



**Pacific Gas
and
Electric
Company**

Iain Baker
Chromium Remediation Manager

77 Beale Street, B28P
San Francisco, CA 94105
(415) 314-8530
ixbj@pge.com

June 30, 2022

Mr. Aaron Yue
Project Manager
California Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630

Subject: *First Quarter 2022 Well Performance Report, PG&E Topock Compressor Station, Needles, California (PGE20180115A)*

Dear Mr. Yue:

Enclosed is the First Quarter 2022 Well Performance Report for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station located in Needles, California (the Site). In December 2021, startup began for Phase 1 of the groundwater remedy system, including start of National Trails Highway in-situ reactive zone (IRZ) system operation, maintenance, and monitoring to address hexavalent chromium in groundwater. Startup (i.e., energization of the IRZ injection and extraction wells and initiation of the ethanol injection process) continued in First Quarter 2022 (January through March 2022).

In accordance with the reporting requirements outlined in the Basis of Design Report/Final (100%) Design Submittal, this well performance report presents an overview of the groundwater remedy and well maintenance objectives; a summary of First Quarter 2022 well operations, maintenance, and performance monitoring activities; and recommendations and planned activities for the next reporting period.

Please contact me at (415) 314-8530 if you have any questions about the quarterly well performance report.

Sincerely,

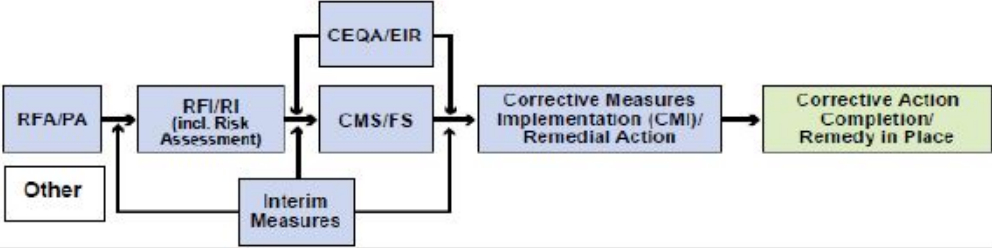
A handwritten signature in black ink, appearing to read 'Iain Baker', is located below the 'Sincerely,' text.

Iain Baker
Chromium Remediation Manager

Cc: Chris Guerre/DTSC
Pam Innis/DOI
Veronica Dickerson/DOI
Ken Foster/CA-SLC
Bruce Campbell/AZ-SLD

Topock Project Executive Abstract

Document Title:	First Quarter 2022 Well Performance Report, PG&E Topock Compressor Station, Needles CA
Submitting Agency:	DTSC and DOI
Final Document?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Date of Document:	June 30, 2022
Who created this document?: (i.e. PG&E, DTSC, DOI, Other)	PG&E
Priority Status:	<input type="checkbox"/> HIGH <input type="checkbox"/> MED <input checked="" type="checkbox"/> LOW
Is this time critical?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Type of Document:	<input type="checkbox"/> Draft <input checked="" type="checkbox"/> Report <input type="checkbox"/> Letter <input type="checkbox"/> Memo <input type="checkbox"/> Other / Explain:
Action Required:	<input checked="" type="checkbox"/> Information Only <input type="checkbox"/> Review & Comment Return to: _____ By Date: _____ <input type="checkbox"/> Other / Explain:
What does this information pertain to?	<input type="checkbox"/> Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA) <input type="checkbox"/> RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment) <input type="checkbox"/> Corrective Measures Study (CMS)/Feasibility Study (FS) <input checked="" type="checkbox"/> Corrective Measures Implementation (CMI)/Remedial Action <input type="checkbox"/> California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR) <input type="checkbox"/> Interim Measures <input type="checkbox"/> Other / Explain:
Is this a regulatory requirement?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, why is the document needed?
What is the consequence of NOT doing this item? What is the consequence of DOING this item?	Submittal of this report is a compliance requirement under DTSC and DOI requirements.
Other Justification/s:	<input type="checkbox"/> Permit <input type="checkbox"/> Other / Explain:
Brief Summary of Attached Document:	<p>In December 2021, startup began for Phase 1 of the groundwater remedy system, including start of National Trails Highway in-situ reactive zone (IRZ) system operation, maintenance, and monitoring to address hexavalent chromium in groundwater. Startup (i.e., energization of the IRZ injection and extraction wells and initiation of the ethanol injection process) continued in First Quarter 2022 (January through March 2022). In accordance with the reporting requirements outlined in the Basis of Design Report/Final (100%) Design Submittal, this well performance report presents an overview of the groundwater remedy and well maintenance objectives; a summary of First Quarter 2022 well operations, maintenance, and performance monitoring activities; and recommendations and planned activities for the next reporting period.</p> <p>Written by: PG&E</p>
Recommendations:	None.
How is this information related to the Final Remedy or Regulatory Requirements?:	This report is required by DTSC and DOI as part of the Basis of Design Report/Final (100%) Design Submittal for the Final Groundwater Remedy.

Other requirements of this information?:	None.
Related Reports and Documents:	<p>Click any boxes in the Regulatory Road Map (below) to be linked to the Documents Library on the DTSC Topock Web Site (www.dtsc-topock.com).</p>  <pre> graph LR RFA[RFA/PA] --> RFI[RFI/RI (incl. Risk Assessment)] Other[Other] --> RFI RFI --> CEQA[CEQA/EIR] RFI --> CMS[CMS/FS] CEQA --> CMS CMS --> CMI[Corrective Measures Implementation (CMI)/ Remedial Action] CMI --> CAP[Corrective Action Completion/ Remedy in Place] IM[Interim Measures] --> RFI </pre> <p>Legend RFA/PA – RCRA Facility Assessment/Preliminary Assessment RFI/RI – RCRA Facility Investigation/CERCLA Remedial Investigation (including Risk Assessment) CMS/FS – RCRA Corrective Measure Study/CERCLA Feasibility Study CEQA/EIR – California Environmental Quality Act/Environmental Impact Report</p>

Pacific Gas and Electric Company

First Quarter 2022 Well Performance Report

**Topock Compressor Station
Needles, California**

June 30, 2022

First Quarter 2022 Well Performance Report

Topock Compressor Station

Needles, California

June 30, 2022

Prepared By:

Arcadis U.S., Inc.
100 Montgomery Street
Suite 300
San Francisco
California 94104
Phone: 415 374 2744
Fax: 415 374 2745

Our Ref:

30121866



Kimberly Wojcik
Arcadis Report Lead



Margaret Gentile, PhD, PE No. 77488
Principal Engineer



Treck Hohman
Arcadis Project Manager

Contents

Acronyms and Abbreviations..... iv

1 Introduction 1

2 Well Maintenance Program..... 2

 2.1 Routine Maintenance..... 2

 2.2 Long-Term Performance Tracking 2

 2.2.1 Well Capacity Monitoring 3

 2.2.2 Water Quality Monitoring 4

3 NTH IRZ Well Performance 5

 3.1 System Operation Summary 5

 3.2 NTH IRZ Extraction Well Performance 6

 3.2.1 Extraction Well O&M and Specific Capacity Summary 6

 3.2.2 Extraction Well Water Quality 7

 3.3 NTH IRZ Injection Well Performance 8

 3.3.1 Injection Well O&M and Specific Capacity Summary 8

 3.3.2 Injection Well Water Quality 9

4 Monitoring Well Performance..... 10

5 Recommendations and Planned Activities for Next Reporting Period 12

6 References 13

Exhibits (in text)

- Exhibit 2.1. Routine Maintenance Matrix for Injection and Extraction Wells
- Exhibit 2.2. Performance Monitoring Frequencies
- Exhibit 3.1. First Quarter 2022 NTH IRZ Extraction Well Analytical Results

Tables

- Table 3.1. Summary of NTH IRZ Well Operations
- Table 3.2. NTH IRZ System Operations and Non-Routine Maintenance Log
- Table 3.3. Summary of NTH IRZ Well Specific Capacities

Table 3.4. NTH IRZ Baseline Sampling Results

Table 3.5. First Quarter 2022 Field Parameters

Table 4.1. Monitoring Well Inspection Results

Table 4.2. Monitoring Well Water Levels and Specific Capacities

Figures

Figure 1.1. Partial Remedy System Layout

Figure 3.1. Extraction Well Specific Capacity Trends

Figure 3.2. Injection Well Specific Capacity Trends

Figure 4.1. Monitoring Well Network

Acronyms and Abbreviations

Agencies	U.S. Department of the Interior and the California Department of Toxic Substances Control
CH2M Hill	CH2M Hill, Inc.
DOI	U.S. Department of the Interior
DTSC	California Department of Toxic Substances Control
Final BOD	Basis of Design Report/Final (100%) Design Submittal and Construction/Remedial Action Work Plan for the Final Groundwater Remedy
IRZ	in-situ reactive zone
mg/L	milligram per liter
NTH	National Trails Highway
O&M	operation and maintenance
PG&E	Pacific Gas and Electric Company
SCADA	supervisor data control and acquisition
Site	PG&E Topock Compressor Station, located in eastern San Bernardino County, 15 miles southeast of the City of Needles, California
TCS	Topock Compressor Station

1 Introduction

Pacific Gas and Electric Company (PG&E) is implementing a final groundwater remedy to address hexavalent chromium in groundwater near the PG&E Topock Compressor Station (TCS), located in eastern San Bernardino County, 15 miles southeast of the City of Needles, California (the Site). PG&E is implementing the groundwater remedy at the TCS in conformance with the requirements of the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act. The U.S. Department of the Interior (DOI) and the California Department of Toxic Substances Control (DTSC), collectively known as the Agencies, executed a Memorandum of Understanding on November 22, 2011 establishing coordination guidelines for overseeing implementation of a groundwater response action at the TCS (DTSC and DOI 2011). In a coordinated effort, the DOI and DTSC selected the final groundwater remedy to address chromium in groundwater, which is presented in the Record of Decision (DOI 2010).

In November 2015, PG&E submitted a Basis of Design Report/Final (100%) Design Submittal and Construction/Remedial Action Work Plan for the Final Groundwater Remedy (Final BOD), which presents the final design basis, design criteria, drawings, specifications, and operation and maintenance (O&M) requirements for the groundwater remedy (CH2M Hill, Inc. [CH2M Hill] 2015a). The infrastructure for the groundwater remedy is being constructed following the plans and procedures within the Construction/Remedial Action Work Plan (CH2M Hill 2015b). Construction and startup of the groundwater remedy is proceeding in phases.

Construction of Phase 1 began in October 2018 and was completed in December 2021 sufficient for initial system startup. The design was modified during construction to accommodate conditions encountered, including a plume footprint smaller than documented in the Final BOD (CH2M Hill 2015a). As a result, the National Trails Highway (NTH) in-situ reactive zone (IRZ) system was installed with 10 fewer wells than planned in the Final BOD, with these 10 wells being deferred from Phase 1 to Phase 2 of construction. The Phase 1 layout is shown on Figure 1.1.

