG&E recommended no soil cleanup action for this release at this time.	An incident report was submitted to the agencies on 3/1/2023. The report outlined the following corrective actions taken to prevent reoccurrence: Several changes to the logic of the system operations were completed or confirmed for all IRZ wells, including: • Prevent operation of all injection well backwash pumps when FCV-IRZ00-628Q is closed. • Prevent operation of all injection well backwash pumps if PLC communications are disabled. • Prevent operation of all injection well backwash pumps if the T-IRZ00-0621 tank level is high, or if the LE/LT-IRZ00-0658 level transmitter is faulted.

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
4/3/2023	ER-4	Upon returning from deconning drilling equipment, the drill crew discovered the freshwater hose filling the drill rig tank was left-on and overflowing onto the drill pad. Freshwater was released onto plastic and subsequently spilled-out into the larger drill pad area via a previously unobserved tear in the plastic. The extent of the release is limited to the drill pad (built to support the rig) and did not breach the line of BMPs (i.e., straw wattles).	Freshwater	100 gallons	Notifications were made to PG&E and onsite compliance personnel. There was no standing water when compliance personnel arrived on scene. After drilling is complete at ER-4, the drill pad soil will be removed and transported to the Soil Processing Yard for characterization.	The root case was determined to be an external distraction that caused a failure to properly communicate that the water hose was actively filling the freshwater tank. The drill crew and the geologist discussed greater effort on communication and division of tasks at hand to ensure that all project elements are accounted for. Furthermore, In the event that a tank is being filled, one member of the team will be identified to have the sole responsibility to monitor that tank until it is full.

BMP = best management practice
CHQ = construction headquarters
Cr6 = hexavalent chromium
IM-3 = Interim Measure No. 3
kV = kilovolt
ND = not detected
NHT = National Trail Highway
PG&E = Pacific Gas and Electric
ppb = part(s) per billion
SPY = Soil Processing Yard
SWPPP = stormwater pollution prevention plan
TPH = total petroleum hydrocarbons

Table 2.3 NTH IRZ System Operations and Non-Routine Maintenance Log

Source: Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California*. June 14.

Table 2.3
NTH IRZ System Operations and Non-Routine Maintenance Log
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
1/1/2023 through 1/3/2023	2.2	IRZ system offline. IRZ-33, IRZ-35, and IRZ-37 remained offline following system restart due to ongoing electrical equipment testing.	Rainstorm flooded vaults, causing system shutdown. IRZ-33 surge protector tripped and will be replaced. Lack of power along IRZ-35 and IRZ-37 due to 480V breaker panel.
1/3/2023	--	Backwashed injection wells IRZ-17 (lower), IRZ-20 (lower), IRZ-27 (upper/middle), and IRZ-31 (lower).	--
1/3/2023	--	Ethanol dosing occurred.	Reduced dosing duration to 4 hours due to vault and electrical equipment inspections following the 1/1/2022 storm.
1/4/2023	1.2	IRZ system offline.	Warranty repairs being completed on the 12kV system.
1/5/2023	--	Injection wells IRZ-33, IRZ-35 and IRZ-37 resumed operation.	Completed electrical equipment testing. Surge protector at IRZ-33 is functional.
1/6/2023	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37.	--
1/6/2023	--	Ethanol dosing occurred at 4 hour dosing duration.	--
1/9/2023	--	Backwashed injection wells IRZ-17 (lower), IRZ-20 (lower), IRZ-31 (lower), and IRZ-37.	--
1/9/2023	--	Ethanol dosing occurred.	6 hour dosing duration.
1/9/2023 through 1/19/2023	--	Injection well IRZ-27 offline for well rehabilitation.	--
1/10/2023 through 1/11/2023	0.8	IRZ system offline.	TCS load shedding.
1/11/2023 through 1/20/2023	--	Extraction well IRZ-13S offline for VFD programming. IRZ-9 resumed operation.	--
1/11/2023 through 1/25/2023	--	Injection well IRZ-17 offline for well rehabilitation and sump pump installation.	--
1/11/2023	--	Backwashed injection wells IRZ-16, IRZ-18, IRZ-20, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
1/12/2023	--	Partial ethanol dosing occurred.	IRZ system lost power while dosing due to TCS load shedding. Approximately half of the intended ethanol dose was injected into the injection wells prior to shutdown.
1/12/2023	0.1	IRZ system offline.	TCS power outage. Delay restart due to TCS testing.
1/12/2023 through 1/14/2023	--	Reinjected conditioned water into injection wells.	--
1/13/2023	--	Backwashed injection wells IRZ-20 (lower), IRZ-31 (lower), and IRZ-37.	--

Table 2.3
NTH IRZ System Operations and Non-Routine Maintenance Log
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
1/14/2023 through 1/23/2023	--	Extraction well IRZ-13D offline for VFD programming.	--
1/14/2023 through 1/16/2023	1.8	IRZ system offline.	Rainwater infiltrated IRZ vaults, causing system shutdown.
1/16/2023	--	Backwashed injection wells IRZ-16, IRZ-18, IRZ-20 (upper), IRZ-29, IRZ-31 (upper), IRZ-33, and IRZ-37.	--
1/16/2023 through 1/18/2023	--	Reinjected conditioned water into injection wells.	--
1/17/2023	--	Ethanol dosing occurred.	
1/18/2023	0.04	IRZ system offline.	Electrical work required extraction wells to be shut down.
1/19/2023 through 1/24/2023	--	Injection well IRZ-31 offline for well rehabilitation.	--
1/19/2023	--	Backwashed injection wells IRZ-16, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-33, IRZ-35, and IRZ-37.	--
1/19/2023	--	Reinjected conditioned water into injection wells.	--
1/20/2023	--	Ethanol dosing occurred.	--
1/23/2023	--	Backwashed injection wells IRZ-16, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-33, IRZ-35, and IRZ-37.	--
1/24/2023	--	Ethanol dosing occurred.	--
1/24/2023	--	Reinjected conditioned water into injection wells.	--
1/24/2023 through 2/2/2023	--	Injection well IRZ-20 offline for well rehabilitation.	--
1/25/2023	--	Injection well IRZ-39 resumed operation.	Sump pump installation and electrical equipment replacement complete.
1/25/2023 through 1/26/2023	--	Injection well IRZ-16 offline for 1 day for sump pump installation.	--
1/25/2023	--	Reduced target flowrate at IRZ-17 (lower) to 10 gpm due to high water levels.	--
1/26/2023	--	Backwashed injection wells IRZ-16, IRZ-18, IRZ-27, IRZ-29, IRZ-33, IRZ-35, and IRZ-37.	--
1/26/2023 through 1/27/2023	--	Reinjected conditioned water into injection wells.	--

Table 2.3
NTH IRZ System Operations and Non-Routine Maintenance Log
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
1/27/2023	--	Ethanol dosing occurred.	--
1/28/2023 through 1/30/2023	--	Extraction well IRZ-23 offline for approximately 2 days.	Pressure transducer malfunctioned, causing a high line pressure alarm. IRZ-23 shut down for remainder of weekend. Staff tested transducer to confirm functionality on 1/30.
1/30/2023	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, and IRZ-39.	--
1/30/2023	--	Reinjected conditioned water into injection wells.	--
1/31/2023	--	Ethanol dosing occurred.	--
2/2/2023	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-27, IRZ-29, IRZ-31, IRZ-33, and IRZ-39.	--
2/2/2023 through 2/6/2023	--	Injection well IRZ-37 offline for well rehab. IRZ-35 offline due to shared metering vault.	--
2/2/2023 through 2/6/2023	--	Injection well IRZ-20 offline to inspect equipment.	IRZ-20 (lower) was not operating after it was restarted following well rehabilitation. Maintenance and well rehabilitation teams determined that biofouling had compacted in the drop pipe upon startup. Drop pipe cleaned and well returned to operation.
2/3/2023 through 2/9/2023	--	Injection well IRZ-35 offline for well rehabilitation.	--
2/3/2023	--	Ethanol dosing occurred.	--
2/5/2023 through 2/7/2023	--	Extraction well IRZ-23 offline for approximately 2 days.	High pressure alarm and subsequent VFD reprogramming.
2/6/2023	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-27, IRZ-29, IRZ-31, IRZ-33, and IRZ-39.	--
2/6/2023 through 2/20/2023	--	Injection well IRZ-29 offline for well rehabilitation.	--
2/7/2023	--	Ethanol dosing occurred.	--
2/7/2023 through 2/8/2023	0.5	IRZ system offline.	Leak detection switch activated due to valve leak in IRZ-18. Sump pump check valve will be replaced.
2/8/2023 through 2/9/2023	--	Reinjected conditioned water into injection wells.	--
2/9/2023	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-31, IRZ-33 and IRZ-39.	--

Table 2.3
NTH IRZ System Operations and Non-Routine Maintenance Log
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
2/10/2023	--	Ethanol dosing occurred.	--
2/10/2023	--	Reinjected conditioned water into injection wells.	--
2/13/2023	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-31, IRZ-33, IRZ-35, IRZ-37, and IRZ-39.	--
2/14/2023	--	Ethanol dosing occurred.	--
2/14/2023 through 2/15/2023	0.3	IRZ system offline.	Leak detection switch activated due to valve leak in IRZ-16.
2/15/2023 through 3/2/2023	--	Injection well IRZ-16 offline for well rehabilitation.	--
2/15/2023 through 2/19/2023	--	Reinjected conditioned water into injection wells.	--
2/16/2023	--	Backwashed injection wells IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-31, IRZ-33, IRZ-35,and IRZ-37.	--
2/16/2023	--	Reduced flowrates at IRZ-18 due to high water levels. New flowrate at IRZ-18 (upper) is 4gpm and new flowrate at IRZ-18 (lower) is 11gpm.	--
2/17/2023 through 3/6/2023	--	Injection well IRZ-18 offline for well rehabilitation.	--
2/17/2023	--	Ethanol dosing occurred.	--
2/18/2023 through 2/19/2023	1.1	IRZ system offline.	Remedy-produced water release. See incident investigation report for more information.
2/19/2023	--	Injection well IRZ-17 (lower) flowrate reduced to 5 gpm due to high water levels.	--
2/20/2023	--	Backwashed injection wells IRZ-17, IRZ-20, IRZ-27, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
2/21/2023	--	Ethanol dosing occurred.	--
2/22/2023 through 2/23/2023	--	Reinjected conditioned water into injection wells.	--
2/23/2023	--	Backwashed injection wells IRZ-17, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, and IRZ-39.	--
2/24/2023	--	Ethanol dosing occurred.	--
2/25/2023 through 2/27/2023	1.6	IRZ system offline.	High water level alarms in vaults due to stormwater.

Table 2.3
NTH IRZ System Operations and Non-Routine Maintenance Log
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
2/27/2023	--	Backwashed injection wells IRZ-17, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, and IRZ-39.	--
2/28/2023 through 3/2/2023	--	Injection well IRZ-39 offline for approximately 2 days.	Electrical work required injection well to be shut down.
2/28/2023	--	Flowrates reduced by 0.5 gpm at IRZ-27 (upper/middle), IRZ-31 (upper), and IRZ-33 (upper).	High water levels at injection wells.
2/28/2023	--	Ethanol dosing occurred.	--
3/1/2023	--	Backwashed injection well IRZ-17.	--
3/1/2023 through 3/2/2023	0.9	IRZ system offline.	High water level alarms in vaults due to stormwater.
3/2/2023	--	Backwashed injection wells IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, and IRZ-39.	--
3/2/2023	--	Injection well IRZ-15 (upper) brought online.	--
3/2/2023 through 3/3/2023	--	Reinjected conditioned water into injection wells.	--
3/3/2023	--	Ethanol dosing occurred. Dosed northern injection wells only (IRZ-15 (upper), IRZ-16, IRZ-17, and IRZ-20).	High water levels observed in southern injection wells. Southern injection wells remained operational but were not dosed with ethanol.
3/6/2023	--	Backwashed injection wells IRZ-15 (upper), IRZ-16, IRZ-17, and IRZ-20.	--
3/7/2023	--	Injection well IRZ-15 (upper) offline for approximately 24 hours.	Once a week dosing at 540 mg/L for .
3/7/2023	--	Extraction well IRZ-23 offline for approximately 7 hours. IRZ-9 operated in its place.	Instrumentation and controls testing.
3/7/2023	--	Ethanol dosing occurred. Dosed northern injection wells only (IRZ-16, IRZ-17, IRZ-18 and IRZ-20).	High water levels observed in southern injection wells. Southern injection wells remained operational but were not dosed with ethanol.
3/8/2023	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, and IRZ-20.	--
3/8/2023	--	Reinjected conditioned water into injection wells.	--
3/8/2023	0.2	IRZ system offline following backwashing.	System was deenergized to complete conduit tie-ins at TCS. Batteries were replaced in transformer control panels and surge suppressors were installed in well disconnect panels during system downtime as well.
3/9/2023	--	Injection well IRZ-39 offline.	High water levels observed.

Table 2.3
NTH IRZ System Operations and Non-Routine Maintenance Log
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
3/9/2023	--	Ethanol dosing occurred. Decreased flowrate at IRZ-27 (upper/middle) by approximately 1gpm. Decreased flowrate at IRZ-31 (upper) and IRZ-31 (lower) by approximately 2 gpm each. Decreased flowrate at IRZ-33 (upper) by approximately 1 gpm.	Decreased flowrates due to high water levels observed at injection wells.
3/9/2023	--	Reinjected conditioned water into injection wells.	--
3/10/2023	--	Backwashed injection wells IRZ-15 (upper), IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
3/11/2023	0.1	IRZ system offline.	Air relief valve leak in IRZ-15 vault. Alarm shut down system.
3/13/2023	--	Backwashed IRZ injection wells IRZ-15 (upper), IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
3/13/2023 through 3/14/2023	--	Injection well IRZ-15 (upper) offline for approximately 24 hours.	Dosing is only scheduled to occur in IRZ-15 (upper) once per week.
3/13/2023	--	Ethanol dosing occurred.	--
3/15/2023	0.4	IRZ system offline.	Overnight rainstorms shut down system.
3/15/2023	--	Backwashed IRZ injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
3/15/2023 through 3/17/2023	1.6	IRZ system offline.	Rain and hail storms in the evening on 3/15 shut down system.
3/17/2023	--	IRZ system resumed operation. Injection wells operating: IRZ-15 (upper), IRZ-16, IRZ-17, IRZ-20. Extraction well operating: IRZ-23.	Electrical damage to remaining injection well vaults. Extraction well vaults were not damaged.
3/17/2023	--	Reinjected conditioned water into injection wells.	--
3/17/2023	--	Ethanol dosing occurred.	4 hour dosing duration
3/19/2023	--	Reinjected conditioned water into injection wells.	--
3/20/2023	--	Backwashed IRZ injection wells IRZ-15 (upper), IRZ-16, IRZ-17, and IRZ-20.	--
3/20/2023 through 3/21/2023	--	Injection well IRZ-15 (upper) offline for approximately 24 hours.	--
3/20/2023	--	Ethanol dosing occurred. Duration returned to 6 hours.	--
3/21/2023	--	Installed watertight fitting on injection wells IRZ-16 and IRZ-20.	--
3/21/2023	--	Reinjected conditioned water into injection wells.	--

Table 2.3
NTH IRZ System Operations and Non-Routine Maintenance Log
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
3/22/2023	--	Backwashed IRZ injection wells IRZ-16, IRZ-17, and IRZ-20.	--
3/23/2023	--	Ethanol dosing occurred.	--
3/23/2023	--	Reinjected conditioned water into injection wells.	--
3/24/2023	--	Backwashed IRZ injection wells IRZ-15 (upper), IRZ-16, IRZ-17, and IRZ-20.	--
3/27/2023	--	Backwashed IRZ injection wells IRZ-15 (upper), IRZ-16, IRZ-17, and IRZ-20.	--
3/27/2023	--	Ethanol dosing occurred.	4 hour dosing duration.
3/29/2023	--	Backwashed IRZ injection wells IRZ-16, IRZ-17, and IRZ-20.	--
3/30/2023	--	Ethanol dosing occurred.	--
3/31/2023	--	Backwashed IRZ injection wells IRZ-15 (upper), IRZ-16, IRZ-17, and IRZ-20.	--

Abbreviations:
-- = not applicable
IRZ = In-Situ Reactive Zone
kV = kilovolt
NTH = National Trails Highway
TCS = Topock Compressor Station
V = volt
VFD = variable frequency drive
gpm = gallon per minute
mg/L = milligram per liter

Table 3.3 Summary of NTH IRZ Well Specific Capacities

Source: Arcadis, 2023b. *First Quarter Well Performance Report*, PG&E *Topock Compressor Station, Needles, California*. June 29.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
First Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-15	Upper	Injection	Nov-21	--	--	--	NC
IRZ-15	Upper	Injection	Dec-21	--	--	--	NC
IRZ-15	Upper	Injection	Jan-22	--	--	--	NC
IRZ-15	Upper	Injection	Feb-22	--	--	--	NC
IRZ-15	Upper	Injection	Mar-22	--	--	--	NC
IRZ-15	Upper	Injection	Apr-22	--	--	--	NC
IRZ-15	Upper	Injection	May-22	--	--	--	NC
IRZ-15	Upper	Injection	Jun-22	--	--	--	NC
IRZ-15	Upper	Injection	Jul-22	--	--	--	NC
IRZ-15	Upper	Injection	Aug-22	--	--	--	NC
IRZ-15	Upper	Injection	Sep-22	--	--	--	NC
IRZ-15	Upper	Injection	Oct-22	--	--	--	NC
IRZ-15	Upper	Injection	Nov-22	--	--	--	NC
IRZ-15	Upper	Injection	Dec-22	--	--	--	NC
IRZ-15	Upper	Injection	Jan-23	--	--	--	NC
IRZ-15	Upper	Injection	Feb-23	--	--	--	NC
IRZ-15	Upper	Injection	Mar-23	1.1	--	--	NC
IRZ-15	Lower	Injection	Nov-21	--	--	--	NC
IRZ-15	Lower	Injection	Dec-21	--	--	--	NC
IRZ-15	Lower	Injection	Jan-22	--	--	--	NC
IRZ-15	Lower	Injection	Feb-22	--	--	--	NC
IRZ-15	Lower	Injection	Mar-22	--	--	--	NC
IRZ-15	Lower	Injection	Apr-22	--	--	--	NC
IRZ-15	Lower	Injection	May-22	--	--	--	NC
IRZ-15	Lower	Injection	Jun-22	--	--	--	NC
IRZ-15	Lower	Injection	Jul-22	--	--	--	NC
IRZ-15	Lower	Injection	Aug-22	--	--	--	NC
IRZ-15	Lower	Injection	Sep-22	--	--	--	NC
IRZ-15	Lower	Injection	Oct-22	--	--	--	NC
IRZ-15	Lower	Injection	Nov-22	--	--	--	NC
IRZ-15	Lower	Injection	Dec-22	--	--	--	NC
IRZ-15	Lower	Injection	Jan-23	--	--	--	NC
IRZ-15	Lower	Injection	Feb-23	--	--	--	NC
IRZ-15	Lower	Injection	Mar-23	--	--	--	NC
IRZ-16	Upper	Injection	Nov-21	--	--	--	NC
IRZ-16	Upper	Injection	Dec-21	1.0	--	--	NC
IRZ-16	Upper	Injection	Jan-22	0.95	--	--	NC
IRZ-16	Upper	Injection	Feb-22	0.78	--	--	NC
IRZ-16	Upper	Injection	Mar-22	0.64	--	--	NC
IRZ-16	Upper	Injection	Apr-22	0.62	--	--	NC
IRZ-16	Upper	Injection	May-22	0.53	--	--	NC
IRZ-16	Upper	Injection	Jun-22	0.60	0.60	Good	NC
IRZ-16	Upper	Injection	Jul-22	0.60	0.60	Good	NC
IRZ-16	Upper	Injection	Aug-22	0.76	0.60	Good	NC
IRZ-16	Upper	Injection	Sep-22	0.62	0.60	Good	NC
IRZ-16	Upper	Injection	Oct-22	0.59	0.60	Good	NC
IRZ-16	Upper	Injection	Nov-22	0.66	0.60	Good	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
First Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-16	Upper	Injection	Dec-22	0.70	0.60	Good	NC
IRZ-16	Upper	Injection	Jan-23	0.82	0.60	Good	NC
IRZ-16	Upper	Injection	Feb-23	0.80	0.60	Good	NC
IRZ-16	Upper	Injection	Mar-23	0.48	0.60	Fair	Well rehabilitation occurred in February and March 2023. Backwashing frequency increased to three times weekly.
IRZ-16	Lower	Injection	Nov-21	--	--	--	NC
IRZ-16	Lower	Injection	Dec-21	1.1	--	--	NC
IRZ-16	Lower	Injection	Jan-22	1.1	--	--	NC
IRZ-16	Lower	Injection	Feb-22	0.78	--	--	NC
IRZ-16	Lower	Injection	Mar-22	0.72	--	--	NC
IRZ-16	Lower	Injection	Apr-22	0.69	--	--	NC
IRZ-16	Lower	Injection	May-22	0.69	--	--	NC
IRZ-16	Lower	Injection	Jun-22	0.78	0.78	Good	NC
IRZ-16	Lower	Injection	Jul-22	0.74	0.78	Good	NC
IRZ-16	Lower	Injection	Aug-22	0.81	0.78	Good	NC
IRZ-16	Lower	Injection	Sep-22	0.74	0.78	Good	NC
IRZ-16	Lower	Injection	Oct-22	0.71	0.78	Good	NC
IRZ-16	Lower	Injection	Nov-22	0.66	0.78	Fair	Well rehabilitation scheduled for First Quarter 2023.
IRZ-16	Lower	Injection	Dec-22	0.53	0.78	Poor	Well rehabilitation scheduled for February 2023. Backwashing frequency to increase to twice weekly in January 2023.
IRZ-16	Lower	Injection	Jan-23	0.59	0.78	Poor	Backwashing frequency continued twice weekly. Well rehabilitation scheduled for February 2023.
IRZ-16	Lower	Injection	Feb-23	0.39	0.78	Poor	Well rehabilitation occurred.
IRZ-16	Lower	Injection	Mar-23	0.48	0.78	Poor	Well rehabilitation occurred in February and March 2023. Backwashing frequency increased to three times weekly.
IRZ-17	Upper	Injection	Nov-21	--	--	--	NC
IRZ-17	Upper	Injection	Dec-21	3.7	--	--	NC
IRZ-17	Upper	Injection	Jan-22	3.5	--	--	NC
IRZ-17	Upper	Injection	Feb-22	2.3	--	--	NC
IRZ-17	Upper	Injection	Mar-22	1.8	--	--	NC
IRZ-17	Upper	Injection	Apr-22	0.97	--	--	NC
IRZ-17	Upper	Injection	May-22	0.71	--	--	NC
IRZ-17	Upper	Injection	Jun-22	0.76	0.76	Good	NC
IRZ-17	Upper	Injection	Jul-22	0.78	0.76	Good	NC
IRZ-17	Upper	Injection	Aug-22	0.94	0.76	Good	NC
IRZ-17	Upper	Injection	Sep-22	0.89	0.76	Good	NC
IRZ-17	Upper	Injection	Oct-22	0.88	0.76	Good	NC
IRZ-17	Upper	Injection	Nov-22	0.93	0.76	Good	NC
IRZ-17	Upper	Injection	Dec-22	0.82	0.76	Good	Well rehabilitation scheduled for January 2023 based on IRZ-17 (lower) performance.
IRZ-17	Upper	Injection	Jan-23	0.98	0.76	Good	NC
IRZ-17	Upper	Injection	Feb-23	0.90	0.76	Good	NC
IRZ-17	Upper	Injection	Mar-23	0.54	0.76	Poor	Backwashing frequency increased to three times weekly. Well operating at reduced flowrate due to high water levels, resulting in lower specific capacity.
IRZ-17	Lower	Injection	Nov-21	--	--	--	NC
IRZ-17	Lower	Injection	Dec-21	1.5	--	--	NC
IRZ-17	Lower	Injection	Jan-22	1.3	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
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Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-17	Lower	Injection	Feb-22	1.0	--	--	NC
IRZ-17	Lower	Injection	Mar-22	0.86	--	--	NC
IRZ-17	Lower	Injection	Apr-22	0.70	--	--	NC
IRZ-17	Lower	Injection	May-22	0.66	--	--	NC
IRZ-17	Lower	Injection	Jun-22	0.71	0.71	Good	NC
IRZ-17	Lower	Injection	Jul-22	0.67	0.71	Good	NC
IRZ-17	Lower	Injection	Aug-22	0.70	0.71	Good	NC
IRZ-17	Lower	Injection	Sep-22	0.64	0.71	Good	NC
IRZ-17	Lower	Injection	Oct-22	0.56	0.71	Poor	Backwashing frequency increased to twice weekly.
IRZ-17	Lower	Injection	Nov-22	0.50	0.71	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.
IRZ-17	Lower	Injection	Dec-22	0.42	0.71	Poor	Backwashing continued twice weekly.
IRZ-17	Lower	Injection	Jan-23	0.38	0.71	Poor	Well rehabilitation conducted in January.
IRZ-17	Lower	Injection	Feb-23	0.30	0.71	Poor	Backwashing continued twice weekly. Well operating at reduced flowrate due to high water levels, resulting in lower specific capacity.
IRZ-17	Lower	Injection	Mar-23	0.19	0.71	Poor	Backwashing increased to three times weekly. Well operating at reduced flowrate due to high water levels, resulting in lower specific capacity.
IRZ-18	Upper	Injection	Nov-21	--	--	--	NC
IRZ-18	Upper	Injection	Dec-21	1.5	--	--	NC
IRZ-18	Upper	Injection	Jan-22	1.3	--	--	NC
IRZ-18	Upper	Injection	Feb-22	1.1	--	--	NC
IRZ-18	Upper	Injection	Mar-22	0.85	--	--	NC
IRZ-18	Upper	Injection	Apr-22	0.97	--	--	NC
IRZ-18	Upper	Injection	May-22	0.71	--	--	NC
IRZ-18	Upper	Injection	Jun-22	0.61	0.61	Good	NC
IRZ-18	Upper	Injection	Jul-22	0.55	0.61	Good	NC
IRZ-18	Upper	Injection	Aug-22	--	--	--	NC
IRZ-18	Upper	Injection	Sep-22	0.47	0.61	Poor	Backwash duration lengthened. Will increase frequency of backwashing if no improvement.
IRZ-18	Upper	Injection	Oct-22	0.38	0.61	Poor	Backwashing frequency increased to twice weekly.
IRZ-18	Upper	Injection	Nov-22	0.36	0.61	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for December 2022.
IRZ-18	Upper	Injection	Dec-22	0.32	0.61	Poor	Well rehabilitation conducted in December. Well will continue to be monitored in January.
IRZ-18	Upper	Injection	Jan-23	0.36	0.61	Poor	Backwashing conducted twice weekly.
IRZ-18	Upper	Injection	Feb-23	0.27	0.61	Poor	Second well rehabilitation conducted in February.
IRZ-18	Upper	Injection	Mar-23	0.36	0.61	Poor	Backwashing frequency increased to three times weekly.
IRZ-18	Lower	Injection	Nov-21	--	--	--	NC
IRZ-18	Lower	Injection	Dec-21	1.1	--	--	NC
IRZ-18	Lower	Injection	Jan-22	0.96	--	--	NC
IRZ-18	Lower	Injection	Feb-22	0.78	--	--	NC
IRZ-18	Lower	Injection	Mar-22	0.67	--	--	NC
IRZ-18	Lower	Injection	Apr-22	0.57	--	--	NC
IRZ-18	Lower	Injection	May-22	0.66	--	--	NC
IRZ-18	Lower	Injection	Jun-22	0.73	0.73	Good	NC
IRZ-18	Lower	Injection	Jul-22	0.72	0.73	Good	NC
IRZ-18	Lower	Injection	Aug-22	--	--	--	NC

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Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-18	Lower	Injection	Sep-22	0.74	0.73	Good	NC
IRZ-18	Lower	Injection	Oct-22	0.64	0.73	Fair	Backwashing increased to twice weekly in November based on October performance.
IRZ-18	Lower	Injection	Nov-22	0.62	0.73	Fair	Backwash conducted twice weekly. Well rehabilitation scheduled for December 2022.
IRZ-18	Lower	Injection	Dec-22	0.56	0.73	Poor	Well rehabilitation conducted in mid to late December. Well will continue to be monitored in January.
IRZ-18	Lower	Injection	Jan-23	0.50	0.73	Poor	Backwashing conducted twice weekly.
IRZ-18	Lower	Injection	Feb-23	0.33	0.73	Poor	Second well rehabilitation conducted in February.
IRZ-18	Lower	Injection	Mar-23	0.40	0.73	Poor	Backwashing frequency increased to three times weekly.
IRZ-20	Upper	Injection	Nov-21	--	--	--	NC
IRZ-20	Upper	Injection	Dec-21	1.1	--	--	NC
IRZ-20	Upper	Injection	Jan-22	1.1	--	--	NC
IRZ-20	Upper	Injection	Feb-22	0.79	--	--	NC
IRZ-20	Upper	Injection	Mar-22	0.72	--	--	NC
IRZ-20	Upper	Injection	Apr-22	0.78	--	--	NC
IRZ-20	Upper	Injection	May-22	0.49	--	--	NC
IRZ-20	Upper	Injection	Jun-22	0.59	0.59	Good	NC
IRZ-20	Upper	Injection	Jul-22	0.61	0.59	Good	NC
IRZ-20	Upper	Injection	Aug-22	0.71	0.59	Good	NC
IRZ-20	Upper	Injection	Sep-22	0.62	0.59	Good	NC
IRZ-20	Upper	Injection	Oct-22	0.64	0.59	Good	NC
IRZ-20	Upper	Injection	Nov-22	0.73	0.59	Good	NC
IRZ-20	Upper	Injection	Dec-22	0.62	0.59	Good	Well rehabilitation scheduled for January 2023 based on IRZ-20 (lower) performance.
IRZ-20	Upper	Injection	Jan-23	0.52	0.59	Fair	Well rehabilitation occurred.
IRZ-20	Upper	Injection	Feb-23	0.63	0.59	Good	NC
IRZ-20	Upper	Injection	Mar-23	0.36	0.59	Poor	Backwashing frequency increased to three times weekly.
IRZ-20	Lower	Injection	Nov-21	--	--	--	NC
IRZ-20	Lower	Injection	Dec-21	0.83	--	--	NC
IRZ-20	Lower	Injection	Jan-22	0.76	--	--	NC
IRZ-20	Lower	Injection	Feb-22	0.68	--	--	NC
IRZ-20	Lower	Injection	Mar-22	0.62	--	--	NC
IRZ-20	Lower	Injection	Apr-22	0.60	--	--	NC
IRZ-20	Lower	Injection	May-22	0.55	--	--	NC
IRZ-20	Lower	Injection	Jun-22	0.54	0.54	Good	NC
IRZ-20	Lower	Injection	Jul-22	0.50	0.54	Good	NC
IRZ-20	Lower	Injection	Aug-22	0.51	0.54	Good	NC
IRZ-20	Lower	Injection	Sep-22	0.45	0.54	Fair	Backwash duration lengthened. Will increase frequency of backwashing if no improvement.
IRZ-20	Lower	Injection	Oct-22	0.47	0.54	Fair	Backwashing conducted twice weekly.
IRZ-20	Lower	Injection	Nov-22	0.37	0.54	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.
IRZ-20	Lower	Injection	Dec-22	0.28	0.54	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.

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IRZ-20	Lower	Injection	Jan-23	0.24	0.54	Poor	Well rehabilitation occurred.
IRZ-20	Lower	Injection	Feb-23	0.39	0.54	Poor	Backwashing occurred twice weekly.
IRZ-20	Lower	Injection	Mar-23	0.25	0.54	Poor	Backwashing frequency increased to three times weekly.
IRZ-21	Upper	Injection	Nov-21	--	--	--	NC
IRZ-21	Upper	Injection	Dec-21	--	--	--	NC
IRZ-21	Upper	Injection	Jan-22	--	--	--	NC
IRZ-21	Upper	Injection	Feb-22	--	--	--	NC
IRZ-21	Upper	Injection	Mar-22	--	--	--	NC
IRZ-21	Upper	Injection	Apr-22	--	--	--	NC
IRZ-21	Upper	Injection	May-22	--	--	--	NC
IRZ-21	Upper	Injection	Jun-22	--	--	--	NC
IRZ-21	Upper	Injection	Jul-22	--	--	--	NC
IRZ-21	Upper	Injection	Aug-22	--	--	--	NC
IRZ-21	Upper	Injection	Sep-22	--	--	--	NC
IRZ-21	Upper	Injection	Oct-22	--	--	--	NC
IRZ-21	Upper	Injection	Nov-22	--	--	--	NC
IRZ-21	Upper	Injection	Dec-22	--	--	--	NC
IRZ-21	Upper	Injection	Jan-23	--	--	--	NC
IRZ-21	Upper	Injection	Feb-23	--	--	--	NC
IRZ-21	Upper	Injection	Mar-23	--	--	--	NC
IRZ-21	Lower	Injection	Nov-21	--	--	--	NC
IRZ-21	Lower	Injection	Dec-21	--	--	--	NC
IRZ-21	Lower	Injection	Jan-22	--	--	--	NC
IRZ-21	Lower	Injection	Feb-22	--	--	--	NC
IRZ-21	Lower	Injection	Mar-22	--	--	--	NC
IRZ-21	Lower	Injection	Apr-22	--	--	--	NC
IRZ-21	Lower	Injection	May-22	--	--	--	NC
IRZ-21	Lower	Injection	Jun-22	--	--	--	NC
IRZ-21	Lower	Injection	Jul-22	--	--	--	NC
IRZ-21	Lower	Injection	Aug-22	--	--	--	NC
IRZ-21	Lower	Injection	Sep-22	--	--	--	NC
IRZ-21	Lower	Injection	Oct-22	--	--	--	NC
IRZ-21	Lower	Injection	Nov-22	--	--	--	NC
IRZ-21	Lower	Injection	Dec-22	--	--	--	NC
IRZ-21	Lower	Injection	Jan-23	--	--	--	NC
IRZ-21	Lower	Injection	Feb-23	--	--	--	NC
IRZ-21	Lower	Injection	Mar-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Nov-21	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Dec-21	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jan-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Feb-22	--	--	--	NC

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Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-25	Upper / Upper Middle	Injection	Mar-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Apr-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	May-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jun-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jul-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Aug-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Sep-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Oct-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Nov-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Dec-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jan-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Feb-23	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Mar-23	--	--	--	NC
IRZ-25	Lower	Injection	Nov-21	--	--	--	NC
IRZ-25	Lower	Injection	Dec-21	--	--	--	NC
IRZ-25	Lower	Injection	Jan-22	--	--	--	NC
IRZ-25	Lower	Injection	Feb-22	--	--	--	NC
IRZ-25	Lower	Injection	Mar-22	--	--	--	NC
IRZ-25	Lower	Injection	Apr-22	--	--	--	NC
IRZ-25	Lower	Injection	May-22	--	--	--	NC
IRZ-25	Lower	Injection	Jun-22	--	--	--	NC
IRZ-25	Lower	Injection	Jul-22	--	--	--	NC
IRZ-25	Lower	Injection	Aug-22	--	--	--	NC
IRZ-25	Lower	Injection	Sep-22	--	--	--	NC
IRZ-25	Lower	Injection	Oct-22	--	--	--	NC
IRZ-25	Lower	Injection	Nov-22	--	--	--	NC
IRZ-25	Lower	Injection	Dec-22	--	--	--	NC
IRZ-25	Lower	Injection	Jan-23	--	--	--	NC
IRZ-25	Lower	Injection	Feb-23	--	--	--	NC
IRZ-25	Lower	Injection	Mar-23	--	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Nov-21	--	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Dec-21	0.93	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Jan-22	0.91	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Feb-22	0.73	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Mar-22	0.57	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Apr-22	0.49	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	May-22	0.60	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Jun-22	0.67	0.67	Good	NC
IRZ-27	Upper / Upper Middle	Injection	Jul-22	0.67	0.67	Good	NC
IRZ-27	Upper / Upper Middle	Injection	Aug-22	--	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Sep-22	0.64	0.67	Good	NC
IRZ-27	Upper / Upper Middle	Injection	Oct-22	0.60	0.67	Fair	Backwashing increased to twice weekly in November based on October performance.
IRZ-27	Upper / Upper Middle	Injection	Nov-22	0.54	0.67	Fair	Backwashing conducted twice weekly.
IRZ-27	Upper / Upper Middle	Injection	Dec-22	0.50	0.67	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.
IRZ-27	Upper / Upper Middle	Injection	Jan-23	0.48	0.67	Poor	Well rehabilitation occurred.
IRZ-27	Upper / Upper Middle	Injection	Feb-23	0.42	0.67	Poor	Backwashing conducted twice weekly.

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Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-27	Upper / Upper Middle	Injection	Mar-23	0.35	0.67	Poor	Backwashing frequency increased to three times weekly.
IRZ-27	Lower	Injection	Nov-21	--	--	--	NC
IRZ-27	Lower	Injection	Dec-21	0.72	--	--	NC
IRZ-27	Lower	Injection	Jan-22	0.66	--	--	NC
IRZ-27	Lower	Injection	Feb-22	0.57	--	--	NC
IRZ-27	Lower	Injection	Mar-22	0.49	--	--	NC
IRZ-27	Lower	Injection	Apr-22	0.47	--	--	NC
IRZ-27	Lower	Injection	May-22	0.39	--	--	NC
IRZ-27	Lower	Injection	Jun-22	0.49	0.49	Good	NC
IRZ-27	Lower	Injection	Jul-22	0.53	0.49	Good	NC
IRZ-27	Lower	Injection	Aug-22	--	--	--	NC
IRZ-27	Lower	Injection	Sep-22	0.53	0.49	Good	NC
IRZ-27	Lower	Injection	Oct-22	0.52	0.49	Good	NC
IRZ-27	Lower	Injection	Nov-22	0.52	0.49	Good	NC
IRZ-27	Lower	Injection	Dec-22	0.51	0.49	Good	Well rehabilitation scheduled for January 2023 based on IRZ-27 (upper) performance.
IRZ-27	Lower	Injection	Jan-23	0.47	0.49	Good	Well rehabilitation occurred.
IRZ-27	Lower	Injection	Feb-23	0.40	0.49	Fair	Backwashing conducted twice weekly.
IRZ-27	Lower	Injection	Mar-23	0.33	0.49	Poor	Backwashing frequency increased to three times weekly.
IRZ-29	Upper	Injection	Nov-21	--	--	--	NC
IRZ-29	Upper	Injection	Dec-21	--	--	--	NC
IRZ-29	Upper	Injection	Jan-22	0.47	--	--	NC
IRZ-29	Upper	Injection	Feb-22	0.55	--	--	NC
IRZ-29	Upper	Injection	Mar-22	0.43	--	--	NC
IRZ-29	Upper	Injection	Apr-22	0.41	--	--	NC
IRZ-29	Upper	Injection	May-22	0.36	--	--	NC
IRZ-29	Upper	Injection	Jun-22	0.41	0.41	Good	NC
IRZ-29	Upper	Injection	Jul-22	0.45	0.41	Good	NC
IRZ-29	Upper	Injection	Aug-22	--	--	--	NC
IRZ-29	Upper	Injection	Sep-22	--	--	--	NC
IRZ-29	Upper	Injection	Oct-22	--	--	--	NC
IRZ-29	Upper	Injection	Nov-22	--	--	--	NC
IRZ-29	Upper	Injection	Dec-22	0.31	0.41	Poor	Well brought online after an extended period of downtime. Well will be monitored in January for flowrate and water level stabilization. Well rehabilitation scheduled for February 2023.
IRZ-29	Upper	Injection	Jan-23	0.26	0.41	Poor	Backwashing frequency increased to twice weekly.
IRZ-29	Upper	Injection	Feb-23	0.37	0.41	Good	Well rehabilitation occurred.
IRZ-29	Upper	Injection	Mar-23	0.35	0.41	Fair	Backwashing frequency increased to three times weekly.
IRZ-29	Lower	Injection	Nov-21	--	--	--	NC
IRZ-29	Lower	Injection	Dec-21	--	--	--	NC
IRZ-29	Lower	Injection	Jan-22	0.89	--	--	NC
IRZ-29	Lower	Injection	Feb-22	0.65	--	--	NC
IRZ-29	Lower	Injection	Mar-22	0.55	--	--	NC
IRZ-29	Lower	Injection	Apr-22	0.52	--	--	NC

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IRZ-29	Lower	Injection	May-22	0.47	--	--	NC
IRZ-29	Lower	Injection	Jun-22	0.52	0.52	Good	NC
IRZ-29	Lower	Injection	Jul-22	0.61	0.52	Good	NC
IRZ-29	Lower	Injection	Aug-22	--	--	--	NC
IRZ-29	Lower	Injection	Sep-22	--	--	--	NC
IRZ-29	Lower	Injection	Oct-22	--	--	--	NC
IRZ-29	Lower	Injection	Nov-22	--	--	--	NC
IRZ-29	Lower	Injection	Dec-22	0.45	0.52	Fair	Well brought online after an extended period of downtime. Well will be monitored in January for flowrate and water level stabilization. Well rehabilitation scheduled for February 2023.
IRZ-29	Lower	Injection	Jan-23	0.37	0.52	Poor	Backwashing frequency increased to twice weekly.
IRZ-29	Lower	Injection	Feb-23	0.38	0.52	Poor	Well rehabilitation occurred.
IRZ-29	Lower	Injection	Mar-23	0.36	0.52	Poor	Backwashing frequency increased to three times weekly.
IRZ-31	Upper	Injection	Nov-21	--	--	--	NC
IRZ-31	Upper	Injection	Dec-21	--	--	--	NC
IRZ-31	Upper	Injection	Jan-22	1.1	--	--	NC
IRZ-31	Upper	Injection	Feb-22	0.71	--	--	NC
IRZ-31	Upper	Injection	Mar-22	0.56	--	--	NC
IRZ-31	Upper	Injection	Apr-22	0.52	--	--	NC
IRZ-31	Upper	Injection	May-22	0.51	--	--	NC
IRZ-31	Upper	Injection	Jun-22	0.58	0.58	Good	NC
IRZ-31	Upper	Injection	Jul-22	0.62	0.58	Good	NC
IRZ-31	Upper	Injection	Aug-22	0.70	0.58	Good	NC
IRZ-31	Upper	Injection	Sep-22	0.65	0.58	Good	NC
IRZ-31	Upper	Injection	Oct-22	0.56	0.58	Good	NC
IRZ-31	Upper	Injection	Nov-22	0.54	0.58	Good	NC
IRZ-31	Upper	Injection	Dec-22	0.46	0.58	Poor	Well rehabilitation scheduled for January 2023.
IRZ-31	Upper	Injection	Jan-23	0.43	0.58	Poor	Well rehabilitation occurred.
IRZ-31	Upper	Injection	Feb-23	0.41	0.58	Poor	Backwashing frequency occurred twice weekly.
IRZ-31	Upper	Injection	Mar-23	0.33	0.58	Poor	Backwashing frequency increased to three times weekly.
IRZ-31	Lower	Injection	Nov-21	--	--	--	NC
IRZ-31	Lower	Injection	Dec-21	--	--	--	NC
IRZ-31	Lower	Injection	Jan-22	1.1	--	--	NC
IRZ-31	Lower	Injection	Feb-22	0.55	--	--	NC
IRZ-31	Lower	Injection	Mar-22	0.44	--	--	NC
IRZ-31	Lower	Injection	Apr-22	0.40	--	--	NC
IRZ-31	Lower	Injection	May-22	0.41	--	--	NC
IRZ-31	Lower	Injection	Jun-22	0.46	0.46	Good	NC
IRZ-31	Lower	Injection	Jul-22	0.47	0.46	Good	NC
IRZ-31	Lower	Injection	Aug-22	0.53	0.46	Good	NC
IRZ-31	Lower	Injection	Sep-22	0.50	0.46	Good	NC
IRZ-31	Lower	Injection	Oct-22	0.41	0.46	Fair	Backwashing increased to twice weekly in November based on October performance.
IRZ-31	Lower	Injection	Nov-22	0.39	0.46	Fair	Backwashing conducted twice weekly.
IRZ-31	Lower	Injection	Dec-22	0.35	0.46	Poor	Backwashing continued twice weekly. Well rehabilitation scheduled for January 2023.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
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Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-31	Lower	Injection	Jan-23	0.31	0.46	Poor	Well rehabilitation occurred.
IRZ-31	Lower	Injection	Feb-23	0.30	0.46	Poor	Backwashing frequency occurred twice weekly.
IRZ-31	Lower	Injection	Mar-23	0.25	0.46	Poor	Backwashing frequency increased to three times weekly.
IRZ-33	Upper	Injection	Nov-21	--	--	--	NC
IRZ-33	Upper	Injection	Dec-21	--	--	--	NC
IRZ-33	Upper	Injection	Jan-22	0.84	--	--	NC
IRZ-33	Upper	Injection	Feb-22	0.69	--	--	NC
IRZ-33	Upper	Injection	Mar-22	0.49	--	--	NC
IRZ-33	Upper	Injection	Apr-22	--	--	--	NC
IRZ-33	Upper	Injection	May-22	0.52	--	--	NC
IRZ-33	Upper	Injection	Jun-22	0.50	0.50	Good	NC
IRZ-33	Upper	Injection	Jul-22	0.53	0.50	Good	NC
IRZ-33	Upper	Injection	Aug-22	0.57	0.50	Good	NC
IRZ-33	Upper	Injection	Sep-22	0.50	0.50	Good	NC
IRZ-33	Upper	Injection	Oct-22	0.39	0.50	Poor	Backwashing increased to twice weekly in November based on October performance.
IRZ-33	Upper	Injection	Nov-22	0.30	0.50	Poor	Backwashing conducted twice weekly. Well rehabilitation scheduled for December 2022.
IRZ-33	Upper	Injection	Dec-22	0.34	0.50	Poor	Well rehabilitation conducted in December. Well will continue to be monitored in January.
IRZ-33	Upper	Injection	Jan-23	0.36	0.50	Poor	Backwashing frequency increased to twice weekly.
IRZ-33	Upper	Injection	Feb-23	0.23	0.50	Poor	Backwashing continued twice weekly.
IRZ-33	Upper	Injection	Mar-23	0.18	0.50	Poor	Backwashing frequency increased to three times weekly.
IRZ-33	Lower	Injection	Nov-21	--	--	--	NC
IRZ-33	Lower	Injection	Dec-21	--	--	--	NC
IRZ-33	Lower	Injection	Jan-22	0.54	--	--	NC
IRZ-33	Lower	Injection	Feb-22	0.48	--	--	NC
IRZ-33	Lower	Injection	Mar-22	0.35	--	--	NC
IRZ-33	Lower	Injection	Apr-22	--	--	--	NC
IRZ-33	Lower	Injection	May-22	0.35	--	--	NC
IRZ-33	Lower	Injection	Jun-22	0.36	0.36	Good	NC
IRZ-33	Lower	Injection	Jul-22	0.39	0.36	Good	NC
IRZ-33	Lower	Injection	Aug-22	0.40	0.36	Good	NC
IRZ-33	Lower	Injection	Sep-22	0.38	0.36	Good	NC
IRZ-33	Lower	Injection	Oct-22	0.34	0.36	Good	NC
IRZ-33	Lower	Injection	Nov-22	0.30	0.36	Fair	Well rehabilitation scheduled for December 2022.
IRZ-33	Lower	Injection	Dec-22	0.25	0.36	Poor	Well rehabilitation conducted in December. Well performance will continue to be monitored in January for improved performance.
IRZ-33	Lower	Injection	Jan-23	0.28	0.36	Poor	Backwashing frequency increased to twice weekly.
IRZ-33	Lower	Injection	Feb-23	0.22	0.36	Poor	Backwashing continued twice weekly.
IRZ-33	Lower	Injection	Mar-23	0.20	0.36	Poor	Backwashing frequency increased to three times weekly.
IRZ-35	Upper	Injection	Nov-21	--	--	--	NC
IRZ-35	Upper	Injection	Dec-21	--	--	--	NC

Table 3.3
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Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-35	Upper	Injection	Jan-22	0.87	--	--	NC
IRZ-35	Upper	Injection	Feb-22	0.63	--	--	NC
IRZ-35	Upper	Injection	Mar-22	0.47	--	--	NC
IRZ-35	Upper	Injection	Apr-22	0.54	--	--	NC
IRZ-35	Upper	Injection	May-22	0.42	--	--	NC
IRZ-35	Upper	Injection	Jun-22	0.48	0.48	Good	NC
IRZ-35	Upper	Injection	Jul-22	0.51	0.48	Good	NC
IRZ-35	Upper	Injection	Aug-22	--	--	--	NC
IRZ-35	Upper	Injection	Sep-22	0.48	0.48	Good	NC
IRZ-35	Upper	Injection	Oct-22	0.41	0.48	Fair	Backwashing intended to occur twice weekly in November based on October performance.
IRZ-35	Upper	Injection	Nov-22	0.39	0.48	Fair	Operations team determined backwash pump wires for IRZ-37 and IRZ-35 were switched, causing IRZ-37 to be backwashed twice weekly instead of IRZ-35. The switched pump wires were identified and corrected in January 2023.
IRZ-35	Upper	Injection	Dec-22	0.37	0.48	Poor	Well rehabilitation scheduled for January 2023.
IRZ-35	Upper	Injection	Jan-23	0.33	0.48	Poor	Backwashing frequency increased to twice weekly.
IRZ-35	Upper	Injection	Feb-23	0.33	0.48	Poor	Well rehabilitation occurred.
IRZ-35	Upper	Injection	Mar-23	0.28	0.48	Poor	Backwashing frequency increased to three times weekly.
IRZ-37	Upper	Injection	Nov-21	--	--	--	NC
IRZ-37	Upper	Injection	Dec-21	--	--	--	NC
IRZ-37	Upper	Injection	Jan-22	0.53	--	--	NC
IRZ-37	Upper	Injection	Feb-22	0.48	--	--	NC
IRZ-37	Upper	Injection	Mar-22	0.33	--	--	NC
IRZ-37	Upper	Injection	Apr-22	--	--	--	NC
IRZ-37	Upper	Injection	May-22	0.34	--	--	NC
IRZ-37	Upper	Injection	Jun-22	0.35	0.35	Good	NC
IRZ-37	Upper	Injection	Jul-22	0.36	0.35	Good	NC
IRZ-37	Upper	Injection	Aug-22	--	--	--	NC
IRZ-37	Upper	Injection	Sep-22	0.37	0.35	Good	NC
IRZ-37	Upper	Injection	Oct-22	0.32	0.35	Good	NC
IRZ-37	Upper	Injection	Nov-22	0.31	0.35	Fair	Backwashing conducted twice weekly. Well rehabilitation scheduled for First Quarter 2023.
IRZ-37	Upper	Injection	Dec-22	0.30	0.35	Fair	Backwashing conducted twice weekly. Well rehabilitation scheduled for First Quarter 2023.
IRZ-37	Upper	Injection	Jan-23	0.22	0.35	Poor	Well rehabilitation occurred.
IRZ-37	Upper	Injection	Feb-23	0.22	0.35	Poor	Backwashing conducted twice weekly.
IRZ-37	Upper	Injection	Mar-23	0.18	0.35	Poor	Backwashing frequency increased to three times weekly.
IRZ-39	Upper	Injection	Nov-21	--	--	--	NC
IRZ-39	Upper	Injection	Dec-21	--	--	--	NC
IRZ-39	Upper	Injection	Jan-22	--	--	--	NC
IRZ-39	Upper	Injection	Feb-22	0.79	--	--	NC
IRZ-39	Upper	Injection	Mar-22	0.20	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
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Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-39	Upper	Injection	Apr-22	0.11	--	--	NC
IRZ-39	Upper	Injection	May-22	--	--	--	NC
IRZ-39	Upper	Injection	Jun-22	--	--	--	NC
IRZ-39	Upper	Injection	Jul-22	--	--	--	NC
IRZ-39	Upper	Injection	Aug-22	--	--	--	NC
IRZ-39	Upper	Injection	Sep-22	--	--	--	NC
IRZ-39	Upper	Injection	Oct-22	--	--	--	NC
IRZ-39	Upper	Injection	Nov-22	--	--	--	NC
IRZ-39	Upper	Injection	Dec-22	--	--	--	NC
IRZ-39	Upper	Injection	Jan-23	0.06	--	--	NC
IRZ-39	Upper	Injection	Feb-23	0.11	--	--	NC
IRZ-39	Upper	Injection	Mar-23	0.03	--	--	NC
IRZ-9	Upper	Extraction	Nov-21	--	--	--	NC
IRZ-9	Upper	Extraction	Dec-21	--	--	--	NC
IRZ-9	Upper	Extraction	Jan-22	2.0	--	--	NC
IRZ-9	Upper	Extraction	Feb-22	--	--	--	NC
IRZ-9	Upper	Extraction	Mar-22	0.72	--	--	NC
IRZ-9	Upper	Extraction	Apr-22	--	--	--	NC
IRZ-9	Upper	Extraction	May-22	--	--	--	NC
IRZ-9	Upper	Extraction	Jun-22	--	--	--	NC
IRZ-9	Upper	Extraction	Jul-22	--	--	--	NC
IRZ-9	Upper	Extraction	Aug-22	--	--	--	NC
IRZ-9	Upper	Extraction	Sep-22	--	--	--	NC
IRZ-9	Upper	Extraction	Oct-22	--	--	--	NC
IRZ-9	Upper	Extraction	Nov-22	47	--	--	NC
IRZ-9	Upper	Extraction	Dec-22	--	--	--	NC
IRZ-9	Upper	Extraction	Jan-23	47	--	--	NC
IRZ-9	Upper	Extraction	Feb-23	72	--	--	NC
IRZ-9	Upper	Extraction	Mar-23	39	--	--	NC
IRZ-13D	Lower	Extraction	Nov-21	--	--	--	NC
IRZ-13D	Lower	Extraction	Dec-21	--	--	--	NC
IRZ-13D	Lower	Extraction	Jan-22	--	--	--	NC
IRZ-13D	Lower	Extraction	Feb-22	--	--	--	NC
IRZ-13D	Lower	Extraction	Mar-22	--	--	--	NC
IRZ-13D	Lower	Extraction	Apr-22	--	--	--	NC
IRZ-13D	Lower	Extraction	May-22	17	--	--	NC
IRZ-13D	Lower	Extraction	Jun-22	13	--	--	NC
IRZ-13D	Lower	Extraction	Jul-22	8.1	6.2	Good	NC
IRZ-13D	Lower	Extraction	Aug-22	59	6.2	Good	NC
IRZ-13D	Lower	Extraction	Sep-22	7.8	6.2	Good	NC
IRZ-13D	Lower	Extraction	Oct-22	4.9	6.2	Poor	Lower specific capacities measured when flowrate increased and greater drawdown occurred. Not interpreted as fouling. No action taken.

Table 3.3
Summary of NTH IRZ Well Specific Capacities
First Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-13D	Lower	Extraction	Nov-22	4.9	6.2	Poor	Low specific capacity continued while higher flowrate was maintained. Not interpreted as fouling. No action taken.
IRZ-13D	Lower	Extraction	Dec-22	4.2	6.2	Poor	Lower specific capacities measured when flowrate increased and greater drawdown occurred. Not interpreted as fouling. No action taken.
IRZ-13D	Lower	Extraction	Jan-23	6.1	6.2	Good	NC
IRZ-13D	Lower	Extraction	Feb-23	18	6.2	Good	NC
IRZ-13D	Lower	Extraction	Mar-23	5.1	6.2	Fair	Lower specific capacities measured when flowrate decreased. Not interpreted as fouling. No action taken.
IRZ-13S	Upper	Extraction	Nov-21	--	--	--	NC
IRZ-13S	Upper	Extraction	Dec-21	--	--	--	NC
IRZ-13S	Upper	Extraction	Jan-22	--	--	--	NC
IRZ-13S	Upper	Extraction	Feb-22	--	--	--	NC
IRZ-13S	Upper	Extraction	Mar-22	5.5	--	--	NC
IRZ-13S	Upper	Extraction	Apr-22	5.9	--	--	NC
IRZ-13S	Upper	Extraction	May-22	6.5	--	--	NC
IRZ-13S	Upper	Extraction	Jun-22	7.9	--	--	NC
IRZ-13S	Upper	Extraction	Jul-22	9.3	9.3	Good	NC
IRZ-13S	Upper	Extraction	Aug-22	--	--	--	NC
IRZ-13S	Upper	Extraction	Sep-22	9.8	9.3	Good	NC
IRZ-13S	Upper	Extraction	Oct-22	12	9.3	Good	NC
IRZ-13S	Upper	Extraction	Nov-22	12	9.3	Good	NC
IRZ-13S	Upper	Extraction	Dec-22	12	9.3	Good	NC
IRZ-13S	Upper	Extraction	Jan-23	16	9.3	Good	NC
IRZ-13S	Upper	Extraction	Feb-23	10	9.3	Good	NC
IRZ-13S	Upper	Extraction	Mar-23	9.4	9.3	Good	NC
IRZ-23	Lower	Extraction	Nov-21	--	--	--	NC
IRZ-23	Lower	Extraction	Dec-21	13	--	--	NC
IRZ-23	Lower	Extraction	Jan-22	360	--	--	NC
IRZ-23	Lower	Extraction	Feb-22	21	--	--	NC
IRZ-23	Lower	Extraction	Mar-22	47	--	--	NC
IRZ-23	Lower	Extraction	Apr-22	110	--	--	NC
IRZ-23	Lower	Extraction	May-22	850	--	--	NC
IRZ-23	Lower	Extraction	Jun-22	660	--	--	NC
IRZ-23	Lower	Extraction	Jul-22	41	41	Good	NC
IRZ-23	Lower	Extraction	Aug-22	19	41	Poor	Lower specific capacities measured when flowrate increased and greater drawdown occurred. Not interpreted as fouling. No action taken.
IRZ-23	Lower	Extraction	Sep-22	30	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Oct-22	39	41	Good	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
First Quarter 2023 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Monthly Average Specific Capacity (gpm/ft)	Baseline Specific Capacity	Well Performance	Response
IRZ-23	Lower	Extraction	Nov-22	25	41	Poor	Lower specific capacities measured when flowrate increased and greater drawdown occurred. Not interpreted as fouling. No action taken.
IRZ-23	Lower	Extraction	Dec-22	21	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Jan-23	17	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Feb-23	16	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.
IRZ-23	Lower	Extraction	Mar-23	8.9	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.

Notes:
1. Specific capacities are calculated on five-minute intervals as flowrates measured from flowmeters divided by the change in water level measured from transducers compared to baseline. Baseline static water levels were adjusted by the typically observed difference in water levels at time of development and January, which is the month where water levels are at their lowest at the Site. Average monthly specific capacities were then calculated by averaging the five-minute interval specific capacities.
2. Water level data was not collected for extraction wells IRZ-13D in March and April 2022 due to a SCADA error and therefore specific capacities were not calculated.

Acronyms and Abbreviations:
-- = not operating or not applicable due to baseline not having been established yet
ft = foot
gpm = gallon per minute
ID = identification
IRZ = in-situ reactive zone
NC = no comment
NTH = National Trails Highway
SCADA = supervisory data control and acquisition

Table 3.5 NTH IRZ Dose-Response Monitoring Wells Performance Summary

Source: Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California*. June 14.

Table 3.5
NTH IRZ Dose-Response Monitoring Wells Performance Summary
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Monitoring Well ID	IRZ Injection Well ID	Sample Date	TOC				Cr6						Dissolved Iron				Dissolved Arsenic			Dissolved Manganese			Evidence of Treated Groundwater at Well[g]	Are In-Situ Byproducts Controlled?	Operational Response and Reasoning[h]
			TOC Baseline[a] (mg/L)	TOC (Method 5310C) (mg/L)	TOC (Method 5310B) (mg/L)	Is TOC within the Target Range of 15 - 50 mg/L[e]?	Cr6 Baseline[c] (µg/L)	Cr6 (µg/L)	Change from Baseline Concentration (µg/L)	Percent Change from Baseline Concentration (%)[d]	Are Cr6 Concentrations Decreasing Compared to the Baseline Concentration?	Is Cr6 < 32 µg/L?	Dissolved Iron Baseline[f] (mg/L)	Dissolved Iron (mg/L)	Are Dissolved Iron Concentrations above Baseline?	Is Dissolved Iron < 5 mg/L[e]? If Dissolved Iron > 5 mg/L, Is It < Baseline?	Dissolved Arsenic Baseline[f] (µg/L)	Dissolved Arsenic (µg/L)	Is Dissolved Arsenic < 15 µg/L[e]? If Dissolved Arsenic > 15 µg/L, Is It < Baseline?	Dissolved Manganese Baseline[f] (mg/L)	Dissolved Manganese (mg/L)	Is Dissolved Manganese < 5 mg/L[e]? If Dissolved Manganese > 5 mg/L, Is It < Baseline?			
MW-20-070	IRZ-25	01/12/2023	<1	<1	1.4	N	2,500	1,700	-800	-32%	Y	N	0.0624	<0.02	N	Y	2.70	1.9	Y	0.0077	0.00085	Y	N	Y	IRZ injection well not operating
MW-20-070	IRZ-25	02/10/2023	<1	<1	1.3	N	2,500	2,000	-500	-20%	Y	N	0.0624	<0.02	N	Y	2.70	0.6	Y	0.0077	<0.0005	Y	N	Y	IRZ injection well not operating
MW-20-070	IRZ-25	03/08/2023	<1	--	1.1	N	2,500	2,500	0	0%	N	N	0.0624	<0.02	N	Y	2.70	1.0	Y	0.0077	<0.0005	Y	N	Y	IRZ injection well not operating
MW-20-100	IRZ-25	01/12/2023	<1	<1	1.8	N	750	1,700	950	127%	N	N	0.390	0.039	N	Y	2.9	1.7	Y	0.056	0.00053	Y	N	Y	IRZ injection well not operating
MW-20-100	IRZ-25	02/10/2023	<1	<5	1.0	N	750	1,400	650	87%	N	N	0.390	<0.02	N	Y	2.9	0.9	Y	0.056	<0.0005	Y	N	Y	IRZ injection well not operating
MW-20-100	IRZ-25	03/08/2023	<1	--	1.1	N	750	1,600	850	113%	N	N	0.390	<0.02	N	Y	2.9	0.9	Y	0.056	<0.0005	Y	N	Y	IRZ injection well not operating
MW-20-130	IRZ-25	01/12/2023	<1	<1	4.0	N	5,900	2,000	-3,900	-66%	Y	N	0.092	0.68	Y	Y	7.42	3.0	Y	0.0036	0.0067	Y	N	Y	IRZ injection well not operating
MW-20-130	IRZ-25	02/10/2023	<1	<1	1.0	N	5,900	3,200	-2,700	-46%	Y	N	0.092	<0.02	N	Y	7.42	<0.1	Y	0.0036	<0.0005	Y	N	Y	IRZ injection well not operating
MW-20-130	IRZ-25	03/08/2023	<1	--	1.4	N	5,900	3,400	-2,500	-42%	Y	N	0.092	<0.02	N	Y	7.42	0.7	Y	0.0036	<0.0005	Y	N	Y	IRZ injection well not operating
MW-21	IRZ-37; IRZ-39	01/11/2023	<1	<1	14	N	4.6	<0.2	-4	-96%	Y	Y	0.170	0.073 J	N	Y	4.47	15	Y	1.04	0.14	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-21	IRZ-37; IRZ-39	02/09/2023	<1	<10	3.4	N	4.6	0.2	-4	-96%	Y	Y	0.170	0.28 J	Y	Y	4.47	7.2	Y	1.04	0.13	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-21	IRZ-37; IRZ-39	03/09/2023	<1	--	6.6	N	4.6	0.3	-4	-93%	Y	Y	0.170	0.39 J	Y	Y	4.47	15	Y	1.04	0.28 J	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-26	IRZ-31	01/12/2023	<1	<1	1.3	N	2,300	0.7	-2,299	-100%	Y	Y	0.110	<0.02	N	Y	2.2	2.2	Y	0.12	0.64	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-26	IRZ-31	02/09/2023	<1	<1	<1	N	2,300	<1	-2,299	-100%	Y	Y	0.110	<0.02 J	N	Y	2.2	<0.1	Y	0.12	0.53	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-26	IRZ-31	03/09/2023	<1	--	1.5	N	2,300	<0.2	-2,300	-100%	Y	Y	0.110	0.021 J	N	Y	2.2	<0.1	Y	0.12	0.83 J	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-31-060	IRZ-18	01/10/2023	<1	<1	40	Y	410	<2	-408	-100%	Y	Y	0.110	0.041 J	N	Y	1.96	2.2	Y	0.0066	2.1	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-31-060	IRZ-18	02/08/2023	<1	<1	2.0	N	410	<1	-409	-100%	Y	Y	0.110	0.038 J	N	Y	1.96	<0.1	Y	0.0066	2.4	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-31-060	IRZ-18	03/09/2023	<1	--	11	N	410	<1	-409	-100%	Y	Y	0.110	<0.02 J	N	Y	1.96	<0.1	Y	0.0066	2.1 J	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-31-135	IRZ-18	01/10/2023	<1	<1	<1	N	15	3.6	-11	-76%	Y	Y	0.0610	0.097 J	Y	Y	4.64	0.5	Y	0.13	0.018	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-31-135	IRZ-18	02/08/2023	<1	<1	<1	N	15	16	1.0	7%	N	Y	0.0610	<0.02 J	N	Y	4.64	<0.1	Y	0.13	0.0086 J	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-31-135	IRZ-18	03/09/2023	<1	--	1.2	N	15	15	0	0%	N	Y	0.0610	<0.02 J	N	Y	4.64	<0.1	Y	0.13	0.0044 J	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-51	IRZ-31	01/12/2023	<1	<1	4.7	N	3,300	520	-2,780	-84%	Y	N	0.081	<0.02	N	Y	4.9	3.0	Y	0.0045	0.1	Y	Y	Y	No operational changes made
MW-51	IRZ-31	02/09/2023	<1	5.7	14	N	3,300	<1	-3,299	-100%	Y	Y	0.081	<0.02 J	N	Y	4.9	1.3	Y	0.0045	0.15	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-51	IRZ-31	03/09/2023	<1	--	12	N	3,300	0.8	-3,299	-100%	Y	Y	0.081	0.13 J	Y	Y	4.9	1.9	Y	0.0045	1.5 J	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-71-035	IRZ-39	01/11/2023	<1	<1	4.5	N	<1.0	2.3	2.3	130%	N	Y	13	0.041 J	N	Y	10	<0.1	Y	5.2	0.1	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-71-035	IRZ-39	02/15/2023	<1	<1	3.6	N	<1.0	<1	0	0%	N	Y	13	0.3 J	N	Y	10	<0.1	Y	5.2	0.26	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-71-035	IRZ-39	03/09/2023	<1	--	3.0	N	<1.0	<1	0	0%	N	Y	13	0.028 J	N	Y	10	<0.1	Y	5.2	0.023 J	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-76-039	IRZ-15	01/10/2023	<1	<1	<1	N	130	250	120	92%	N	N	2.0	0.15 J	N	Y	1.3	0.2	Y	0.22	0.00073	Y	N	Y	IRZ injection well not operating
MW-76-039	IRZ-15	02/07/2023	<1	<1	<1	N	130	270	140	108%	N	N	2.0	0.03	N	Y	1.3	<0.1 J	Y	0.22	0.0034 J	Y	N	Y	IRZ injection well not operating
MW-76-039	IRZ-15	03/07/2023	<1	--	<1	N	130	200	70	54%	Y	N	2.0	<0.02	N	Y	1.3	<0.1	Y	0.22	0.00084 J	Y	Y	Y	IRZ injection well brought online March 2, 2023
MW-76-156	IRZ-15	01/10/2023	<1	<1	1.2	N	4.2	17	13	305%	N	Y	0.170	0.16 J	N	Y	2.5	<0.1	Y	0.28	0.056	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-76-156	IRZ-15	02/07/2023	<1	<1	1.1	N	4.2	16	12	281%	N	Y	0.170	<0.02	N	Y	2.5	<0.1 J	Y	0.28	0.079	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-76-156	IRZ-15	03/07/2023	<1	--	<1	N	4.2	17	13	305%	N	Y	0.170	<0.02	N	Y	2.5	<0.1	Y	0.28	0.048 J	Y	N	Y	Baseline Cr6 less than 32 µg/L
MW-76-181	IRZ-15	01/10/2023	<1	<1	1.0	N	1,500	460	-1,040	-69%	Y	N	0.080	0.088 J	Y	Y	1.7	<0.1	Y	0.93	0.019	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations are decreasing
MW-76-181	IRZ-15	02/07/2023	<1	<25	<1	N	1,500	390	-1,110	-74%	Y	N	0.080	<0.02	N	Y	1.7	<0.1 J	Y	0.93	0.021	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations are decreasing
MW-76-181	IRZ-15	03/07/2023	<1	--	<1	N	1,500	370	-1,130	-75%	Y	N	0.080	<0.02	N	Y	1.7	<0.1	Y	0.93	0.018 J	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations are decreasing
MW-76-218	IRZ-15	01/10/2023	<1	<1	1.5	N	320	<1	-319	-100%	Y	Y	0.180	0.032 J	N	Y	5.1	<0.1	Y	0.39	0.42	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations decreased below 32 µg/L
MW-76-218	IRZ-15	02/07/2023	<1	<1	<1	N	320	<1	-319	-100%	Y	Y	0.180	<0.02	N	Y	5.1	<0.1	Y	0.39	0.44 J	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations decreased below 32 µg/L
MW-76-218	IRZ-15	03/07/2023	<1	--	1.4	N	320	<1	-319	-100%	Y	Y	0.180	0.041	N	Y	5.1	<0.1	Y	0.39	0.41 J	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations decreased below 32 µg/L
MW-78-070	IRZ-25; IRZ-27	01/11/2023	<1	<1	<1	N	4,400	9.5	-4,391	-100%	Y	Y	0.100	<0.02	N	Y	1.40	<0.1	Y	0.0054	0.38	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-78-070	IRZ-25; IRZ-27	02/10/2023	<1	<1	1.0	N	4,400	2.7	-4,397	-100%	Y	Y	0.100	<0.02	N	Y	1.40	<0.1	Y	0.0054	0.73	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-78-070	IRZ-25; IRZ-27	03/09/2023	<1	--	1.6	N	4,400	4.9	-4,395	-100%	Y	Y	0.100	<0.02 J	N	Y	1.40	<0.1	Y	0.0054	0.15 J	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-78-142	IRZ-25; IRZ-27	01/11/2023	<1	<1	<1	N	6,800	2,400	-4,400	-65%	Y	N	0.130	<0.02	N	Y	4.3	1.2	Y	0.0250	0.0023	Y	Y	Y	No operational changes made
MW-78-142	IRZ-25; IRZ-27	02/10/2023	<1	<1	<1	N	6,800	2,200	-4,600	-68%	Y	N	0.130	<0.02	N	Y	4.3	<0.1	Y	0.0250	0.0023	Y	Y	Y	No operational changes made