In December 2021, startup began for Phase 1 of the groundwater remedy system, including the start of NTH IRZ system operation, maintenance, and monitoring. O&M activities are being performed in accordance with the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a).

This report presents well maintenance activities and well performance and covers the period from January 1 to March 31, 2022, the First Quarter 2022. The remainder of this report is organized into the following sections:

- Section 2 provides an overview of the well maintenance program.
- Section 3 summarizes the well performance and maintenance for the NTH IRZ remedial wells.
- Section 4 summarizes monitoring well performance.
- Section 5 provides recommendations for modifications to the well maintenance program and planned activities for the next reporting period.
- Section 6 provides the references for the documents cited throughout this report.

2 Well Maintenance Program

The well maintenance program consists of routine maintenance and performance tracking, including tracking well performance over time and collecting analytical data, and conducting well inspections to evaluate well integrity over time. This section summarizes these activities.

2.1 Routine Maintenance

Well maintenance is incorporated into the routine operations of the NTZ IRZ. Exhibit 2.1 in this section summarizes the initially-planned maintenance for NTH IRZ wells. Injection wells are prone to fouling as the injection of organic carbon stimulates the growth of bacteria, generation of gases such as carbon dioxide, and formation of mineral precipitates. To mitigate fouling due to these processes, routine maintenance plans include backwashing and mechanical and chemical rehabilitation. Injection well backwashing is executed by extraction for a short period using a downhole pump to loosen and remove sediments and deposits present on the well screen or in the filter pack. Backwashing of injection wells is initially planned to occur weekly. Mechanical rehabilitation methods are used to physically agitate and remove dislodged and detached deposits. Chemical rehabilitation uses additives to remove deposits, for example through dissolution or by increasing solubility. Mechanical and chemical rehabilitation are planned after well operation for 6 months to 1.5 years. The frequencies of injection well rehabilitation that are initially planned are presented in Exhibit 2.1 in this section but may be increased in frequency or manner of application in response to well performance monitoring data as detailed in Section 2.2. Extraction wells are less prone to fouling and as such routine rehabilitation is not planned. The O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a) recommended mechanical rehabilitation (i.e., pumping and surging) for routine maintenance as needed. Chemical rehabilitation may be warranted in some cases.

Exhibit 2.1 Routine Maintenance Matrix for Injection and Extraction Wells

Injection Well Backwashing Frequency	Injection Well Chemical/Mechanical Rehabilitation Frequency	Extraction Well Mechanical Rehabilitation Frequency
Weekly	6 months to 1.5 years	As needed

2.2 Long-Term Performance Tracking

The purpose of well performance tracking is to assess the frequency and methods required for well maintenance, report well performance trends, and identify potential performance declines within the IRZ system and monitoring wells. Routine preventative maintenance activities are performed regularly to aid in maintaining well health as described in Section 2.1. Long-term performance monitoring consists of well capacity monitoring, water quality monitoring, and wellhead inspection. Exhibit 2.2 in this section presents the planned frequency of these activities, and well capacity and water quality monitoring are detailed in the following subsections.

Exhibit 2.2. Performance Monitoring Frequencies

Performance Monitoring Activity	Injection Wells	Extraction Wells
Well capacity evaluation	Monthly	Monthly
Water quality monitoring	Baseline, then as needed	Baseline, as well as the following: Monthly total organic carbon, manganese, iron, and field parameter screening in First Quarter 2022, then quarterly for remainder of 2022, then semiannually in 2023, then annually or as needed thereafter. Annual or as needed biological and geochemical sampling. Annual or as needed biological activity tests, sand content tests, and modified fouling index tests.
Wellhead inspection	Quarterly	Quarterly

Notes:

1. Field parameter screening includes temperature, pH, specific conductance, turbidity, dissolved oxygen, and oxidation reduction potential.
2. Biological and geochemical sampling parameters for extraction wells include total organic carbon, total dissolved solids, iron and manganese (total and dissolved), calcium, potassium, magnesium, sodium (total), chloride, fluoride, bromide, nitrate, nitrite, sulfate, alkalinity (total, carbonate, and bicarbonate), and hardness as calcium carbonate. Parameters measured during baseline only include Title 22 metals (total and dissolved), sulfide, phosphate, total phosphorus, silica, ammonia as nitrogen, total Kjeldahl nitrogen, and biochemical oxygen demand.

2.2.1 Well Capacity Monitoring

One measure that will be used in the assessment of well performance is a well capacity evaluation. The specific capacity for each extraction, injection, and monitoring well is determined by the rate of extraction or injection per unit of drawdown or draw up in the well. Mathematically, this is calculated using the following equation:

$$\text{Specific Capacity} \left(\frac{\text{gpm}}{\text{ft}} \right) = \frac{\text{discharge rate (gpm)}}{\text{pumping water level (ft)} - \text{static water level (ft)}}$$

A baseline specific capacity will be determined for each extraction and injection well once the wells have been operating consistently and the flowrates and water levels stabilize. Continuous operation did not begin until February 28, 2022 in the First Quarter; therefore, sufficient data are not available to establish a baseline in this

report. The collection of data during consistent operation is expected to occur in Second Quarter 2022, after which baseline specific capacity will be established.

Once a baseline specific capacity is determined for each well, specific capacities will be calculated monthly and compared to the baseline values to assess well performance decline over time. Well capacity that falls below 80 to 90% of the baseline capacity will be flagged as needing evaluation and potential additional maintenance activities, such as increasing the frequency of backwashing or rehabilitation. Well capacity data collected during periodic operations in First Quarter 2022 are presented in Section 3.

2.2.2 Water Quality Monitoring

Water quality monitoring, including field parameter collection and sampling, provides information on system status, which may help diagnose well clogging issues and provide information for designing corrective measures. Baseline water quality sampling included biological, geochemical, and field parameters as specified in Exhibits 4.1-1 and 4.1-2 of the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a). Additionally, extraction wells are sampled monthly, when operating, during the first quarter as stated in the O&M Manual (Appendix L, Volumes 1 and 2; CH2M Hill 2015a) for extraction of constituents associated with in-situ injections, including total organic carbon and dissolved metals. Samples were collected and analyzed according to standard operating procedures presented in Appendix B to the Phase 1 Interim Monitoring Plan (Arcadis U.S., Inc. [Arcadis] 2021), and the PG&E Program Quality Assurance Project Plan (CH2M Hill 2014; Critigen 2020).

3 NTH IRZ Well Performance

The NTH IRZ is a recirculation system in which water is extracted from up to four NTH IRZ extraction wells, amended with carbon substrate, and injected into up to 25 NTH IRZ injection wells. The NTH IRZ extraction and injection wells include the following:

- Extraction wells include IRZ-9, IRZ-13 (upper), IRZ-13 (lower), and IRZ-23.
- Injection wells include IRZ-15 (upper), IRZ-15 (lower), IRZ-16 (upper), IRZ-16 (lower), IRZ-17 (upper), IRZ-17 (lower), IRZ-18 (upper), IRZ-18 (lower), IRZ-20 (upper), IRZ-20 (lower), IRZ-21 (upper), IRZ-21 (lower), IRZ-25 (upper/upper middle), IRZ-25 (lower), IRZ-27 (upper/upper middle), IRZ-27 (lower), IRZ-29 (upper), IRZ-29 (lower), IRZ-31 (upper), IRZ-31 (lower), IRZ-33 (upper), IRZ-33 (lower), IRZ-35, IRZ-37, and IRZ-39.

A site layout, including locations of the extraction wells, remedy-produced water conditioning system, and carbon amendment system, is shown on Figure 1.1.

3.1 System Operation Summary

The following summary of system operation was provided in the First Quarter 2022 Quarterly Progress Report (Arcadis 2022) and is repeated here for ease of reference. Startup of Phase 1 of the groundwater remedy, including the line of remedial wells along the NTH, associated conveyance lines, and the treatment system compound for carbon amendment, began in December 2021 and continued in January 2022. During First Quarter 2022, operation can be divided into three periods of time, depending on system operation status, as summarized in this section. The periods are part ongoing startup of the Phase 1 system and transition from a generator to a permanent power supply. A summary of NTH IRZ well operations, including runtime, recirculated groundwater volumes and flowrates is summarized in Table 3.1. An IRZ system operations and non-routine maintenance log is provided as Table 3.2.

1. Partial system operation occurred during working hours Monday through Friday using generator power, pending power supply from the TCS. During this period, the generator was only operated for either the wells plumbed into the northern forcemain (IRZ-21 and north), or the wells tied into the southern forcemain (IRZ-23 and south). Operations for this initial period (from December 2021 through early February 2022) are as follows:
 - December 2021: Startup and initial operation of the northern IRZ injection wells began in December 2021. This included operation of extraction well IRZ-23 and injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, and IRZ-27.
 - January 17, 2022: Startup and initial operation of extraction well IRZ-9 began on January 17, 2022.
 - January 26, 2022 through January 30, 2022: All extraction and injection wells were shut down to test system energization using TCS station power. The testing tripped circuit breakers that required additional troubleshooting and prevented the system from transitioning to TCS power. IRZ system operation resumed on January 31, 2022 using generators.
 - January 31, 2022: Operation of the northern set of wells ended, and startup and initial operation of the southern IRZ injection wells began. This operation included extraction well IRZ-23 and injection wells IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.
 - February 9, 2022: Functional testing and startup and initial operation of injection well IRZ-39 began.

2. The NTH IRZ system was in full and continuous operation using generator power.
 - February 22, 2022: All injection and extraction wells were shut down to transition to a larger, centralized generator for full-time operation. The generator was approved to operate overnight, allowing for 24-hour operation. System operation resumed using the larger generator on February 28, 2022. Wells operating included extraction well IRZ-23 and injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, and IRZ-27. The remaining southern IRZ wells remained offline pending the commissioning of the final transformer needed for operation.
 - March 10, 2022: The additional transformer was approved for operation. Extraction wells IRZ-9 and IRZ-13 and injection wells IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, and IRZ-39 were brought online.
3. The NTH IRZ system was in full and continuous operation using TCS power.
 - March 22, 2022: All injection and extraction wells were shut down to test system energization using TCS station power.
 - March 24, 2022: The transfer to TCS station power was successful, and continuous full Phase 1 system operation on TCS power began. Injection wells IRZ-15, IRZ-21, and IRZ-25 remained offline due to their proximity to an extraction well; and extraction well IRZ-9 remained offline for flow balancing of the wells in operation.
 - March 29, 2022: Stormwater flooding caused all wells to shut down. All well vaults were inspected for equipment functionality.
 - March 30, 2022: Partial system operation resumed while inspections of remaining IRZ well equipment continued. Wells operating include extraction well IRZ-23 and injection wells IRZ-16, IRZ-17, and IRZ-20.