Table 3.5
NTH IRZ Dose-Response Monitoring Wells Performance Summary
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Monitoring Well ID	IRZ Injection Well ID	Sample Date	TOC				Cr6						Dissolved Iron				Dissolved Arsenic			Dissolved Manganese			Evidence of Treated Groundwater at Well[g]	Are In-Situ Byproducts Controlled?	Operational Response and Reasoning[h]
			TOC Baseline[a] (mg/L)	TOC (Method 5310C) (mg/L)	TOC (Method 5310B) (mg/L)	Is TOC within the Target Range of 15 - 50 mg/L[b]?	Cr6 Baseline[c] (µg/L)	Cr6 (µg/L)	Change from Baseline Concentration (µg/L)	Percent Change from Baseline Concentration (%)[d]	Are Cr6 Concentrations Decreasing Compared to the Baseline Concentration?	Is Cr6 < 32 µg/L[e]?	Dissolved Iron Baseline[f] (mg/L)	Dissolved Iron (mg/L)	Are Dissolved Iron Concentrations above Baseline?	Is Dissolved Iron < 5 mg/L[e]? If Dissolved Iron > 5 mg/L, Is It < Baseline?	Dissolved Arsenic Baseline[f] (µg/L)	Dissolved Arsenic (µg/L)	Is Dissolved Arsenic < 15 µg/L[e]? If Dissolved Arsenic > 15 µg/L, Is It < Baseline?	Dissolved Manganese Baseline[f] (mg/L)	Dissolved Manganese (mg/L)	Is Dissolved Manganese < 5 mg/L[e]? If Dissolved Manganese > 5 mg/L, Is It < Baseline?			
MW-78-142	IRZ-25; IRZ-27	03/08/2023	<1	--	<1	N	6,800	2,100	-4,700	-69%	Y	N	0.130	<0.02	N	Y	4.3	2.1	Y	0.0250	0.0016	Y	Y	Y	No operational changes made
MW-79-058	IRZ-29; IRZ-31	01/11/2023	<1	<1	<1	N	3,200	110	-3,090	-97%	Y	N	2.6	<0.02	N	Y	2.5	<0.1	Y	0.47	0.0071	Y	Y	Y	No operational changes made
MW-79-058	IRZ-29; IRZ-31	02/09/2023	<1	<1	<1	N	3,200	66	-3,134	-98%	Y	N	2.6	<0.02 J	N	Y	2.5	<0.1	Y	0.47	0.0005	Y	Y	Y	No operational changes made
MW-79-058	IRZ-29; IRZ-31	03/08/2023	<1	--	<1	N	3,200	33	-3,167	-99%	Y	N	2.6	0.092	N	Y	2.5	<0.1	Y	0.47	0.008	Y	Y	Y	No operational changes made
MW-79-102	IRZ-29; IRZ-31	01/11/2023	<1	<1	<1	N	3,500	330	-3,170	-91%	Y	N	0.065	<0.02	N	Y	4.8	0.6	Y	0.054	0.0085	Y	Y	Y	No operational changes made
MW-79-102	IRZ-29; IRZ-31	02/09/2023	<1	<20	<1	N	3,500	250	-3,250	-93%	Y	N	0.065	<0.02 J	N	Y	4.8	<0.1	Y	0.054	0.0081	Y	Y	Y	No operational changes made
MW-79-102	IRZ-29; IRZ-31	03/08/2023	<1	--	<1	N	3,500	160	-3,340	-95%	Y	N	0.065	<0.02	N	Y	4.8	0.6	Y	0.054	0.012	Y	Y	Y	No operational changes made
MW-80-057	IRZ-35	01/11/2023	<1	<1	<1	N	840 J	350	-490	-58%	Y	N	0.110	<0.02	N	Y	3.3	<0.1	Y	0.080	0.0065	Y	Y	Y	No operational changes made
MW-80-057	IRZ-35	02/08/2023	<1	<1	<1	N	840 J	520	-320	-38%	Y	N	0.110	<0.02 J	N	Y	3.3	<0.1	Y	0.080	0.006	Y	Y	Y	No operational changes made
MW-80-057	IRZ-35	03/08/2023	<1	--	<1	N	840 J	74	-766	-91%	Y	N	0.110	0.14	Y	Y	3.3	<0.1	Y	0.080	0.0081	Y	Y	Y	No operational changes made
MW-80-082	IRZ-35	01/11/2023	<1	<20	<1	N	2,100	3.4	-2,097	-100%	Y	Y	0.059	0.037 J	N	Y	4.2	<0.1	Y	0.010	0.57	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-80-082	IRZ-35	02/08/2023	<1	<1	1.0	N	2,100	5.5	-2,095	-100%	Y	Y	0.059	<0.02 J	N	Y	4.2	<0.1	Y	0.010	0.27	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
MW-80-082	IRZ-35	03/08/2023	<1	--	1.2	N	2,100	<0.2	-2,100	-100%	Y	Y	0.059	0.021	N	Y	4.2	1.6	Y	0.010	0.61	Y	Y	Y	Cr6 concentrations decreased below 32 µg/L
TW-02D	IRZ-21	01/12/2023	<1	<1	1.1	N	740	34	-706	-95%	Y	N	0.770	<0.02	N	Y	4.53	7.7	Y	0.21	0.0087	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations are decreasing
TW-02D	IRZ-21	02/08/2023	<1	<1	<1	N	740	40	-700	-95%	Y	N	0.770	<0.02 J	N	Y	4.53	3.5	Y	0.21	0.037	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations are decreasing
TW-02D	IRZ-21	03/07/2023	<1	--	<1	N	740	28	-712	-96%	Y	Y	0.770	<0.02	N	Y	4.53	4.3	Y	0.21	0.066 J	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations decreased below 32 µg/L
TW-02S	IRZ-21	01/12/2023	<1	<1	1.3	N	81	120	39	48%	N	N	0.180	0.09	N	Y	<10	1.3	Y	0.090	0.00091	Y	N	Y	IRZ injection well not operating
TW-02S	IRZ-21	02/08/2023	<1	<1	<1	N	81	85	4.0	5%	N	N	0.180	<0.02 J	N	Y	<10	<0.1	Y	0.090	<0.0005	Y	N	Y	IRZ injection well not operating
TW-02S	IRZ-21	03/07/2023	<1	--	<1	N	81	70	-11	-14%	Y	N	0.180	<0.02	N	Y	<10	<0.1	Y	0.090	<0.0005 J	Y	N	Y	IRZ injection well not operating
TW-03D	IRZ-21	01/12/2023	<1	<1	1.1	N	470	97	-373	-79%	Y	N	0.180	<0.02	N	Y	<5.0	7.1	Y	0.034	0.044	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations are decreasing
TW-03D	IRZ-21	02/08/2023	<1	<25	<1	N	470	76	-394	-84%	Y	N	0.180	<0.02 J	N	Y	<5.0	2.0	Y	0.034	0.034	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations are decreasing
TW-03D	IRZ-21	03/07/2023	<1	--	1.2	N	470	59	-411	-87%	Y	N	0.180	<0.02	N	Y	<5.0	3.2	Y	0.034	0.047 J	Y	Y	Y	IRZ injection well not operating; Cr6 concentrations are decreasing

Notes:
1. If a primary sample and field duplicate sample were collected, then the maximum result is presented.
a. Baseline TOC concentrations are defined by the most recent sampling result prior to IRZ system startup. Note that if a result was non-detect at an elevated reporting limit, previous sampling events were considered to develop a more conservative baseline concentration.
b. Anticipated target ranges were set forth in the NTH IRZ Injection Decision Rules and Operational Framework (CH2M Hill 2015).
c. Baseline Cr6 concentrations represent the maximum concentration observed at each monitoring well between January 2020 and December 2021.
d. In comparison to the baseline concentration, a negative value indicates a decrease in concentration and a positive value indicates an increase in concentration.
e. Anticipated comparison values were set forth in the NTH IRZ Injection Decision Rules and Operational Framework (CH2M Hill 2015).
f. Baseline dissolved iron, dissolved arsenic, and dissolved manganese concentrations represent the maximum historical concentration observed at each monitoring well. For wells installed after 2019, baseline concentrations represent the maximum concentration observed at each monitoring well between January 2020 and December 2021.
g. Evidence of treated groundwater at the monitoring well is determined by changes in TOC, Cr6, and/or in-situ byproduct (dissolved iron, dissolved arsenic and dissolved manganese) concentrations, as outlined in the NTH IRZ Injection Decision Rules and Operational Framework (CH2M Hill 2015). Additional information, including changes in nitrate and sulfate concentrations, is also used to support evidence of treated groundwater.
h. The need for an operational response is determined based on evidence of treated groundwater at the monitoring well and control of in-situ byproducts, as outlined in the NTH IRZ Injection Decision Rules and Operational Framework (CH2M Hill 2015).

Abbreviations:
-- = not applicable
<x = not detected at the reporting limit
< = less than
Cr6 = hexavalent chromium
ID = identification
IRZ = in-situ reactive zone
J = estimated concentration
mg/L= milligram(s) per liter
N = no
NTH = National Trails Highway
TOC = total organic carbon
Y = yes
µg/L = microgram(s) per liter

Reference:
CH2M Hill. 2015. Basis of Design Report / Final (100%) Design Submittal for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California. November.

Table 3.6 NTH IRZ Downgradient Response Monitoring Wells Performance Summary

Source: Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California*. June 14.

Table 3.6
NTH IRZ Downgradient Response Monitoring Wells Performance Summary
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Sample Date	Cr6						Dissolved Iron			Dissolved Arsenic			Dissolved Manganese			Are In-Situ Byproducts Controlled?	Operational Response and Reasoning[e]
		Cr6 Baseline[a] (µg/L)	Cr6 (µg/L)	Change from Baseline Concentration[b] (µg/L)	Percent Change from Baseline Concentration[b]	Anticipated Change in Cr6 Concentrations[c]	Is Cr6 Concentration Within Expectations?	Dissolved Iron Baseline[a] (mg/L)	Dissolved Iron (mg/L)	Is Dissolved Iron < 5 mg/L[c] ? If Dissolved Iron > 5 mg/L, Is It < Baseline?	Dissolved Arsenic Baseline[a] (µg/L)	Dissolved Arsenic (µg/L)	Is Dissolved Arsenic < 15 µg/L[c]? If Dissolved Arsenic > 15 µg/L, Is It < Baseline?	Dissolved Manganese Baseline[a] (mg/L)	Dissolved Manganese (mg/L)	Is Dissolved Manganese < 5 mg/L[c]? If Dissolved Manganese > 5 mg/L, Is It < Baseline?		
MW-22	02/22/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	21.0	13	Y	28	3.5	Y	7.2	3.4	Y	Y	No operational changes made
MW-27-020	02/22/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	2.9	<0.02	Y	4.8	0.90	Y	0.360	0.054	Y	Y	No operational changes made
MW-27-060	02/22/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	2.6	0.70	Y	13	9.1	Y	0.350	0.40	Y	Y	No operational changes made
MW-27-085	02/22/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	1.9	0.20	Y	14	<0.1	Y	0.964	0.34	Y	Y	No operational changes made
MW-28-025	02/17/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.063	<0.02	Y	2.4	0.60	Y	0.410	0.001	Y	Y	No operational changes made
MW-28-090	02/17/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	1.0	0.80	Y	7.7	<0.1	Y	0.664	0.0042	Y	Y	No operational changes made
MW-30-030	02/06/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	5.37	0.90	Y	19	<0.1 J	Y	1.3	0.29	Y	Y	No operational changes made
MW-30-050	01/13/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.12	0.057 J	Y	9.7	3.7	Y	0.260	0.31	Y	Y	No operational changes made
MW-30-050	02/06/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.12	0.042 J	Y	9.7	3.9	Y	0.260	0.30	Y	Y	No operational changes made
MW-30-050	03/08/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.12	0.041	Y	9.7	2.7	Y	0.260	0.31	Y	Y	No operational changes made
MW-32-020	02/14/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	21.0	6.9	Y	65	2.0	Y	2.85	0.30	Y	Y	No operational changes made
MW-32-035	02/14/2023	<0.2	<1	0	0%	Remains below 32 µg/L	Y	24.1	26 J	N	53	5.3	Y	4.30	0.61	Y	Y	No operational changes made
MW-34-055	02/22/2023	<0.2	0.23	0	15%	Remains below 32 µg/L	Y	0.505	<0.02	Y	4.83	3.5	Y	0.290	0.018	Y	Y	No operational changes made
MW-34-080	01/13/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.35	0.30	Y	7.3	<0.1	Y	0.300	0.16	Y	Y	No operational changes made
MW-34-080	02/08/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.35	0.20	Y	7.3	<0.1	Y	0.300	0.17	Y	Y	No operational changes made
MW-34-080	03/09/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.35	0.40	Y	7.3	<0.1	Y	0.300	0.15 J	Y	Y	No operational changes made
MW-34-100	02/22/2023	<1.0	<1	0	0%	Steady	Y	0.47	0.022	Y	16	<0.1	Y	0.230	0.071	Y	Y	No operational changes made
MW-36-020	02/24/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	2.75	0.60	Y	3.3	0.60	Y	0.642	0.17	Y	Y	No operational changes made
MW-36-040	02/24/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	3.92	0.50	Y	7.7	7.0	Y	0.699	0.16	Y	Y	No operational changes made
MW-36-050	02/24/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.57	0.20	Y	5.6	5.8	Y	0.517	0.23	Y	Y	No operational changes made
MW-36-070	02/24/2023	0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.57	0.052 J	Y	10	2.4	Y	1.60	0.32	Y	Y	No operational changes made
MW-36-090	01/13/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.13	0.072 J	Y	25	2.3	Y	0.170	0.13	Y	Y	No operational changes made
MW-36-090	02/08/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.13	0.046 J	Y	25	1.3	Y	0.170	0.17	Y	Y	No operational changes made
MW-36-090	03/09/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.13	0.065 J	Y	25	1.8	Y	0.170	0.17 J	Y	Y	No operational changes made
MW-36-100	01/13/2023	36	<0.2	-36	-99%	Increasing	Y	0.26	0.80	Y	14	4.5	Y	0.390	0.67	Y	Y	No operational changes made
MW-36-100	02/08/2023	36	<0.2	-36	-99%	Increasing	Y	0.26	0.80	Y	14	3.6	Y	0.390	0.65	Y	Y	No operational changes made
MW-36-100	03/09/2023	36	<0.2	-36	-99%	Increasing	Y	0.26	0.90	Y	14	3.3	Y	0.390	0.81 J	Y	Y	No operational changes made
MW-39-040	01/09/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	12.4	0.30	Y	21	11 J	Y	1.59	0.1	Y	Y	No operational changes made
MW-39-040	02/06/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	12.4	0.30	Y	21	14 J	Y	1.59	0.14	Y	Y	No operational changes made
MW-39-040	03/07/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	12.4	0.30	Y	21	11	Y	1.59	0.11 J	Y	Y	No operational changes made
MW-39-050	01/09/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.15	0.028	Y	16	1.5	Y	0.190	0.24	Y	Y	No operational changes made
MW-39-050	02/06/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.15	0.024 J	Y	16	1.8	Y	0.190	0.24	Y	Y	No operational changes made
MW-39-050	03/07/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.15	0.021	Y	16	1.5	Y	0.190	0.21 J	Y	Y	No operational changes made
MW-39-060	01/09/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.12	0.069	Y	7.6	1.3	Y	0.110	0.25	Y	Y	No operational changes made

Table 3.6
NTH IRZ Downgradient Response Monitoring Wells Performance Summary
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Sample Date	Cr6						Dissolved Iron			Dissolved Arsenic			Dissolved Manganese			Are In-Situ Byproducts Controlled?	Operational Response and Reasoning[e]
		Cr6 Baseline[a] (µg/L)	Cr6 (µg/L)	Change from Baseline Concentration[b] (µg/L)	Percent Change from Baseline Concentration[b]	Anticipated Change in Cr6 Concentrations[c]	Is Cr6 Concentration Within Expectations?	Dissolved Iron Baseline[a] (mg/L)	Dissolved Iron (mg/L)	Is Dissolved Iron < 5 mg/L[c] ? If Dissolved Iron > 5 mg/L, Is It < Baseline?	Dissolved Arsenic Baseline[a] (µg/L)	Dissolved Arsenic (µg/L)	Is Dissolved Arsenic < 15 µg/L[c]? If Dissolved Arsenic > 15 µg/L, Is It < Baseline?	Dissolved Manganese Baseline[a] (mg/L)	Dissolved Manganese (mg/L)	Is Dissolved Manganese < 5 mg/L[c]? If Dissolved Manganese > 5 mg/L, Is It < Baseline?		
MW-39-060	02/06/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.12	0.072 J	Y	7.6	1.1	Y	0.110	0.38	Y	Y	No operational changes made
MW-39-060	03/07/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.12	0.048	Y	7.6	1.5	Y	0.110	0.27 J	Y	Y	No operational changes made
MW-39-070	01/09/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.22	0.022	Y	16	1.1	Y	0.12	0.023	Y	Y	No operational changes made
MW-39-070	02/06/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.22	<0.02 J	Y	16	1.0	Y	0.12	0.021	Y	Y	No operational changes made
MW-39-070	03/07/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.22	<0.02	Y	16	0.80	Y	0.12	0.024 J	Y	Y	No operational changes made
MW-39-080	01/09/2023	0.47	4.9	4	943%	Remains below 32 µg/L	Y	0.12	<0.02	Y	16	0.80	Y	0.12	0.0091	Y	Y	No operational changes made
MW-39-080	02/06/2023	0.47	1.8	1	283%	Remains below 32 µg/L	Y	0.12	<0.02 J	Y	16	<0.1 J	Y	0.12	0.0086	Y	Y	No operational changes made
MW-39-080	03/07/2023	0.47	33	33	6,921%	Remains below 32 µg/L	N	0.12	<0.02	Y	16	<0.1	Y	0.12	0.0065 J	Y	Y	No operational changes made; monitoring closely
MW-39-100	01/09/2023	120	270	150	125%	Increasing	Y	0.056	<0.02	Y	4.1	<0.1 J	Y	0.031	0.014	Y	Y	No operational changes made; monitoring closely
MW-39-100	02/06/2023	120	170	50	42%	Increasing	Y	0.056	<0.02 J	Y	4.1	<0.1 J	Y	0.031	0.014	Y	Y	No operational changes made; monitoring closely
MW-39-100	03/07/2023	120	160	40	33%	Increasing	Y	0.056	<0.02	Y	4.1	<0.1	Y	0.031	0.0088 J	Y	Y	No operational changes made; monitoring closely
MW-42-030	02/16/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	5.39	0.30	Y	6.5	1.3	Y	0.737	0.075	Y	Y	No operational changes made
MW-42-055	02/16/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	2.24	0.30	Y	29	14	Y	1.02	0.36	Y	Y	No operational changes made
MW-42-065	02/16/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.36	0.035	Y	14	<0.1	Y	2.37	2.3	Y	Y	No operational changes made
MW-43-025	02/21/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	5.4	3.9	Y	32	20	Y	0.360	0.47 J	Y	Y	No operational changes made
MW-43-075	02/21/2023	<0.2	<1	0	0%	Remains below 32 µg/L	Y	5.5	2.7	Y	17	5.4	Y	0.930	0.62 J	Y	Y	No operational changes made
MW-43-090	02/21/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	9.26	0.80	Y	25	<0.1	Y	1.26	0.74 J	Y	Y	No operational changes made
MW-44-070	02/22/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.656	0.70	Y	6.6	2.4	Y	0.316	0.32	Y	Y	No operational changes made
MW-44-115	01/10/2023	4.8	3.2	-2	-33%	Increasing	Y	0.25	0.057 J	Y	6.93	1.2	Y	0.0917	0.015	Y	Y	No operational changes made
MW-44-115	02/08/2023	4.8	1.9	-3	-60%	Increasing	Y	0.25	<0.02 J	Y	6.93	<0.1	Y	0.0917	0.039	Y	Y	No operational changes made
MW-44-115	03/09/2023	4.8	3.3	-2	-31%	Increasing	Y	0.25	<0.02 J	Y	6.93	1.1	Y	0.0917	0.056 J	Y	Y	No operational changes made
MW-44-125	01/10/2023	<1.0	<1	0	0%	Increasing	Y	0.7	0.50	Y	5.9	1.4	Y	0.777	0.52	Y	Y	No operational changes made
MW-44-125	02/08/2023	<1.0	<1	0	0%	Increasing	Y	0.7	0.30	Y	5.9	<0.1	Y	0.777	0.52	Y	Y	No operational changes made
MW-44-125	03/09/2023	<1.0	<1	0	0%	Increasing	Y	0.7	0.30	Y	5.9	1.6	Y	0.777	0.47 J	Y	Y	No operational changes made
MW-45-095A	01/10/2023	<0.2	<0.2	0	0%	Increasing	Y	0.0129	0.046 J	Y	10	0.70	Y	0.260	0.46	Y	Y	No operational changes made
MW-45-095A	02/08/2023	<0.2	0.91	0	355%	Increasing	Y	0.0129	0.074 J	Y	10	<0.1	Y	0.260	0.39	Y	Y	No operational changes made
MW-45-095A	03/08/2023	<0.2	0.92	0	360%	Increasing	Y	0.0129	<0.02	Y	10	0.6	Y	0.260	0.16	Y	Y	No operational changes made
MW-46-175	02/21/2023	6.6	8.9	2	35%	Remains below 32 µg/L	Y	0.20	<0.02 J	Y	2.9	<0.1	Y	0.025	0.013 J	Y	Y	No operational changes made
MW-46-205	02/21/2023	1.6	<1	-1	-38%	Remains below 32 µg/L	Y	0.068	0.027 J	Y	<0.1	<0.1	Y	0.053	0.043 J	Y	Y	No operational changes made
MW-52D	02/21/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	5.40	0.60	Y	27	<0.1	Y	0.319	0.25 J	Y	Y	No operational changes made
MW-52M	02/21/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	2.0	1.3	Y	21	<0.1	Y	0.316	0.16 J	Y	Y	No operational changes made
MW-52S	02/21/2023	<0.2	<1	0	0%	Remains below 32 µg/L	Y	27	21 J	Y	12	<0.1	Y	2.10	1.0	Y	Y	No operational changes made
MW-53D	02/21/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	0.54	0.20	Y	32	<0.1	Y	2.20	1.3	Y	Y	No operational changes made

Table 3.6
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		Cr6 Baseline[a] (µg/L)	Cr6 (µg/L)	Change from Baseline Concentration[b] (µg/L)	Percent Change from Baseline Concentration[b]	Anticipated Change in Cr6 Concentrations[c]	Is Cr6 Concentration Within Expectations?	Dissolved Iron Baseline[a] (mg/L)	Dissolved Iron (mg/L)	Is Dissolved Iron < 5 mg/L[c] ? If Dissolved Iron > 5 mg/L, Is It < Baseline?	Dissolved Arsenic Baseline[a] (µg/L)	Dissolved Arsenic (µg/L)	Is Dissolved Arsenic < 15 µg/L[c]? If Dissolved Arsenic > 15 µg/L, Is It < Baseline?	Dissolved Manganese Baseline[a] (mg/L)	Dissolved Manganese (mg/L)	Is Dissolved Manganese < 5 mg/L[c]? If Dissolved Manganese > 5 mg/L, Is It < Baseline?		
MW-53M	02/21/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	0.55	0.50	Y	25	<0.1	Y	0.630	0.37 J	Y	Y	No operational changes made
MW-53S	02/21/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	5.40	5.2	Y	<0.1	<0.1	Y	1.20	1.2	Y	Y	No operational changes made
MW-77-046	01/09/2023	1.1	<0.2	-1	-82%	Remains below 32 µg/L	Y	0.94	0.20	Y	3.6	2.6	Y	0.460	0.44	Y	Y	No operational changes made
MW-77-046	02/07/2023	1.1	<1	0	-9%	Remains below 32 µg/L	Y	0.94	0.10	Y	3.6	<0.1 J	Y	0.460	0.43	Y	Y	No operational changes made
MW-77-046	03/06/2023	1.1	<0.71	-0.4	-35%	Remains below 32 µg/L	Y	0.94	<0.02	Y	3.6	0.60	Y	0.460	0.47 J	Y	Y	No operational changes made
MW-77-102	01/09/2023	1.6	<1	-0.6	-38%	Remains below 32 µg/L	Y	0.082	<0.02	Y	1.3	<0.1 J	Y	0.064	0.13	Y	Y	No operational changes made
MW-77-102	02/07/2023	1.6	<1	-0.6	-38%	Remains below 32 µg/L	Y	0.082	<0.02	Y	1.3	<0.1 J	Y	0.064	0.15	Y	Y	No operational changes made
MW-77-102	03/06/2023	1.6	<1	-0.6	-38%	Remains below 32 µg/L	Y	0.082	<0.02	Y	1.3	<0.1	Y	0.064	0.12 J	Y	Y	No operational changes made
MW-77-158	01/09/2023	10 J	<1	-9	-90%	Remains below 32 µg/L	Y	0.048	0.085	Y	3.2	3.1	Y	0.087	0.074	Y	Y	No operational changes made
MW-77-158	02/07/2023	10 J	<1	-9	-90%	Remains below 32 µg/L	Y	0.048	0.039	Y	3.2	<0.1 J	Y	0.087	0.055	Y	Y	No operational changes made
MW-77-158	03/06/2023	10 J	<1	-9	-90%	Remains below 32 µg/L	Y	0.048	0.046	Y	3.2	<0.1	Y	0.087	0.068 J	Y	Y	No operational changes made
MW-77-187	01/09/2023	4.1	22	18	437%	Remains below 32 µg/L	Y	0.050	<0.02	Y	4.4	2.4	Y	0.110	0.013	Y	Y	No operational changes made
MW-77-187	02/07/2023	4.1	25	21	510%	Remains below 32 µg/L	Y	0.050	<0.02	Y	4.4	<0.1 J	Y	0.110	0.013	Y	Y	No operational changes made
MW-77-187	03/07/2023	4.1	<0.2	-4	-95%	Remains below 32 µg/L	Y	0.050	0.084	Y	4.4	4.3	Y	0.110	0.051 J	Y	Y	No operational changes made
MW-81-043	01/11/2023	13	20	7	54%	Remains below 32 µg/L	Y	0.38	0.024 J	Y	3.4	3.1	Y	0.360	0.018	Y	Y	No operational changes made
MW-81-043	02/07/2023	13	9.7	-3	-25%	Remains below 32 µg/L	Y	0.38	0.023	Y	3.4	4.3	Y	0.360	0.019 J	Y	Y	No operational changes made
MW-81-043	03/07/2023	13	5.4	-8	-58%	Remains below 32 µg/L	Y	0.38	0.024	Y	3.4	2.7	Y	0.360	0.032 J	Y	Y	No operational changes made
MW-81-098	01/11/2023	2.0 J	1.3	-1	-35%	Remains below 32 µg/L	Y	0.15	0.024 J	Y	1.0	<0.1	Y	0.28	0.11	Y	Y	No operational changes made
MW-81-098	02/07/2023	2.0 J	<1	-1	-50%	Remains below 32 µg/L	Y	0.15	0.061	Y	1.0	<0.1	Y	0.28	0.11 J	Y	Y	No operational changes made
MW-81-098	03/07/2023	2.0 J	<1	-1	-50%	Remains below 32 µg/L	Y	0.15	0.076	Y	1.0	<0.1	Y	0.28	0.097 J	Y	Y	No operational changes made
MW-82-046	01/10/2023	<0.2	<0.2	0	0%	Increasing before decreasing below 32 µg/L	Y	6.60	4.3	Y	32	17	Y	0.480	0.31	Y	Y	No operational changes made
MW-82-046	02/07/2023	<0.2	<1	0	0%	Increasing before decreasing below 32 µg/L	Y	6.60	4.0	Y	32	13 J	Y	0.480	0.20	Y	Y	No operational changes made
MW-82-046	03/08/2023	<0.2	<1	0	0%	Increasing before decreasing below 32 µg/L	Y	6.60	5.2	Y	32	20	Y	0.480	0.23	Y	Y	No operational changes made
MW-82-112	01/10/2023	0.88	<1	1	14%	Increasing before decreasing below 32 µg/L	Y	0.11	0.036 J	Y	2.0	<0.1	Y	0.072	0.086	Y	Y	No operational changes made
MW-82-112	02/07/2023	0.88	<1	1	14%	Increasing before decreasing below 32 µg/L	Y	0.11	0.039	Y	2.0	<0.1 J	Y	0.072	0.18	Y	Y	No operational changes made
MW-82-112	03/08/2023	0.88	<0.2	-0.7	-77%	Increasing before decreasing below 32 µg/L	Y	0.11	<0.02	Y	2.0	<0.1	Y	0.072	0.10	Y	Y	No operational changes made
MW-82-168	01/10/2023	7	<0.2	-7	-97%	Increasing before decreasing below 32 µg/L	Y	0.094	0.059 J	Y	1.9	<0.1	Y	0.320	0.037	Y	Y	No operational changes made
MW-82-168	02/07/2023	7	<1	-6	-86%	Increasing before decreasing below 32 µg/L	Y	0.094	0.053	Y	1.9	<0.1 J	Y	0.320	0.052	Y	Y	No operational changes made
MW-82-168	03/08/2023	7	<0.2	-7	-97%	Increasing before decreasing below 32 µg/L	Y	0.094	0.036	Y	1.9	<0.1	Y	0.320	0.044	Y	Y	No operational changes made
MW-82-198	01/10/2023	<1.0	<0.2	0	-80%	Increasing before decreasing below 32 µg/L	Y	0.27	0.20	Y	3.9	1.0	Y	0.230	0.071	Y	Y	No operational changes made
MW-82-198	02/07/2023	<1.0	<1	0	0%	Increasing before decreasing below 32 µg/L	Y	0.27	<0.02	Y	3.9	<0.1 J	Y	0.230	0.063	Y	Y	No operational changes made
MW-82-198	03/08/2023	<1.0	<0.2	0	-80%	Increasing before decreasing below 32 µg/L	Y	0.27	0.047	Y	3.9	1.0	Y	0.230	0.064	Y	Y	No operational changes made
MW-86-030	02/23/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	1.40	0.9	Y	7.8	8.4	Y	0.44	0.25	Y	Y	No operational changes made

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Monitoring Well ID	Sample Date	Cr6						Dissolved Iron			Dissolved Arsenic			Dissolved Manganese			Are In-Situ Byproducts Controlled?	Operational Response and Reasoning[e]
		Cr6 Baseline[a] (µg/L)	Cr6 (µg/L)	Change from Baseline Concentration[b] (µg/L)	Percent Change from Baseline Concentration[b]	Anticipated Change in Cr6 Concentrations[c]	Is Cr6 Concentration Within Expectations?	Dissolved Iron Baseline[d] (mg/L)	Dissolved Iron (mg/L)	Is Dissolved Iron < 5 mg/L[c] ? If Dissolved Iron > 5 mg/L, Is It < Baseline?	Dissolved Arsenic Baseline[d] (µg/L)	Dissolved Arsenic (µg/L)	Is Dissolved Arsenic < 15 µg/L[c]? If Dissolved Arsenic > 15 µg/L, Is It < Baseline?	Dissolved Manganese Baseline[d] (mg/L)	Dissolved Manganese (mg/L)	Is Dissolved Manganese < 5 mg/L[c]? If Dissolved Manganese > 5 mg/L, Is It < Baseline?		
MW-86-066	02/23/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	0.42	<0.02	Y	2.0	<0.1	Y	1.1	0.55	Y	Y	No operational changes made
MW-86-120	02/23/2023	1.1 J	<1	-0.1	-9%	Remains below 32 µg/L	Y	0.69	<0.02	Y	3.1	<0.1	Y	0.980	0.37	Y	Y	No operational changes made
MW-86-140	02/23/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	0.53	0.087 J	Y	1.4	<0.1	Y	1.5	1.0	Y	Y	No operational changes made
MW-90-031	02/22/2023	<1.0	<1	0	0%	Remains below 32 µg/L	Y	9.80	16	N	3.7	<0.1	Y	0.350	0.80	Y	Y	No operational changes made
PT5D	02/16/2023	31	85	54	174%	May increase before decreasing	Y	2.2	<0.02	Y	11.5	5.0	Y	1.7	0.013	Y	Y	No operational changes made; monitoring closely
PT5M	02/16/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	1.82	0.033	Y	11.1	0.80	Y	1.77	1.1	Y	Y	No operational changes made
PT5S	02/16/2023	<0.2	<0.2	0	0%	Remains below 32 µg/L	Y	1.03	0.80	Y	13	13	Y	2.44	0.26	Y	Y	No operational changes made

Notes:

1. If a primary sample and field duplicate sample were collected, then the maximum result is presented.

a. Baseline Cr6 concentrations represent the maximum concentration observed at each monitoring well between January 2020 and December 2021.

b. In comparison to the baseline concentration, a negative value indicates a decrease in concentration and a positive value indicates an increase in concentration.

c. Anticipated change in Cr6 concentrations and comparison values were determined from the NTH IRZ Injection Decision Rules and Operational Framework (CH2M Hill 2015).

d. Baseline dissolved iron, dissolved arsenic, and dissolved manganese concentrations represent the maximum historical concentration observed at each monitoring well. For wells installed after 2019, baseline concentrations represent the maximum concentration observed at each monitoring well between January 2020 and December 2021.

e. The need for an operational response is determined based on anticipated changes in Cr6 concentrations and control of in-situ byproducts, as outlined in the NTH IRZ Injection Decision Rules and Operational Framework (CH2M Hill 2015).

Abbreviations:

<x = not detected at the reporting limit
Cr6 = hexavalent chromium
ID = identification
IRZ = in-situ reactive zone
J = estimated value
mg/L= milligram(s) per liter
N = no
NTH = National Trails Highway
Y = yes
µg/L = microgram(s) per liter

Reference:

CH2M Hill. 2015. Basis of Design Report / Final (100%) Design Submittal for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California. November.

Table 3.4 Process Control Monitoring Analytical Results

Source: Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California*. June 14.

Table 3.4
Process Control Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Barium (µg/L)	Total Iron (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)	Ammonia (as Nitrate) (mg/L)	Nitrate (as Nitrogen) (mg/L)	Nitrite (as Nitrogen) (mg/L)	Sulfate (mg/L)	Total Organic Carbon by Method 5310B (mg/L)	Total Organic Carbon by Method 5310C (mg/L)
IRZ-15-055	Injection Well	02/22/2023	N	27	25	<0.1	43	--	<0.02	0.0023	--	<0.5	<5	410	--	<1
IRZ-15-200	Injection Well	02/22/2023	N	65	58	<0.1	27	--	<0.02	0.0049	--	<0.5	<5	450	--	<1
IRZ-21-065	Injection Well	02/28/2023	N	1.6	2.8 J	<0.1	71	--	<0.02	0.066	<0.2	<0.25	<2.5	350 J	--	<1
IRZ-21-065	Injection Well	02/28/2023	FD	1.2	1.8 J	<0.1	69	--	<0.02	0.065	<0.2	<0.25	<2.5	350 J	--	<1
IRZ-21-157	Injection Well	02/28/2023	N	2.8	4.8 J	<0.1	70	--	<0.02	0.061	<0.2	<0.25	<2.5	340 J	--	<1
IRZ-25-100	Injection Well	02/28/2023	N	450	570 J	<0.1	210	--	0.024 J	<0.0005	<0.2	1.4	<5	420 J	--	<1
IRZ-25-100	Injection Well	02/28/2023	FD	400	380 J	<0.1	190	--	<0.02	<0.0005	<0.2	1.2	<5	420 J	--	<1
IRZ-25-166	Injection Well	02/28/2023	N	430	420 J	<0.1	170	--	0.043 J	<0.0005	<0.2	1.2	<5	430 J	--	<20
MW-20-070	Dose Response	01/12/2023	N	1,700	--	1.9 J	56	--	<0.02	0.00085	--	33	--	680	1.4	<1
MW-20-070	Dose Response	02/10/2023	N	2,000	2,300	0.60	60	--	<0.02	<0.0005	<0.2	29	<5	620	1.3	<1
MW-20-070	Dose Response	03/08/2023	N	2,500	--	0.95	53 J	--	<0.02	<0.0005	--	20	--	500	1.1	--
MW-20-100	Dose Response	01/12/2023	N	1,700	--	1.7 J	25	--	0.039	0.00053	--	7.6	--	410	1.8	<1
MW-20-100	Dose Response	02/10/2023	N	1,400	1,400 J	0.87	31	--	<0.02	<0.0005	<0.2	5.2	<5	290	1	<5
MW-20-100	Dose Response	02/10/2023	FD	1,400	1,700	0.81	32	--	<0.02	<0.0005	<0.2	4.9	<5	300	<1	<1
MW-20-100	Dose Response	03/08/2023	N	1,600	--	0.85	32 J	--	<0.02	<0.0005	--	5.6	--	360	1.1	--
MW-20-130	Dose Response	01/12/2023	N	2,000	--	3.0 J	33	--	0.68	0.0067	--	6.7	--	1,300	4.0	<1
MW-20-130	Dose Response	02/10/2023	N	3,200	3,700	<0.1	27	--	<0.02	<0.0005	<0.2	9.1	<5	830	1	<1
MW-20-130	Dose Response	03/08/2023	N	3,400	--	0.66	25 J	--	<0.02	<0.0005	--	9.3	--	840	1.4	--
MW-21	Dose Response	01/11/2023	N	<0.2	--	15	18	--	0.073 J	0.14	--	<0.5	--	850	14	<1
MW-21	Dose Response	02/09/2023	N	0.21	2.8	7.2	22	--	0.28 J	0.13	<0.2	<0.25	<2.5	1,300	3.4	<10
MW-21	Dose Response	03/09/2023	N	0.32	--	13	38	--	0.38 J	0.24 J	--	<0.5	--	740	6.4	--
MW-21	Dose Response	03/09/2023	FD	0.25	--	15	35	--	0.39 J	0.28 J	--	<0.5	--	670	6.6	--
MW-26	Dose Response	01/12/2023	N	0.66	--	2.2 J	74	--	<0.02	0.64	--	<0.5	--	430	1.3	<1
MW-26	Dose Response	02/09/2023	N	<1	<1	<0.1	100	--	<0.02 J	0.53	<0.2	<0.5	<5	330	<1	<1
MW-26	Dose Response	02/09/2023	FD	<1	<1	<0.1	110	--	<0.02 J	0.52	<0.2	<0.5	<5	330	<1	<1
MW-26	Dose Response	03/09/2023	N	<0.2	--	<0.1	90	--	0.021 J	0.83 J	--	<0.5	--	360	1.5	--
MW-31-060	Dose Response	01/10/2023	N	<2	--	2.2	210 J	--	0.041 J	2.1	--	<0.5	--	410	40	<1
MW-31-060	Dose Response	02/08/2023	N	<1	<1	<0.1	400	--	0.038 J	2.4	<0.2	<0.5	<5	460	2.0	<1
MW-31-060	Dose Response	03/09/2023	N	<1	--	<0.1	390	--	<0.02 J	2.10 J	--	<0.5	--	230	11	--
MW-31-135	Dose Response	01/10/2023	N	3.4	--	<0.1 J	37 J	--	0.097 J	0.015	--	<0.5	--	560	<1	<1
MW-31-135	Dose Response	01/10/2023	FD	3.6	--	0.51 J	38 J	--	0.058 J	0.018	--	<0.5	--	560	<1	<1
MW-31-135	Dose Response	02/08/2023	N	16	19	<0.1	45	--	<0.02 J	0.0086 J	<0.2	0.78	<5	580	<1	<1
MW-31-135	Dose Response	02/08/2023	FD	15	18	<0.1	44	--	<0.02 J	0.0068 J	<0.2	0.62	<5	580	<1	<1
MW-31-135	Dose Response	03/09/2023	N	15	--	<0.1	34	--	<0.02 J	0.0044 J	--	<0.5	--	570	1.2	--
MW-51	Dose Response	01/12/2023	N	520	--	3.0 J	98	--	<0.02	0.1	--	1.2	--	450	4.7	<1
MW-51	Dose Response	02/09/2023	N	<1	12	1.3	64	--	<0.02 J	0.15	<0.2	<0.05	<0.5	47	14	5.7
MW-51	Dose Response	03/09/2023	N	0.81	--	1.9	100	--	0.13 J	1.5 J	--	<0.5	--	130	12	--
MW-71-035	Dose Response	01/11/2023	N	2.3	--	<0.1	40	--	0.035 J	0.10	--	0.79	--	1,000	4.5	<1
MW-71-035	Dose Response	01/11/2023	FD	2.2	--	<0.1	39	--	0.041 J	0.098	--	0.86	--	1,000	4.1	<1
MW-71-035	Dose Response	02/15/2023	N	<1	<1	<0.1	46	--	0.19 J	0.22	<0.2	0.64	<10	1,000	3.6	<1
MW-71-035	Dose Response	02/15/2023	FD	<1	<1	<0.1	48	--	0.30 J	0.26	<0.2	1.2	<5	950	3.4	<1
MW-71-035	Dose Response	03/09/2023	N	<1	--	<0.1	39	--	0.028 J	0.023 J	--	1.3	--	960	3.0	--
MW-71-035	Dose Response	03/09/2023	FD	<1	--	<0.1	38	--	<0.02 J	0.013 J	--	1.9	--	940	3.0	--
MW-76-039	Dose Response	01/10/2023	N	250	--	0.22	57 J	--	0.15 J	0.00073	--	3.3	--	220	<1	<1
MW-76-039	Dose Response	02/07/2023	N	270	300	<0.1 J	60 J	--	0.029	0.0019 J	<0.2	3.4	<5	230	<1	<1
MW-76-039	Dose Response	02/07/2023	FD	260	280	<0.1 J	60 J	--	0.03	0.0034 J	<0.2	3.4	<5	230	<1	<1
MW-76-039	Dose Response	03/07/2023	N	200	--	<0.1	120 J	--	<0.02	0.00084 J	--	2.2	--	300	<1	--
MW-76-156	Dose Response	01/10/2023	N	17	--	<0.1	44 J	--	0.16 J	0.056	--	1.9	--	740	1.2	<1
MW-76-156	Dose Response	02/07/2023	N	16	18 J	<0.1 J	48 J	--	<0.02	0.079	<0.2	1.8	<5	700	1.1	<1

Table 3.4
Process Control Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Barium (µg/L)	Total Iron (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)	Ammonia (as Nitrate) (mg/L)	Nitrate (as Nitrogen) (mg/L)	Nitrite (as Nitrogen) (mg/L)	Sulfate (mg/L)	Total Organic Carbon by Method 5310B (mg/L)	Total Organic Carbon by Method 5310C (mg/L)
MW-76-156	Dose Response	03/07/2023	N	17	--	<0.1	40 J	--	<0.02	0.048 J	--	1.7	--	710	<1	--
MW-76-181	Dose Response	01/10/2023	N	460	--	<0.1	42 J	--	0.088 J	0.019	--	1.1	--	770	1	<1
MW-76-181	Dose Response	02/07/2023	N	390	420	<0.1 J	46 J	--	<0.02	0.021	<0.2	0.79	<10	710	<1	<25
MW-76-181	Dose Response	03/07/2023	N	370	--	<0.1	34 J	--	<0.02	0.018 J	--	0.59	--	690	<1	--
MW-76-218	Dose Response	01/10/2023	N	<1	--	<0.1	83 J	--	0.032 J	0.42	--	<0.5	--	630	1.5	<1
MW-76-218	Dose Response	02/07/2023	N	<1	<1	<0.1	94	--	<0.02	0.44 J	<0.2	<0.5	<5	600	<1	<1
MW-76-218	Dose Response	03/07/2023	N	<1	--	<0.1	83 J	--	0.041	0.41 J	--	<0.5	--	620	1.4	--
MW-78-070	Dose Response	01/11/2023	N	9.5	--	<0.1	160	--	<0.02	0.38	--	<0.5	--	480	<1	<1
MW-78-070	Dose Response	02/10/2023	N	2.7	3.4 J	<0.1	170	--	<0.02	0.73	<0.2	<0.25	<2.5	340	1	<1
MW-78-070	Dose Response	02/10/2023	FD	2.7	3.4 J	<0.1	170	--	<0.02	0.71	<0.2	<0.25	<2.5	340	<1	<1
MW-78-070	Dose Response	03/09/2023	N	4.9	--	<0.1	140	--	<0.02 J	0.15 J	--	<0.5	--	330	1.6	--
MW-78-142	Dose Response	01/11/2023	N	2,400	--	1.2	27	--	<0.02	0.0023	--	4.4	--	690	<1	<1
MW-78-142	Dose Response	02/10/2023	N	2,200	2,700	<0.1	34	--	<0.02	0.0023	<0.2	3.7	<10	650	<1	<1
MW-78-142	Dose Response	03/08/2023	N	2,100	--	2.1	27 J	--	<0.02	0.0016	--	7.0	--	610	<1	--
MW-79-058	Dose Response	01/11/2023	N	110	--	<0.1	210	--	<0.02	0.0071	--	<0.5	--	470	<1	<1
MW-79-058	Dose Response	02/09/2023	N	65	71	<0.1	190	--	<0.02 J	0.0005	<0.2	<0.5	<5	460	<1	<1
MW-79-058	Dose Response	02/09/2023	FD	66	79	<0.1	210	--	<0.02 J	<0.0005	<0.2	<0.5	<5	460	<1	<1
MW-79-058	Dose Response	03/08/2023	N	33	--	<0.1	190 J	--	0.092	0.0080	--	<0.5	--	400	<1	--
MW-79-102	Dose Response	01/11/2023	N	330	--	0.57 J	41	--	<0.02	0.0085	--	<0.5	--	500	<1	<1
MW-79-102	Dose Response	02/09/2023	N	250	270	<0.1	50	--	<0.02 J	0.0081	<0.2	<0.5	<5	420	<1	<20
MW-79-102	Dose Response	03/08/2023	N	160	--	0.63	48 J	--	<0.02	0.012	--	<0.5	--	390	<1	--
MW-80-057	Dose Response	01/11/2023	N	350	--	<0.1	81	--	<0.02	0.0065	--	3.3	--	500	<1	<1
MW-80-057	Dose Response	02/08/2023	N	520	620	<0.1	87	--	<0.02 J	0.006	<0.2	5.8	<5	470	<1	<1
MW-80-057	Dose Response	03/08/2023	N	74	--	<0.1	100 J	--	0.14	0.0081	--	<0.5	--	450	<1	--
MW-80-082	Dose Response	01/11/2023	N	3.4	--	<0.1	51	--	0.037 J	0.57	--	<0.5	--	470	<1	<20
MW-80-082	Dose Response	02/08/2023	N	5.4	7.3	<0.1	59	--	<0.02 J	0.27	<0.2	<0.5	<5	370	1	<1
MW-80-082	Dose Response	02/08/2023	FD	5.5	6.9	<0.1	56	--	<0.02 J	0.25	<0.2	<0.5	<5	370	<1	<1
MW-80-082	Dose Response	03/08/2023	N	<0.2	--	1.6	52 J	--	0.021	0.61	--	<0.5	--	310	1.2	--
TW-02D	Dose Response	01/12/2023	N	34	--	7.7 J	13	--	<0.02	0.0087	--	<0.5	--	570	1.1	<1
TW-02D	Dose Response	02/08/2023	N	40	39 J	3.5	17	--	<0.02 J	0.037	<0.2	<0.5	<5	530	<1	<1
TW-02D	Dose Response	03/07/2023	N	28	--	4.3	15 J	--	<0.02	0.066 J	--	<0.5	--	500	<1	--
TW-02S	Dose Response	01/12/2023	N	120	--	1.3 J	200	--	0.090	0.00091	--	1.2	--	410	1.3	<1
TW-02S	Dose Response	02/08/2023	N	85	99	<0.1	200	--	<0.02 J	<0.0005	<0.2	0.66	<5	430	<1	<1
TW-02S	Dose Response	02/08/2023	FD	85	98	<0.1	200	--	<0.02 J	<0.0005	<0.2	0.72	<5	440	<1	<1
TW-02S	Dose Response	03/07/2023	N	70	--	<0.1	220 J	--	<0.02	<0.0005 J	--	0.53	--	450	<1	--
TW-03D	Dose Response	01/12/2023	N	97	--	7.1 J	20	--	<0.02	0.044	--	<0.5	--	590	1.1	<1
TW-03D	Dose Response	02/08/2023	N	76	90	2.0	23	--	<0.02 J	0.034	<0.2	<0.5	<10	550	<1	<25
TW-03D	Dose Response	03/07/2023	N	59	--	3.2	18 J	--	<0.02	0.047 J	--	<0.5	--	520	1.2	--
MW-22	Downgradient	02/22/2023	N	<1	--	3.5	86	--	13	3.4	4.6	<0.5	--	--	--	<1
MW-27-020	Downgradient	02/22/2023	N	<0.2	--	0.91	55	--	<0.02	0.054	--	<0.25	--	--	--	1.1
MW-27-060	Downgradient	02/22/2023	N	<0.2	--	9.1	170	--	0.69	0.40	--	<0.25	--	--	--	<1
MW-27-085	Downgradient	02/22/2023	N	<1	--	<0.1	45	--	0.24	0.34	--	<0.25	--	--	--	<1
MW-28-025	Downgradient	02/17/2023	N	<0.2	--	0.55	58	--	<0.02	0.001	--	<0.05	--	--	--	<1
MW-28-090	Downgradient	02/17/2023	N	<0.2	--	<0.1	47	--	0.77	0.0042	--	<0.25	--	--	--	<1
MW-30-030	Downgradient	02/06/2023	N	<1	--	<0.1 J	330 J	--	0.87 J	0.29	--	<0.25	--	--	--	3.0
MW-30-050	Downgradient	01/13/2023	N	<0.2	--	3.7	19	--	0.057 J	0.31	--	<0.5	--	210	--	<1
MW-30-050	Downgradient	02/06/2023	N	<0.2	--	3.9 J	24 J	--	0.042 J	0.3	--	<0.25	--	190	--	<1
MW-30-050	Downgradient	03/08/2023	N	<0.2	--	2.7	20 J	--	0.041	0.31	--	<0.25	--	200	--	<1
MW-32-020	Downgradient	02/14/2023	N	<1	--	2.0	96	--	6.90 J	0.3	--	<0.5	--	--	--	6.7

Table 3.4
Process Control Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Barium (µg/L)	Total Iron (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)	Ammonia (as Nitrate) (mg/L)	Nitrate (as Nitrogen) (mg/L)	Nitrite (as Nitrogen) (mg/L)	Sulfate (mg/L)	Total Organic Carbon by Method 5310B (mg/L)	Total Organic Carbon by Method 5310C (mg/L)
MW-32-035	Downgradient	02/14/2023	N	<1	--	5.3	360	--	26 J	0.61	--	<0.5	--	--	--	1.7
MW-34-055	Downgradient	02/22/2023	N	0.23	--	3.5	28	--	<0.02	0.018	--	0.38	--	--	--	<1
MW-34-080	Downgradient	01/13/2023	N	<0.2	--	<0.1	36	--	0.25 J	0.16	--	<0.5	--	730	--	<1
MW-34-080	Downgradient	02/08/2023	N	<0.2	--	<0.1	42	--	0.18 J	0.17	--	<0.5	--	730	--	<1
MW-34-080	Downgradient	03/09/2023	N	<0.2	--	<0.1	34	--	0.42 J	0.14 J	--	<0.5	--	720	--	<1
MW-34-080	Downgradient	03/09/2023	FD	<0.2	--	<0.1	40	--	0.39 J	0.15 J	--	0.75	--	720	--	<1
MW-34-100	Downgradient	02/22/2023	N	<1	--	<0.1	18	--	0.022	0.071	--	<0.25	--	--	--	<1
MW-36-020	Downgradient	02/24/2023	N	<0.2	--	0.57	83	--	0.56 J	0.17	--	<0.05	--	--	--	1.2
MW-36-040	Downgradient	02/24/2023	N	<0.2	--	7.0	54	--	0.48 J	0.16	--	<0.05	--	--	--	1.6
MW-36-050	Downgradient	02/24/2023	N	<0.2	--	5.8	33	--	0.18 J	0.23	--	<0.05	--	--	--	<1
MW-36-070	Downgradient	02/24/2023	N	<0.2	--	2.4	44	--	0.052 J	0.32	--	<0.05	--	--	--	<1
MW-36-090	Downgradient	01/13/2023	N	<0.2	--	2.3	41	--	0.072 J	0.13	--	<0.5	--	300	--	<1
MW-36-090	Downgradient	02/08/2023	N	<0.2	--	1.3	57	--	0.046 J	0.17	--	<0.5	--	330	--	<1
MW-36-090	Downgradient	03/09/2023	N	<0.2	--	1.8	58	--	0.065 J	0.17 J	--	<0.5	--	310	--	<1
MW-36-100	Downgradient	01/13/2023	N	<0.2	--	4.5	63	--	0.76 J	0.67	--	<0.5	--	360	--	<1
MW-36-100	Downgradient	02/08/2023	N	<0.2	--	3.6	72	--	0.76 J	0.65	<0.2	<0.5	--	360	--	<1
MW-36-100	Downgradient	03/09/2023	N	<0.2	--	3.3	69	--	0.94 J	0.81 J	--	<0.5	--	480	--	<1
MW-36-100	Downgradient	03/09/2023	FD	<0.2	--	3.1	64	--	0.87 J	0.62 J	--	<0.5	--	470	--	<1
MW-39-040	Downgradient	01/09/2023	N	<0.2	--	11 J	74	--	0.27	0.10	--	<0.25	--	120	--	2.2
MW-39-040	Downgradient	01/09/2023	FD	<0.2	--	11 J	73	--	0.29	0.10	--	<0.25	--	120	--	2.2
MW-39-040	Downgradient	02/06/2023	N	<0.2	--	14 J	110 J	--	0.29 J	0.14	--	<0.25	--	110	--	2.3
MW-39-040	Downgradient	03/07/2023	N	<0.2	--	11	88 J	--	0.31	0.11 J	--	<0.25	--	160	--	2.6
MW-39-050	Downgradient	01/09/2023	N	<0.2	--	1.5 J	47	--	0.028	0.24	--	<0.25	--	200	--	<1
MW-39-050	Downgradient	02/06/2023	N	<0.2	--	1.8 J	56 J	--	0.024 J	0.24	--	<0.25	--	190	--	<1
MW-39-050	Downgradient	03/07/2023	N	<0.2	--	1.5	44 J	--	0.021	0.21 J	--	<0.25	--	190	--	<1
MW-39-060	Downgradient	01/09/2023	N	<0.2	--	1.3 J	51	--	0.069	0.25	--	<0.5	--	240	--	<1
MW-39-060	Downgradient	02/06/2023	N	<0.2	--	1.1 J	82 J	--	0.072 J	0.38	--	<0.25	--	240	--	<1
MW-39-060	Downgradient	03/07/2023	N	<0.2	--	1.5	56 J	--	0.048	0.27 J	--	<0.25	--	240	--	<1
MW-39-070	Downgradient	01/09/2023	N	<0.2	--	1.1 J	42	--	0.022	0.023	--	<0.5	--	330	--	<1
MW-39-070	Downgradient	02/06/2023	N	<0.2	--	0.96 J	53 J	--	<0.02 J	0.021	--	<0.25	--	310	--	<1
MW-39-070	Downgradient	03/07/2023	N	<0.2	--	0.80	73 J	--	<0.02	0.024 J	--	<0.5	--	370	--	<1
MW-39-080	Downgradient	01/09/2023	N	4.9	--	0.84 J	29	--	<0.02	0.0091	--	<0.5	--	620	--	<1
MW-39-080	Downgradient	02/06/2023	N	1.8	--	<0.1 J	37 J	--	<0.02 J	0.0086	--	<0.25	--	530	--	<1
MW-39-080	Downgradient	03/07/2023	N	33	--	<0.1	30 J	--	<0.02	0.0065 J	--	<0.5	--	650	--	<1
MW-39-100	Downgradient	01/09/2023	N	270	--	<0.1 J	33	--	<0.02	0.013	--	<0.5	--	920	--	<1
MW-39-100	Downgradient	01/09/2023	FD	270	--	<0.1 J	34	--	<0.02	0.014	--	<0.5	--	930	--	<1
MW-39-100	Downgradient	02/06/2023	N	170	--	<0.1 J	36 J	--	<0.02 J	0.014	--	<0.25	--	880	--	<1
MW-39-100	Downgradient	03/07/2023	N	160	--	<0.1	31 J	--	<0.02	0.0088 J	--	<0.5	--	930	--	<1
MW-42-030	Downgradient	02/16/2023	N	<0.2	--	1.3	100	--	0.30	0.075	--	<0.05	--	--	--	1.7
MW-42-055	Downgradient	02/16/2023	N	<0.2	--	14	160	--	0.26	0.36	--	<0.05	--	--	--	<1
MW-42-065	Downgradient	02/16/2023	N	<0.2	--	<0.1	110	--	0.035	2.30	--	5.2	--	--	--	<20
MW-43-025	Downgradient	02/21/2023	N	<0.2	--	20	89	--	3.90 J	0.47 J	--	<0.5	--	--	--	1.5
MW-43-075	Downgradient	02/21/2023	N	<1	--	5.4	62	--	2.70 J	0.62 J	--	<0.5	--	--	--	<1
MW-43-090	Downgradient	02/21/2023	N	<1	--	<0.1	62	--	0.84 J	0.74 J	--	<0.5	--	--	--	<1
MW-44-070	Downgradient	02/22/2023	N	<0.2	--	2.4	41	--	0.72	0.32	--	<0.25	--	--	--	<1
MW-44-115	Downgradient	01/10/2023	N	3.2	--	1.2	22 J	--	0.057 J	0.015	--	<0.5	--	1,000	--	<1
MW-44-115	Downgradient	02/08/2023	N	1.9	--	<0.1	27	--	<0.02 J	0.039	--	<0.5	--	1,000	--	<1
MW-44-115	Downgradient	03/09/2023	N	3.3	--	1.1	22	--	<0.02 J	0.056 J	--	1.4	--	1,000	--	<1
MW-44-125	Downgradient	01/10/2023	N	<1	--	1.4 J	49 J	--	0.49 J	0.52	--	<0.5	--	1,100	--	<1

Table 3.4
Process Control Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Barium (µg/L)	Total Iron (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)	Ammonia (as Nitrate) (mg/L)	Nitrate (as Nitrogen) (mg/L)	Nitrite (as Nitrogen) (mg/L)	Sulfate (mg/L)	Total Organic Carbon by Method 5310B (mg/L)	Total Organic Carbon by Method 5310C (mg/L)
MW-44-125	Downgradient	01/10/2023	FD	<1	--	<0.1 J	48 J	--	0.39 J	0.5	--	<0.5	--	1,100	--	<1
MW-44-125	Downgradient	02/08/2023	N	<1	--	<0.1	54	--	0.31 J	0.52	--	<0.5	--	1,100	--	<1
MW-44-125	Downgradient	03/09/2023	N	<1	--	1.6	43	--	0.28 J	0.47 J	--	<0.5	--	1,100	--	<20
MW-45-095A	Downgradient	01/10/2023	N	<0.2	--	0.66	43 J	--	0.046 J	0.46	--	<0.5	--	360	--	<1
MW-45-095A	Downgradient	02/08/2023	N	0.91	--	<0.1	41	--	0.074 J	0.39	--	<0.5	--	400	--	<1
MW-45-095A	Downgradient	03/08/2023	N	0.92	--	0.63	30 J	--	<0.02	0.16	--	<0.5	--	460	--	<1
MW-46-175	Downgradient	02/21/2023	N	8.9	--	<0.1	28	--	<0.02 J	0.013 J	--	0.91	--	--	--	<1
MW-46-205	Downgradient	02/21/2023	N	<1	--	<0.1	36	--	0.027 J	0.043 J	--	0.71	--	--	--	<1
MW-52D	Downgradient	02/21/2023	N	<1	--	<0.1	37	--	0.59 J	0.25 J	--	<0.5	--	--	--	<1
MW-52M	Downgradient	02/21/2023	N	<1	--	<0.1	58	--	1.30 J	0.16 J	--	<0.5	--	--	--	<1
MW-52S	Downgradient	02/21/2023	N	<1	--	<0.1	460	--	21 J	1.0 J	--	<0.5	--	--	--	3.6
MW-53D	Downgradient	02/21/2023	N	<1	--	<0.1	44	--	0.21 J	1.30 J	--	<0.5	--	--	--	<1
MW-53M	Downgradient	02/21/2023	N	<1	--	<0.1	69	--	0.51 J	0.37 J	--	<0.5	--	--	--	<1
MW-53S	Downgradient	02/21/2023	N	<0.2	--	<0.1	190	--	5.2 J	1.2 J	--	<0.5	--	--	--	1.1
MW-77-046	Downgradient	01/09/2023	N	<0.2	--	2.6 J	100	--	0.20	0.44	--	<0.5	--	1,000	--	<20
MW-77-046	Downgradient	02/07/2023	N	<1	--	<0.1 J	100 J	--	0.10	0.43	--	<0.5	--	860	--	<1
MW-77-046	Downgradient	03/06/2023	N	<0.2	--	0.58 J	62	--	<0.02	0.47 J	--	<0.5	--	470	--	<1
MW-77-102	Downgradient	01/09/2023	N	<1	--	<0.1 J	79	--	<0.02	0.13	--	0.98	--	860	--	<1
MW-77-102	Downgradient	02/07/2023	N	<1	--	<0.1 J	89 J	--	<0.02	0.15	--	1.0	--	660	--	<1
MW-77-102	Downgradient	03/06/2023	N	<1	--	<0.1	75	--	<0.02	0.12 J	--	<0.5	--	680	--	<1
MW-77-158	Downgradient	01/09/2023	N	<1	--	3.1 J	35	--	0.085	0.074	--	<0.5	--	580	--	<1
MW-77-158	Downgradient	02/07/2023	N	<1	--	<0.1 J	45 J	--	0.039	0.055	--	<0.5	--	440	--	<1
MW-77-158	Downgradient	03/06/2023	N	<1	--	<0.1	40	--	0.046	0.068 J	--	<0.5	--	450	--	<1
MW-77-187	Downgradient	01/09/2023	N	22	--	2.4 J	27	--	<0.02	0.013	--	0.65	--	710	--	<1
MW-77-187	Downgradient	02/07/2023	N	25	--	<0.1 J	32 J	--	<0.02	0.013	--	0.6	--	670	--	<1
MW-77-187	Downgradient	03/07/2023	N	<0.2	--	4.3	22 J	--	0.084	0.051 J	--	<0.5	--	550	--	<1
MW-81-043	Downgradient	01/11/2023	N	20	--	3.1	76	--	0.024 J	0.018	--	1.2	--	270	--	<1
MW-81-043	Downgradient	02/07/2023	N	9.7	--	4.3	110	--	0.023	0.019 J	--	0.69	--	270	--	<1
MW-81-043	Downgradient	03/07/2023	N	5.4	--	2.7	140 J	--	0.024	0.032 J	--	<0.5	--	390	--	<1
MW-81-098	Downgradient	01/11/2023	N	1.3	--	<0.1	75	--	0.024 J	0.11	--	0.64	--	640	--	<1
MW-81-098	Downgradient	02/07/2023	N	<1	--	<0.1	64	--	0.061	0.11 J	--	0.71	--	700	--	<1
MW-81-098	Downgradient	03/07/2023	N	<1	--	<0.1	48 J	--	0.076	0.097 J	--	0.52	--	680	--	<1
MW-82-046	Downgradient	01/10/2023	N	<0.2	--	17	59 J	--	4.3 J	0.31	--	<0.5	--	1,700	--	1.5
MW-82-046	Downgradient	02/07/2023	N	<1	--	13 J	69 J	--	4.0	0.20	--	<0.5	--	1,800	--	1.5
MW-82-046	Downgradient	03/08/2023	N	<1	--	20	71 J	--	5.20	0.23	--	<0.5	--	2,000	--	2.1
MW-82-112	Downgradient	01/10/2023	N	<1	--	<0.1	44 J	--	0.036 J	0.086	--	0.90	--	660	--	<1
MW-82-112	Downgradient	02/07/2023	N	<1	--	<0.1 J	77 J	--	0.039	0.18	--	1.4	--	720	--	<1
MW-82-112	Downgradient	03/08/2023	N	<0.2	--	<0.1	48 J	--	<0.02	0.1	--	0.92	--	690	--	<1
MW-82-168	Downgradient	01/10/2023	N	<0.2	--	<0.1	35 J	--	0.059 J	0.037	--	<0.5	--	450	--	<1
MW-82-168	Downgradient	02/07/2023	N	<1	--	<0.1 J	40 J	--	0.053	0.052	--	<0.5	--	440	--	<1
MW-82-168	Downgradient	03/08/2023	N	<0.2	--	<0.1	34 J	--	0.036	0.044	--	<0.5	--	450	--	<1
MW-82-198	Downgradient	01/10/2023	N	<0.2	--	0.99 J	38 J	--	0.11 J	0.071	--	<0.5	--	610	--	<1
MW-82-198	Downgradient	01/10/2023	FD	<0.2	--	0.73 J	38 J	--	0.18 J	0.068	--	<0.5	--	620	--	<1
MW-82-198	Downgradient	02/07/2023	N	<1	--	<0.1 J	37 J	--	<0.02	0.063	--	<0.5	--	570	--	<1
MW-82-198	Downgradient	03/08/2023	N	<0.2	--	1.0	38 J	--	0.047	0.064	--	<0.5	--	580	--	<1
MW-86-030	Downgradient	02/23/2023	N	<0.2	--	8.4	120	--	0.91 J	0.25	--	<0.05	--	--	--	3.0
MW-86-066	Downgradient	02/23/2023	N	<0.2	--	<0.1	84	--	<0.02	0.55	--	<0.25	--	--	--	<1
MW-86-120	Downgradient	02/23/2023	N	<1	--	<0.1	44	--	<0.02	0.37	--	<0.5	--	--	--	<1
MW-86-140	Downgradient	02/23/2023	N	<1	--	<0.1	81	--	0.087 J	1.0	--	<0.5	--	--	--	<1

Table 3.4
Process Control Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Barium (µg/L)	Total Iron (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)	Ammonia (as Nitrate) (mg/L)	Nitrate (as Nitrogen) (mg/L)	Nitrite (as Nitrogen) (mg/L)	Sulfate (mg/L)	Total Organic Carbon by Method 5310B (mg/L)	Total Organic Carbon by Method 5310C (mg/L)
MW-90-031	Downgradient	02/22/2023	N	<1	--	<0.1	320	--	16	0.80	18	<0.5	--	--	--	1.8
PT5D	Downgradient	02/16/2023	N	85	--	5.0	37	--	<0.02	0.013	--	1.1	--	--	--	<1
PT5M	Downgradient	02/16/2023	N	<0.2	--	0.76	70	--	0.033	1.1	--	<0.25	--	--	--	<1
PT5S	Downgradient	02/16/2023	N	<0.2	--	13	88	--	0.81	0.26	--	<0.05	--	--	--	1.9
IRZ-09-100	Extraction Wells	01/24/2023	N	16	--	--	--	<0.02	<0.02 J	0.002 J	--	1.5	--	450	<1	<1
IRZ-09-100	Extraction Wells	02/14/2023	N	17	--	--	--	<0.02	<0.02	0.0015	--	1.3	--	430	<1	<1
IRZ-09-100	Extraction Wells	03/06/2023	N	16	--	--	--	<0.02	<0.02	<0.0005 J	--	<0.5	--	450	<1	--
IRZ-13D-210	Extraction Wells	01/24/2023	N	360	--	--	--	<0.02	<0.02 J	<0.0005 J	--	1.6	--	880	<1	<1
IRZ-13D-210	Extraction Wells	02/14/2023	N	350	--	--	--	<0.02	<0.02	<0.0005	--	1.4	--	860	<1	<1
IRZ-13D-210	Extraction Wells	03/06/2023	N	360	--	--	--	<0.02	<0.02	<0.0005 J	--	<0.5	--	860	<1	--
IRZ-13S-095	Extraction Wells	01/24/2023	N	39	--	--	--	0.032	<0.02 J	0.0064 J	--	1.8	--	420	<1	<1
IRZ-13S-095	Extraction Wells	02/14/2023	N	40	--	--	--	<0.02	<0.02	<0.0005	--	1.6	--	420	<1	<1
IRZ-13S-095	Extraction Wells	03/06/2023	N	38	--	--	--	<0.02	<0.02	<0.0005 J	--	<0.5	--	440	<1	--
IRZ-23-143	Extraction Wells	01/24/2023	N	660	--	--	--	0.68	<0.02 J	<0.0005 J	--	3.8	--	470	<1	<1
IRZ-23-143	Extraction Wells	02/14/2023	N	650	--	--	--	0.039	<0.02	<0.0005	--	3.4 J	--	470	1.3	<1
IRZ-23-143	Extraction Wells	03/06/2023	N	640	--	--	--	0.028	<0.02	<0.0005 J	--	2.4	--	490	1.0	--
MW-29	Northern Extraction	02/21/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-33-040	Northern Extraction	02/14/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-33-090	Northern Extraction	02/14/2023	N	6.9	--	--	--	--	--	--	--	--	--	--	--	--
MW-33-150	Northern Extraction	02/14/2023	N	14	--	--	--	--	--	--	--	--	--	--	--	--
MW-33-210	Northern Extraction	02/14/2023	N	14	--	--	--	--	--	--	--	--	--	--	--	--
MW-35-060	Northern Extraction	02/23/2023	N	20	--	--	--	--	--	--	--	--	--	--	--	--
MW-35-135	Northern Extraction	02/23/2023	N	28	--	--	--	--	--	--	--	--	--	--	--	--
MW-47-055	Northern Extraction	02/23/2023	N	17	--	--	--	--	--	--	--	--	--	--	--	--
MW-47-115	Northern Extraction	02/23/2023	N	21	--	--	--	--	--	--	--	--	--	--	--	--
MW-49-135	Northern Extraction	02/21/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-49-275	Northern Extraction	02/21/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-49-365	Northern Extraction	02/21/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-75-033	Northern Extraction	02/13/2023	N	49	--	--	--	--	--	--	--	--	--	--	--	--
MW-75-117	Northern Extraction	02/13/2023	N	18	--	--	--	--	--	--	--	--	--	--	--	--
MW-75-202	Northern Extraction	02/13/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-75-267	Northern Extraction	02/13/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-75-337	Northern Extraction	02/13/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-96-045	Northern Extraction	02/22/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-96-217	Northern Extraction	02/22/2023	N	<1	--	--	--	--	--	--	--	--	--	--	--	--
MW-97-042	Northern Extraction	02/23/2023	N	26	--	--	--	--	--	--	--	--	--	--	--	--
MW-97-202	Northern Extraction	02/23/2023	N	290	--	--	--	--	--	--	--	--	--	--	--	--
TW-04	Northern Extraction	02/23/2023	N	14	--	--	--	--	--	--	--	--	--	--	--	--

Abbreviations:
-- = not applicable or not available
< = not detected at reporting limit, as shown
FD = field duplicate
ID = identification
J = estimated concentration
mg/L = milligram(s) per liter
N = primary sample

Table 3.8 Remedy Compliance Monitoring Analytical Results

Source: Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California*. June 14.