3.2 NTH IRZ Extraction Well Performance

Extraction wells in Phase 1 of the groundwater remedy include IRZ-9, IRZ-13 (upper), IRZ-13 (lower), and IRZ-23. Extraction well runtime, including monthly average extraction well flowrates and average water levels, is documented in Table 3.1. A discussion of observed extraction well performance in First Quarter 2022 is provided in the following subsections.

3.2.1 Extraction Well O&M and Specific Capacity Summary

Extraction well IRZ-23 began operating on December 22, 2021 and operated during daytime hours on workdays using generator power until February 28, 2022, when operation began 24-hours per day. Extraction well IRZ-9 began operating on January 17, 2022. Extraction well IRZ-9 operated when needed in January to balance injection rates, and IRZ-9 operating time for this well was approximately 9% in January. Extraction well IRZ-9 remained offline in February and operated on March 10, 2022 but was subsequently shut down again to balance injection rates. Extraction wells IRZ-13 (upper) and IRZ-13 (lower) began operating on March 10, 2022.

Routine operation activities for extraction wells include daily monitoring of extraction and injection well flowrates and specific capacities using the supervisor data control and acquisition (SCADA) system. Extraction well specific capacities measured during First Quarter 2022 are documented in Table 3.3. Extraction well IRZ-23 was operated 24 hours a day at relatively consistent rates for most of the period from February 28 to March 28, 2022, while extraction wells IRZ-13 (upper) and IRZ-13 (lower) operated 24 hours a day at relatively consistent rates for most of the period from March 10 to 28, 2022. Data collected from the SCADA system for extraction wells IRZ-23 and

IRZ-13 (upper) from this period allow for an evaluation of specific capacity baseline stabilization. The SCADA system did not properly collect data from extraction well IRZ-13D during this period; however, this issue was corrected and continuous data are being collected in Second Quarter 2022. Graphs of average daily specific capacity for extraction wells IRZ-13D and IRZ-23 during this period are presented on Figure 3.1. Specific capacity was increasing over this period in extraction well IRZ-23, indicating the well was stabilizing. Extraction well IRZ-13 (upper) had relatively stable specific capacity from March 10 to 22, 2022, and then increased as the extraction rate increased from approximately 25 to 40 gallons per minute. These data indicate that additional continuous operation and data collection is needed to establish baseline specific capacity that can be used to trace well performance decline and guide maintenance activities. Additional data evaluation and establishment of baseline is anticipated to occur in Second Quarter 2022. Extraction well IRZ-9 was not evaluated given the short duration of continuous operation after 24-hour-per-day operations of the majority of wells began on March 10, 2022.

In accordance with the Final BOD (CH2M Hill 2015a), routine maintenance of extraction wells could include pump and surge redevelopment as needed. No routine maintenance was performed on the extraction wells in First Quarter 2022.

Extraction wells are inspected quarterly at minimum for visible leaks and damage. Any notable damage or equipment needing replacement is listed in Table 3.2. Leak detection switches within the vaults are also used as an additional measure to identify maintenance needs in a timely manner. Notable damage to extraction wells and/or non-routine maintenance during First Quarter 2022 included the following:

- On March 29, 2022, all wells were shut down due to flooding from stormwater. Staff onsite inspected vaults and panels for damage/functionality. Wells that were determined to be functional were brought back online on March 30, 2022, and repairs and procurement began where needed for equipment that was not functional. Stormwater was pumped out of the vaults for extraction wells IRZ-9 and IRZ-13 on March 30, 2022 and all extraction wells (IRZ-9, IRZ-13, IRZ-23) were determined to be functional with no further repairs needed.

3.2.2 Extraction Well Water Quality

The potential for well fouling at IRZ extraction wells as the result of carbon injection is monitored during system operations. This monitoring includes measuring total organic carbon and metal byproducts for conditions that may generate well fouling. The First Quarter 2022 Quarterly Progress Report (Arcadis 2022) provides the extraction well monitoring analytical results; however, the results are also summarized and discussed herein.

Table 3.4 provides the baseline analytical results from extraction wells IRZ-9, IRZ-23, IRZ-13 (upper), and IRZ-13 (lower). Baseline analytical data were collected during December 2021, January 2022, and March 2022 when extraction wells were brought online. Baseline analytical data were collected for each extraction well once all equipment for the well was installed and available for operation. Future analytical results will be compared to the baseline results to evaluate changing conditions over time.

Exhibit 3.1 in this section includes the monthly analytical results for extraction wells operating during the given month. Extraction well IRZ-23 was actively operated approximately 20 to 83% of the time each month; thus far, there is no evidence of increasing total organic carbon or metal byproducts concentrations at this extraction well. Extraction wells IRZ-13 (upper) and IRZ-13 (lower) were not operated in January or February 2022 and were minimally operated in March 2022, and extraction well IRZ-9 was minimally operated in January and March 2022. The First Quarter 2022 analytical results from extraction wells IRZ-9, IRZ-13 (upper), and IRZ-13 (lower) represent baseline conditions, which will be used to evaluate changing conditions over time.

Exhibit 3.1. First Quarter 2022 NTH IRZ Extraction Well Analytical Results

Extraction Well	Sample Date	Active Time Operating (%)	Total Organic Carbon (mg/L)	Total Iron (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
IRZ-9	Baseline: January 2022	9	Less than 1	Less than 0.02	Less than 0.02	0.0027
IRZ-9	March 2022	Less than 1	Less than 1	0.081	0.022	0.0016
IRZ-23	Baseline: December 2021	8	Less than 10	0.69	0.091 J	Less than 0.0005
IRZ-23	January 2022	20	Less than 1	0.13	Less than 0.02	Less than 0.0005
IRZ-23	February 2022	23	Less than 20	Less than 0.02	Less than 0.02	Less than 0.0005
IRZ-23	March 2022	83	Less than 1	0.11	Less than 0.02	Less than 0.0005
IRZ-13S	Baseline: March 2022	53	Less than 1	0.06	Less than 0.02	Less than 0.0005
IRZ-13D	Baseline: March 2022	53	Less than 50	Less than 0.02	0.059	0.062

Note:

mg/L = milligram per liter

Table 3.5 includes field parameter data for extraction wells IRZ-9 and IRZ-23 collected during January and February 2022. Field parameter data collected includes temperature, pH, specific conductance, turbidity, dissolved oxygen, and redox potential. Field parameters will be collected on a quarterly basis for the remainder of 2022.

3.3 NTH IRZ Injection Well Performance

Injection wells of the Phase 1 groundwater remedy include IRZ-15, IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-21, IRZ-25, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, and IRZ-39. Injection well runtime, including average well flowrates and average water levels, is documented in Table 3.1. A discussion of observed injection well performance in First Quarter 2022 is provided in the following subsections.

3.3.1 Injection Well O&M and Specific Capacity Summary

Injection wells IRZ-15, IRZ-21, and IRZ-25 remained offline for the duration of First Quarter 2022. The remaining injection wells began operating during December 2021 or during First Quarter 2022 and operated at varying times throughout the first quarter. Initial startup and operating periods of each injection well are provided in Table 3.2.

Routine operation activities for injection wells include daily monitoring of injection well flowrates and specific capacities. Injection well specific capacities measured during First Quarter 2022 are documented in Table 3.3. Injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20 and IRZ-27 operated continuously from February 28 to March 28, 2022; while IRZ-31, IRZ-33, IRZ-35, and IRZ-37 operated continuously from March 10 to 28, 2022. Average daily specific capacity from this period is plotted on Figure 3.2. and allows for an evaluation of specific capacity baseline stabilization. The graphs on Figure 3.2 show that specific capacity was just starting to stabilize before the storm and system shutdown on March 28, 2022. These data indicate that additional continuous operation and data collection is needed to establish baseline specific capacity that can be used to trace well performance

decline and guide maintenance activities. Additional data evaluation and establishment of baseline is anticipated in Second Quarter 2022.

Routine injection well maintenance during First Quarter 2022 included generally weekly backwashing of injection wells during system operation, as detailed in Table 3.2. Backwashing of the IRZ injection wells and processing of the backwash water was initiated on January 5, 2022 and continued weekly during operation thereafter. Each operating injection well was backwashed to remove solids that may have accumulated in the well screen and gravel pack during injections.

Mechanical and chemical rehabilitation were not performed in First Quarter 2022, consistent with the planned frequency of 6 months to 1.5 years.

Injection wells are inspected quarterly at minimum to inspect for visible leaks and damage. Any notable damage or equipment needing replacement is listed in Table 3.2. Leak detection switches within the vaults are also used as an additional measure to identify maintenance needs in a timely manner. Notable damage to injection wells and/or non-routine maintenance during First Quarter 2022 included the following:

- On March 29, 2022, all wells were shut down due to flooding from stormwater. Staff onsite inspected vaults and panels for damage/functionality. Wells that were determined to be functional were brought back online on March 30, 2022, and repairs and procurement began where needed for equipment that was not functional.

3.3.2 Injection Well Water Quality

The potential for well fouling at IRZ injection wells as the result of carbon injection is monitored during system operation. Table 3.4 shows the baseline analytical results for each injection well. Baseline analytical data were collected during December 2021 and January 2022. Future analytical results will be collected as needed and compared to the baseline results to evaluate changing conditions over time and identify wells requiring maintenance.

4 Monitoring Well Performance

Monitoring wells are inspected to determine whether monitoring well maintenance, including wellhead repair or well screen redevelopment, is needed. Monitoring well inspections include assessment of the following parameters:

- Wellhead condition is assessed to determine if well protection features, including the well seal, well vault/protective casing, and concrete pad, are in place and functioning as designed.
- Turbidity is used as an indicator that the monitoring well screen and filter pack are intact and functioning.
- Depth to bottom of the well is used as an indicator of infill (siltation).
- Specific capacity evaluation is used to confirm consistency with sampling standard operating procedures.

This section provides a summary of each of these parameters. The locations of the monitoring wells inspected are shown on Figure 4.1.

Wellhead condition. Wellheads are inspected routinely during sampling and observations are documented in the field tablet. The inspection results are presented in Table 4.1 and the issues that need to be addressed, such as missing bolts, are listed. Overall, the wells were in good condition in First Quarter 2022. The minor issues identified will be addressed during a future sampling event.

A storm/flooding event occurred the evening of March 28th, 2022. Over one inch of rain fell at the site resulting in some of the well access paths being partially washed out. The condition of the monitoring wells was inspected shortly afterwards during the April sampling event conducted during the week of April 11th. The majority of the monitoring wells showed no evidence of damage or impacts due to flooding. A few wells were observed to have adverse effects from the storm and corrective actions were taken. Details will be documented in the forthcoming Second Quarter report.