Table 3.8
Remedy Compliance Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Manganese (mg/L)
MW-09	Inside Plume	02/20/2023	N	<0.2	<1	--	--
MW-10	Inside Plume	02/20/2023	N	4,000	3,700	--	--
MW-11	Inside Plume	02/20/2023	N	230	280	--	--
MW-11	Inside Plume	02/20/2023	FD	220	250	--	--
MW-20-070	Inside Plume	01/12/2023	N	1,700	--	1.9 J	0.00085
MW-20-070	Inside Plume	02/10/2023	N	2,000	2,300	0.60	<0.0005
MW-20-070	Inside Plume	03/08/2023	N	2,500	--	0.95	<0.0005
MW-20-100	Inside Plume	01/12/2023	N	1,700	--	1.7 J	0.00053
MW-20-100	Inside Plume	02/10/2023	N	1,400	1,400 J	0.87	<0.0005
MW-20-100	Inside Plume	02/10/2023	FD	1,400	1,700	0.81	<0.0005
MW-20-100	Inside Plume	03/08/2023	N	1,600	--	0.85	<0.0005
MW-20-130	Inside Plume	01/12/2023	N	2,000	--	3.0 J	0.0067
MW-20-130	Inside Plume	02/10/2023	N	3,200	3,700	<0.1	<0.0005
MW-20-130	Inside Plume	03/08/2023	N	3,400	--	0.66	<0.0005
MW-24A	Inside Plume	02/20/2023	N	<0.2	<1	--	--
MW-26	Inside Plume	01/12/2023	N	0.66	--	2.2 J	0.64
MW-26	Inside Plume	02/09/2023	N	<1	<1	<0.1	0.53
MW-26	Inside Plume	02/09/2023	FD	<1	<1	<0.1	0.52
MW-26	Inside Plume	03/09/2023	N	<0.2	--	<0.1	0.83 J
MW-31-060	Inside Plume	01/10/2023	N	<2	--	2.2	2.10
MW-31-060	Inside Plume	02/08/2023	N	<1	<1	<0.1	2.40
MW-31-060	Inside Plume	03/09/2023	N	<1	--	<0.1	2.10 J
MW-38D	Inside Plume	02/20/2023	N	24	24	--	--
MW-38S	Inside Plume	02/20/2023	N	31	30	--	--
MW-39-100	Inside Plume	01/09/2023	N	270	--	<0.1 J	0.013
MW-39-100	Inside Plume	01/09/2023	FD	270	--	<0.1 J	0.014
MW-39-100	Inside Plume	02/06/2023	N	170	--	<0.1 J	0.014
MW-39-100	Inside Plume	03/07/2023	N	160	--	<0.1	0.0088 J
MW-51	Inside Plume	01/12/2023	N	520	--	3.0 J	0.1
MW-51	Inside Plume	02/09/2023	N	<1	12	1.3	0.15
MW-51	Inside Plume	03/09/2023	N	0.81	--	1.9	1.50 J
MW-65-160	Inside Plume	02/17/2023	N	280	280	--	--
MW-65-225	Inside Plume	02/17/2023	N	450	470	--	--
MW-67-185	Inside Plume	01/10/2023	N	<80	<5	--	1.50
MW-67-185	Inside Plume	02/17/2023	N	<80	9.5	--	0.83 J
MW-67-185	Inside Plume	02/17/2023	FD	<80	9.6	--	1.10 J
MW-67-185	Inside Plume	03/09/2023	N	<80	17	--	0.86
MW-68-180	Inside Plume	01/10/2023	N	20,000	21,000	--	--
MW-68-180	Inside Plume	02/17/2023	N	20,000	20,000	--	--
MW-68-180	Inside Plume	03/09/2023	N	31,000	31,000	--	--
MW-69-195	Inside Plume	02/17/2023	N	280	300	--	--
MW-75-033	Inside Plume	02/13/2023	N	49	--	--	--
MW-76-039	Inside Plume	01/10/2023	N	250	--	0.22	0.00073
MW-76-039	Inside Plume	02/07/2023	N	270	300	<0.1 J	0.0019 J
MW-76-039	Inside Plume	02/07/2023	FD	260	280	<0.1 J	0.0034 J
MW-76-039	Inside Plume	03/07/2023	N	200	--	<0.1	0.00084 J
MW-76-156	Inside Plume	01/10/2023	N	17	--	<0.1	0.056
MW-76-156	Inside Plume	02/07/2023	N	16	18 J	<0.1 J	0.079
MW-76-156	Inside Plume	03/07/2023	N	17	--	<0.1	0.048 J
MW-76-181	Inside Plume	01/10/2023	N	460	--	<0.1	0.019
MW-76-181	Inside Plume	02/07/2023	N	390	420	<0.1 J	0.021
MW-76-181	Inside Plume	03/07/2023	N	370	--	<0.1	0.018 J
MW-76-218	Inside Plume	01/10/2023	N	<1	--	<0.1	0.42
MW-76-218	Inside Plume	02/07/2023	N	<1	<1	<0.1	0.44 J

Table 3.8
Remedy Compliance Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Manganese (mg/L)
MW-76-218	Inside Plume	03/07/2023	N	<1	--	<0.1	0.41 J
MW-78-070	Inside Plume	01/11/2023	N	9.5	--	<0.1	0.38
MW-78-070	Inside Plume	02/10/2023	N	2.7	3.4 J	<0.1	0.73
MW-78-070	Inside Plume	02/10/2023	FD	2.7	3.4 J	<0.1	0.71
MW-78-070	Inside Plume	03/09/2023	N	4.9	--	<0.1	0.15 J
MW-78-142	Inside Plume	01/11/2023	N	2,400	--	1.2	0.0023
MW-78-142	Inside Plume	02/10/2023	N	2,200	2,700	<0.1	0.0023
MW-78-142	Inside Plume	03/08/2023	N	2,100	--	2.1	0.0016
MW-79-058	Inside Plume	01/11/2023	N	110	--	<0.1	0.0071
MW-79-058	Inside Plume	02/09/2023	N	65	71	<0.1	0.0005
MW-79-058	Inside Plume	02/09/2023	FD	66	79	<0.1	<0.0005
MW-79-058	Inside Plume	03/08/2023	N	33	--	<0.1	0.008
MW-79-102	Inside Plume	01/11/2023	N	330	--	0.57 J	0.0085
MW-79-102	Inside Plume	02/09/2023	N	250	270	<0.1	0.0081
MW-79-102	Inside Plume	03/08/2023	N	160	--	0.63	0.012
MW-80-057	Inside Plume	01/11/2023	N	350	--	<0.1	0.0065
MW-80-057	Inside Plume	02/08/2023	N	520	620	<0.1	0.006
MW-80-057	Inside Plume	03/08/2023	N	74	--	<0.1	0.0081
MW-80-082	Inside Plume	01/11/2023	N	3.4	--	<0.1	0.57
MW-80-082	Inside Plume	02/08/2023	N	5.4	7.3	<0.1	0.27
MW-80-082	Inside Plume	02/08/2023	FD	5.5	6.9	<0.1	0.25
MW-80-082	Inside Plume	03/08/2023	N	<0.2	--	1.6	0.61
MW-88-107	Inside Plume	02/20/2023	N	53	53	--	--
PT5D	Inside Plume	02/16/2023	N	85	--	5.0	0.013
TW-02D	Inside Plume	01/12/2023	N	34	--	7.7 J	0.0087
TW-02D	Inside Plume	02/08/2023	N	40	39 J	3.5	0.037
TW-02D	Inside Plume	03/07/2023	N	28	--	4.3	0.066 J
TW-02S	Inside Plume	01/12/2023	N	120	--	1.3 J	0.00091
TW-02S	Inside Plume	02/08/2023	N	85	99	<0.1	<0.0005
TW-02S	Inside Plume	02/08/2023	FD	85	98	<0.1	<0.0005
TW-02S	Inside Plume	03/07/2023	N	70	--	<0.1	<0.0005 J
TW-03D	Inside Plume	01/12/2023	N	97	--	7.1 J	0.044
TW-03D	Inside Plume	02/08/2023	N	76	90	2.0	0.034
TW-03D	Inside Plume	03/07/2023	N	59	--	3.2	0.047 J
MW-15	Outside Plume	02/22/2023	N	13	13	0.99	<0.0005
MW-21	Outside Plume	01/11/2023	N	<0.2	--	15	0.14
MW-21	Outside Plume	02/09/2023	N	0.21	2.8	7.2	0.13
MW-21	Outside Plume	03/09/2023	N	0.32	--	13	0.24 J
MW-21	Outside Plume	03/09/2023	FD	0.25	--	15	0.28 J
MW-22	Outside Plume	02/22/2023	N	<1	--	3.5	3.40
MW-27-020	Outside Plume	02/22/2023	N	<0.2	--	0.91	0.054
MW-27-060	Outside Plume	02/22/2023	N	<0.2	--	9.1	0.4
MW-27-085	Outside Plume	02/22/2023	N	<1	--	<0.1	0.34
MW-28-025	Outside Plume	02/17/2023	N	<0.2	--	0.55	0.001
MW-28-090	Outside Plume	02/17/2023	N	<0.2	--	<0.1	0.0042
MW-29	Outside Plume	02/21/2023	N	<1	--	--	--
MW-30-030	Outside Plume	02/06/2023	N	<1	--	<0.1 J	0.29
MW-30-050	Outside Plume	01/13/2023	N	<0.2	--	3.7	0.31
MW-30-050	Outside Plume	02/06/2023	N	<0.2	--	3.9 J	0.3
MW-30-050	Outside Plume	03/08/2023	N	<0.2	--	2.7	0.31
MW-31-135	Outside Plume	01/10/2023	N	3.4	--	<0.1 J	0.015
MW-31-135	Outside Plume	01/10/2023	FD	3.6	--	0.51 J	0.018
MW-31-135	Outside Plume	02/08/2023	N	16	19	<0.1	0.0086 J
MW-31-135	Outside Plume	02/08/2023	FD	15	18	<0.1	0.0068 J

Table 3.8
Remedy Compliance Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Manganese (mg/L)
MW-31-135	Outside Plume	03/09/2023	N	15	--	<0.1	0.0044 J
MW-32-020	Outside Plume	02/14/2023	N	<1	--	2.0	0.30
MW-32-035	Outside Plume	02/14/2023	N	<1	--	5.3	0.61
MW-33-040	Outside Plume	02/14/2023	N	<1	--	--	--
MW-33-090	Outside Plume	02/14/2023	N	6.9	--	--	--
MW-33-150	Outside Plume	02/14/2023	N	14	--	--	--
MW-33-210	Outside Plume	02/14/2023	N	14	--	--	--
MW-34-055	Outside Plume	02/22/2023	N	0.23	--	3.5	0.018
MW-34-080	Outside Plume	01/13/2023	N	<0.2	--	<0.1	0.16
MW-34-080	Outside Plume	02/08/2023	N	<0.2	--	<0.1	0.17
MW-34-080	Outside Plume	03/09/2023	N	<0.2	--	<0.1	0.14 J
MW-34-080	Outside Plume	03/09/2023	FD	<0.2	--	<0.1	0.15 J
MW-34-100	Outside Plume	02/22/2023	N	<1	--	<0.1	0.071
MW-35-060	Outside Plume	02/23/2023	N	20	--	--	--
MW-35-135	Outside Plume	02/23/2023	N	28	--	--	--
MW-36-020	Outside Plume	02/24/2023	N	<0.2	--	0.57	0.17
MW-36-040	Outside Plume	02/24/2023	N	<0.2	--	7.0	0.16
MW-36-050	Outside Plume	02/24/2023	N	<0.2	--	5.8	0.23
MW-36-070	Outside Plume	02/24/2023	N	<0.2	--	2.4	0.32
MW-36-090	Outside Plume	01/13/2023	N	<0.2	--	2.3	0.13
MW-36-090	Outside Plume	02/08/2023	N	<0.2	--	1.3	0.17
MW-36-090	Outside Plume	03/09/2023	N	<0.2	--	1.8	0.17 J
MW-36-100	Outside Plume	01/13/2023	N	<0.2	--	4.5	0.67
MW-36-100	Outside Plume	02/08/2023	N	<0.2	--	3.6	0.65
MW-36-100	Outside Plume	03/09/2023	N	<0.2	--	3.3	0.81 J
MW-36-100	Outside Plume	03/09/2023	FD	<0.2	--	3.1	0.62 J
MW-39-040	Outside Plume	01/09/2023	N	<0.2	--	11 J	0.1
MW-39-040	Outside Plume	01/09/2023	FD	<0.2	--	11 J	0.1
MW-39-040	Outside Plume	02/06/2023	N	<0.2	--	14 J	0.14
MW-39-040	Outside Plume	03/07/2023	N	<0.2	--	11	0.11 J
MW-39-050	Outside Plume	01/09/2023	N	<0.2	--	1.5 J	0.24
MW-39-050	Outside Plume	02/06/2023	N	<0.2	--	1.8 J	0.24
MW-39-050	Outside Plume	03/07/2023	N	<0.2	--	1.5	0.21 J
MW-39-060	Outside Plume	01/09/2023	N	<0.2	--	1.3 J	0.25
MW-39-060	Outside Plume	02/06/2023	N	<0.2	--	1.1 J	0.38
MW-39-060	Outside Plume	03/07/2023	N	<0.2	--	1.5	0.27 J
MW-39-070	Outside Plume	01/09/2023	N	<0.2	--	1.1 J	0.023
MW-39-070	Outside Plume	02/06/2023	N	<0.2	--	0.96 J	0.021
MW-39-070	Outside Plume	03/07/2023	N	<0.2	--	0.8	0.024 J
MW-39-080	Outside Plume	01/09/2023	N	4.9	--	0.84 J	0.0091
MW-39-080	Outside Plume	02/06/2023	N	1.8	--	<0.1 J	0.0086
MW-39-080	Outside Plume	03/07/2023	N	33	--	<0.1	0.0065 J
MW-42-030	Outside Plume	02/16/2023	N	<0.2	--	1.3	0.075
MW-42-055	Outside Plume	02/16/2023	N	<0.2	--	14	0.36
MW-42-065	Outside Plume	02/16/2023	N	<0.2	--	<0.1	2.3
MW-43-025	Outside Plume	02/21/2023	N	<0.2	--	20	0.47 J
MW-43-075	Outside Plume	02/21/2023	N	<1	--	5.4	0.62 J
MW-43-090	Outside Plume	02/21/2023	N	<1	--	<0.1	0.74 J
MW-44-070	Outside Plume	02/22/2023	N	<0.2	--	2.4	0.32
MW-44-115	Outside Plume	01/10/2023	N	3.2	--	1.2	0.015
MW-44-115	Outside Plume	02/08/2023	N	1.9	--	<0.1	0.039
MW-44-115	Outside Plume	03/09/2023	N	3.3	--	1.1	0.056 J
MW-44-125	Outside Plume	01/10/2023	N	<1	--	1.4 J	0.52
MW-44-125	Outside Plume	01/10/2023	FD	<1	--	<0.1 J	0.5

Table 3.8
Remedy Compliance Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Manganese (mg/L)
MW-44-125	Outside Plume	02/08/2023	N	<1	--	<0.1	0.52
MW-44-125	Outside Plume	03/09/2023	N	<1	--	1.6	0.47 J
MW-45-095A	Outside Plume	01/10/2023	N	<0.2	--	0.66	0.46
MW-45-095A	Outside Plume	02/08/2023	N	0.91	--	<0.1	0.39
MW-45-095A	Outside Plume	03/08/2023	N	0.92	--	0.63	0.16
MW-46-175	Outside Plume	02/21/2023	N	8.9	--	<0.1	0.013 J
MW-46-205	Outside Plume	02/21/2023	N	<1	--	<0.1	0.043 J
MW-47-055	Outside Plume	02/23/2023	N	17	--	--	--
MW-47-115	Outside Plume	02/23/2023	N	21	--	--	--
MW-49-135	Outside Plume	02/21/2023	N	<1	--	--	--
MW-49-275	Outside Plume	02/21/2023	N	<1	--	--	--
MW-49-365	Outside Plume	02/21/2023	N	<1	--	--	--
MW-52D	Outside Plume	02/21/2023	N	<1	--	<0.1	0.25 J
MW-52M	Outside Plume	02/21/2023	N	<1	--	<0.1	0.16 J
MW-52S	Outside Plume	02/21/2023	N	<1	--	<0.1	1.0 J
MW-53D	Outside Plume	02/21/2023	N	<1	--	<0.1	1.30 J
MW-53M	Outside Plume	02/21/2023	N	<1	--	<0.1	0.37 J
MW-53S	Outside Plume	02/21/2023	N	<0.2	--	<0.1	1.20 J
MW-71-035	Outside Plume	01/11/2023	N	2.3	--	<0.1	0.10
MW-71-035	Outside Plume	01/11/2023	FD	2.2	--	<0.1	0.098
MW-71-035	Outside Plume	02/15/2023	N	<1	<1	<0.1	0.22
MW-71-035	Outside Plume	02/15/2023	FD	<1	<1	<0.1	0.26
MW-71-035	Outside Plume	03/09/2023	N	<1	--	<0.1	0.023 J
MW-71-035	Outside Plume	03/09/2023	FD	<1	--	<0.1	0.013 J
MW-75-117	Outside Plume	02/13/2023	N	18	--	--	--
MW-75-202	Outside Plume	02/13/2023	N	<1	--	--	--
MW-75-267	Outside Plume	02/13/2023	N	<1	--	--	--
MW-75-337	Outside Plume	02/13/2023	N	<1	--	--	--
MW-77-046	Outside Plume	01/09/2023	N	<0.2	--	2.6 J	0.44
MW-77-046	Outside Plume	02/07/2023	N	<1	--	<0.1 J	0.43
MW-77-046	Outside Plume	03/06/2023	N	<0.2	--	0.58 J	0.47 J
MW-77-102	Outside Plume	01/09/2023	N	<1	--	<0.1 J	0.13
MW-77-102	Outside Plume	02/07/2023	N	<1	--	<0.1 J	0.15
MW-77-102	Outside Plume	03/06/2023	N	<1	--	<0.1	0.12 J
MW-77-158	Outside Plume	01/09/2023	N	<1	--	3.1 J	0.074
MW-77-158	Outside Plume	02/07/2023	N	<1	--	<0.1 J	0.055
MW-77-158	Outside Plume	03/06/2023	N	<1	--	<0.1	0.068 J
MW-77-187	Outside Plume	01/09/2023	N	22	--	2.4 J	0.013
MW-77-187	Outside Plume	02/07/2023	N	25	--	<0.1 J	0.013
MW-77-187	Outside Plume	03/07/2023	N	<0.2	--	4.3	0.051 J
MW-81-043	Outside Plume	01/11/2023	N	20	--	3.1	0.018
MW-81-043	Outside Plume	02/07/2023	N	9.7	--	4.3	0.019 J
MW-81-043	Outside Plume	03/07/2023	N	5.4	--	2.7	0.032 J
MW-81-098	Outside Plume	01/11/2023	N	1.3	--	<0.1	0.11
MW-81-098	Outside Plume	02/07/2023	N	<1	--	<0.1	0.11 J
MW-81-098	Outside Plume	03/07/2023	N	<1	--	<0.1	0.097 J
MW-82-046	Outside Plume	01/10/2023	N	<0.2	--	17	0.31
MW-82-046	Outside Plume	02/07/2023	N	<1	--	13 J	0.20
MW-82-046	Outside Plume	03/08/2023	N	<1	--	20	0.23
MW-82-112	Outside Plume	01/10/2023	N	<1	--	<0.1	0.086
MW-82-112	Outside Plume	02/07/2023	N	<1	--	<0.1 J	0.18
MW-82-112	Outside Plume	03/08/2023	N	<0.2	--	<0.1	0.10
MW-82-168	Outside Plume	01/10/2023	N	<0.2	--	<0.1	0.037
MW-82-168	Outside Plume	02/07/2023	N	<1	--	<0.1 J	0.052

Table 3.8
Remedy Compliance Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Well Group	Sample Date	Sample Type	Hexavalent Chromium (µg/L)	Total Dissolved Chromium (µg/L)	Dissolved Arsenic (µg/L)	Dissolved Manganese (mg/L)
MW-82-168	Outside Plume	03/08/2023	N	<0.2	--	<0.1	0.044
MW-82-198	Outside Plume	01/10/2023	N	<0.2	--	0.99 J	0.071
MW-82-198	Outside Plume	01/10/2023	FD	<0.2	--	0.73 J	0.068
MW-82-198	Outside Plume	02/07/2023	N	<1	--	<0.1 J	0.063
MW-82-198	Outside Plume	03/08/2023	N	<0.2	--	1.0	0.064
MW-86-030	Outside Plume	02/23/2023	N	<0.2	--	8.4	0.25
MW-86-066	Outside Plume	02/23/2023	N	<0.2	--	<0.1	0.55
MW-86-120	Outside Plume	02/23/2023	N	<1	--	<0.1	0.37
MW-86-140	Outside Plume	02/23/2023	N	<1	--	<0.1	1.0
MW-90-031	Outside Plume	02/22/2023	N	<1	--	<0.1	0.80
MW-95-113	Outside Plume	02/20/2023	N	1.6	1.8	--	--
MW-96-045	Outside Plume	02/22/2023	N	<1	--	--	--
MW-96-217	Outside Plume	02/22/2023	N	<1	--	--	--
PT5M	Outside Plume	02/16/2023	N	<0.2	--	0.76	1.10
PT5S	Outside Plume	02/16/2023	N	<0.2	--	13	0.26
TW-04	Outside Plume	02/23/2023	N	14	--	--	--
C-BNS	Surface Water	02/15/2023	N	<0.2	--	2.5	0.035 J
C-BNS	Surface Water	02/15/2023	FD	<0.2	--	2.7	0.0011 J
C-CON-D	Surface Water	02/16/2023	N	<0.2	--	2.3	0.0014
C-CON-S	Surface Water	02/16/2023	N	<0.2	--	2.2	0.0014
C-I-3-D	Surface Water	02/15/2023	N	<0.2	--	2.8	0.0011
C-I-3-S	Surface Water	02/15/2023	N	<0.2	--	2.8	0.001
C-MAR-D	Surface Water	02/16/2023	N	<0.2	--	2.3	0.043
C-MAR-S	Surface Water	02/16/2023	N	<0.2	--	2.1	0.034
C-NR1-D	Surface Water	02/16/2023	N	<0.2	--	2.4	0.0015
C-NR1-S	Surface Water	02/16/2023	N	<0.2	--	2.3	0.0013
C-NR1-S	Surface Water	02/16/2023	FD	<0.2	--	2.3	0.0014
C-NR3-D	Surface Water	02/16/2023	N	<0.2	--	2.3	0.0012
C-NR3-S	Surface Water	02/16/2023	N	<0.2	--	2.4	0.0012
C-NR4-D	Surface Water	02/16/2023	N	<0.2	--	2.3	0.0011
C-NR4-S	Surface Water	02/16/2023	N	<0.2	--	2.2	0.001
C-R22A-D	Surface Water	02/15/2023	N	<0.2	--	2.8	0.013
C-R22A-S	Surface Water	02/15/2023	N	<0.2	--	3.0	0.0012
C-R27-D	Surface Water	02/15/2023	N	<0.2	--	2.7	0.00099
C-R27-D	Surface Water	02/15/2023	FD	<0.2	--	2.5	0.00093
C-R27-S	Surface Water	02/15/2023	N	<0.2	--	2.7	0.00099
C-TAZ-D	Surface Water	02/15/2023	N	<0.2	--	2.6	0.0016
C-TAZ-S	Surface Water	02/15/2023	N	<0.2	--	2.6	0.0011
R-19	Surface Water	02/16/2023	N	<0.2	--	2.4	0.0015
R-28	Surface Water	02/15/2023	N	<0.2	--	2.6	0.0011
R-63	Surface Water	02/15/2023	N	<0.2	--	2.4	0.0034
RRB	Surface Water	02/16/2023	N	<0.2	--	1.8	0.0018
SW1	Surface Water	02/15/2023	N	<0.2	--	2.5	0.0016
SW2	Surface Water	02/15/2023	N	<0.2	--	2.5	0.0016

Abbreviations:
-- = not applicable or not available
< = not detected at reporting limit, as shown
FD = field duplicate
ID = identification
J = estimated concentration
mg/L= milligram(s) per liter
N = primary sample
µg/L = microgram(s) per liter

Table 3.9 COPC Monitoring Analytical Results

Source: Arcadis, 2023a. *First Quarter 2023 Quarterly Progress Report, PG&E Topock Compressor Station, Needles, California*. June 14.

Table 3.9
COPC Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Perimeter Assessment Plan Monitoring Well	Sample Date	Sample Type	Dissolved Molybdenum (µg/L)	Dissolved Selenium (µg/L)	Nitrate (mg/L)	Nitrate/Nitrite as Nitrogen (mg/L)
MW-20-070	--	02/10/23	N	21 J	39 J	29	--
MW-20-100	--	02/10/23	N	3.7 J	8.3 J	5.2	--
MW-20-100	--	02/10/23	FD	3.7 J	8.4 J	4.9	--
MW-20-130	--	02/10/23	N	15 J	57 J	9.1	--
MW-21	--	02/09/23	N	100	0.99 J	<0.25	--
MW-22	X	02/22/23	N	--	--	<0.5	<0.1
MW-26	--	02/09/23	N	4.5	<0.5	<0.5	--
MW-26	--	02/09/23	FD	4.7	<0.5	<0.5	--
MW-27-020	--	02/22/23	N	--	--	<0.25	--
MW-27-060	X	02/22/23	N	--	--	<0.25	<0.1
MW-27-085	X	02/22/23	N	--	--	<0.25	<0.1
MW-28-025	--	02/17/23	N	--	--	<0.05	--
MW-28-090	--	02/17/23	N	--	--	<0.25	--
MW-30-030	--	02/06/23	N	--	--	<0.25	--
MW-30-050	--	02/06/23	N	--	--	<0.25	--
MW-31-060	--	02/08/23	N	0.57	<0.5	<0.5	--
MW-31-135	--	02/08/23	N	31	<0.5	0.78	--
MW-31-135	--	02/08/23	FD	30	<0.5	0.62	--
MW-32-020	--	02/14/23	N	--	--	<0.5	--
MW-32-035	X	02/14/23	N	--	--	<0.5	<0.1
MW-34-055	X	02/22/23	N	--	--	0.38	0.35
MW-34-080	--	02/08/23	N	--	--	<0.5	--
MW-34-100	X	02/22/23	N	--	--	<0.25	<0.1
MW-36-020	--	02/24/23	N	--	--	<0.05	--
MW-36-040	X	02/24/23	N	--	--	<0.05	<0.1
MW-36-050	--	02/24/23	N	--	--	<0.05	--
MW-36-070	--	02/24/23	N	--	--	<0.05	--
MW-36-090	--	02/08/23	N	--	--	<0.5	--
MW-36-100	X	02/08/23	N	--	--	<0.5	--
MW-38D	--	02/20/23	N	34	<2.5	<1	--
MW-38S	--	02/20/23	N	8.4	4.7	5.5	--
MW-39-040	--	02/06/23	N	--	--	<0.25	--

Table 3.9
COPC Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Perimeter Assessment Plan Monitoring Well	Sample Date	Sample Type	Dissolved Molybdenum (µg/L)	Dissolved Selenium (µg/L)	Nitrate (mg/L)	Nitrate/Nitrite as Nitrogen (mg/L)
MW-39-050	--	02/06/23	N	--	--	<0.25	--
MW-39-060	--	02/06/23	N	--	--	<0.25	--
MW-39-070	--	02/06/23	N	--	--	<0.25	--
MW-39-080	--	02/06/23	N	--	--	<0.25	--
MW-39-100	--	02/06/23	N	--	--	<0.25	--
MW-42-030	X	02/16/23	N	--	--	<0.05	<0.1
MW-42-055	--	02/16/23	N	--	--	<0.05	--
MW-42-065	--	02/16/23	N	--	--	5.2	--
MW-43-025	--	02/21/23	N	--	--	<0.5	--
MW-43-075	--	02/21/23	N	--	--	<0.5	--
MW-43-090	--	02/21/23	N	--	--	<0.5	--
MW-44-070	X	02/22/23	N	--	--	<0.25	<0.1
MW-44-115	--	02/08/23	N	--	--	<0.5	--
MW-44-125	X	02/08/23	N	--	--	<0.5	<0.1
MW-45-095A	--	02/08/23	N	--	--	<0.5	--
MW-46-175	X	02/21/23	N	--	--	0.91	1.1
MW-46-205	--	02/21/23	N	--	--	0.71	--
MW-51	--	02/09/23	N	5.9	0.56	<0.05	--
MW-52D	--	02/21/23	N	--	--	<0.5	--
MW-52M	--	02/21/23	N	--	--	<0.5	--
MW-52S	--	02/21/23	N	--	--	<0.5	--
MW-53D	--	02/21/23	N	--	--	<0.5	--
MW-53M	--	02/21/23	N	--	--	<0.5	--
MW-53S	--	02/21/23	N	--	--	<0.5	--
MW-65-160	--	02/17/23	N	21	<0.5	13	--
MW-65-225	--	02/17/23	N	24	7.5 J	8.7	--
MW-67-185	--	02/17/23	N	35 J	200 J	29	--
MW-67-185	--	02/17/23	FD	27 J	160 J	28	--
MW-68-180	--	02/17/23	N	74	23 J	20	--
MW-69-195	--	02/17/23	N	55	13 J	13	--
MW-71-035	X	02/15/23	N	19 J	0.64 J	0.64	0.96
MW-71-035	X	02/15/23	FD	20 J	<0.5 J	1.2	1.1

Table 3.9
COPC Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Perimeter Assessment Plan Monitoring Well	Sample Date	Sample Type	Dissolved Molybdenum (µg/L)	Dissolved Selenium (µg/L)	Nitrate (mg/L)	Nitrate/Nitrite as Nitrogen (mg/L)
MW-76-039	--	02/07/23	N	29	5.9	3.4	--
MW-76-039	--	02/07/23	FD	28	5.8	3.4	--
MW-76-156	--	02/07/23	N	35	1.3	1.8	--
MW-76-181	--	02/07/23	N	52	0.80	0.79	--
MW-76-218	--	02/07/23	N	32	<0.5	<0.5	--
MW-77-046	--	02/07/23	N	--	--	<0.5	--
MW-77-102	--	02/07/23	N	--	--	1.0	--
MW-77-158	--	02/07/23	N	--	--	<0.5	--
MW-77-187	--	02/07/23	N	--	--	0.60	--
MW-78-070	--	02/10/23	N	5.5 J	<0.5 J	<0.25	--
MW-78-070	--	02/10/23	FD	5.5 J	<0.5 J	<0.25	--
MW-78-142	--	02/10/23	N	27 J	25 J	3.7	--
MW-79-058	--	02/09/23	N	5.2	<0.5	<0.5	--
MW-79-058	--	02/09/23	FD	5.3	<0.5	<0.5	--
MW-79-102	--	02/09/23	N	40	0.73	<0.5	--
MW-80-057	--	02/08/23	N	22	14	5.8	--
MW-80-082	--	02/08/23	N	49	<0.5	<0.5	--
MW-80-082	--	02/08/23	FD	46	<0.5	<0.5	--
MW-81-043	--	02/07/23	N	--	--	0.69	--
MW-81-098	--	02/07/23	N	--	--	0.71	--
MW-82-046	--	02/07/23	N	--	--	<0.5	--
MW-82-112	--	02/07/23	N	--	--	1.4	--
MW-82-168	--	02/07/23	N	--	--	<0.5	--
MW-82-198	--	02/07/23	N	--	--	<0.5	--
MW-86-030	--	02/23/23	N	--	--	<0.05	--
MW-86-066	--	02/23/23	N	--	--	<0.25	--
MW-86-120	--	02/23/23	N	--	--	<0.5	--
MW-86-140	--	02/23/23	N	--	--	<0.5	--
MW-90-031	X	02/22/23	N	--	--	<0.5	<0.1
PT5D	--	02/16/23	N	--	--	1.1	--
PT5M	--	02/16/23	N	--	--	<0.25	--
PT5S	--	02/16/23	N	--	--	<0.05	--

Table 3.9
COPC Monitoring Analytical Results
First Quarter 2023 Quarterly Progress Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Monitoring Well ID	Perimeter Assessment Plan Monitoring Well	Sample Date	Sample Type	Dissolved Molybdenum (µg/L)	Dissolved Selenium (µg/L)	Nitrate (mg/L)	Nitrate/Nitrite as Nitrogen (mg/L)
TW-02D	--	02/08/23	N	120	<0.5	<0.5	--
TW-02S	--	02/08/23	N	4.4	2.8 J	0.66	--
TW-02S	--	02/08/23	FD	4.4	<0.5 J	0.72	--
TW-03D	--	02/08/23	N	110	<0.5	<0.5	--

Abbreviations:
-- = not applicable or not available
< = not detected at reporting limit, as shown
COPC = constituent of potential concern
FD = field duplicate
ID = identification
J = estimated concentration
mg/L= milligram(s) per liter
N = primary sample
µg/L = microgram(s) per liter

Appendix F-2

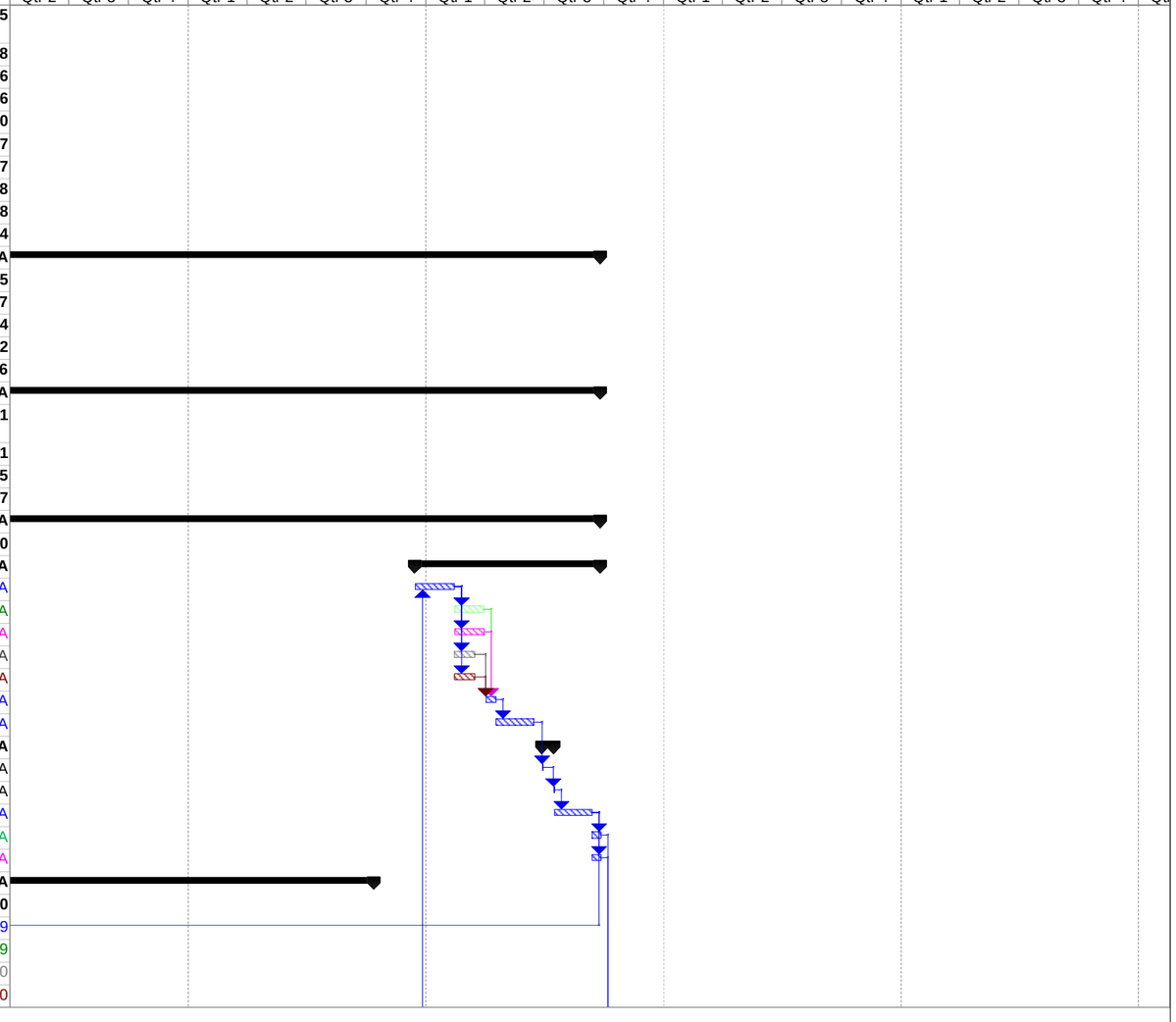
Schedules

May 9, 2023 Consultative Work Group (CWG) Schedule Presentation:

Handout 10 A Topock Remediation Project Schedule (Rev. 52),
Groundwater Remedy Construction, Start-up, and Initial O&M Schedule, and
Handout 10B Schedule Highlights Summary of Key Schedule Changes

HANDOUT 10A - TOPOCK REMEDIATION PROJECT SCHEDULE (REV. 52)
MAY 9, 2023 CWG MEETING

ID	Task Name	Duration	Forecasted Start	Forecasted Finish	Actual Start	Actual Finish
1	**IM Installation (Note that IM3 is currently in operation and will remain in operation until directed otherwise by agencies)**	**512 days**	**Thu 1/22/04**	**Tue 12/20/05**	**Thu 1/22/04**	**Tue 12/20/05**
32	**IM3 Cultural Resources Management Plan (IM3 CRMP)**	**986 days**	**Thu 7/1/04**	**Mon 3/10/08**	**Thu 7/1/04**	**Mon 3/10/08**
37	**Extraction Well PE-1/Facilities**	**230 days**	**Mon 3/21/05**	**Fri 1/27/06**	**Mon 3/21/05**	**Fri 1/27/06**
47	**Supplemental Extraction Well and Facilities**	**127 days**	**Fri 7/29/05**	**Thu 1/19/06**	**Fri 7/29/05**	**Thu 1/19/06**
55	**Decommissioning of IM2 Batch Treatment**	**1182 days**	**Fri 8/5/05**	**Fri 1/29/10**	**Fri 8/5/05**	**Fri 1/29/10**
66	**Interim Measures and Treated Water Management**	**751 days**	**Mon 5/3/04**	**Fri 2/16/07**	**Mon 5/3/04**	**Fri 2/16/07**
210	**Public Participation Plan**	**578 days**	**Mon 12/20/04**	**Fri 2/9/07**	**Mon 12/20/04**	**Fri 2/9/07**
219	**Baseline Resources Assessments**	**897 days**	**Mon 11/1/04**	**Mon 3/10/08**	**Mon 11/1/04**	**Mon 3/10/08**
233	**Sitewide CEQA Documentation**	**586 days**	**Wed 5/17/06**	**Fri 8/1/08**	**Wed 5/17/06**	**Fri 8/1/08**
237	**Programmatic Biological Assessment (PBA)**	**1920 days**	**Tue 12/19/06**	**Tue 4/15/14**	**Tue 12/19/06**	**Tue 4/15/14**
250	**REMEDIAL FACILITY INVESTIGATION/REMEDIAL INVESTIGATION (RFI/RI)**	**7490 days**	**Sat 2/24/96**	**Wed 9/25/24**	**Sat 2/24/96**	**NA**
251	**Historical RFI/RI Reports (Feb. 2005 and Prior Versions)**	**2455 days**	**Sat 2/24/96**	**Fri 7/8/05**	**Sat 2/24/96**	**Fri 7/8/05**
269	**Site History Report (Vol 1)**	**466 days**	**Tue 11/15/05**	**Wed 8/15/07**	**Tue 11/15/05**	**Wed 8/15/07**
284	**RFI/RI Vol 1 Addendum**	**1829 days**	**Wed 7/11/07**	**Tue 7/8/14**	**Wed 7/11/07**	**Tue 7/8/14**
306	**Final Groundwater RFI/RI (Vol 2)**	**1948 days**	**Mon 6/27/05**	**Fri 11/16/12**	**Mon 6/27/05**	**Fri 11/16/12**
616	**ADEQ Topock Groundwater Study**	**475 days**	**Thu 11/18/04**	**Wed 8/23/06**	**Thu 11/18/04**	**Wed 8/23/06**
620	**Final Soil RFI/RI (Vol 3)**	**4763 days**	**Sat 7/15/06**	**Wed 9/25/24**	**Sat 7/15/06**	**NA**
621	**Implementation of Off-site Soil Sampling (Part A Phase 1) and Data Gaps Evaluation**	**1215 days**	**Sat 7/15/06**	**Fri 2/25/11**	**Sat 7/15/06**	**Fri 2/25/11**
770	**Draft On-site Soil Sampling (Part B) DQOs**	**1122 days**	**Wed 12/6/06**	**Fri 3/11/11**	**Wed 12/6/06**	**Fri 3/11/11**
825	**Soil RFI/RI Work Plan**	**1211 days**	**Tue 1/4/11**	**Mon 8/24/15**	**Tue 1/4/11**	**Mon 8/24/15**
922	**Work Plan Implementation/Data Gaps Analysis**	**594 days**	**Tue 8/25/15**	**Thu 11/30/17**	**Tue 8/25/15**	**Thu 11/30/17**
978	**Reporting**	**1900 days**	**Tue 6/20/17**	**Wed 9/25/24**	**Tue 6/20/17**	**NA**
979	**Soil Risk Assessment**	**770 days**	**Tue 6/20/17**	**Fri 5/29/20**	**Tue 6/20/17**	**Fri 5/29/20**
1002	**Soil Risk Assessment Addendum (After Completion of Soil NTCRA)**	**203.65 days**	**Fri 12/15/23**	**Wed 9/25/24**	**NA**	**NA**
1003	PG&E prepares/submits Soil Risk Assessment Addendum Report	2 mons	Fri 12/15/23	Tue 2/13/24	NA	NA
1004	DTSC review/comment	45 edays	Wed 2/14/24	Sat 3/30/24	NA	NA
1005	DOI review/comment	45 edays	Wed 2/14/24	Sat 3/30/24	NA	NA
1006	CWG/TWG review/comment	31 edays	Tue 2/13/24	Fri 3/15/24	NA	NA
1007	Tribes review/comment	31 edays	Tue 2/13/24	Fri 3/15/24	NA	NA
1008	Review/compile Comment Table	15 edays	Mon 4/1/24	Tue 4/16/24	NA	NA
1009	Prepare/send RTC Table (duration to be verified)	2 mons	Wed 4/17/24	Thu 6/13/24	NA	NA
1010	**RTC Meeting (Placeholder, Date to be confirmed)**	**12 days**	**Fri 6/28/24**	**Mon 7/15/24**	**NA**	**NA**
1011	Send agenda (2 wks prior to meeting)	1 day	Fri 6/28/24	Fri 6/28/24	NA	NA
1012	Hold Meeting	1 day	Mon 7/15/24	Mon 7/15/24	NA	NA
1013	Finalize/Submit Final Soil Risk Assessment Addendum with RTC Table	2 mons	Tue 7/16/24	Wed 9/11/24	NA	NA
1014	DTSC review/accept report	2 wks	Thu 9/12/24	Wed 9/25/24	NA	NA
1015	DOI review/accept report	2 wks	Thu 9/12/24	Wed 9/25/24	NA	NA
1016	**RFI/RI Volume 3**	**1623.6 days**	**Fri 7/28/17**	**Fri 10/13/23**	**Fri 7/28/17**	**NA**
1017	**Draft RFI/RI Volume 3 Report**	**881 days**	**Fri 7/28/17**	**Thu 12/10/20**	**Fri 7/28/17**	**Thu 12/10/20**
1018	Prepare Draft RFI/RI Vol 3 Report	29.43 mons	Fri 7/28/17	Mon 12/9/19	Fri 7/28/17	Mon 12/9/19
1019	DTSC sends report to CWG/TWG and Tribes	0 days	Tue 12/10/19	Tue 12/10/19	Tue 12/10/19	Tue 12/10/19
1020	CWG/TWG review/comment	101 edays	Tue 12/10/19	Fri 3/20/20	Tue 12/10/19	Fri 3/20/20
1021	Tribes review/comment	101 edays	Tue 12/10/19	Fri 3/20/20	Tue 12/10/19	Fri 3/20/20



Project: PG&E Topock Remediation Project
Date: Wed 5/3/23

Tasks Not Started/In Progess
Tasks Finished
Baseline Schedule
Milestone
Overall Task Duration
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only

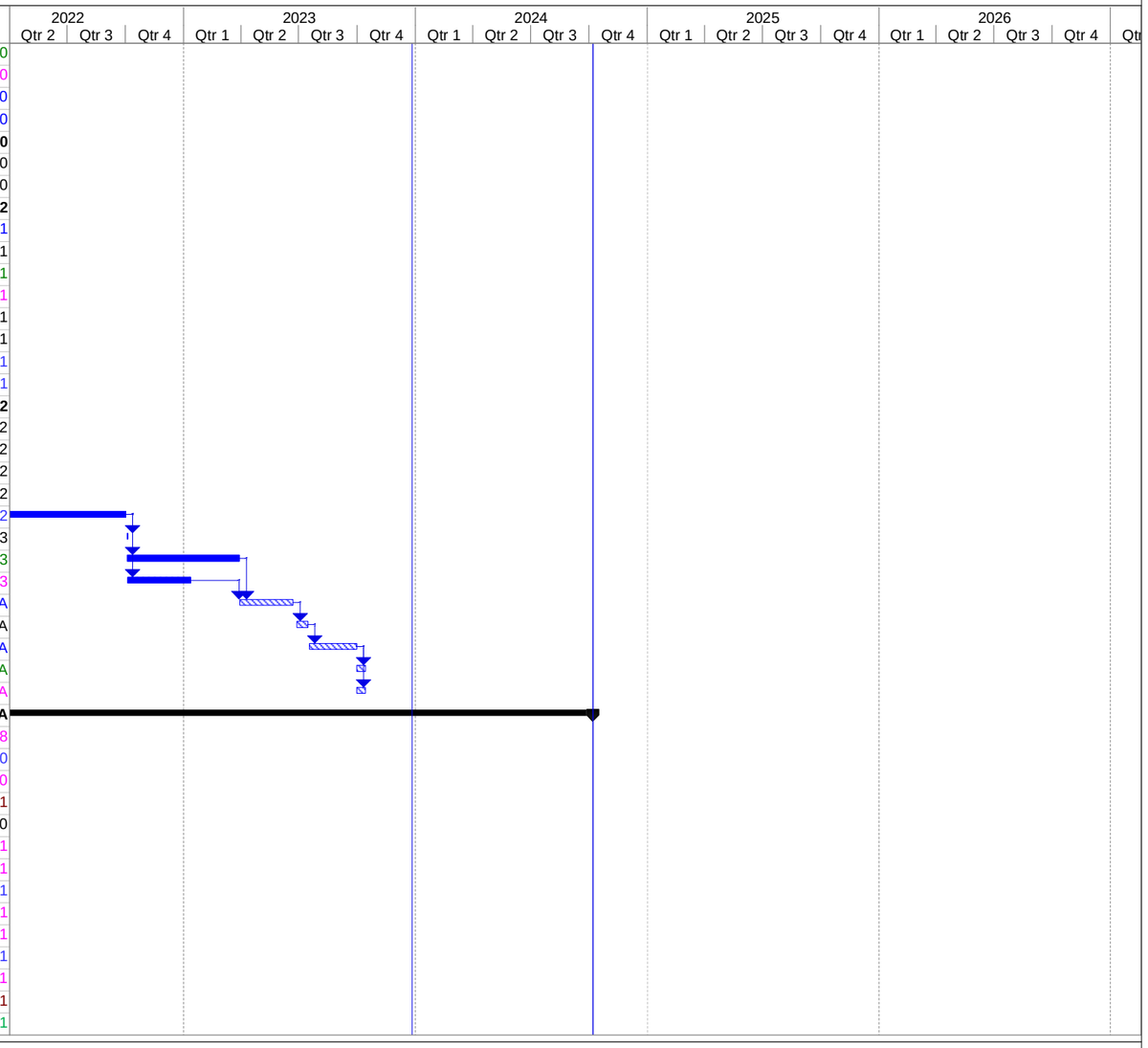
edays = calendar days; days = work days
Baseline Schedule is the 8/15/07 CWG Schedule (rev 1, 12/12/07).
*Timeframes shown are for planning purpose. Actual timeframes may vary.

Color Coding:
PG&E Federal Agencies CWG/TWG Public
DTSC Tribes/SHPO Other CA Agencies AZ Agencies

Major Assumptions
- Permits, CWG/ stakeholder review, and DTSC review & approvals are estimated.
- Actual dates may vary depending on field conditions.

HANDOUT 10A - TOPOCK REMEDIATION PROJECT SCHEDULE (REV. 52)
MAY 9, 2023 CWG MEETING

ID	Task Name	Duration	Forecasted Start	Forecasted Finish	Actual Start	Actual Finish
1022	DTSC review/comment	115 edays	Tue 12/10/19	Fri 4/3/20	Tue 12/10/19	Fri 4/3/20
1023	DOI review/comment	115 edays	Tue 12/10/19	Fri 4/3/20	Tue 12/10/19	Fri 4/3/20
1024	Review/compile Comment Table	79.38 edays	Mon 4/6/20	Wed 6/24/20	Mon 4/6/20	Wed 6/24/20
1025	Prepare/send RTC Table	18.2 wks	Thu 6/25/20	Fri 10/30/20	Thu 6/25/20	Fri 10/30/20
1026	**RTC Meeting**	**3 days**	**Tue 12/8/20**	**Thu 12/10/20**	**Tue 12/8/20**	**Thu 12/10/20**
1027	Send agenda	1 day	Tue 12/8/20	Tue 12/8/20	Tue 12/8/20	Tue 12/8/20
1028	Hold Meeting	2 days	Wed 12/9/20	Thu 12/10/20	Wed 12/9/20	Thu 12/10/20
1029	**Revised RFI/RI Volume 3 Report**	**312 days**	**Fri 12/11/20**	**Thu 2/17/22**	**Fri 12/11/20**	**Thu 2/17/22**
1030	Prepare Revised RFI Volume 3 with RTC Table	5.86 mons	Fri 12/11/20	Mon 5/31/21	Fri 12/11/20	Mon 5/31/21
1031	DTSC sends report to CWG/TWG and Tribes	1 day	Tue 6/1/21	Tue 6/1/21	Tue 6/1/21	Tue 6/1/21
1032	CWG/TWG review/comment	91.38 edays	Tue 6/1/21	Tue 8/31/21	Tue 6/1/21	Tue 8/31/21
1033	Tribes review/comment	91.38 edays	Tue 6/1/21	Tue 8/31/21	Tue 6/1/21	Tue 8/31/21
1034	DTSC review/comment	115.38 edays	Tue 6/1/21	Fri 9/24/21	Tue 6/1/21	Fri 9/24/21
1035	DOI review/comment	115.38 edays	Tue 6/1/21	Fri 9/24/21	Tue 6/1/21	Fri 9/24/21
1036	Review/compile Comment Table	25.38 edays	Mon 9/27/21	Fri 10/22/21	Mon 9/27/21	Fri 10/22/21
1037	Prepare/send RTC Table	2 mons	Mon 10/25/21	Mon 12/20/21	Mon 10/25/21	Mon 12/20/21
1038	**RTC Meeting**	**12 days**	**Wed 1/26/22**	**Thu 2/10/22**	**Wed 1/19/22**	**Thu 2/17/22**
1039	Send agenda (2 wks prior to meeting)	1 day	Wed 1/19/22	Wed 1/19/22	Wed 1/19/22	Wed 1/19/22
1040	Hold Meeting #1	1 day	Wed 2/9/22	Wed 2/9/22	Wed 2/9/22	Wed 2/9/22
1041	Hold Meeting #2	1 day	Thu 2/10/22	Thu 2/10/22	Thu 2/10/22	Thu 2/10/22
1042	Hold Meeting #3	1 day	Thu 2/17/22	Thu 2/17/22	Thu 2/17/22	Thu 2/17/22
1043	Finalize RTC/Update Sections of Volume 3 Report	7.62 mons	Mon 2/21/22	Fri 9/30/22	Mon 2/21/22	Fri 9/30/22
1044	CWG/TWG review/comment	120.38 edays	Mon 10/3/22	Tue 1/31/23	Mon 10/3/22	Tue 1/31/23
1045	DTSC review/comment	176.38 edays	Mon 10/3/22	Tue 3/28/23	Mon 10/3/22	Tue 3/28/23
1046	DOI review/comment	99.38 edays	Mon 10/3/22	Tue 1/10/23	Mon 10/3/22	Tue 1/10/23
1047	Prepare responses to comments	84.38 edays	Wed 3/29/23	Wed 6/21/23	Wed 3/29/23	NA
1048	Comment resolution (Placeholder, Dates to be confirmed)	13 days	Wed 6/28/23	Fri 7/14/23	NA	NA
1049	Prepare Final Report	2.6 mons	Mon 7/17/23	Fri 9/29/23	NA	NA
1050	DTSC review/approve	2 wks	Fri 9/29/23	Fri 10/13/23	NA	NA
1051	DOI review/approve	2 wks	Fri 9/29/23	Fri 10/13/23	NA	NA
1052	**SOIL NON-TIME CRITICAL REMOVAL ACTION (NTCRA)**	**1552.35 days**	**Tue 10/30/18**	**Mon 10/7/24**	**Tue 10/30/18**	**NA**
1053	DOI's Approval Memorandum for an Engineering Evaluation/Cost Analysis (EE/CA)	0 days	Tue 10/30/18	Tue 10/30/18	Tue 10/30/18	Tue 10/30/18
1054	PG&E prepares Draft Soil EE/CA	414 days	Wed 10/31/18	Fri 5/29/20	Wed 10/31/18	Fri 5/29/20
1055	BLM sends package to Tribes for Consultation	0 days	Wed 6/3/20	Wed 6/3/20	Wed 6/3/20	Wed 6/3/20
1056	Tribal Consultation	254.38 edays	Wed 6/3/20	Fri 2/12/21	Wed 6/3/20	Fri 2/12/21
1057	Public Review	63.38 edays	Wed 6/3/20	Wed 8/5/20	Wed 6/3/20	Wed 8/5/20
1058	DOI responds to comments received on the Draft Soil EE/CA	50 days	Mon 2/15/21	Fri 4/23/21	Mon 2/15/21	Fri 4/23/21
1059	DOI prepares Responsiveness Summary	67.38 edays	Mon 2/15/21	Fri 4/23/21	Mon 2/15/21	Fri 4/23/21
1060	PG&E finalizes EE/CA	67.38 edays	Mon 2/15/21	Fri 4/23/21	Mon 2/15/21	Fri 4/23/21
1061	DOI prepares Action Memorandum	8.14 mons	Mon 2/15/21	Mon 10/11/21	Mon 2/15/21	Mon 10/11/21
1062	DOI approved Action Memorandum	0 days	Tue 10/12/21	Tue 10/12/21	Tue 10/12/21	Tue 10/12/21
1063	PG&E submits Non-time Critical Removal (NTCRA) Work Plan	1 day	Fri 10/29/21	Fri 10/29/21	Fri 10/29/21	Fri 10/29/21
1064	BLM sends NTCRA Work Plan to Tribes	2 edays	Mon 11/1/21	Wed 11/3/21	Mon 11/1/21	Wed 11/3/21
1065	Tribal Consultation	48 edays	Wed 11/3/21	Tue 12/21/21	Wed 11/3/21	Tue 12/21/21
1066	DTSC and Stakeholders review/comment	57 edays	Mon 11/1/21	Tue 12/28/21	Mon 11/1/21	Tue 12/28/21



Project: PG&E Topock Remediation Project
Date: Wed 5/3/23

Tasks Not Started/In Progess
Tasks Finished
Baseline Schedule
Milestone
Overall Task Duration
Inactive Task
Inactive Milestone
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edays = calendar days; days = work days
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Major Assumptions
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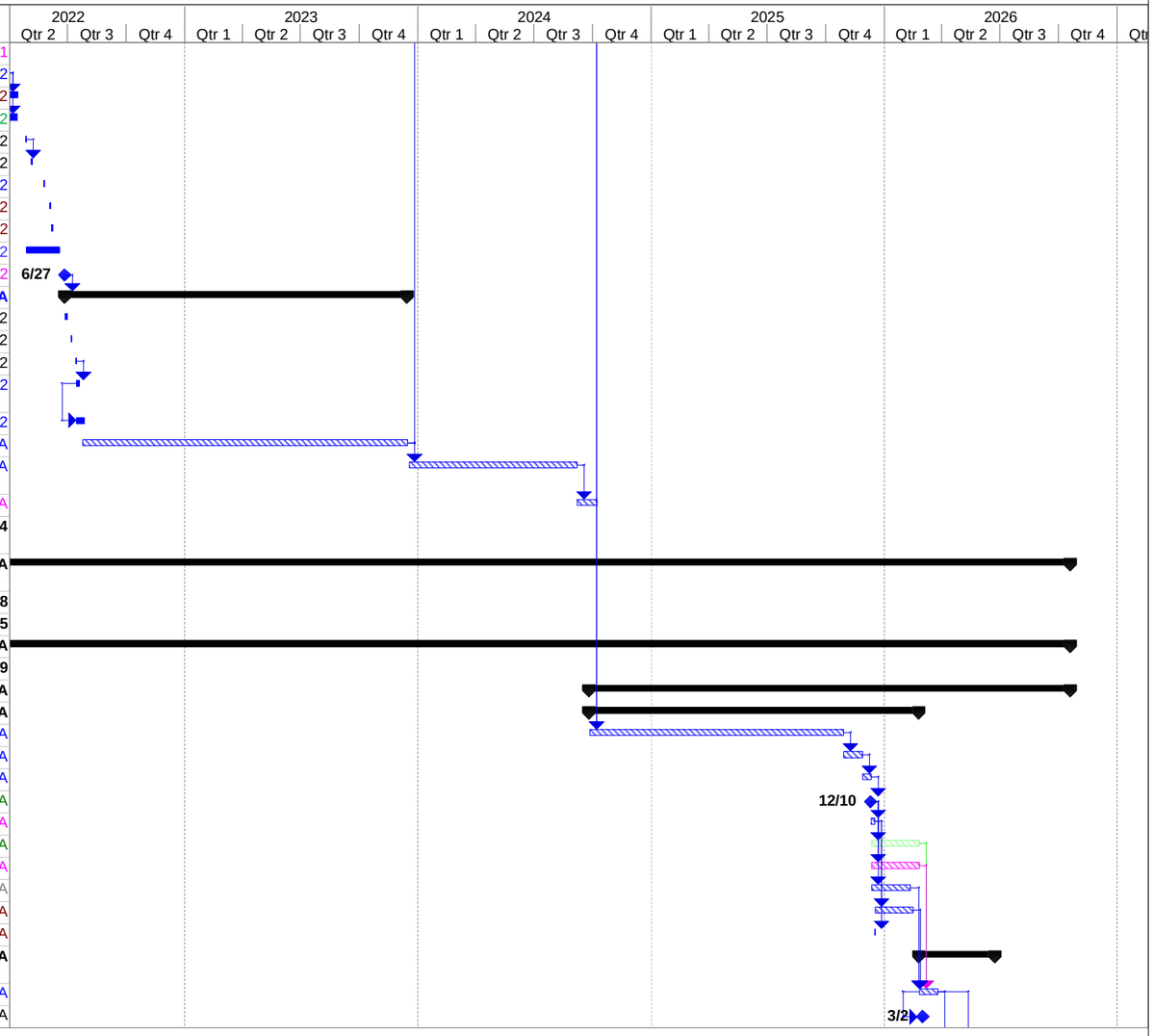
- Actual dates may vary depending on field conditions.

HANDOUT 10A - TOPOCK REMEDIATION PROJECT SCHEDULE (REV. 52)
MAY 9, 2023 CWG MEETING

ID	Task Name	Duration	Forecasted Start	Forecasted Finish	Actual Start	Actual Finish
1067	DOI review/comment	49.38 edays	Mon 11/1/21	Mon 12/20/21	Mon 11/1/21	Mon 12/20/21
1068	PG&E compiles comments/prepares RTCs	87.38 edays	Tue 12/28/21	Fri 3/25/22	Tue 12/28/21	Fri 3/25/22
1069	Tribes review RTCs	2.6 wks	Fri 3/25/22	Wed 4/13/22	Fri 3/25/22	Wed 4/13/22
1070	DTSC and Stakeholders review RTCs	12 days	Fri 3/25/22	Tue 4/12/22	Fri 3/25/22	Tue 4/12/22
1071	Meeting to discuss RTCs	1 day	Tue 4/26/22	Tue 4/26/22	Tue 4/26/22	Tue 4/26/22
1072	Meeting to discuss RTCs	1 day	Thu 5/5/22	Thu 5/5/22	Thu 5/5/22	Thu 5/5/22
1073	PG&E Submits Redline RTCs	1 day	Tue 5/24/22	Tue 5/24/22	Tue 5/24/22	Tue 5/24/22
1074	FMIT provide input to RTC Table	1 day	Fri 6/3/22	Fri 6/3/22	Fri 6/3/22	Fri 6/3/22
1075	Quechan Tribe concur with FMIT comments	1 day	Mon 6/6/22	Mon 6/6/22	Mon 6/6/22	Mon 6/6/22
1076	PG&E addresses comments/finalizes NTCRA Work Plan	38 days	Wed 4/27/22	Fri 6/17/22	Wed 4/27/22	Fri 6/17/22
1077	DOI reviews/approves NTCRA Work Plan	0 days	Mon 6/27/22	Mon 6/27/22	Mon 6/27/22	Mon 6/27/22
1078	**PG&E implements NTCRA Work Plan**	**384.35 days**	**Mon 6/27/22**	**Fri 12/15/23**	**Mon 6/27/22**	**NA**
1079	Stake corners of Target Action Areas	3 days	Mon 6/27/22	Wed 6/29/22	Mon 6/27/22	Wed 6/29/22
1080	Project Initiation Meeting - Online	1 day	Wed 7/6/22	Wed 7/6/22	Wed 7/6/22	Wed 7/6/22
1081	Project Initiation Meeting - Face-to-Face	1 day	Thu 7/14/22	Thu 7/14/22	Thu 7/14/22	Thu 7/14/22
1082	Collect Soil Samples for waste profiling, XRF/Lab Data comparison, and Dioxin Furan lab comparison	2 days	Fri 7/15/22	Mon 7/18/22	Fri 7/15/22	Mon 7/18/22
1083	Mobilization	8 days	Fri 7/15/22	Tue 7/26/22	Fri 7/15/22	Tue 7/26/22
1084	Soil Removal Activities	17.35 mons	Mon 7/25/22	Fri 12/15/23	Mon 7/25/22	NA
1085	PG&E prepares/submits the NTCRA Completion Report (incorporate results from the Soil Risk Assessment Addendum Report)	9 mons	Mon 12/18/23	Fri 9/6/24	NA	NA
1086	DOI review/accept report	1 mon	Fri 9/6/24	Mon 10/7/24	NA	NA
1087	**GROUNDWATER CORRECTIVE MEASURES/REMEDIAL ALTERNATIVE DEVELOPMENT**	**2835 days**	**Mon 3/29/04**	**Wed 12/31/14**	**Mon 3/29/04**	**Wed 12/31/14**
1235	**CORRECTIVE MEASURE STUDY/FEASIBILITY STUDY (CMS/FS) AND RISK ASSESSMENT**	**6252 days**	**Mon 12/16/02**	**Mon 10/19/26**	**Mon 12/16/02**	**NA**
1236	**CMS Work Plan**	**1465 days**	**Mon 12/16/02**	**Tue 6/24/08**	**Mon 12/16/02**	**Tue 6/24/08**
1255	**Risk Evaluation - Scoping and CSM**	**2326 days**	**Tue 10/31/06**	**Tue 9/15/15**	**Tue 10/31/06**	**Tue 9/15/15**
1339	**CMS/FS Report**	**4749 days**	**Mon 8/18/08**	**Mon 10/19/26**	**Mon 8/18/08**	**NA**
1340	**Groundwater**	**350 days**	**Mon 8/18/08**	**Fri 12/18/09**	**Mon 8/18/08**	**Fri 12/18/09**
1399	**Soil CMS/FS (duration to be verified after completion of RFI/RI)**	**538 days**	**Thu 9/26/24**	**Mon 10/19/26**	**NA**	**NA**
1400	**Prepare Draft Soil CMS/FS Report**	**368 days**	**Thu 9/26/24**	**Mon 2/23/26**	**NA**	**NA**
1401	Prepare Discussion Draft Soil CMS/FS Report	284 days	Thu 9/26/24	Tue 10/28/25	NA	NA
1402	PG&E outreach with Tribes	1 mon	Wed 10/29/25	Wed 11/26/25	NA	NA
1403	PG&E submits Draft Soil CMS/FS	2 wks	Thu 11/27/25	Wed 12/10/25	NA	NA
1404	DTSC send Draft Soil CMS/FS to CWG/TWG	0 days	Wed 12/10/25	Wed 12/10/25	NA	NA
1405	BLM sends package to Tribes for Consultation	3 days	Thu 12/11/25	Mon 12/15/25	NA	NA
1406	DTSC review and comment	74 edays	Thu 12/11/25	Mon 2/23/26	NA	NA
1407	DOI review and comment	74 edays	Thu 12/11/25	Mon 2/23/26	NA	NA
1408	CWG/TWG review and comment	60 edays	Thu 12/11/25	Mon 2/9/26	NA	NA
1409	Tribal Consultation	60 edays	Tue 12/16/25	Sat 2/14/26	NA	NA
1410	SHPO for information only	1 day	Tue 12/16/25	Tue 12/16/25	NA	NA
1411	**Response to Comments/Prepare Final Soil CMS/FS Report (duration to be verified after receipt of comments)**	**86 days**	**Tue 2/24/26**	**Tue 6/23/26**	**NA**	**NA**
1412	Review/compile Comment Table	1 mon	Tue 2/24/26	Tue 3/24/26	NA	NA
1413	Comment clarification meeting	0 days	Mon 3/2/26	Mon 3/2/26	NA	NA



Project: PG&E Topock Remediation Project
Date: Wed 5/3/23

Tasks Not Started/In Progess
Tasks Finished
Baseline Schedule
Milestone
Overall Task Duration
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Color Coding:
PG&E Federal Agencies CWG/TWG Public
DTSC Tribes/SHPO Other CA Agencies AZ Agencies

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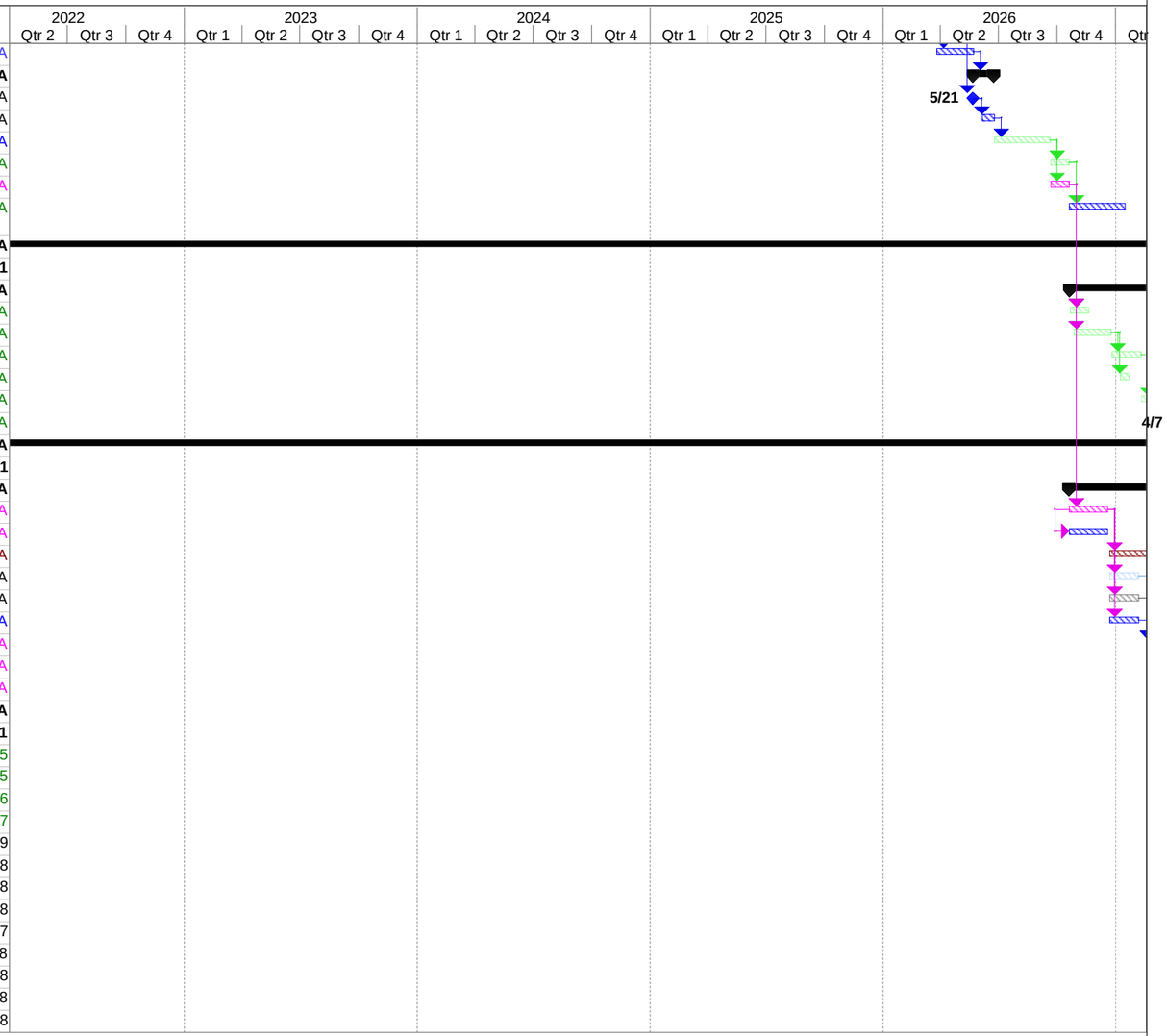
HANDOUT 10A - TOPOCK REMEDIATION PROJECT SCHEDULE (REV. 52)
MAY 9, 2023 CWG MEETING

ID	Task Name	Duration	Forecasted Start	Forecasted Finish	Actual Start	Actual Finish
1414	Prepare/send RTC Table	2 mons	Wed 3/25/26	Thu 5/21/26	NA	NA
1415	**RTC Meeting**	**23 days**	**Thu 5/21/26**	**Tue 6/23/26**	**NA**	**NA**
1416	Send agenda (2 wks prior to meeting)	0 days	Thu 5/21/26	Thu 5/21/26	NA	NA
1417	Hold Multiple Meetings	13 days	Fri 6/5/26	Tue 6/23/26	NA	NA
1418	Prepare Final Soil CMS/FS Report	3 mons	Wed 6/24/26	Fri 9/18/26	NA	NA
1419	DTSC review and concur	1 mon	Mon 9/21/26	Mon 10/19/26	NA	NA
1420	DOI review and concur	1 mon	Mon 9/21/26	Mon 10/19/26	NA	NA
1421	CEQA Evaluation (Place Holder Item only. Details including duration will be provided after the prior steps are better defined))	3 mons	Tue 10/20/26	Thu 1/14/27	NA	NA
1422	**STATEMENT OF BASIS**	**4511 days**	**Mon 1/4/10**	**Wed 4/7/27**	**Mon 1/4/10**	**NA**
1423	**Groundwater**	**284 days**	**Mon 1/4/10**	**Mon 1/31/11**	**Mon 1/4/10**	**Mon 1/31/11**
1430	**Soil**	**121 days**	**Wed 10/21/26**	**Wed 4/7/27**	**NA**	**NA**
1431	Prepare fact sheet for proposed remedy	1 mon	Wed 10/21/26	Wed 11/18/26	NA	NA
1432	Prepare public notice package/Statement of Basis	2 mons	Tue 10/27/26	Wed 12/23/26	NA	NA
1433	Public Notice/Comment Period	46 edays	Thu 12/24/26	Mon 2/8/27	NA	NA
1434	Public Hearing	15 edays	Wed 1/6/27	Thu 1/21/27	NA	NA
1435	Prepare Responsiveness Summary	2 mons	Tue 2/9/27	Wed 4/7/27	NA	NA
1436	DTSC adopts final remedy	0 days	Wed 4/7/27	Wed 4/7/27	NA	NA
1437	**RECORD OF DECISION**	**4617 days**	**Fri 12/18/09**	**Wed 8/18/27**	**Fri 12/18/09**	**NA**
1438	**Groundwater**	**288 days**	**Fri 12/18/09**	**Thu 1/20/11**	**Fri 12/18/09**	**Thu 1/20/11**
1449	**Soil**	**217 days**	**Mon 10/19/26**	**Wed 8/18/27**	**NA**	**NA**
1450	Develop Proposed Plan	60 edays	Mon 10/19/26	Fri 12/18/26	NA	NA
1451	Prepare factsheet	60 edays	Mon 10/19/26	Fri 12/18/26	NA	NA
1452	Tribal Consultation	60 edays	Mon 12/21/26	Fri 2/19/27	NA	NA
1453	Public Review and Comment	45 edays	Mon 12/21/26	Thu 2/4/27	NA	NA
1454	CWG Review and Comment	45 edays	Mon 12/21/26	Thu 2/4/27	NA	NA
1455	PG&E Review and Comment	45 edays	Mon 12/21/26	Thu 2/4/27	NA	NA
1456	Prepare ROD and Responsiveness Summary	119 edays	Fri 2/19/27	Fri 6/18/27	NA	NA
1457	DOI Approval Process	60 edays	Fri 6/18/27	Tue 8/17/27	NA	NA
1458	Issue Soil ROD	1 day	Wed 8/18/27	Wed 8/18/27	NA	NA
1459	**Section 106 Programmatic Agreement (PA)**	**1858 days**	**Fri 10/10/08**	**Wed 11/18/15**	**Fri 10/10/08**	**NA**
1492	**EIR DOCUMENTATION**	**1449 days**	**Thu 9/1/05**	**Wed 3/2/11**	**Thu 9/1/05**	**Wed 3/2/11**
1493	Scoping of EIR needs	45 days	Thu 9/1/05	Tue 11/1/05	Thu 9/1/05	Tue 11/1/05
1494	DTSC/PG&E, MOU signed for EIR	40 days	Wed 11/2/05	Tue 12/27/05	Wed 11/2/05	Tue 12/27/05
1495	EIR Contractor Interviews and Contract Negotiations	47 days	Thu 7/27/06	Fri 9/29/06	Thu 7/27/06	Fri 9/29/06
1496	Project Initiation	1 day	Tue 1/2/07	Tue 1/2/07	Tue 1/2/07	Tue 1/2/07
1497	**Project and Remedy Alternatives Description and Technical Work Plan**	**376 days**	**Mon 9/10/07**	**Mon 2/16/09**	**Mon 9/10/07**	Mon 2/16/09
1498	DTSC and EDAW to conduct outreach meetings to discuss EIR process	60 days	Fri 2/8/08	Thu 5/1/08	Fri 2/8/08	Thu 5/1/08
1499	EDAW defines elements and text of the project description, project objectives, vari	165.8 days	Mon 9/10/07	Fri 5/16/08	Mon 9/10/07	Fri 5/16/08
1500	DTSC reviews elements, project description et.al, and provides comments back to	31 days	Fri 5/16/08	Fri 6/27/08	Fri 5/16/08	Fri 6/27/08
1501	Submits request for WA for NOP preparation/participation in scoping	1 day	Thu 11/29/07	Thu 11/29/07	Thu 11/29/07	Thu 11/29/07
1502	PG&E issues WA for preparation of NOP and participation in scoping	29 days	Fri 11/30/07	Wed 1/9/08	Fri 11/30/07	Wed 1/9/08
1503	EDAW prepares draft Environmental Impact Report (EIR) outline for review by DTS	23 days	Tue 12/4/07	Thu 1/3/08	Tue 12/4/07	Thu 1/3/08
1504	DTSC reviews EIR outline and provides comment back to EDAW	14 days	Fri 1/4/08	Wed 1/23/08	Fri 1/4/08	Wed 1/23/08
1505	EDAW prepares the draft technical work plan	88 days	Thu 6/5/08	Mon 10/6/08	Thu 6/5/08	Mon 10/6/08



Tasks Not Started/In Progess | Milestone | Inactive Milestone | Duration-only | Start-only
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Major Assumptions
- Permits, CWG/ stakeholder review, and DTSC review & approvals are estimated.
- Actual dates may vary depending on field conditions.