Turbidity. Turbidity data are presented in Table 3.5. In accordance with Section 4.2.4 of the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a), wells that yield turbidity above the consistently measured range of 20 to 30 nephelometric units will undergo additional evaluation to determine if redevelopment is warranted, potentially including evaluation of prior purge data, specific capacity, and longer-term pressure transducer data. Wells in this category included MW-22, MW-31-135, MW-32-020, MW-39-060, MW-43-025, MW-77-046, MW-78-070, MW-78-142, MW-96-045, and MW-97-042. Evaluation of purging data (discussed under Specific Capacity) and transducer data (with the exception of MW-32-020, MW-78-142, and MW-78-070, which are not outfitted with transducers) to confirm ongoing seasonal variation indicated these wells are still in hydraulic communication with the aquifer. Accordingly, redevelopment is not planned at this time.

Depth to well bottom. The data collection process for collecting depth to bottom is being refined will be presented in the Second Quarter 2022 Well Performance report. These data will be compared to the as-constructed well depth and bottom of the screened interval to assess siltation.

Specific capacity. Purging data, including purge rate, drawdown and calculated specific capacity, are presented in Table 4.2. Purging is conducted between 100 and 500 milliliters per minute, and drawdown at these rates typically ranges from a few hundredths to a few tenths of a foot. If drawdown of greater than 1 foot is observed, the well will be flagged for further evaluation to determine if it needs rehabilitation. No wells were identified for potential rehabilitation in First Quarter 2022 based on this criterion, with the exception of MW-21. At monitoring well MW-21, more than 6 feet of drawdown was recorded during the February 2022 sampling event, but less than 1 foot of drawdown was recorded during the next sampling even in March 2022, indicating this well does not need

to be redeveloped. Additionally, well depths to bottom are documented to assess integrity of the well screen and casing.

5 Recommendations and Planned Activities for Next Reporting Period

Phase 1 groundwater remedy operations and the Phase 1 monitoring program will continue to be performed in Second Quarter 2022 (April to June 2022) in accordance with the O&M Manual (CH2M Hill 2015a) and Phase 1 Interim Monitoring Plan (Arcadis 2021). Arcadis does not recommend modifications to the well maintenance program for Second Quarter 2022.

In addition to routine groundwater remedy operations and monitoring, the following activities related to well performance are planned for Second Quarter 2022:

- Resume operation of target extraction and injection wells following repairs after the flooding event and power outage on March 28, 2022. Injection wells closest to an extraction well (IRZ-15, IRZ-21, and IRZ-25) along with extraction well IRZ-9 will remain offline.
- Continue quarterly extraction and injection well monitoring to evaluate the potential for well fouling of the IRZ injection wells.
- Continue weekly injection well backwashing during operation.
- Establish baseline specific capacities for extraction and injection wells.
- Continue quarterly inspections of sampled monitoring wells.

Well performance monitoring will be reported in a Second Quarter 2022 Well Performance Report. A Second Quarter 2022 Quarterly Progress Report will also be submitted to document operations and monitoring results, in accordance with the O&M Manual (CH2M Hill 2015a).

6 References

- Arcadis. 2021. Groundwater Remedy Phase 1 Interim Monitoring Plan. Topock Compressor Station, Needles, California. October 1.
- Arcadis. 2022. First Quarter 2022 Quarterly Progress Report. PG&E Topock Compressor Station, Needles, California. June 3.
- CH2M Hill. 2014. Final PG&E Program Quality Assurance Project Plan. November.
- CH2M Hill. 2015a. Basis of Design Report/Final (100%) Design Submittal for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California. November.
- CH2M Hill. 2015b. Construction/Remedial Action Work Plan for the Final Groundwater Remedy. PG&E Topock Compressor Station, Needles, California. November.
- Critigen. 2020. Addendum to the PG&E Program Quality Assurance Project Plan for Groundwater and Surface Water Sampling at the Topock Chromium Site. April.
- DOI. 2010. Groundwater Record of Decision, Pacific Gas and Electric Company, Topock Compressor Station, Needles, San Bernardino County, California. ROD cover date is December 2010; signed/approved by DOI on January 20, 2011.
- DTSC and DOI. 2011. Memorandum of Understanding (MOU) concerning the coordination in overseeing the implementation of groundwater response action at Topock Compressor Station. November 22.

Tables

Table 3.1
Summary of NTH IRZ Well Operations
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-15	Upper	Injection	Nov-21	--	--	--	--
IRZ-15	Upper	Injection	Dec-21	--	--	--	--
IRZ-15	Upper	Injection	Jan-22	--	--	--	--
IRZ-15	Upper	Injection	Feb-22	--	--	--	--
IRZ-15	Upper	Injection	Mar-22	--	--	--	--
IRZ-15	Lower	Injection	Nov-21	--	--	--	--
IRZ-15	Lower	Injection	Dec-21	--	--	--	--
IRZ-16	Upper	Injection	Nov-21	--	--	--	--
IRZ-16	Upper	Injection	Dec-21	18,090	55	7	5.5
IRZ-16	Upper	Injection	Jan-22	47,945	150	20	5.3
IRZ-16	Upper	Injection	Feb-22	3,011	10	1	5.0
IRZ-16	Upper	Injection	Mar-22	188,133	610	82	5.1
IRZ-16	Lower	Injection	Nov-21	--	--	--	--
IRZ-16	Lower	Injection	Dec-21	37,913	56	8	11.3
IRZ-16	Lower	Injection	Jan-22	83,007	139	19	10.0
IRZ-16	Lower	Injection	Feb-22	5,621	10	1	9.4
IRZ-16	Lower	Injection	Mar-22	368,922	608	82	10.1
IRZ-17	Upper	Injection	Nov-21	--	--	--	--
IRZ-17	Upper	Injection	Dec-21	25,091	56	8	7.5
IRZ-17	Upper	Injection	Jan-22	61,929	153	21	6.7
IRZ-17	Upper	Injection	Feb-22	3,761	10	1	6.3
IRZ-17	Upper	Injection	Mar-22	253,824	636	85	6.7
IRZ-17	Lower	Injection	Nov-21	--	--	--	--
IRZ-17	Lower	Injection	Dec-21	48,210	56	8	14.3
IRZ-17	Lower	Injection	Jan-22	126,137	153	21	13.7
IRZ-17	Lower	Injection	Feb-22	7,626	10	1	12.7
IRZ-17	Lower	Injection	Mar-22	511,032	632	85	13.5
IRZ-18	Upper	Injection	Nov-21	--	--	--	--
IRZ-18	Upper	Injection	Dec-21	23,330	56	8	6.9
IRZ-18	Upper	Injection	Jan-22	57,708	150	20	6.4
IRZ-18	Upper	Injection	Feb-22	3,581	10	1	6.0
IRZ-18	Upper	Injection	Mar-22	237,093	598	80	6.6
IRZ-18	Lower	Injection	Nov-21	--	--	--	--
IRZ-18	Lower	Injection	Dec-21	46,126	56	8	13.7
IRZ-18	Lower	Injection	Jan-22	124,878	152	20	13.7
IRZ-18	Lower	Injection	Feb-22	7,496	10	1	12.5
IRZ-18	Lower	Injection	Mar-22	441,208	598	80	12.3
IRZ-20	Upper	Injection	Nov-21	--	--	--	--
IRZ-20	Upper	Injection	Dec-21	18,890	56	8	5.6
IRZ-20	Upper	Injection	Jan-22	48,376	151	20	5.3
IRZ-20	Upper	Injection	Feb-22	2,701	9	1	5.0

Table 3.1
Summary of NTH IRZ Well Operations
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-20	Upper	Injection	Mar-22	202,257	630	85	5.4
IRZ-20	Lower	Injection	Nov-21	--	--	--	--
IRZ-20	Lower	Injection	Dec-21	34,313	55	7	10.4
IRZ-20	Lower	Injection	Jan-22	93,639	152	20	10.3
IRZ-20	Lower	Injection	Feb-22	5,767	10	1	9.6
IRZ-20	Lower	Injection	Mar-22	388,733	631	85	10.3
IRZ-21	Upper	Injection	Nov-21	--	--	--	--
IRZ-21	Upper	Injection	Dec-21	--	--	--	--
IRZ-21	Upper	Injection	Jan-22	--	--	--	--
IRZ-21	Upper	Injection	Feb-22	--	--	--	--
IRZ-21	Upper	Injection	Mar-22	--	--	--	--
IRZ-21	Lower	Injection	Nov-21	--	--	--	--
IRZ-21	Lower	Injection	Dec-21	--	--	--	--
IRZ-21	Lower	Injection	Jan-22	--	--	--	--
IRZ-21	Lower	Injection	Feb-22	--	--	--	--
IRZ-21	Lower	Injection	Mar-22	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Nov-21	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Dec-21	--	--	--	--
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	Lower	Injection	Nov-21	--	--	--	--
IRZ-25	Lower	Injection	Dec-21	--	--	--	--
IRZ-25	Lower	Injection	Jan-22	--	--	--	--
IRZ-25	Lower	Injection	Feb-22	--	--	--	--
IRZ-25	Lower	Injection	Mar-22	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	Nov-21	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	Dec-21	36,743	56	8	10.9
IRZ-27	Upper / Upper Middle	Injection	Jan-22	103,663	154	21	11.5
IRZ-27	Upper / Upper Middle	Injection	Feb-22	113,867	169	23	11.2
IRZ-27	Upper / Upper Middle	Injection	Mar-22	395,578	594	80	11.1
IRZ-27	Lower	Injection	Nov-21	--	--	--	--
IRZ-27	Lower	Injection	Dec-21	23,710	56	8	7.1
IRZ-27	Lower	Injection	Jan-22	47,797	154	21	5.4
IRZ-27	Lower	Injection	Feb-22	53,661	167	22	5.4
IRZ-27	Lower	Injection	Mar-22	190,998	594	80	5.4
IRZ-29	Upper	Injection	Nov-21	--	--	--	--
IRZ-29	Upper	Injection	Dec-21	--	--	--	--
IRZ-29	Upper	Injection	Jan-22	740	3	0	4.1
IRZ-29	Upper	Injection	Feb-22	50,817	157	21	5.4
IRZ-29	Upper	Injection	Mar-22	121,397	388	52	5.2
IRZ-29	Lower	Injection	Nov-21	--	--	--	--