HANDOUT 10A - TOPOCK REMEDIATION PROJECT SCHEDULE (REV. 52)
MAY 9, 2023 CWG MEETING

ID	Task Name	Duration	Forecasted Start	Forecasted Finish	Actual Start	Actual Finish
1506	DTSC reviews technical work plan	30 days	Tue 10/7/08	Mon 11/17/08	Tue 10/7/08	Mon 11/17/08
1507	EDAW incorporates comments into the revised technical work plan	30 days	Tue 11/18/08	Mon 12/29/08	Tue 11/18/08	Mon 12/29/08
1508	DTSC reviews revised technical work plan	21 days	Tue 12/30/08	Tue 1/27/09	Tue 12/30/08	Tue 1/27/09
1509	Submits request for WA for final technical work plan, Draft EIR existing setting/stu	5 days	Tue 3/18/08	Mon 3/24/08	Tue 3/18/08	Mon 3/24/08
1510	PG&E issues WA for final technical work plan, Draft EIR existing setting/studies	15 days	Tue 3/25/08	Mon 4/14/08	Tue 3/25/08	Mon 4/14/08
1511	EDAW prepares final technical work plan	14 days	Wed 1/28/09	Mon 2/16/09	Wed 1/28/09	Mon 2/16/09
1512	**NOP and scoping**	**277 days**	**Thu 1/10/08**	**Fri 1/30/09**	**Thu 1/10/08**	**Fri 1/30/09**
1522	**Program EIR**	**680 days**	**Tue 7/29/08**	**Wed 3/2/11**	**Tue 7/29/08**	**Wed 3/2/11**
1565	**DESIGN, PERMITTING, AND CONSTRUCTION OF GROUNDWATER REMEDY**	**1889 days**	**Mon 1/31/11**	**Tue 4/24/18**	**Mon 1/31/11**	**Tue 4/24/18**
1566	**Corrective Measure Implementation/Remedial Design (CMI/RD) Workplan**	**199 days**	**Mon 1/31/11**	**Thu 11/3/11**	**Mon 1/31/11**	**Thu 11/3/11**
1580	**Remedial Design (Preliminary, Intermediate, and Pre-Final/Final)**	**1723 days**	**Tue 9/20/11**	**Tue 4/24/18**	**Tue 9/20/11**	**Tue 4/24/18**
1753	**Community Outreach**	**1710 days**	**Fri 10/7/11**	**Tue 4/24/18**	**Fri 10/7/11**	**Tue 4/24/18**
1763	Project Contracting	2.9 mons	Wed 4/4/18	Wed 6/27/18	Wed 4/4/18	Wed 6/27/18
1764	**Construction**	**2014 days?**	**Wed 6/27/18**	**Wed 3/11/26**	**Wed 6/27/18**	**NA**
1765	**Phase 1 Construction**	**1046 days**	**Wed 6/27/18**	**Fri 6/24/22**	**Wed 6/27/18**	**Fri 6/24/22**
1797	**Phase 2A Planning/Contracting**	**30 days**	**Mon 2/14/22**	**Fri 3/25/22**	**Mon 2/14/22**	**Fri 3/25/22**
1798	**Phase 2A Construction Mobilization**	**16 days**	**Mon 2/14/22**	**Mon 3/7/22**	**Mon 2/14/22**	**Mon 3/7/22**
1802	**Major Phase 2A Construction Activities**	**561 days**	**Tue 3/8/22**	**Tue 4/30/24**	**Tue 3/8/22**	**NA**
1803	**Well Installation**	**426 days**	**Tue 3/8/22**	**Tue 10/24/23**	**Tue 3/8/22**	**NA**
1804	Install FW-2 and Remediation Wells (TCS-1, TCS-2, TWB-1, TWB-3, ER-1/2/3/4)	120 days	Tue 3/8/22	Mon 8/22/22	Tue 3/8/22	Mon 8/22/22
1805	Install Arsenic Monitoring Wells (MW-HH, MW-II)	50 days	Tue 8/1/23	Mon 10/9/23	NA	NA
1806	Well Buildout (RB-5, TCS-1, 2, ER-6, TWB-1/3 full build-out; RB-2, 3, 4 civil/ mechanical only, ER-1/2 full build-out, ER-3/4 civil only	268 days	Fri 10/14/22	Tue 10/24/23	Fri 10/14/22	NA
1807	**Pipeline Installation**	**526 days**	**Mon 4/4/22**	**Mon 4/8/24**	**Mon 4/4/22**	**NA**
1808	Inside TCS	160 days	Mon 4/4/22	Fri 11/11/22	Mon 4/4/22	Fri 11/11/22
1809	Outside TCS	450 days	Tue 7/19/22	Mon 4/8/24	Tue 7/19/22	NA
1810	Site Electrical and I&C	318 days	Fri 8/5/22	Tue 10/24/23	Fri 8/5/22	NA
1811	System Integration and Functional Testing	135 days	Wed 10/25/23	Tue 4/30/24	NA	NA
1812	**Phase 2B Planning/Contracting**	**4 mons**	**Mon 7/31/23**	**Thu 11/23/23**	**NA**	**NA**
1813	**Phase 2B Construction Mobilization**	**21 days**	**Mon 12/18/23**	**Mon 1/15/24**	**NA**	**NA**
1820	**Major Phase 2B Construction Activities**	**599 days**	**Tue 1/16/24**	**Fri 5/1/26**	**NA**	**NA**
1821	**California Remedy Facilities**	**478 days**	**Tue 1/16/24**	**Thu 11/13/25**	**NA**	**NA**
1822	Access Roads Preparation (IRL-2, IRL-4, and road to BCW)	92 days	Tue 1/16/24	Wed 5/22/24	NA	NA
1823	**Well Installation**	**396 days**	**Tue 1/16/24**	**Tue 7/22/25**	**NA**	**NA**
1824	Install Upland MWs (MW-P, Q, I, J, MW-AA, BB, CC, DD, EE, FF, and GG	291 days	Tue 1/16/24	Tue 2/25/25	NA	NA
1825	Install FW-1 and Remediation Wells (IRL-1, 2, 3, and 4)	182 days	Tue 1/16/24	Wed 9/25/24	NA	NA
1826	Well Buildout - CA (RB-2, 3, 4, ER-3, 4 complete build-out [from Phase 2A], IRL-1, 2, 3, 4 full build-out)	44 days	Thu 5/22/25	Tue 7/22/25	NA	NA
1827	Pipeline Installation - California	286 days	Thu 4/25/24	Thu 5/29/25	NA	NA
1828	Remaining Facilities in TCS and MW-20 Bench	471 days	Tue 1/16/24	Tue 11/4/25	NA	NA
1829	Site Electrical and I&C	120 days	Fri 5/30/25	Thu 11/13/25	NA	NA
1830	**Arizona Remedy Facilities**	**131 days**	**Tue 1/16/24**	**Tue 7/16/24**	**NA**	**NA**
1831	Well Buildout - AZ (HNWR-1A) including electrical hook-up/I&C/site improveme	67 days	Mon 4/15/24	Tue 7/16/24	NA	NA
1832	Pipeline Installation - Arizona	120 days	Tue 1/16/24	Mon 7/1/24	NA	NA
1833	System Integration and Functional Testing	121 days	Fri 11/14/25	Fri 5/1/26	NA	NA

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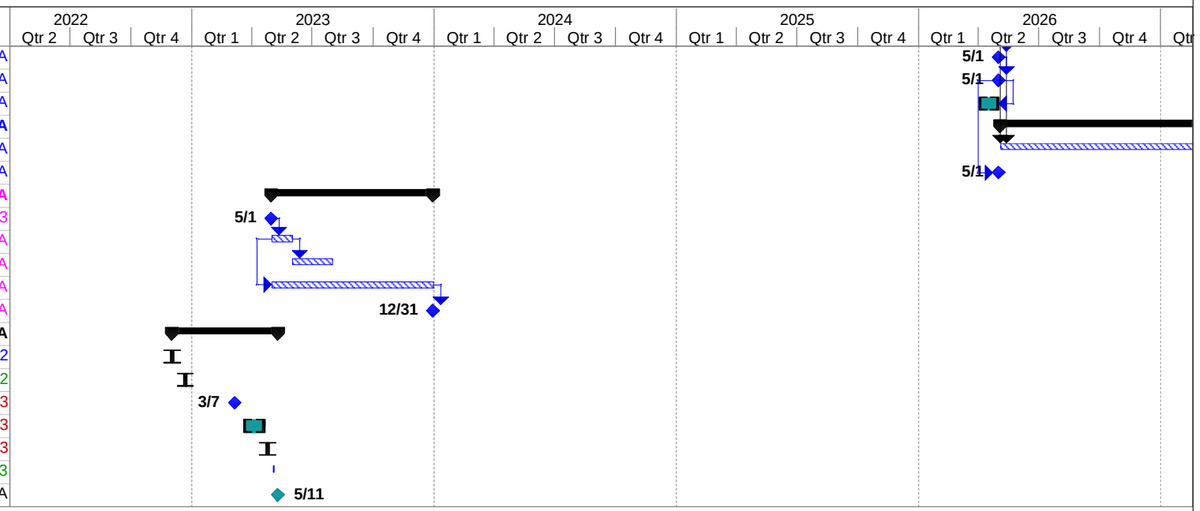
HANDOUT 10A - TOPOCK REMEDIATION PROJECT SCHEDULE (REV. 52)
MAY 9, 2023 CWG MEETING

ID	Task Name	Duration	Forecasted Start	Forecasted Finish	Actual Start	Actual Finish
1834	Start-up Phase 2B Components	0 days	Fri 5/1/26	Fri 5/1/26	NA	NA
1835	Start-up Complete/Start Full Remedy Operation	0 days	Fri 5/1/26	Fri 5/1/26	NA	NA
1836	Construction Demobization	22 days	Thu 4/2/26	Fri 5/1/26	NA	NA
1837	**Reporting**	**1911 days**	**Mon 5/4/26**	**Mon 8/29/33**	**NA**	**NA**
1838	Prepare/submit monthly construction progress reports	91 mons	Mon 5/4/26	Mon 8/29/33	NA	NA
1839	Start Operation and Maintenance	0 days	Fri 5/1/26	Fri 5/1/26	NA	NA
1840	**First Five Year Review of Groundwater Remedy**	**175 days**	**Mon 5/1/23**	**Sun 12/31/23**	**Mon 5/1/23**	**NA**
1841	Public Notice/Factsheet	0 days	Mon 5/1/23	Mon 5/1/23	Mon 5/1/23	Mon 5/1/23
1842	Request For Interview	30.38 edays	Mon 5/1/23	Wed 5/31/23	Mon 5/1/23	NA
1843	Interview Period	60 edays	Thu 6/1/23	Mon 7/31/23	NA	NA
1844	Five-Year Review Report Preparation	244 edays	Mon 5/1/23	Sun 12/31/23	NA	NA
1845	Notice of Report Availability	0 days	Sun 12/31/23	Sun 12/31/23	NA	NA
1846	**Proposed Phase 2B Design Modification**	**114 days**	**Fri 12/2/22**	**Thu 5/11/23**	**Fri 12/2/22**	**NA**
1847	Submit proposal to DTSC/DOI	1 day	Fri 12/2/22	Fri 12/2/22	Fri 12/2/22	Fri 12/2/22
1848	DTSC forward to CWG/TWG	1 day	Thu 12/22/22	Thu 12/22/22	Thu 12/22/22	Thu 12/22/22
1849	FMIT provided comments	0 days	Tue 3/7/23	Tue 3/7/23	Tue 3/7/23	Tue 3/7/23
1850	Tribal Consultation	24 days	Mon 3/20/23	Thu 4/20/23	Mon 3/20/23	Thu 4/20/23
1851	Quechan Indian Tribe provided concurrence with FMIT's comments	1 day	Tue 4/25/23	Tue 4/25/23	Tue 4/25/23	Tue 4/25/23
1852	DTSC provided comments	1 day	Wed 5/3/23	Wed 5/3/23	Wed 5/3/23	Wed 5/3/23
1853	Site visit	0 days	Thu 5/11/23	Thu 5/11/23	NA	NA



Project: PG&E Topock Remediation Project
Date: Wed 5/3/23

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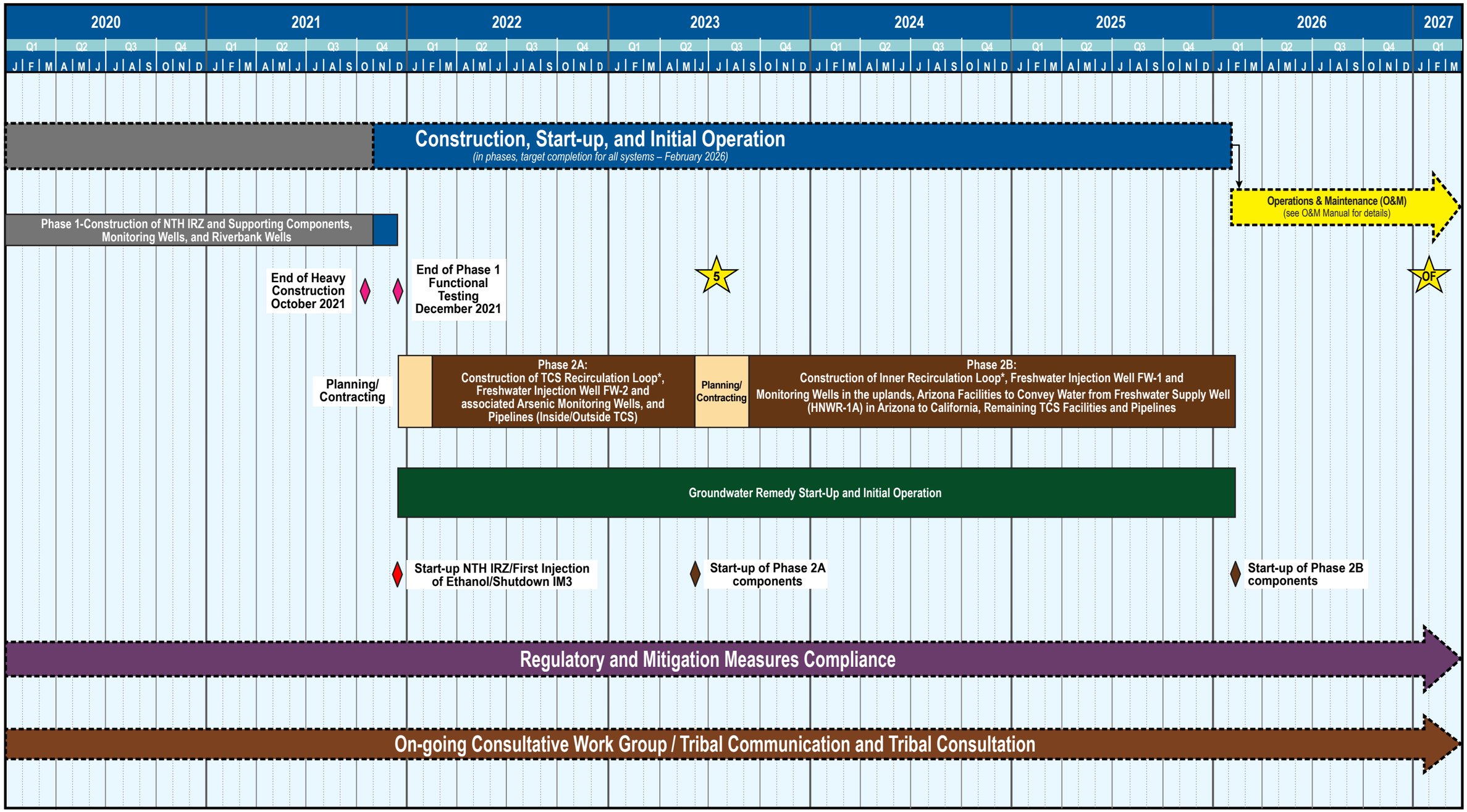
Groundwater Remedy Construction, Start-up, and Initial O&M Schedule

PG&E Topock Compressor Station | Needles, California
November 2022



LEGEND

- 5 — Agencies 5-year Review
- OF — The remedy becomes Operational and Functional (OF) either one year after completion of construction or when the groundwater is determined to be functioning properly and performing as designed

* Per the 2015 Basis of Design Report, the **TCS Recirculation Loop** consists of injection wells in TCS, extraction wells on the Transwestern Bench, and extraction wells in the East Ravine area. The **Inner Recirculation Loop** consists of IRL wells in the uplands and River Bank wells along the riverbank.

ch2m

Handout 10B
Schedule Highlights
Summary of Key Schedule Changes

Consultative Work Group Meeting

May 9, 2023

Schedule Highlights

Text in “red font” represents updates from last CWG (11/9/22)

Phase 1 Groundwater Remedy Construction

NTH IRZ* and Supporting Components, Monitoring Wells, Riverbank Wells*, Pipelines, Remedy-produced Water Conditioning Tank Farm

- Phase 1 Construction, Startup, and Initial Operation – 10/2/18 to 6/24/22
  - Progress and schedule are communicated via:
    - **Daily** list of construction activities
    - **Weekly** emails of 6-week look ahead
    - **Monthly** progress reports
    - **Quarterly** progress reports (focuses on operations & maintenance)
    - **CWG schedule updates**
- Switch from Temporary (Portable Generators) to Permanent Power (Topock Compressor Station) – 3/24/22
- Remedy-Produced Water Conditioning system – 6/24/22

** Excludes northern IRZ well (IRZ-1), select IRZ well screens, and northern Riverbank Well (RB-1).*

Phase 2A Groundwater Remedy Construction

TCS Recirculation Loop*, Freshwater Injection Well (FW-02) and Associated Arsenic Monitoring Wells, Pipelines (Inside/Outside of TCS)*

- Phase 2A Construction and Startup – 3/7/22 to 4/30/24
  - Mobilization – 2/14 to 3/7/22
  - Pilot Borehole/Well Installation/Well Buildout – 3/8/22 to 10/24/23
    - Assumes a decision is made on FW-02 and associated arsenic MWs in July 2023
  - Pipeline Installation – 4/4/22 to 4/8/24
  - Site Electrical/Instrumentation & Control – 12/20/22 to 10/24/23
  - System Integration/Functional Testing – 3/21/23 to 4/30/24
- Phase 2A Startup – Forecast 4/30/2024

Current forecast includes a 3-month pause in Phase 2A heavy construction. The pause is driven by delayed receipt of vault panel components. Note that Phase 2A schedule is independent of Phase 2B.

** The TCS Recirculation Loop consists of 2 injection wells in TCS, 2 extraction wells at the Transwestern Bench, and 4 extraction wells in the East Ravine (along historic Route 66).*

Phase 2B Groundwater Remedy Construction

Inner Recirculation Loop* IRL Wells, Freshwater Injection Well FW-1, Upland Monitoring Wells, Pipelines (Inside/Outside TCS), AZ Facilities to Convey Water from Freshwater Supply Well (HNWR-1A) to California

- Site Kick-Off Meeting – December 2023
- Mobilization – Mid-December 2023 to mid-January 2024
- California Remedy Facilities – January 2024 to November 2025
- Arizona Remedy Facilities – January to June 2024
- System Integration/Functional Testing – November 2025 to May 2026
- Phase 2B Startup – Forecast May 2026

** Per 2015 BOD, the Inner Recirculation Loop consists of 4 IRL wells in the uplands and 5 RB wells along the riverbank. All IRL wells will be installed in Phase 2B. Four Riverbank Wells (RB-2, 3, 4, 5) were installed in Phase 1, with full buildout of RB-5 planned in Phase 2A and of RB-2, 3, and 4 planned in Phase 2B.*

Five-Year Review of Groundwater Remedy

- First Five-Year Review
  - Public Notice/Factsheet – May 1, 2023
  - Request for Interview – May 1 to May 31, 2023
  - Interview – June 1 to July 31, 2023
  - Prepare Five-Year Review Report – May 1 to December 31, 2023
  - Notice of Report Availability – December 31, 2023

Proposed Phase 2B Design Modification

- PG&E submitted proposal to DTSC/DOI – 12/2/22
- DTSC forward to CWG/TWG – 12/22/22
- FMIT provided comments – 3/7/22
- Tribal consultation – 3/20 to 4/20/22
- Quechan Indian Tribe provided concurrence with FMIT comments – 4/25/22
- DTSC provided comments – 5/3/23
- Site visit – May 11, 2023

Soil RFI/RI Reporting (Volume 3)

- Soil RFI/RI Report
  - Draft Report – submitted 12/9/19
  - Review and Comment
    - Tribes and Stakeholder Review: 12/10/19 – 3/20/20
    - Agencies Review: 12/10/19 – 4/3/20
  - Response to Comments/Comment Resolution
    - Sent RTC Table: 10/30/20
    - Sent meeting agenda: 12/8/20
    - Comment resolution meeting held on 12/9 and 12/10/20

Soil RFI/RI Reporting (Volume 3)
(Continued)

- Soil RFI/RI Report (Continued)
  - Revised Report – submitted 5/31/2021
  - Review and Comment
    - Tribes and Stakeholder Review: 6/1 – 8/31/21
    - Agencies Review: 6/1 – 9/24/21
    - PG&E reviewed comments/determined that a meeting is not needed to clarify comments from Tribes
  - Response to Comments/Comment Resolution
    - Compiled comments into RTC Table: 10/22/21
    - Prepared responses to comments: 9/27-12/17/21
    - Sent RTC Table with responses to comments: 12/20/21
    - Held four comment resolution meetings: 2/9, 2/10, 2/17, and 2/18/22
    - Sent RTC Table with revised sections of Soil RFI/RI Report – 9/30/22

Soil RFI/RI Reporting (Volume 3)
(Continued)

- Soil RFI/RI Report (Continued)
  - Review and Comment
    - Tribes and Stakeholder Review: 10/3/22 – 1/31/23
    - Agencies Review: 10/3/22 – 3/28/23
    - PG&E Review Comments/Prepare Responses
    - Comment Resolution – June-July 2023
  - Final Report – September 2023
  - Agencies Review/Approve – October 2023

Soil Non-Time Critical Removal Action

Engineering Evaluation/Cost Analysis (EE/CA), Action Memorandum

- Draft Soil Engineering Evaluation/Cost Analysis - 5/29/20
  - Stakeholders/Public Review: 6/3 – 8/5/20
  - Tribal Consultation: 6/3 – 2/12/21
- DOI sent responses to comments – 4/23/21
- DOI considers comments and makes final decision
  - Final EE/CA & Responsiveness Summary – 10/12/21
  - Approval of Action Memorandum – 10/12/21

Soil Non-Time Critical Removal Action

NTCRA Work Plan Preparation, Agency Approval

- Draft NTCRA Work Plan – 10/29/21
  - BLM sends Work Plan to Tribes: 11/1 - 11/4
  - Tribal Consultation: 11/4 - 12/21
  - DTSC Review/Comment: 11/1 - 12/28
  - DOI Review/Comment: 11/1 – 12/20
- Response to Comments (RTC)
  - PG&E compiles/prepares RTCs: 12/28/21 - 3/24/22
  - Agencies/Tribes/Stakeholders review RTCs: 3/25 – 4/13/22
  - Meeting to discuss RTCs/comment resolution: 4/26, 5/5/22
  - FMIT review redline RTCs and provide inputs to redline RTC Table: 6/3/22
  - Quechan and Cocopah Tribes concur with FMIT inputs: 6/6/22
  - Chemehuevi concur with FMIT inputs: 6/7/22
- Final NTCRA Work Plan – Approved 6/27/22
  - PG&E addresses/finalizes Work Plan – 4/27 to 6/17/22
  - DOI reviews/approves Work Plan – 6/27/22

Soil Non-Time Critical Removal Action

NTCRA Work Plan Implementation, Reporting, and Agency Acceptance

- Soil NTCRA Implementation – July 2022 to December 2023
- Soil NTCRA Completion Report (incorporate results from the Soil Risk Assessment Addendum) – Forecast September 2024
- DOI review/accept report – Forecast October 2024

Soil Risk Assessment (RA) Addendum

- A Soil Risk Assessment Addendum will be prepared after the implementation of the Soil NTCRA
  - Prepare/submit RA Addendum: February 2024
  - Tribes/Stakeholders review/comment: February – March 2024
  - Agencies review/comment: February – March 2024
  - Compile/prepare RTCs: April – June 2024
  - Review RTCs/comment resolution: July 2024
  - Finalize/submit RA Addendum: July – September 2024
  - Anticipate Agencies' Approval: September 2024
- Results of the approved Soil RA Addendum will be incorporated into the NTCRA Completion Report

Soil Corrective Measure Study/Feasibility Study (CMS/FS)

- Prepare/submit draft CMS/FS: December 2025
  - Tribes/Stakeholders review/comment: 60 calendar days
  - Agencies review/comment: 75 calendar days
- Prepare RTCs/Comment Resolution: February-June 2026
- Finalize/submit final CMS/FS: June – September 2026
- Anticipate Agencies' Approval: October 2026

Soil Remedy Decision (Statement of Basis/Record of Decision)

- DTSC's Statement of Basis/Adoption of Remedy – Forecast Q2 2027
  - CEQA evaluation of the selected remedy will be conducted after Final CMS/FS

- DOI's Record of Decision – Forecast Q3 2027

Summary of Schedule Changes

Handout 10B

Summary of Key Schedule Changes since August 15, 2007 (Rev. 52)

Yellow highlights are changes since November 9, 2022 CWG

Activities	Forecast Schedule Deviation	Key Reasons
Groundwater Remedy Construction		
Phase 2A Construction and Startup (Lines 1796-1811)	**FF for completion of construction** • 4/27/2023 (Rev. 48, 49, 50) • 5/30/2023 (Rev. 51) • 4/24/2024 (Rev. 52)	• Time extension reflects adjustments made from remedy construction sequencing and implementation details. • Current forecast includes a 3-month pause of Phase 2A heavy construction due to delayed receipt of vault panel components.
Phase 2B Construction and Startup (Lines 1813-1836)	**FF for completion of construction** • 5/1/2026 (Rev. 52)	
Soil RCRA Facility Investigation/Remedial Investigation (RFI/RI) and Corrective Measure Study/Feasibility Study (CMS/FS)		
RFI/RI Vol. 3 Reporting (Revised report, RTCs, Final, Approvals) (Lines 1029-1050)	• FF 7/8/2014 (Rev. 15) • FF 10/1/2014 (Rev. 16) • FF 8/18/2015 (Rev. 17) • FF 12/29/2015 (Rev. 18) • FF 7/26/2016 (Rev.20) • FF 10/25/2016 (Rev. 22) • FF 10/24/2016 (Rev. 23) • FF 2/7/2017 (Rev. 24) • FF 2/22/2017 (Rev. 25) • FF 6/27/2017 (Rev. 26) • FF 7/25/2017 (Rev. 27) • FF 2/16/2017 (Rev. 28 and 29) • FF 11/15/2017 (Rev. 30) • FF 10/29/2018 (Rev. 32 and 33) • FF 12/17/2018 (Rev. 34) • FF 2/7/2019 (Rev. 35 and 36) • FF 9/24/2019 (Rev. 37 and 38) • FF 2/7/2020 (Rev. 39 and 40) • FF 6/9/2020 (Rev. 41) • FF 9/7/2020 (Rev. 42, 43) • FF 11/3/2021 (Rev. 44, 45) • FF 3/8/2022 (Rev. 46, 47)	• Adjusted schedule to reflect current anticipated approval dateand scope of the Final Soil RFI/RI Work Plan. • Cascading changes from Soil Work Plan approval and Soil EIR. • Cascading changes from Soil Work Plan approval andimplementation. • Cascading changes from Soil Work Plan implementation/DataGaps Analysis. • Adjusted schedule to incorporate results from the soil risk assessment into the RFI/RI Vol. 3 Report, and to reflect a RTC process in accordance with the October 29, 2012 letter from DTSCto Tribes, titled Response to Comments Process - PG&E Topock Compressor Station, Needles, California • Cascading changes from Work Plan Implementation/Data GapsEvaluation. • Schedule reflects implementation of Soil RFI-RI-RA RTCprotocol. • Cascading changes from Soil Risk Assessment. • Extension of schedule to reflect the additional time needed to incorporate results from the Soil Risk Assessment after agencies'approval. Additional time was also added to allow Tribes, stakeholders, and agencies more time to review the report over end of year holidays. • Extension of schedule to reflect a revision of the Soil RFI/RIVol. 3 report and additional review as well as RTC of the revised report. • Extension of schedule reflects the actual timing of comment resolution as well as the time needed to revise the Soil RFI/R Ireport based on actual comment resolution. • Extension of schedule reflects an extended review/comment period for the RTC and revised sections of the report and finalize the Soil RFI/RI report.

	• FF 5/6/2022 (Rev. 48) • FF 10/31/2022 (Rev. 50) • FF 5/26/2023 (Rev. 51) • FF 10/13/2023 (Rev. 52)	• Time extension reflects additional time needed to revise the RFI/RI Volume 3 report. • Time extension reflects an additional one month requested by stakeholders to review and provide comments, and the anticipated duration to prepare responses to comments and resolve responses.
Soil Risk Assessment Addendum (Report Preparation, Review/ comment, RTCs, Final, Approval) (Lines 1002-1015)	• FF 5/11/2023 • FF 6/13/2023 (Rev. 49) • FF 9/4/2023 (Rev. 50) • FF 1/15/2024 (Rev. 51) • FF 9/25/2024 (Rev. 52)	• Cascading change from Soil NTCRA implementation.
Soil Corrective Measure Study/Feasibility Study (Draft CMS/FS, RTC, Final CMS/FS, Agencies Approval) (Lines 1399-1420)	• FF 11/24/2022 (Rev. 44, 45) • FF 5/12/2023 (Rev. 46, 47) • FF 10/4/2024 (Rev. 48) • FF 10/30/2024 (Rev. 49) • FF 12/27/2024 (Rev. 50) • FF 6/20/2025 (Rev. 51) • FF 10/19/2026 (Rev. 52)	• Cascading changes from Soil RFI/RI report. • Schedule reflects the incorporation of conclusions from the Soil Risk Assessment Addendum and the NTCRA Completion Report into the Draft CMS/FS. • Cascading change from Soil NTCRA implementation.
DTSC CEQA Evaluation (placeholder only) (Line 1421)	• To be determined after CMS/FS is complete.	
Statement of Basis including Public Reviewto Remedy Adoption (Lines 1430-1436)	• FF 6/28/2023 (Rev. 44, 45) • FF 10/31/2023 (Rev. 46, 47) • FF 3/25/2025 (Rev. 48) • FF 4/22/2025 (Rev. 49) • FF 6/17/2025 (Rev. 50) • FF 12/9/2025 (Rev. 51) • FF 4/7/2027 (Rev. 52)	• Cascading changes from Soil RFI/RI and CMS/FS reports.
Proposed Plan/Record of Decision (Lines 1449-1458)	• FF 9/21/2023 (Rev. 44, 45) • FF 3/8/2024 (Rev. 46, 47) • FF 8/1/2025 (Rev. 48) • FF 8/27/2025 (Rev. 49) • FF 10/24/2025 (Rev. 50) • FF 4/17/2026 (Rev. 51) • FF 8/18/2027 (Rev. 52)	• Cascading changes from Soil RFI/RI and CMS/FS reports.
Soil Non-Time Critical Removal Action (NTCRA)		

Soil Non-Time Critical Removal Action (NTCRA Work Plan through Acceptance of Completion Report) (Lines 1051-1086)	• FF 6/19/2023 (Rev. 48) • FF 7/13/2023 (Rev. 49) • FF 10/20/2023 (Rev. 50) • FF 3/1/2024 (Rev. 51) • FF 10/7/2024 (Rev. 52)	• Schedule was updated to reflect extended duration for the RTC process associated with the NTCRA Work Plan. • Extension of the schedule reflects the additional time needed to a) step outside of the Target Action Areas (TAAs) due to the presence of discolored materials and/or concentrations higher than the Remedial Action Goals (RAGs) and b) manage site conditions post August 2022 storm events.

December 5, 2018 Consultative Work Group (CWG) Schedule Presentation:

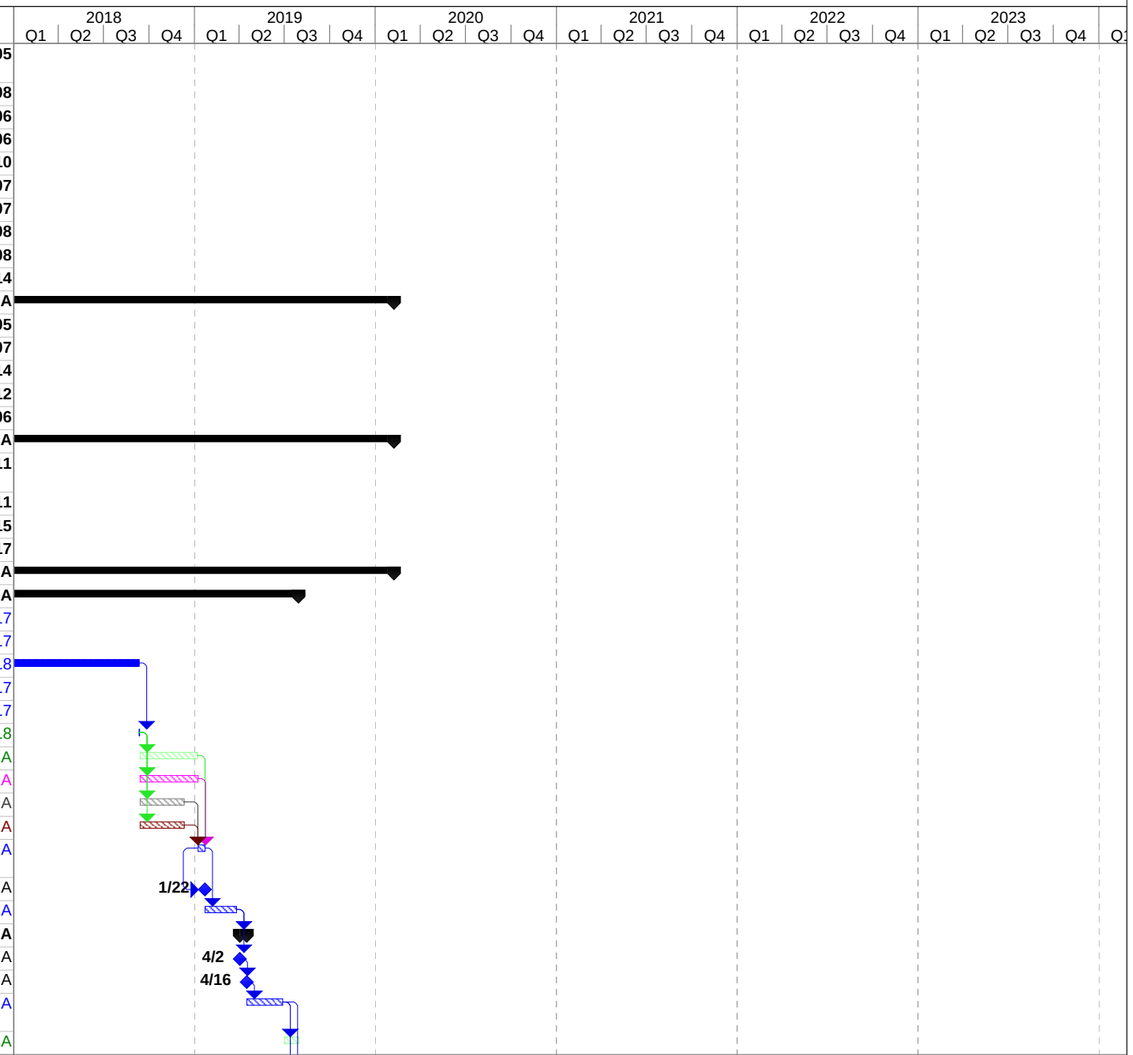
Handout 9 A Topock Remediation Project Schedule (Rev. 39),