Table 3.1
Summary of NTH IRZ Well Operations
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-29	Lower	Injection	Dec-21	--	--	--	--
IRZ-29	Lower	Injection	Jan-22	3,450	5	1	11.5
IRZ-29	Lower	Injection	Feb-22	70,677	158	21	7.5
IRZ-29	Lower	Injection	Mar-22	167,369	389	52	7.2
IRZ-31	Upper	Injection	Nov-21	--	--	--	--
IRZ-31	Upper	Injection	Dec-21	--	--	--	--
IRZ-31	Upper	Injection	Jan-22	2,620	4	1	10.9
IRZ-31	Upper	Injection	Feb-22	60,855	160	22	6.3
IRZ-31	Upper	Injection	Mar-22	141,661	389	52	6.1
IRZ-31	Lower	Injection	Nov-21	--	--	--	--
IRZ-31	Lower	Injection	Dec-21	--	--	--	--
IRZ-31	Lower	Injection	Jan-22	3,380	5	1	11.3
IRZ-31	Lower	Injection	Feb-22	60,795	161	22	6.3
IRZ-31	Lower	Injection	Mar-22	144,199	389	52	6.2
IRZ-33	Upper	Injection	Nov-21	--	--	--	--
IRZ-33	Upper	Injection	Dec-21	--	--	--	--
IRZ-33	Upper	Injection	Jan-22	560	2	0	4.7
IRZ-33	Upper	Injection	Feb-22	42,259	158	21	4.5
IRZ-33	Upper	Injection	Mar-22	97,704	389	52	4.2
IRZ-33	Lower	Injection	Nov-21	--	--	--	--
IRZ-33	Lower	Injection	Dec-21	--	--	--	--
IRZ-33	Lower	Injection	Jan-22	480	2	0.3	4
IRZ-33	Lower	Injection	Feb-22	41,839	158	21	4.4
IRZ-33	Lower	Injection	Mar-22	97,074	389	52	4.2
IRZ-35	Upper	Injection	Nov-21	--	--	--	--
IRZ-35	Upper	Injection	Dec-21	--	--	--	--
IRZ-35	Upper	Injection	Jan-22	800	2	0	
IRZ-35	Upper	Injection	Feb-22	51,887	158	21	5.5
IRZ-35	Upper	Injection	Mar-22	118,638	387	52	5.1
IRZ-37	Upper	Injection	Nov-21	--	--	--	--
IRZ-37	Upper	Injection	Dec-21	--	--	--	--
IRZ-37	Upper	Injection	Jan-22	380	2	0	3.2
IRZ-37	Upper	Injection	Feb-22	31,301	153	21	3.4
IRZ-37	Upper	Injection	Mar-22	76,904	383	51	3.3
IRZ-39	Upper	Injection	Nov-21	--	--	--	--
IRZ-39	Upper	Injection	Dec-21	--	--	--	--
IRZ-39	Upper	Injection	Jan-22	--	--	--	--
IRZ-39	Upper	Injection	Feb-22	17,140	72	10	4.0
IRZ-39	Upper	Injection	Mar-22	83,493	384	52	3.6
IRZ-9	Upper	Extraction	Nov-21	--	--	--	--
IRZ-9	Upper	Extraction	Dec-21	--	--	--	--
IRZ-9	Upper	Extraction	Jan-22	207,010	66	9	52.3

Table 3.1
Summary of NTH IRZ Well Operations
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-9	Upper	Extraction	Feb-22	--	--	--	--
IRZ-9	Upper	Extraction	Mar-22	612	1	0.1	10.2
IRZ-13D	Lower	Extraction	Nov-21	--	--	--	--
IRZ-13D	Lower	Extraction	Dec-21	--	--	--	--
IRZ-13D	Lower	Extraction	Jan-22	--	--	--	--
IRZ-13D	Lower	Extraction	Feb-22	--	--	--	--
IRZ-13D	Lower	Extraction	Mar-22	937,033	391	53	39.9
IRZ-13S	Upper	Extraction	Nov-21	--	--	--	--
IRZ-13S	Upper	Extraction	Dec-21	--	--	--	--
IRZ-13S	Upper	Extraction	Jan-22	--	--	--	--
IRZ-13S	Upper	Extraction	Feb-22	--	--	--	--
IRZ-13S	Upper	Extraction	Mar-22	674,317	391	53	28.7
IRZ-23	Lower	Extraction	Nov-21	--	--	--	--
IRZ-23	Lower	Extraction	Dec-21	307,610	56	8	91.6
IRZ-23	Lower	Extraction	Jan-22	583,763	148	20	65.7
IRZ-23	Lower	Extraction	Feb-22	615,500	168	23	61.1
IRZ-23	Lower	Extraction	Mar-22	2,542,801	621	83	68.2

Acronyms and Abbreviations:

-- = not applicable

gal = gallon

gpm = gallon per minute

ID = identification

IRZ = in-situ reactive zone

NTH = National Trails Highway

Table 3.2
NTH IRZ System Operations and Non-Routine Maintenance Log
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Operations and Maintenance Log	Notes
12/22/2021	Functional testing and startup and initial operation of northern wells. Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27 Extraction well: IRZ-23.	Daytime operation on work days using portable generators.
12/31/2021 to 1/2/2022	All injection and extraction wells are turned off. System is not running.	Holiday weekend.
1/5/2022	Backwash wells that were in operation. Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27.	--
1/9/2022	All injection and extraction wells are turned off. System is not running.	Holiday weekend.
1/11/2022 to 1/13/2022	Injection well IRZ-16 (lower) offline for 51 hours.	Replaced modulating valve.
1/12/2022	Backwash injection well IRZ-27.	--
1/13/2022	Backwash remaining wells. Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20.	--
1/14/2022 to 1/17/2022	All injection and extraction wells are turned off. System is not running.	Weekend. Staff not onsite to operate generators.
1/17/2022	Startup and initial operation of extraction well IRZ-9.	Additional generator used to power additional nodes and additional wells.
1/17/2022	IRZ-23 offline to add a ball valve until 2pm. Operated approximately 2 hours total during the day.	--
1/19/2022	Backwash wells that were in operation. Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27.	--
1/23/2022	All injection and extraction wells are turned off. System is not running.	Weekend. Staff not onsite to operate generators.
1/25/2022	Backwash wells that were in operation. Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27.	--
1/26/2022 through 1/30/2022	All injection and extraction wells are turned off. System is not running.	Testing sitewide energization.
1/31/2022	Startup and initial operation of southern IRZ wells. Injection wells: IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37. Extraction wells: IRZ-23 Injection wells that had been previously operating that were taken offline include: IRZ-16, IRZ-17, IRZ-18, IRZ-20.	--
2/9/2022	Functional testing and startup and initial operation of injection well IRZ-39.	--
2/9/2022	Backwash wells that were in operation. Injection Wells: IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37.	--
2/10/2022	Continued functional testing and startup and initial operation of injection well IRZ-39. Flow not continuous.	--
2/16/2022	All injection and extraction wells are turned off. System is not running.	Construction work occurring near generator.
2/17/2022	Backwash wells that were in operation. Injection Wells: IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, IRZ-39.	--
2/19/2022 through 2/27/2022	All injection and extraction wells are turned off. System is not running.	Sitewide energization and functional testing.
2/28/2022	Full-time system operation (24-hour operation via generator). Wells operating: Extraction well: IRZ-23 Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27.	--

Table 3.2
NTH IRZ System Operations and Non-Routine Maintenance Log
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Operations and Maintenance Log	Notes
3/2/2022	Backwash wells that were in operation.	--
3/7/2022	Ethanol dosing. Ethanol injection frequency reduced from 2 doses per week to 1 dose per week.	Injection frequency change was based on manganese at well MW-31-060, as detailed in Table 3.4 in the First Quarter 2022 Quarterly Progress Report (Arcadis U.S., Inc. 2022).
3/9/2022	Functional testing of IRZ-13.	--
3/10/2022	Full-time system operation (24-hour operation via generator). Wells operating: Extraction well: IRZ-23, IRZ-9, IRZ-13 Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, IRZ-39.	IRZ-15, IRZ-21, IRZ-25 remain offline.
3/10/2022	IRZ-9 turned off to balance extraction and injection flows.	--
3/11/2022	Backwash subset of wells. Injection wells: IRZ-16, IRZ-17, IRZ-20, IRZ-27.	--
3/16/2022	IRZ-35 repaired. Broken nipple in air relief valve replaced.	--
3/16/2022	Backwash remaining wells. Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, IRZ-39.	--
3/18/2022	IRZ-9 online. Flowrates for IRZ-13 (upper) and IRZ-13 (lower) adjusted to be closer to target rates.	Additional valves installed to be able to accommodate lower flowrates.
3/22/2022 to 3/24/2022	All injection and extraction wells are turned off. System is not running.	Transfer to station power.
3/24/2022	Transfer to station power complete. Full-time system operation (24-hour operation on station power). Wells operating: Extraction well: IRZ-23, IRZ-13 Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, IRZ-39.	IRZ-15, IRZ-21, IRZ-25 offline to avoid fouling of IRZ-23 and IRZ-13 while performance monitoring data is collected. IRZ-9 offline to balance injection and extraction flows.
3/29/2022 to 3/30/2022	All wells shut down due to flooding from stormwater. Onsite team inspected vaults and panels for damage/functionality.	--
3/30/2022	Partial system operation. Wells operating: Extraction well: IRZ-23 Injection wells: IRZ-16, IRZ-17, and IRZ-20.	Onsite team continued to inspect vaults and panels for damage/functionality. Wells deemed functional brought online and flow balanced.

Acronyms and Abbreviations:

-- = not applicable

IRZ = in-situ reactive zone

NTH = National Trails Highway

Table 3.3
Summary of NTH IRZ Well Specific Capacities
First Quarter 2022 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)
IRZ-15	Upper	Injection	Nov-21	--
IRZ-15	Upper	Injection	Dec-21	--
IRZ-15	Upper	Injection	Jan-22	--
IRZ-15	Upper	Injection	Feb-22	--
IRZ-15	Upper	Injection	Mar-22	--
IRZ-15	Lower	Injection	Nov-21	--
IRZ-15	Lower	Injection	Dec-21	--
IRZ-16	Upper	Injection	Nov-21	--
IRZ-16	Upper	Injection	Dec-21	1.3
IRZ-16	Upper	Injection	Jan-22	1.1
IRZ-16	Upper	Injection	Feb-22	0.92
IRZ-16	Upper	Injection	Mar-22	0.74
IRZ-16	Lower	Injection	Nov-21	--
IRZ-16	Lower	Injection	Dec-21	1.2
IRZ-16	Lower	Injection	Jan-22	1.1
IRZ-16	Lower	Injection	Feb-22	0.88
IRZ-16	Lower	Injection	Mar-22	0.82
IRZ-17	Upper	Injection	Nov-21	--
IRZ-17	Upper	Injection	Dec-21	5.1
IRZ-17	Upper	Injection	Jan-22	4.9
IRZ-17	Upper	Injection	Feb-22	2.7
IRZ-17	Upper	Injection	Mar-22	2.0
IRZ-17	Lower	Injection	Nov-21	--
IRZ-17	Lower	Injection	Dec-21	1.5
IRZ-17	Lower	Injection	Jan-22	1.5
IRZ-17	Lower	Injection	Feb-22	1.1
IRZ-17	Lower	Injection	Mar-22	0.98
IRZ-18	Upper	Injection	Nov-21	--
IRZ-18	Upper	Injection	Dec-21	3.4
IRZ-18	Upper	Injection	Jan-22	3.2
IRZ-18	Upper	Injection	Feb-22	1.8
IRZ-18	Upper	Injection	Mar-22	1.3
IRZ-18	Lower	Injection	Nov-21	--
IRZ-18	Lower	Injection	Dec-21	1.4
IRZ-18	Lower	Injection	Jan-22	1.3
IRZ-18	Lower	Injection	Feb-22	0.97
IRZ-18	Lower	Injection	Mar-22	0.81
IRZ-20	Upper	Injection	Nov-21	--
IRZ-20	Upper	Injection	Dec-21	2.3
IRZ-20	Upper	Injection	Jan-22	2.0
IRZ-20	Upper	Injection	Feb-22	1.3
IRZ-20	Upper	Injection	Mar-22	0.99
IRZ-20	Lower	Injection	Nov-21	--
IRZ-20	Lower	Injection	Dec-21	1.1
IRZ-20	Lower	Injection	Jan-22	1.0
IRZ-20	Lower	Injection	Feb-22	0.85
IRZ-20	Lower	Injection	Mar-22	0.79
IRZ-21	Upper	Injection	Nov-21	--
IRZ-21	Upper	Injection	Dec-21	--
IRZ-21	Upper	Injection	Jan-22	--
IRZ-21	Upper	Injection	Feb-22	--
IRZ-21	Upper	Injection	Mar-22	--
IRZ-21	Lower	Injection	Nov-21	--
IRZ-21	Lower	Injection	Dec-21	--
IRZ-21	Lower	Injection	Jan-22	--
IRZ-21	Lower	Injection	Feb-22	--
IRZ-21	Lower	Injection	Mar-22	--
IRZ-25	Upper / Upper Middle	Injection	Nov-21	--
IRZ-25	Upper / Upper Middle	Injection	Dec-21	--

Table 3.3
Summary of NTH IRZ Well Specific Capacities
First Quarter 2022 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)
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	Lower	Injection	Nov-21	--
IRZ-25	Lower	Injection	Dec-21	--
IRZ-25	Lower	Injection	Jan-22	--
IRZ-25	Lower	Injection	Feb-22	--
IRZ-25	Lower	Injection	Mar-22	--
IRZ-27	Upper / Upper Middle	Injection	Nov-21	--
IRZ-27	Upper / Upper Middle	Injection	Dec-21	1.2
IRZ-27	Upper / Upper Middle	Injection	Jan-22	1.2
IRZ-27	Upper / Upper Middle	Injection	Feb-22	0.87
IRZ-27	Upper / Upper Middle	Injection	Mar-22	0.65
IRZ-27	Lower	Injection	Nov-21	--
IRZ-27	Lower	Injection	Dec-21	0.91
IRZ-27	Lower	Injection	Jan-22	0.89
IRZ-27	Lower	Injection	Feb-22	0.72
IRZ-27	Lower	Injection	Mar-22	0.59
IRZ-29	Upper	Injection	Nov-21	--
IRZ-29	Upper	Injection	Dec-21	--
IRZ-29	Upper	Injection	Jan-22	1.0
IRZ-29	Upper	Injection	Feb-22	0.91
IRZ-29	Upper	Injection	Mar-22	0.62
IRZ-29	Lower	Injection	Nov-21	--
IRZ-29	Lower	Injection	Dec-21	--
IRZ-29	Lower	Injection	Jan-22	1.5
IRZ-29	Lower	Injection	Feb-22	1.0
IRZ-29	Lower	Injection	Mar-22	0.82
IRZ-31	Upper	Injection	Nov-21	--
IRZ-31	Upper	Injection	Dec-21	--
IRZ-31	Upper	Injection	Jan-22	2.4
IRZ-31	Upper	Injection	Feb-22	1.3
IRZ-31	Upper	Injection	Mar-22	0.88
IRZ-31	Lower	Injection	Nov-21	--
IRZ-31	Lower	Injection	Dec-21	--
IRZ-31	Lower	Injection	Jan-22	2.0
IRZ-31	Lower	Injection	Feb-22	0.9
IRZ-31	Lower	Injection	Mar-22	0.6
IRZ-33	Upper	Injection	Nov-21	--
IRZ-33	Upper	Injection	Dec-21	--
IRZ-33	Upper	Injection	Jan-22	2.3
IRZ-33	Upper	Injection	Feb-22	1.3
IRZ-33	Upper	Injection	Mar-22	0.76
IRZ-33	Lower	Injection	Nov-21	--
IRZ-33	Lower	Injection	Dec-21	--
IRZ-33	Lower	Injection	Jan-22	1.5
IRZ-33	Lower	Injection	Feb-22	0.74
IRZ-33	Lower	Injection	Mar-22	0.48
IRZ-35	Upper	Injection	Nov-21	--
IRZ-35	Upper	Injection	Dec-21	--
IRZ-35	Upper	Injection	Jan-22	1.7
IRZ-35	Upper	Injection	Feb-22	1.0
IRZ-35	Upper	Injection	Mar-22	0.65
IRZ-37	Upper	Injection	Nov-21	--
IRZ-37	Upper	Injection	Dec-21	--
IRZ-37	Upper	Injection	Jan-22	1.0
IRZ-37	Upper	Injection	Feb-22	0.78
IRZ-37	Upper	Injection	Mar-22	0.51
IRZ-39	Upper	Injection	Nov-21	--
IRZ-39	Upper	Injection	Dec-21	--

Table 3.3
Summary of NTH IRZ Well Specific Capacities
First Quarter 2022 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)
IRZ-39	Upper	Injection	Jan-22	--
IRZ-39	Upper	Injection	Feb-22	0.38
IRZ-39	Upper	Injection	Mar-22	0.19
IRZ-9	Upper	Extraction	Nov-21	--
IRZ-9	Upper	Extraction	Dec-21	--
IRZ-9	Upper	Extraction	Jan-22	--
IRZ-9	Upper	Extraction	Feb-22	--
IRZ-9	Upper	Extraction	Mar-22	--
IRZ-13D	Lower	Extraction	Nov-21	--
IRZ-13D	Lower	Extraction	Dec-21	--
IRZ-13D	Lower	Extraction	Jan-22	--
IRZ-13D	Lower	Extraction	Feb-22	--
IRZ-13D	Lower	Extraction	Mar-22	1.1
IRZ-13S	Upper	Extraction	Nov-21	--
IRZ-13S	Upper	Extraction	Dec-21	--
IRZ-13S	Upper	Extraction	Jan-22	6.9
IRZ-13S	Upper	Extraction	Feb-22	--
IRZ-13S	Upper	Extraction	Mar-22	8.5
IRZ-23	Lower	Extraction	Nov-21	--
IRZ-23	Lower	Extraction	Dec-21	9.7
IRZ-23	Lower	Extraction	Jan-22	11
IRZ-23	Lower	Extraction	Feb-22	12
IRZ-23	Lower	Extraction	Mar-22	12

Notes:

- 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 collected during well development. Average monthly specific capacities were then calculated by averaging the five-minute interval specific capacities.
- Specific capacity data was not collected for well IRZ-13 (lower) in January 2022 and most of March 2022 due to SCADA error that has been corrected.

Acronyms and Abbreviations:

-- = not operating
ft = foot
gpm = gallon per minute
ID = identification
IRZ = in-situ reactive zone
NTH = National Trails Highway