Groundwater Remedy Construction, Start-up, and Initial O&M Schedule, and

Handout 9B Schedule Highlights Summary of Key Schedule Changes

HANDOUT 9A - TOPOCK REMEDIATION PROJECT SCHEDULE (REV. 39)
DECEMBER 5, 2018 CWG MEETING

ID	Task Name	Duration	Forecasted Start	Forecasted Finish	Actual Start	Actual Finish
1	**IM Installation (Note that IM3 is currently in operation and will remain in operation until directed otherwise by agencies)**	**512 days**	**Thu 1/22/04**	**Tue 12/20/05**	**Thu 1/22/04**	**Tue 12/20/05**
32	**IM3 Cultural Resources Management Plan (IM3 CRMP)**	**986 days**	**Thu 7/1/04**	**Mon 3/10/08**	**Thu 7/1/04**	**Mon 3/10/08**
37	**Extraction Well PE-1/Facilities**	**230 days**	**Mon 3/21/05**	**Fri 1/27/06**	**Mon 3/21/05**	**Fri 1/27/06**
47	**Supplemental Extraction Well and Facilities**	**127 days**	**Fri 7/29/05**	**Thu 1/19/06**	**Fri 7/29/05**	**Thu 1/19/06**
55	**Decommissioning of IM2 Batch Treatment**	**1182 days**	**Fri 8/5/05**	**Fri 1/29/10**	**Fri 8/5/05**	**Fri 1/29/10**
66	**Interim Measures and Treated Water Management**	**751 days**	**Mon 5/3/04**	**Fri 2/16/07**	**Mon 5/3/04**	**Fri 2/16/07**
210	**Public Participation Plan**	**578 days**	**Mon 12/20/04**	**Fri 2/9/07**	**Mon 12/20/04**	**Fri 2/9/07**
219	**Baseline Resources Assessments**	**897 days**	**Mon 11/1/04**	**Mon 3/10/08**	**Mon 11/1/04**	**Mon 3/10/08**
233	**Sitewide CEQA Documentation**	**586 days**	**Wed 5/17/06**	**Fri 8/1/08**	**Wed 5/17/06**	**Fri 8/1/08**
237	**Programmatic Biological Assessment (PBA)**	**1920 days**	**Tue 12/19/06**	**Tue 4/15/14**	**Tue 12/19/06**	**Tue 4/15/14**
250	**REMEDIAL FACILITY INVESTIGATION/REMEDIAL INVESTIGATION (RFI/RI)**	**6279.85 days**	**Sat 2/24/96**	**Fri 2/7/20**	**Sat 2/24/96**	**NA**
251	**Historical RFI/RI Reports (Feb. 2005 and Prior Versions)**	**2455 days**	**Sat 2/24/96**	**Fri 7/8/05**	**Sat 2/24/96**	**Fri 7/8/05**
269	**Prepare Site History Report (Vol 1)**	**466 days**	**Tue 11/15/05**	**Wed 8/15/07**	**Tue 11/15/05**	**Wed 8/15/07**
284	**Prepare RFI/RI Vol 1 Addendum**	**1829 days**	**Wed 7/11/07**	**Tue 7/8/14**	**Wed 7/11/07**	**Tue 7/8/14**
306	**Prepare Final Groundwater RFI/RI (Vol 2)**	**1948 days**	**Mon 6/27/05**	**Fri 11/16/12**	**Mon 6/27/05**	**Fri 11/16/12**
616	**ADEQ Topock Groundwater Study**	**475 days**	**Thu 11/18/04**	**Wed 8/23/06**	**Thu 11/18/04**	**Wed 8/23/06**
620	**Prepare Final Soil RFI/RI (Vol 3)**	**3552.85 days**	**Sat 7/15/06**	**Fri 2/7/20**	**Sat 7/15/06**	**NA**
621	**Implementation of Off-site Soil Sampling (Part A Phase 1) and Data Gaps Evaluation**	**1215 days**	**Sat 7/15/06**	**Fri 2/25/11**	**Sat 7/15/06**	**Fri 2/25/11**
770	**Draft On-site Soil Sampling (Part B) DQOs**	**1122 days**	**Wed 12/6/06**	**Fri 3/11/11**	**Wed 12/6/06**	**Fri 3/11/11**
825	**Soil RFI/RI Work Plan**	**1211 days**	**Tue 1/4/11**	**Mon 8/24/15**	**Tue 1/4/11**	**Mon 8/24/15**
922	**Work Plan Implementation/Data Gaps Analysis**	**594 days**	**Tue 8/25/15**	**Thu 11/30/17**	**Tue 8/25/15**	**Thu 11/30/17**
978	**Reporting**	**689.85 days**	**Tue 6/20/17**	**Fri 2/7/20**	**Tue 6/20/17**	**NA**
979	**Soil Risk Assessment**	**551 days**	**Tue 6/20/17**	**Mon 7/29/19**	**Tue 6/20/17**	**NA**
980	Agency Direction to Move Forward with Soil Risk Assessment	1 day	Tue 6/20/17	Tue 6/20/17	Tue 6/20/17	Tue 6/20/17
981	Data Summary for EPCs Calculation	5.4 wks	Wed 6/21/17	Fri 7/28/17	Wed 6/21/17	Fri 7/28/17
982	Prepare/Submit Draft Soil Risk Assessment Report	58.2 wks	Mon 7/31/17	Mon 9/10/18	Mon 7/31/17	Mon 9/10/18
983	Calculate Exposure Point Concentrations (EPCs)	4.05 mons	Mon 7/31/17	Fri 11/24/17	Mon 7/31/17	Fri 11/24/17
984	Meeting to discuss EPCs	1 day	Wed 8/16/17	Wed 8/16/17	Wed 8/16/17	Wed 8/16/17
985	DTSC send Soil Risk Evaluation to CWG/TWG	1 day	Tue 9/11/18	Tue 9/11/18	Tue 9/11/18	Tue 9/11/18
986	DTSC review/comment	117 edays	Wed 9/12/18	Mon 1/7/19	Wed 9/12/18	NA
987	DOI review/comment	117.38 edays	Wed 9/12/18	Mon 1/7/19	Wed 9/12/18	NA
988	CWG/TWG review/comment	89.38 edays	Wed 9/12/18	Mon 12/10/18	Wed 9/12/18	NA
989	Tribes review/comment	89.38 edays	Wed 9/12/18	Mon 12/10/18	Wed 9/12/18	NA
990	Review/compile Comment Table (duration will be verified after receipt of comments and directives)	2 wks	Tue 1/8/19	Mon 1/21/19	NA	NA
991	DTSC/DOI/PG&E hold comment clarification meeting (date is tentative)	0 days	Tue 1/22/19	Tue 1/22/19	NA	NA
992	Prepare/send RTC Table (duration will be verified after receipt of comments)	9.1 wks	Tue 1/22/19	Tue 3/26/19	NA	NA
993	**RTC Meeting**	**10 days**	**Tue 4/2/19**	**Tue 4/16/19**	**NA**	**NA**
994	Send agenda (2 wks prior to meeting)	0 days	Tue 4/2/19	Tue 4/2/19	NA	NA
995	Hold Meeting	0 days	Tue 4/16/19	Tue 4/16/19	NA	NA
996	Finalize/Submit Final Soil Risk Assessment Report with RTC Table (duration is estimated, to be verified after completion of RTCs)	2.5 mons	Tue 4/16/19	Thu 6/27/19	NA	NA
997	DTSC review/approve	1 mon	Mon 7/1/19	Mon 7/29/19	NA	NA



Project: PG&E Topock Remediation Project
Date: Fri 11/30/18

Tasks Not Started/In Progess
Tasks Finished
Baseline Schedule
Milestone
Overall Task Duration
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only

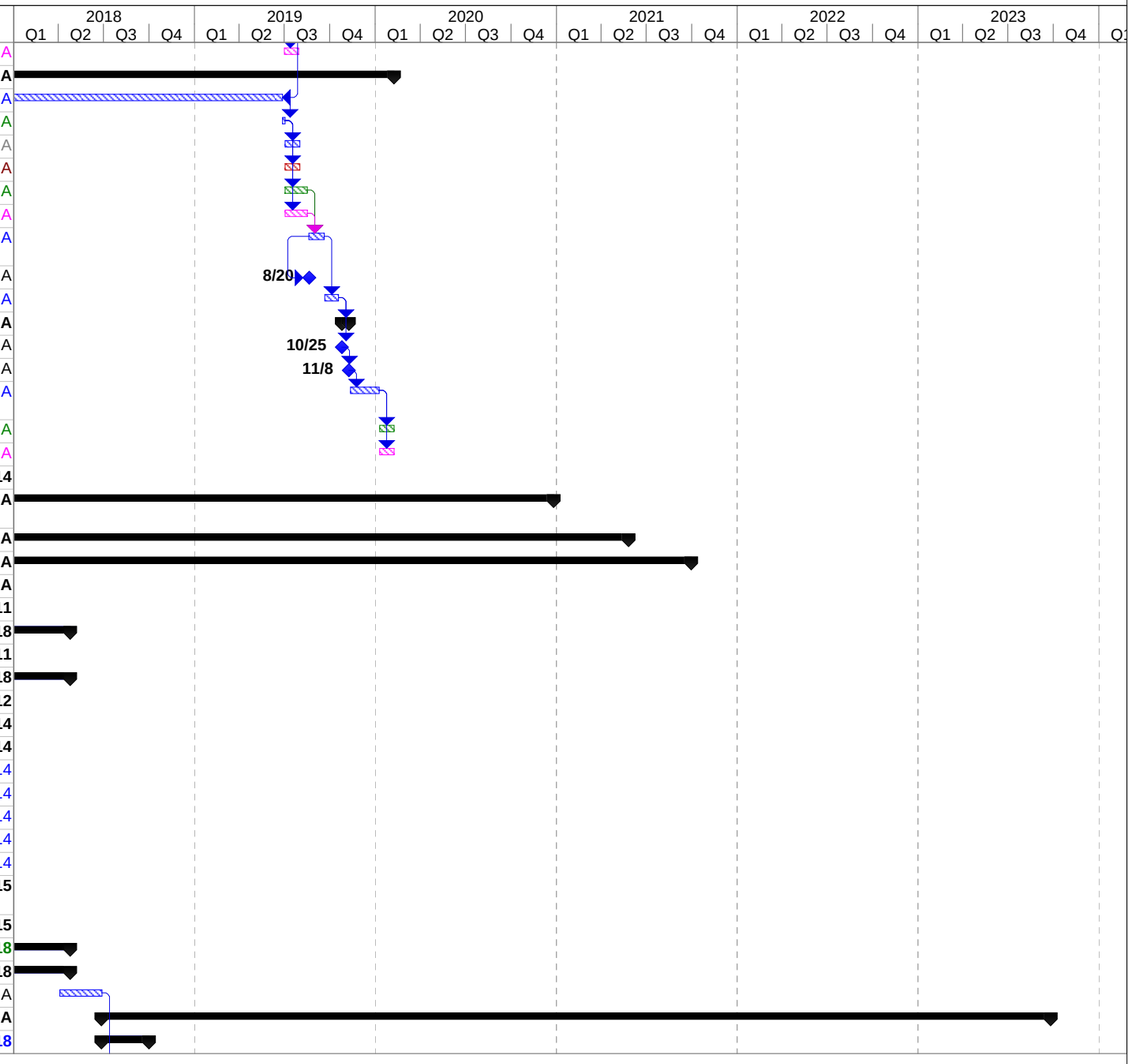
edays = calendar days; days = work days
Baseline Schedule is the 8/15/07 CWG Schedule (rev 1, 12/12/07).
*Timeframes shown are for planning purpose. Actual timeframes may vary.

Color Coding:
PG&E Federal Agencies CWG/TWG Public
DTSC Tribes/SHPO Other CA Agencies AZ Agencies

Major Assumptions
- Permits, CWG/ stakeholder review, and DTSC review & approvals are estimated.
- Actual dates may vary depending on field conditions.

HANDOUT 9A - TOPOCK REMEDIATION PROJECT SCHEDULE (REV. 39)
DECEMBER 5, 2018 CWG MEETING

ID	Task Name	Duration	Forecasted Start	Forecasted Finish	Actual Start	Actual Finish
998	DOI review/approve	1 mon	Mon 7/1/19	Mon 7/29/19	NA	NA
999	**RFI/RI Volume 3**	**661.85 days**	**Fri 7/28/17**	**Fri 2/7/20**	**Fri 7/28/17**	**NA**
1000	Prepare Draft RFI/RI Vol 3 Report	23.85 mons	Fri 7/28/17	Thu 6/27/19	Fri 7/28/17	NA
1001	DTSC sends report to CWG/TWG and Tribes	3 days	Thu 6/27/19	Tue 7/2/19	NA	NA
1002	CWG/TWG review/comment	30 edays	Tue 7/2/19	Thu 8/1/19	NA	NA
1003	Tribes review/comment	30 edays	Tue 7/2/19	Thu 8/1/19	NA	NA
1004	DTSC review/comment	45 edays	Tue 7/2/19	Fri 8/16/19	NA	NA
1005	DOI review/comment	45 edays	Tue 7/2/19	Fri 8/16/19	NA	NA
1006	Review/compile Comment Table (duration will be verified after receipt of comments and directives)	31 edays	Mon 8/19/19	Thu 9/19/19	NA	NA
1007	DTSC/DOI/PG&E hold comment clarification meeting (date is tentative)	0 days	Tue 8/20/19	Tue 8/20/19	NA	NA
1008	Prepare/send RTC Table (duration will be verified after receipt of comments)	4 wks	Fri 9/20/19	Fri 10/18/19	NA	NA
1009	**RTC Meeting**	**10 days**	**Fri 10/25/19**	**Fri 11/8/19**	**NA**	**NA**
1010	Send agenda (2 wks prior to meeting)	0 days	Fri 10/25/19	Fri 10/25/19	NA	NA
1011	Hold Meeting	0 days	Fri 11/8/19	Fri 11/8/19	NA	NA
1012	Prepare Revised RFI Volume 3 with RTC Table (duration is estimated, to be verified after completion of RTCs)	2 mons	Mon 11/11/19	Wed 1/8/20	NA	NA
1013	DTSC review/approve Revised RFI/RI Vol. 3 Report	1 mon	Thu 1/9/20	Fri 2/7/20	NA	NA
1014	DOI review/approve Revised RFI/RI Vol. 3 Report	1 mon	Thu 1/9/20	Fri 2/7/20	NA	NA
1015	**GROUNDWATER CORRECTIVE MEASURES/REMEDIAL ALTERNATIVE DEVELOPMENT**	**2835 days**	**Mon 3/29/04**	**Wed 12/31/14**	**Mon 3/29/04**	**Wed 12/31/14**
1163	**CORRECTIVE MEASURE STUDY/FEASIBILITY STUDY (CMS/FS) AND RISK ASSESSMENT**	**4734 days**	**Mon 12/16/02**	**Fri 12/25/20**	**Mon 12/16/02**	**NA**
1345	**STATEMENT OF BASIS**	**2979.6 days**	**Mon 1/4/10**	**Wed 5/26/21**	**Mon 1/4/10**	**NA**
1360	**RECORD OF DECISION**	**3081 days**	**Fri 12/18/09**	**Wed 9/29/21**	**Fri 12/18/09**	**NA**
1383	**Section 106 Programmatic Agreement (PA)**	**1858 days**	**Fri 10/10/08**	**Wed 11/18/15**	**Fri 10/10/08**	**NA**
1416	**EIR DOCUMENTATION**	**1449 days**	**Thu 9/1/05**	**Wed 3/2/11**	**Thu 9/1/05**	**Wed 3/2/11**
1489	**DESIGN, PERMITTING, AND CONSTRUCTION OF GROUNDWATER REMEDY**	**1889 days**	**Mon 1/31/11**	**Tue 4/24/18**	**Mon 1/31/11**	**Tue 4/24/18**
1490	**Corrective Measure Implementation/Remedial Design (CMI/RD) Workplan**	**199 days**	**Mon 1/31/11**	**Thu 11/3/11**	**Mon 1/31/11**	**Thu 11/3/11**
1504	**Remedial Design (Preliminary, Intermediate, and Pre-Final/Final)**	**1723 days**	**Tue 9/20/11**	**Tue 4/24/18**	**Tue 9/20/11**	**Tue 4/24/18**
1505	**Preliminary Design**	**174 days**	**Tue 9/20/11**	**Thu 5/17/12**	**Tue 9/20/11**	**Thu 5/17/12**
1517	**Intermediate Design**	**501 days**	**Fri 5/18/12**	**Fri 4/18/14**	**Fri 5/18/12**	**Fri 4/18/14**
1546	**Implementation Plan for Evaluation of Alternative Freshwater Sources**	**422 days**	**Fri 11/16/12**	**Mon 6/30/14**	**Fri 11/16/12**	**Mon 6/30/14**
1585	Field Verification of Archaeological/Historical Sites in Groundwater Remedy Footprint	4 days	Tue 9/9/14	Fri 9/12/14	Tue 9/9/14	Fri 9/12/14
1586	Prepare/submit Field Verification Report	28 days	Mon 9/15/14	Wed 10/22/14	Mon 9/15/14	Wed 10/22/14
1587	Survey of Archaelogical/Historical Sites in Expanded Area at Park Moabi	1 day	Tue 12/2/14	Tue 12/2/14	Tue 12/2/14	Tue 12/2/14
1588	Survey of Biological Resources in Expanded Area at Park Moabi	3 days	Wed 11/19/14	Fri 11/21/14	Wed 11/19/14	Fri 11/21/14
1589	Annual archeological monitoring and site condition assessments	7 days	Thu 12/11/14	Fri 12/19/14	Thu 12/11/14	Fri 12/19/14
1590	**Pre-Final/Final Design (include plan for decommissioning, removal, and restoration of IM3 facility)**	**423 days**	**Mon 4/7/14**	**Wed 11/18/15**	**Mon 4/7/14**	**Wed 11/18/15**
1639	**Construction/Remedial Action Work Plan**	**423 days**	**Mon 4/7/14**	**Wed 11/18/15**	**Mon 4/7/14**	**Wed 11/18/15**
1649	**State CEQA Evaluation**	**793 days**	**Mon 4/13/15**	**Tue 4/24/18**	**Mon 4/13/15**	**Tue 4/24/18**
1677	**Community Outreach**	**1710 days**	**Fri 10/7/11**	**Tue 4/24/18**	**Fri 10/7/11**	**Tue 4/24/18**
1687	Project Contracting	2.9 mons	Wed 4/4/18	Wed 6/27/18	Wed 4/4/18	NA
1688	**Construction (this is a preliminary construction schedule for planning purposes)**	**1370.6 days**	**Wed 6/27/18**	**Mon 9/25/23**	**Wed 6/27/18**	**NA**
1689	**Pre-Construction**	**68 days**	**Wed 6/27/18**	**Sun 9/30/18**	**Wed 6/27/18**	**Sun 9/30/18**



Project: PG&E Topock Remediation Project
Date: Fri 11/30/18

Tasks Not Started/In Progess
Tasks Finished
Baseline Schedule
Milestone
Overall Task Duration
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only

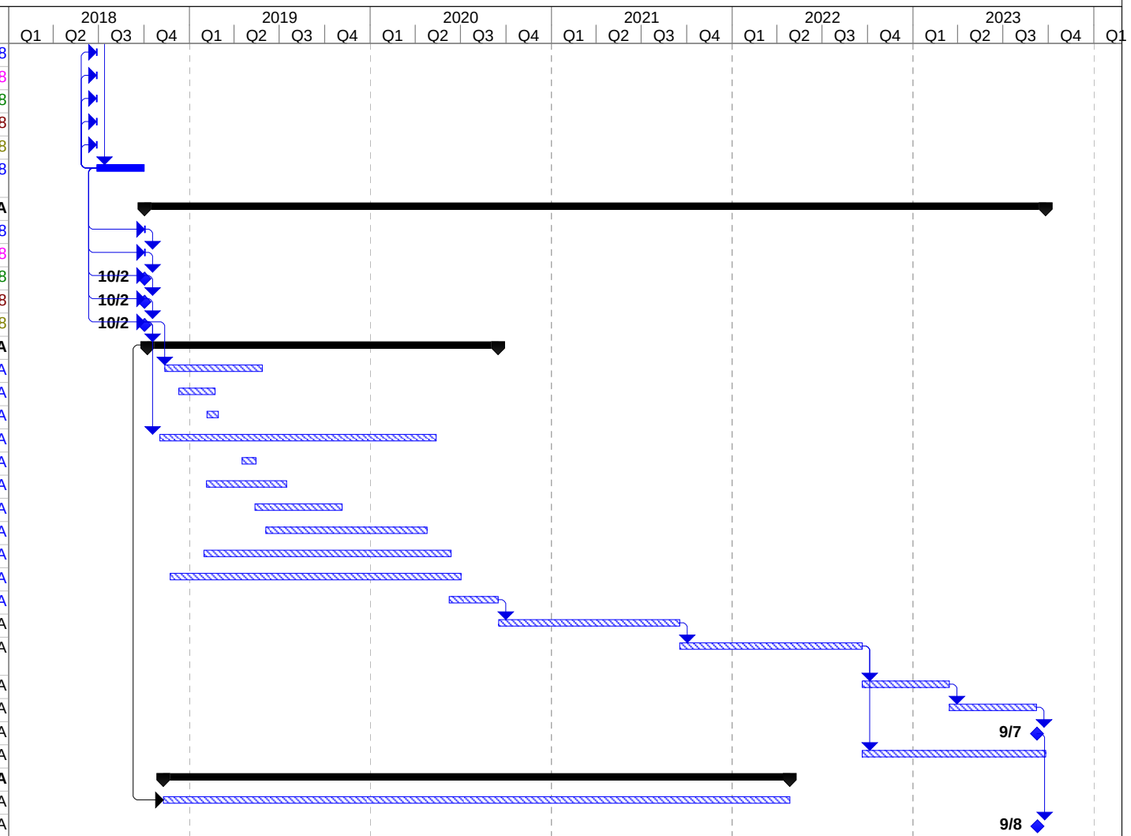
edays = calendar days; days = work days
Baseline Schedule is the 8/15/07 CWG Schedule (rev 1, 12/12/07).
*Timeframes shown are for planning purpose. Actual timeframes may vary.

Color Coding:
PG&E Federal Agencies CWG/TWG Public
DTSC Tribes/SHPO Other CA Agencies AZ Agencies

Major Assumptions
- Permits, CWG/ stakeholder review, and DTSC review & approvals are estimated.
- Actual dates may vary depending on field conditions.

HANDOUT 9A - TOPOCK REMEDIATION PROJECT SCHEDULE (REV. 39)
DECEMBER 5, 2018 CWG MEETING

ID	Task Name	Duration	Forecasted Start	Forecasted Finish	Actual Start	Actual Finish
1690	Stakeholder Attending Mobilization Kick-Off Meeting at Site	1 day	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18
1691	Stakeholder Attending Mobilization Kick-Off Meeting at Site	1 day	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18
1692	Stakeholder Attending Mobilization Kick-Off Meeting at Site	1 day	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18
1693	Stakeholder Attending Mobilization Kick-Off Meeting at Site	1 day	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18
1694	Stakeholder Attending Mobilization Kick-Off Meeting at Site	1 day	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18	Wed 6/27/18
1695	Mobilization (Setup temp construction trailers, construction water, construction signage, access routes,etc.)	95.38 edays	Wed 6/27/18	Sun 9/30/18	Wed 6/27/18	Sun 9/30/18
1696	**Construction and Start-up Activities**	**1301.6 days**	**Tue 10/2/18**	**Mon 9/25/23**	**Tue 10/2/18**	**NA**
1697	Stakeholder Attending Construction Kick-Off Meeting at Site	1 day	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18
1698	Stakeholder Attending Construction Kick-Off Meeting at Site	1 day	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18
1699	Stakeholder Attending Construction Kick-Off Meeting at Site	0 days	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18
1700	Stakeholder Attending Construction Kick-Off Meeting at Site	0 days	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18
1701	Stakeholder Attending Construction Kick-Off Meeting at Site	0 days	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18	Tue 10/2/18
1702	**Major Phase 1 Construction Activities**	**507 days**	**Mon 10/8/18**	**Tue 9/15/20**	**Mon 10/8/18**	**NA**
1703	Build Construction Headquarters	6.75 mons	Mon 11/12/18	Mon 5/27/19	Mon 11/12/18	NA
1704	Build Soil Processing Yard	2.6 mons	Mon 12/10/18	Thu 2/21/19	Mon 12/10/18	NA
1705	Install Remedy Storm Drain at Transwestern Bench	23 edays	Tue 2/5/19	Thu 2/28/19	NA	NA
1706	Install Pilot Borings, Monitoring Wells, and Remediation Wells	19 mons	Mon 10/8/18	Tue 5/12/20	Mon 10/8/18	NA
1707	Build IRZ Ring Road	28 edays	Wed 4/17/19	Wed 5/15/19	NA	NA
1708	Install Remedy Pipelines	5.5 mons	Mon 2/4/19	Mon 7/15/19	NA	NA
1709	Install Remedy Facilties at MW-20 Bench	6 mons	Mon 5/13/19	Mon 11/4/19	NA	NA
1710	Install Remedy Facilities at TCS and TCS Ponds	11.1 mons	Tue 6/4/19	Fri 4/24/20	NA	NA
1711	Install Electrical and Control System	17 mons	Wed 1/30/19	Thu 6/11/20	NA	NA
1712	Site Stabilization/Revegetation	20 mons	Fri 11/23/18	Wed 7/1/20	NA	NA
1713	System Integration and Functional Testing	99 edays	Mon 6/8/20	Tue 9/15/20	NA	NA
1714	Shut down IM and Start-up IRZ	12.5 mons	Wed 9/16/20	Thu 9/16/21	NA	NA
1715	Construct Phase 2 Components Construction (Freshwater Injection System, Inner Recirculation Loop, and TCS Recirculation Loop, Wells)	12.5 mons	Thu 9/16/21	Mon 9/19/22	NA	NA
1716	Commissioning and Start-up Freshwater Injection	6 mons	Tue 9/20/22	Tue 3/14/23	NA	NA
1717	Start-up Inner Recirculation/TCS Loop	6 mons	Wed 3/15/23	Wed 9/6/23	NA	NA
1718	Start-up Complete/Start Full Remedy Operations	0 days	Thu 9/7/23	Thu 9/7/23	NA	NA
1719	Construction Close-out	12.6 mons	Tue 9/20/22	Mon 9/25/23	NA	NA
1720	**Reporting**	**905 days**	**Fri 11/9/18**	**Tue 4/26/22**	**Fri 11/9/18**	**NA**
1721	Prepare/submit monthly construction progress reports	43.1 mons	Fri 11/9/18	Tue 4/26/22	Fri 11/9/18	NA
1722	Start Operation and Maintenance	0 days	Fri 9/8/23	Fri 9/8/23	NA	NA



Project: PG&E Topock Remediation Project
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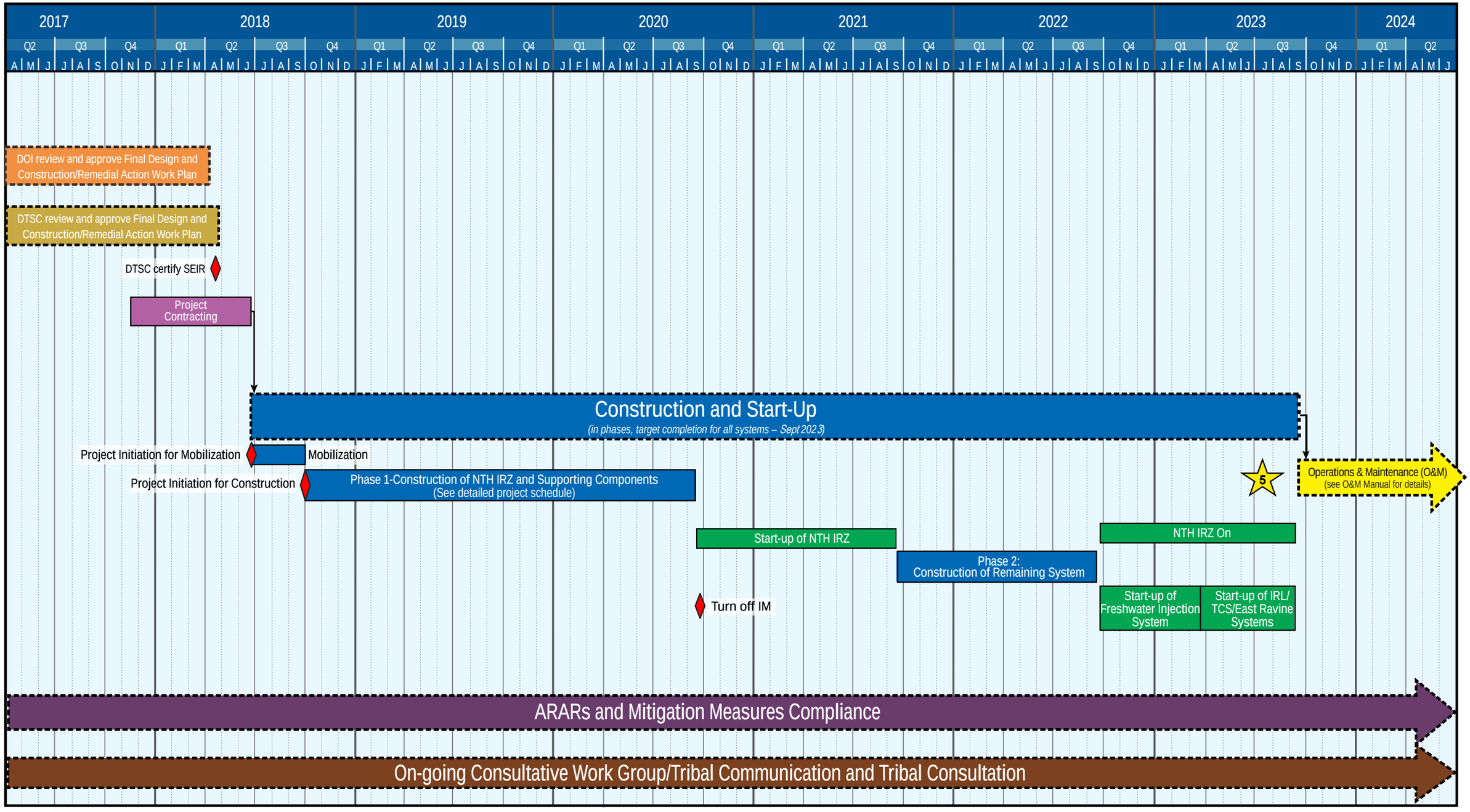
Major Assumptions
- Permits, CWG/ stakeholder review, and DTSC review & approvals are estimated.
- Actual dates may vary depending on field conditions.

Groundwater Remedy Construction, Start-up, and Initial O&M Schedule

PG&E Topock Compressor Station | Needles, California
December 2018



LEGEND

5 Agencies 5-year Review

Handout 9B
Schedule Highlights
Summary of Key Schedule Changes

Consultative Work Group Meeting

December 5, 2018

Schedule Highlights

Groundwater Remedy Construction

- Project Initiation – 10/2/18
- Phase 1 Construction – 10/2/18 to 9/15/20
  - Construction schedule is communicated via:
    - **Daily** list of construction activities
    - **Weekly** emails of 6-week look ahead
    - **Monthly** progress reports
- Turn off IM/IRZ Start-up – Forecast 9/16/20

Soil Risk Assessment

- Risk Assessment Report
  - ✓ Draft Report – submitted 9/10/18
  - ✓ Review and Comment
    - Tribes and Stakeholder Review: 9/11 – 12/10/18
    - Agencies Review: 9/11/18 – 1/7/19
    - Risk Assessment Walk-Thru via WebEx – 9/26/18
    - Comment Clarification Meeting – Week of 1/21/19 (tentative)
  - ✓ Response to Comments/Comment Resolution
    - Prepare/send RTC Table – 3/26/19 (to be verified after receipt of comments)
    - Comment Resolution Meeting – Mid April 2019 (tentative)
  - ✓ Final Report – tentative submittal June 2019

Soil RFI/RI Reporting (Volume 3)

- Soil RFI/RI Report
  - ✓ Draft Report - Tentative submittal June 2019
    - ✓ Tribes and Stakeholder Review: July - August 2019
    - ✓ Agencies Review: July - August 2019

Summary of Key Schedule Changes

Handout 9B

Summary of Key Schedule Changes since August 15, 2007 (Rev. 39)

December 5, 2018 changes highlighted in Yellow – changes are from May 16, 2018

Activities	Forecast Schedule Deviation	Key Reasons
Groundwater		
Construction (Lines 1688-1719)	**FF for completion of construction** • 6/18/2014 (Rev. 11) • 6/26/2014 (Rev. 12) • 8/18/2014 (Rev. 13) • 9/29/2014 (Rev. 14) • 2/26/2015 (Rev. 15) • 9/17/2015 (Rev. 16) • 12/4/2015 (Rev. 17) • 9/16/2016 (Rev. 18) • 10/17/2016 (Rev. 19) • 11/8/2016 (Rev. 20) • 1/10/2017 (Rev. 21) • 4/5/2017 (Rev. 22) • 4/13/2017 (Rev. 23) • 6/25/2018 (Rev. 24) • 7/30/2018 (Rev. 25) • 10/15/2018 (Rev. 26) • 12/18/2019 (Rev. 27) • 1/29/2020 (Rev. 28) • Phase 1 - 1/28/2019 (Rev. 29 and 30) • Phase 2 – 1/26/2021 (Rev. 29 and 30) • Phase 1 - 3/7/2019 (Rev. 31) • Phase 2 – 3/5/2021 (Rev. 31) • Phase 1 - 5/20/2019 (Rev. 32/ 33) • Phase 2 – 5/18/2021 (Rev. 32/ 33) • Phase 1 - 6/27/2019 (Rev. 34) • Phase 2 – 6/25/2021 (Rev. 34) • Phase 1 - 9/6/2019 (Rev. 35) • Phase 2 – 9/6/2021 (Rev. 35) • Phase 1 – 10/25/2019 (Rev. 36)	• Cascading extension of schedule from Preliminary (30%) Design. • Cascading extension of schedule from Intermediate (60%) Design Addendum. • Added high level details on construction activities at 60% design stage. • Cascading changes from Intermediate (60%) Design and 60% Design Addendum. • Cascading changes from the Freshwater Source Evaluation and Comment Resolution schedule. • Cascading changes from Pre-Final (90%) Design. • Updated the construction schedule per the September 8, 2014 Pre-Final (90%) Design Submittal. • Cascading changes from certification of Final SEIR and Agencies' approval of Final Design and C/RAWP. • Implementation of phased construction approach.

	• Phase 2 – 10/25/2021 (Rev. 36) • Phase 1 – 10/2/2020 (Rev. 37) • Phase 2 – 9/7/2022 (Rev. 37) • Phase 1 – 9/15/2020 (Rev. 38 & 39)	
Start-up (Lines 1714, 1716-1718)	**FF for completion of startup** • 12/14/2015 (Rev. 14) • 5/13/2016 (Rev. 15) • 12/2/2016 (Rev. 16) • 2/20/2017 (Rev. 17) • 11/23/2017 (Rev. 18) • 1/2/2018 (Rev. 19) • 1/24/2018 (Rev. 20) • 3/28/2018 (Rev. 21) • 6/21/2018 (Rev. 22) • 6/29/2018 (Rev. 23) • 9/10/2019 (Rev. 24) • 10/15/2019 (Rev. 25) • 12/31/2019 (Rev. 26) • 3/4/2021 (Rev. 27) • 4/15/2021 (Rev. 28) • NTH IRZ – 1/28/2020 (Rev. 29 and 30) • Remaining System – 1/31/2022 (Rev. 29 and 30) • NTH IRZ – 3/6/2020 (Rev. 31) • Remaining System – 3/10/2022 (Rev. 31) • NTH IRZ – 5/19/2020 (Rev. 32/33) • Remaining System – 5/23/2022 (Rev. 32/33) • NTH IRZ – 6/26/2020 (Rev. 34) • Remaining System – 6/30/2022 (Rev. 34) • NTH IRZ – 9/7/2020 (Rev. 35) • Remaining System – 9/9/2022 (Rev. 35) • NTH IRZ – 10/26/2020 (Rev. 36) • Remaining System – 10/28/2022 (Rev. 36) • NTH IRZ – 9/20/2020 (Rev. 37) • Remaining System – 8/25/2022 (Rev. 37) • NTH IRZ – 9/16/2020 (Rev. 38 & 39)	• Cascading extension of schedule from the above items. • Cascading changes from Intermediate (60%) Design and 60% Design Addendum. • Cascading changes from the Freshwater Source Evaluation schedule. • Cascading changes from Pre-Final (90%) Design. • Cascading changes from Construction line items. • Cascading changes from approval of Final Design and C/RAWP. • Implementation of phased construction approach.
Soil		

Soil Risk Assessment (Draft, RTCs, Final, Approvals) (Lines 979 – 998)	• FF 7/22/2015 (Rev. 16) • FF 6/7/2016 (Rev. 17) • FF 10/18/2016 (Rev. 18) • FF 5/16/2017 (Rev. 20) • FF 8/15/2017 (Rev. 22) • FF 8/14/2017 (Rev. 23) • FF 11/28/17 (Rev. 24) • FF 12/13/17 (Rev. 25) • FF 4/17/2018 (Rev. 26) • FF 5/15/2018 (Rev. 27) • FF 5/22/2017 (Rev. 28 and 29) • FF 6/5/2017 (Rev. 30) • FF 4/20/2018 (Rev. 32 and 33) • FF 6/8/2018 (Rev. 34) • FF 7/30/2018 (Rev. 35 and 36) • FF 3/15/2019 (Rev. 37 and 38) • FF 7/29/2019 (Rev. 39)	• Adjusted schedule to reflect current anticipated schedule for approval of Final Soil RFI/RI Work Plan, completion of Work Plan Implementation/Data Analysis, approval of RFI/RI Vol. 3 Reporting, and approval of the Risk Assessment Work Plan Addendum II. • Cascading changes from Soil Work Plan approval and implementation. • Accelerate Soil Risk Assessment Activities to overlap with Soil Investigation Activities. • Cascading changes from Soil Work Plan implementation/Data Gaps Analysis. • Adjusted schedule to reflect the preparation of a Data Summary for EPCs Calculation, and a RTC process in accordance with the October 29, 2012 letter from DTSC to Tribes, titled Response to Comments Process - PG&E Topock Compressor Station, Needles, California • Cascading changes from Work Plan Implementation/Data Gaps Evaluation. • Schedule reflects implementation of Soil RFI-RI-RA RTC protocol. • Schedule reflects additional time required for preparation of the Draft Soil Risk Assessment Report, and review/comment on the draft report.
RFI/RI Vol. 3 Reporting (Draft, RTCs, Final, Approvals) (Lines 999 – 1014)	• FF 7/8/2014 (Rev. 15) • FF 10/1/2014 (Rev. 16) • FF 8/18/2015 (Rev. 17) • FF 12/29/2015 (Rev. 18) • FF 7/26/2016 (Rev.20) • FF 10/25/2016 (Rev. 22) • FF 10/24/2016 (Rev. 23) • FF 2/7/2017 (Rev. 24) • FF 2/22/2017 (Rev. 25) • FF 6/27/2017 (Rev. 26) • FF 7/25/2017 (Rev. 27) • FF 2/16/2017 (Rev. 28 and 29) • FF 11/15/2017 (Rev. 30) • FF 10/29/2018 (Rev. 32 and 33) • FF 12/17/2018 (Rev. 34)	• Adjusted schedule to reflect current anticipated approval date and scope of the Final Soil RFI/RI Work Plan. • Cascading changes from Soil Work Plan approval and Soil EIR. • Cascading changes from Soil Work Plan approval and implementation. • Cascading changes from Soil Work Plan implementation/Data Gaps Analysis. • Adjusted schedule to incorporate results from the soil risk assessment into the RFI/RI Vol. 3 Report, and to reflect a RTC process in accordance with the October 29, 2012 letter from DTSC to Tribes, titled Response to Comments Process - PG&E Topock Compressor Station, Needles, California • Cascading changes from Work Plan Implementation/Data Gaps Evaluation. • Schedule reflects implementation of Soil RFI-RI-RA RTC protocol.

	• FF 2/7/2019 (Rev. 35 and 36) • FF 9/24/2019 (Rev. 37 and 38) • FF 2/7/2020 (Rev. 39)	• Cascading changes from Soil Risk Assessment.