Table 3.4
NTH IRZ Baseline Sampling Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Type	Sample Date	Alkalinity, Bicarbonate as CaCO3 mg/L	Alkalinity, Carbonate as CaCO3 mg/L	Alkalinity, Total as CaCO3 mg/L	Aluminum µg/L	Aluminum, Dissolved µg/L	Ammonia as Nitrate µg/L	Ammonia as Nitrogen µg/L	Antimony µg/L	Antimony, Dissolved µg/L	Arsenic µg/L	Arsenic, Dissolved µg/L	Barium µg/L	Barium, Dissolved µg/L	Beryllium µg/L	Beryllium, Dissolved µg/L	Biological Oxygen Demand, 5-Day mg/L	Boron µg/L
IRZ-09	N	01/25/22	52	ND (5.0)	52	ND (50)	ND (50)	ND (0.0002)	ND (0.0002)	ND (0.5)	ND (0.5)	ND (0.1)	ND (0.1)	64	75	ND (0.5)	ND (0.5)	1.7	970
IRZ-13	N	03/10/22	52	ND (5.0)	52	ND (50)	86	ND (0.0002)	ND (0.0002)	ND (0.5)	ND (0.5)	1.8	ND (0.1)	47	44	ND (0.5)	ND (0.5)	ND (1.5)	1,400
IRZ-13	N	03/10/22	48	ND (5.0)	48	ND (50)	ND (50)	ND (0.00022)	ND (0.00022)	ND (0.5)	ND (0.5)	ND (0.1)	ND (0.1)	82	76	ND (0.5)	ND (0.5)	ND (1.5)	1,200
IRZ-15	N	12/20/21	38	ND (5.0)	38	640	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1 J)	ND (0.1 J)	45	45	ND (2.5)	ND (0.5 J)	--	1,700
IRZ-15	N	12/20/21	81	ND (5.0)	81	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1 J)	ND (0.1 J)	56	52	ND (0.5)	ND (0.5 J)	--	550
IRZ-16	N	12/20/21	34	ND (5.0)	34	66	ND (50)	--	--	ND (0.5)	ND (0.5)	5.7 J	ND (0.1 J)	54	51	ND (2.5)	ND (0.5 J)	--	1,800
IRZ-16	N	12/20/21	85	ND (5.0)	85	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	1.6 J	ND (0.1 J)	72	64	ND (0.5)	ND (0.5 J)	--	590
IRZ-17	N	12/20/21	49	ND (5.0)	49	80	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1 J)	ND (0.1 J)	75	68	ND (2.5)	ND (0.5 J)	--	1,400
IRZ-17	N	12/20/21	76	ND (5.0)	76	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1 J)	ND (0.1 J)	79	75	ND (0.5)	ND (0.5 J)	--	780
IRZ-18	N	12/20/21	89	ND (5.0)	89	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	4.5 J	0.56 J	60	53	ND (0.5)	ND (0.5 J)	--	470
IRZ-18	N	12/20/21	37	ND (5.0)	37	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1 J)	ND (0.1 J)	72	69	ND (2.5)	ND (0.5 J)	--	1,900
IRZ-20	N	12/20/21	33	ND (5.0)	33	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1 J)	ND (0.1 J)	97	96	ND (0.5)	ND (0.5 J)	--	1,400
IRZ-20	N	12/20/21	91	ND (5.0)	91	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	3.4 J	0.91 J	48	53	ND (0.5)	ND (0.5 J)	--	450
IRZ-21	N	12/20/21	96	ND (5.0)	96	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	13 J	1.3 J	50	40	ND (0.5)	ND (0.5 J)	--	370
IRZ-21	N	12/20/21	39	ND (5.0)	39	100	ND (50)	--	--	ND (0.5)	ND (0.5)	7.1 J	ND (0.1 J)	250	230	ND (2.5)	ND (0.5 J)	--	1,800
IRZ-23	N	12/21/21	87	ND (5.0)	87	ND (50)	ND (50 J)	--	ND (0.2)	ND (0.5)	ND (0.5)	2.7 J	0.92 J	55	51	ND (0.5 J)	ND (0.5 J)	ND (1.5 J)	620
IRZ-25	N	12/20/21	89	ND (5.0)	89	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	4.6 J	0.91 J	38	30	ND (0.5)	ND (0.5 J)	--	500
IRZ-25	N	12/20/21	47	ND (5.0)	47	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1 J)	ND (0.1 J)	49	41	ND (0.5)	ND (0.5 J)	--	1,800
IRZ-27	N	12/20/21	110	ND (5.0)	110	750	ND (50)	--	--	ND (0.5)	ND (0.5)	6.3 J	1.2 J	100	41	ND (0.5)	ND (0.5 J)	--	700
IRZ-27	N	12/20/21	95	ND (5.0)	95	52	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1 J)	ND (0.1 J)	58	34	ND (0.5)	ND (0.5 J)	--	1,800
IRZ-29	N	01/04/22	91	ND (5.0)	91	350	ND (50)	--	--	ND (0.5)	ND (0.5)	1	< 0.10 U	43	36	ND (0.5)	ND (2.5)	--	2,000
IRZ-29	N	01/04/22	200	ND (5.0)	200	690	ND (50)	--	--	ND (0.5)	ND (0.5)	2.7	1	50	78	ND (0.5)	ND (0.5)	--	2,000
IRZ-31	N	01/04/22	150	ND (5.0)	150	100	ND (50)	--	--	ND (0.5)	ND (0.5)	0.97	0.63	51	48	ND (0.5)	ND (0.5)	--	1,000
IRZ-31	N	01/04/22	84	ND (5.0)	84	ND (50)	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1)	ND (0.1)	48	41	ND (0.5)	ND (2.5)	--	1,700
IRZ-33	N	01/04/22	120	ND (5.0)	120	170	ND (50)	--	--	ND (0.5)	ND (0.5)	1.7	1.2	42	35	ND (0.5)	ND (0.5)	--	970
IRZ-33	N	01/04/22	78	ND (5.0)	78	60	ND (50)	--	--	ND (0.5)	ND (0.5)	ND (0.1)	ND (0.1)	79	77	ND (0.5)	ND (0.5)	--	1,700
IRZ-35	N	01/04/22	100	ND (5.0)	100	84	ND (50)	--	--	ND (0.5)	ND (0.5)	1.5	0.76	57	50	ND (0.5)	ND (0.5)	--	920
IRZ-37	N	01/04/22	120	ND (5.0)	120	160	ND (50)	--	--	ND (0.5)	ND (0.5)	9.6	1.8	65	57	ND (0.5)	ND (0.5)	--	950
IRZ-39	N	01/04/22	330	ND (5.0)	330	150	ND (50)	--	--	ND (0.5)	ND (0.5)	4.6	2	39	32	ND (0.5)	ND (0.5)	--	1,300

Table 3.4
NTH IRZ Baseline Sampling Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Type	Sample Date	Boron, Dissolved mg/L	Bromide mg/L	Cadmium µg/L	Cadmium, Dissolved µg/L	Calcium µg/L	Calcium, Dissolved mg/L	Chloride mg/L	Chromium, Hexavalent µg/L	Chromium, Total Dissolved µg/L	Chromium, Total µg/L	Cobalt µg/L	Cobalt, Dissolved µg/L	Copper µg/L	Copper, Dissolved µg/L	Fluoride mg/L	Hardness, Calcium as CaCO3 mg/L	Iron-Related Bacteria CFU/mL
IRZ-09	N	01/25/22	1	ND (5.0)	ND (0.5)	ND (0.5)	310,000	330	3,000	19	18	18	ND (0.5)	ND (0.5)	ND (1.0)	5.2	3.2	830	9,000
IRZ-13	N	03/10/22	1.4	ND (5.0)	ND (0.5)	ND (0.5)	570,000	450	6,200	350	340	310	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	3.7	1100	9,000
IRZ-13	N	03/10/22	1.1	ND (5.0)	ND (0.5)	ND (0.5)	350,000	430	2,800	17	17	18	ND (0.5)	ND (0.5)	ND (1.0)	ND (1.0)	3.8	1100	9,000
IRZ-15	N	12/20/21	1.7	ND (5.0)	ND (0.5)	ND (0.5)	420,000	460	7,100	590	690	630	ND (0.5)	ND (0.5)	2.9 J	1.7 J	4.2	--	35,000
IRZ-15	N	12/20/21	0.56	ND (5.0)	ND (0.5)	ND (0.5)	180,000	180	1,200	65	77	130	0.9	ND (0.5)	1.3 J	ND (1.0 J)	2.8	--	9,000
IRZ-16	N	12/20/21	1.7	ND (5.0)	ND (0.5)	ND (0.5)	410,000	430	7,000	220	300	1,300	1.3	ND (0.5)	14 J	1.2 J	4.5	--	35,000
IRZ-16	N	12/20/21	0.6	ND (5.0)	ND (0.5)	ND (0.5)	150,000	170	1,300	91	87	410	2.4	ND (0.5)	4.1 J	ND (1.0 J)	3.3	--	35,000
IRZ-17	N	12/20/21	1.3	ND (5.0)	ND (0.5)	ND (0.5)	600,000 J	600	6,600	65	67	760	0.75	ND (0.5)	4.6 J	ND (1.0 J)	2.8	--	35,000
IRZ-17	N	12/20/21	0.81	ND (5.0)	ND (0.5)	ND (0.5)	230,000	260	1,900	20	21	48	ND (0.5)	ND (0.5)	ND (1.0 J)	ND (1.0 J)	2.8	--	35,000
IRZ-18	N	12/20/21	0.5	ND (5.0)	ND (0.5)	ND (0.5)	110,000	130	760	300	270	1,400	3.4	ND (0.5)	15 J	ND (1.0 J)	3	--	35,000
IRZ-18	N	12/20/21	2	ND (5.0)	ND (0.5)	ND (0.5)	460,000 J	470	7,700	1,400	1,500	2,400	4.1	1.4	11 J	1.3 J	4.7	--	9,000
IRZ-20	N	12/20/21	1.5	ND (5.0)	ND (0.5)	ND (0.5)	490,000	490	6,200	52	290	1,000	24	8.1	25 J	4.2 J	3.6	--	500
IRZ-20	N	12/20/21	0.34	ND (5.0)	ND (0.5)	ND (0.5)	93,000 J	100	610	140	130	890	2.4	1.2	9.4 J	2.5 J	2.2	--	500
IRZ-21	N	12/20/21	0.34	ND (5.0)	ND (0.5)	ND (0.5)	68,000	76	470	270	180	3,600	6.2	ND (0.5)	36 J	ND (1.0 J)	1.9	--	9,000
IRZ-21	N	12/20/21	1.7	ND (5.0)	ND (0.5)	ND (0.5)	600,000 J	640	7,300	2,900	2,900	4,700	6.9	0.73	20 J	2.2 J	4.6	--	9,000
IRZ-23	N	12/21/21	0.63 J	ND (5.0)	ND (0.5)	ND (0.5)	170,000	170	990	150	150	370	4.6	ND (0.5)	3.4 J	ND (1.0 J)	2	430	2,200
IRZ-25	N	12/20/21	0.53	ND (5.0)	ND (0.5)	ND (0.5)	100,000 J	110	490	2,000	2,000	6,300	6	ND (0.5)	37 J	ND (1.0 J)	1.4	--	9,000
IRZ-25	N	12/20/21	0.9	ND (5.0)	ND (0.5)	ND (0.5)	430,000 J	160	5,600	3,700	810	4,000	2.9	0.95	4.8 J	1.3 J	4.2	--	9,000
IRZ-27	N	12/20/21	0.77	ND (5.0)	ND (0.5)	ND (0.5)	100,000 J	99	510	3,200	3,200	4,000	9.6	ND (0.5)	17 J	ND (1.0 J)	1.8	--	500
IRZ-27	N	12/20/21	1.6	ND (5.0)	ND (0.5)	ND (0.5)	200,000	150	1,500	520	410	1,200	3.7	2.6	5.7 J	ND (1.0 J)	1.5	--	9,000
IRZ-29	N	01/04/22	2.1	ND (5.0)	ND (0.5)	ND (0.5)	290,000	300	3,400	3400	3900	3,600	1.2	0.63	5.4	1.5	2.8	--	35,000
IRZ-29	N	01/04/22	1	ND (5.0)	ND (0.5)	ND (0.5)	290,000	160	1,000	3500	7900	1,100	2	1.1	8.7	1	1.3	--	35,000
IRZ-31	N	01/04/22	0.96	ND (5.0)	ND (0.5)	ND (0.5)	180,000	180	680	1500	1700	1,600	2.2	0.73	3	ND (1.0)	1.1	--	35,000
IRZ-31	N	01/04/22	1.7	ND (5.0)	ND (0.5)	ND (0.5)	270,000	270	3,300	2700	3300	2,800	6.8	7.1	7	1.9	3.6	--	35,000
IRZ-33	N	01/04/22	0.94	ND (5.0)	ND (0.5)	ND (0.5)	130,000	140	1,000	2200	2500	2,200	2.3	ND (0.5)	5.8	1	2.3	--	35,000
IRZ-33	N	01/04/22	1.6	ND (5.0)	ND (0.5)	ND (0.5)	420,000	370	3,900	2100	2600	1,800	3.1	0.56	6.8	1.3	2.9	--	35,000
IRZ-35	N	01/04/22	0.93	ND (5.0)	ND (0.5)	ND (0.5)	160,000	160	1,700	860	1800	1,100	9.3	3.1	9.7	2.1	3.4	--	35,000
IRZ-37	N	01/04/22	0.93	ND (5.0)	ND (0.5)	ND (0.5)	260,000	250	2,100	1200	2800	1,400	13	1.1	24	2.1	2.1	--	35,000
IRZ-39	N	01/04/22	1.3	ND (5.0)	ND (0.5)	ND (0.5)	99,000	100	540	18	2200	24	6.6	2.1	28	ND (1.0)	1.9	--	35,000

Table 3.4
NTH IRZ Baseline Sampling Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Type	Sample Date	Iron µg/L	Iron, Dissolved µg/L	Lead µg/L	Lead, Dissolved µg/L	Magnesium µg/L	Magnesium, Dissolved mg/L	Manganese µg/L	Manganese, Dissolved µg/L	Mercury µg/L	Mercury, Dissolved µg/L	Modified Fouling Index s/L ²	Molybdenum µg/L	Molybdenum, Dissolved µg/L	Nickel µg/L	Nickel, Dissolved µg/L	Nitrate as Nitrogen mg/L	Nitrite as Nitrogen mg/L
IRZ-09	N	01/25/22	ND (20)	ND (20)	ND (1.0)	ND (1.0)	26,000	27	2.6	2.7	ND (0.2)	ND (0.2)	3	13	13	ND (25)	ND (25)	1.8	ND (5.0)
IRZ-13	N	03/10/22	ND (20)	59	ND (1.0)	ND (1.0)	54,000	52	63	62	ND (0.2)	ND (0.2)	1.3	32	34	ND (25)	ND (25)	1.5	ND (5.0)
IRZ-13	N	03/10/22	60	ND (20)	ND (1.0)	ND (1.0)	29,000	37	1.5	ND (0.5)	ND (0.2)	ND (0.2)	0.35	15	15	ND (1.0)	ND (1.0)	1.6	ND (5.0)
IRZ-15	N	12/20/21	140 J	23	ND (1.0)	ND (1.0)	14,000 J	23	26	14	ND (0.2)	ND (0.2)	--	58	45	ND (25 J)	ND (25 J)	1.4	ND (5.0)
IRZ-15	N	12/20/21	180 J	ND (20)	ND (1.0)	ND (1.0)	27,000 J	26	5.3	0.97	ND (0.2)	ND (0.2)	--	26	19	46 J	18 J	2.3	ND (5.0)
IRZ-16	N	12/20/21	2,200 J	ND (20)	ND (1.0)	ND (1.0)	14,000 J	17	24	14	ND (0.2)	ND (0.2)	--	92	58	ND (1.0 J)	ND (1.0 J)	1.2	ND (5.0)
IRZ-16	N	12/20/21	970 J	ND (20)	ND (1.0)	ND (1.0)	30,000 J	29	18	2.2	ND (0.2)	ND (0.2)	--	17	10	85 J	41 J	2.5	ND (5.0)
IRZ-17	N	12/20/21	1,700 J	ND (20)	ND (1.0)	ND (1.0)	40,000 J	40	40	32	ND (0.2)	ND (0.2)	--	57	30	ND (1.0 J)	ND (1.0 J)	1.3	ND (5.0)
IRZ-17	N	12/20/21	55 J	21	ND (1.0)	ND (1.0)	32,000 J	34	1.9	0.59	ND (0.2)	ND (0.2)	--	20	14	4.4 J	ND (1.0 J)	1.5	ND (5.0)
IRZ-18	N	12/20/21	2,200 J	ND (20)	ND (1.0)	ND (1.0)	16,000 J	17	31	2.6	ND (0.2)	ND (0.2)	--	75	21	40 J	6.6 J	3.9	ND (5.0)
IRZ-18	N	12/20/21	1,800 J	ND (20)	ND (1.0)	ND (1.0)	15,000 J	16	73	56	ND (0.2)	ND (0.2)	--	100	84	ND (1.0 J)	ND (1.0 J)	1.4	ND (5.0)
IRZ-20	N	12/20/21	3,000 J	390	ND (1.0)	ND (1.0)	20,000 J	21	260	110	ND (0.2)	ND (0.2)	--	67	45	340 J	96 J	1.2	ND (5.0)
IRZ-20	N	12/20/21	1,500 J	ND (20)	ND (1.0)	ND (1.0)	18,000 J	19	17	10	ND (0.2)	ND (0.2)	--	59	11	54 J	30 J	4.2	ND (5.0)
IRZ-21	N	12/20/21	4,800 J	ND (20)	ND (1.0)	ND (1.0)	18,000 J	21	56	ND (0.5)	ND (0.2)	ND (0.2)	--	170	10	66 J	9.4 J	4.6	ND (5.0)
IRZ-21	N	12/20/21	3,500 J	ND (20)	2	ND (1.0)	25,000 J	24	79	15	ND (0.2)	ND (0.2)	--	79	51	ND (1.0 J)	ND (1.0 J)	2.2	ND (5.0)
IRZ-23	N	12/21/21	690	91 J	ND (1.0)	ND (1.0)	25,000 J	26 J	29	ND (0.5)	ND (0.2)	ND (0.2)	7.5	11	6.7	16 J	9.0 J	5.5	ND (5.0)
IRZ-25	N	12/20/21	1,700 J	ND (20)	ND (1.0)	ND (1.0)	19,000 J	19	51	0.55	ND (0.2)	ND (0.2)	--	330	16	140 J	52 J	12	ND (5.0)
IRZ-25	N	12/20/21	250 J	ND (20)	ND (1.0)	ND (1.0)	15,000 J	17	83	18	ND (0.2)	ND (0.2)	--	64	17	ND (1.0 J)	57 J	2.8	ND (5.0)
IRZ-27	N	12/20/21	1,900 J	ND (20)	36	ND (1.0)	16,000 J	16	310	2.1	ND (0.2)	ND (0.2)	--	36	22	87 J	7.6 J	7.3	ND (5.0)
IRZ-27	N	12/20/21	1,200 J	31	1.8	ND (1.0)	21,000 J	25	150	34	ND (0.2)	ND (0.2)	--	65	12	150 J	130 J	5.1	ND (5.0)
IRZ-29	N	01/04/22	910	ND (20)	ND (1.0)	ND (1.0)	15000	15	32	23	ND (0.2)	ND (0.2)	--	59	31	ND (5.0)	ND (5.0)	8.2	ND (5.0)
IRZ-29	N	01/04/22	2900	ND (20)	1.2	ND (1.0)	15000	29	36	120	ND (0.2)	ND (0.2)	--	180	22	ND (1.0)	16	4.1	ND (5.0)
IRZ-31	N	01/04/22	590	ND (20)	ND (1.0)	ND (1.0)	39000	38	15	6.5	ND (0.2)	ND (0.2)	--	33	24	100	66	9	ND (5.0)
IRZ-31	N	01/04/22	1600	420	ND (1.0)	ND (1.0)	13000	13	68	79	ND (0.2)	ND (0.2)	--	66	37	280	300	9.2	ND (5.0)
IRZ-33	N	01/04/22	960	ND (20)	ND (1.0)	ND (1.0)	25000	26	14	ND (0.5)	ND (0.2)	ND (0.2)	--	120	91	78	8.7	27	ND (5.0)
IRZ-33	N	01/04/22	1100	ND (20)	ND (1.0)	ND (1.0)	23000	22	35	12	ND (0.2)	ND (0.2)	--	84	56	80	ND (1.0)	6.7	ND (5.0)
IRZ-35	N	01/04/22	1800	92	ND (1.0)	ND (1.0)	15000	15	76	35	ND (0.2)	ND (0.2)	--	120	73	320	130	14	ND (5.0)
IRZ-37	N	01/04/22	5300	ND (20)	ND (1.0)	ND (1.0)	21000	20	110	26	ND (0.2)	ND (0.2)	--	140	54	110	16	10	ND (5.0)
IRZ-39	N	01/04/22	3200	890	ND (1.0)	ND (1.0)	13000	12	370	370	ND (0.2)	ND (0.2)	--	280	140	290	83	4.2	ND (5.0)

Table 3.4
NTH IRZ Baseline Sampling Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Type	Sample Date	Ortho-Phosphate, Dissolved mg/L	Potassium µg/L	Potassium, dissolved mg/L	Selenium µg/L	Selenium, Dissolved µg/L	Silver µg/L	Silver, Dissolved µg/L	Slime-Forming Bacteria CFU/mL	Sodium µg/L	Sodium, Dissolved mg/L	Soluble Silica, Dissolved mg/L	Sulfate mg/L	Sulfate-Reducing Bacteria CFU/mL	Sulfide mg/L	Thallium µg/L	Thallium, Dissolved µg/L	Total Dissolved Solids mg/L
IRZ-09	N	01/25/22	ND (1.0)	21,000	19	0.92	0.83	ND (0.5)	ND (0.5)	0.1	2,000,000	1,900	31	480	0.1	ND (0.1)	ND (0.5)	ND (0.5)	6,800
IRZ-13	N	03/10/22	ND (1.0)	30,000	29	1	0.96	ND (0.5)	ND (0.5)	20	4,300,000	4,200	15	950	0	ND (0.1)	ND (0.5)	ND (0.5)	12,000
IRZ-13	N	03/10/22	ND (1.0)	17,000	16	0.83	0.86	ND (0.5)	ND (0.5)	500	2,100,000	2,000	17	460	0	ND (0.1)	ND (0.5)	ND (0.5)	5,600
IRZ-15	N	12/20/21	--	39,000 J	38 J	1.3	1.5	ND (0.5)	ND (0.5)	ND (0.1)	5,800,000	4,900	--	920	325	--	ND (0.5)	ND (0.5)	13,000
IRZ-15	N	12/20/21	--	11,000	10 J	2.1	2.1	ND (0.5)	ND (0.5)	20	540,000	600 J	--	230	1,400	--	ND (0.5)	ND (0.5)	2,400
IRZ-16	N	12/20/21	--	41,000 J	39 J	1.1	1	ND (0.5)	ND (0.5)	67,000	5,900,000	5,200	--	900	ND (0.1)	--	ND (0.5)	ND (0.5)	13,000
IRZ-16	N	12/20/21	--	8,900	9.1 J	2.4	1.7	ND (0.5)	ND (0.5)	13,000	630,000	870 J	--	250	ND (0.1)	--	ND (0.5)	ND (0.5)	2,600
IRZ-17	N	12/20/21	--	37,000 J	29 J	0.87	1.1	ND (0.5)	ND (0.5)	67,000	4,800,000	4,900	--	1,100	ND (0.1)	--	ND (0.5)	ND (0.5)	12,000
IRZ-17	N	12/20/21	--	10,000 J	11 J	1.5	1.3	ND (0.5)	ND (0.5)	500	1,200,000	1,200	--	350	ND (0.1)	--	ND (0.5)	ND (0.5)	3,600
IRZ-18	N	12/20/21	--	5,500 J	6.2 J	3.5	2.8	ND (0.5)	ND (0.5)	440,000	610,000	650	--	200	ND (0.1)	--	ND (0.5)	ND (0.5)	1,800
IRZ-18	N	12/20/21	--	34,000 J	34 J	1.6	1.6	ND (0.5)	ND (0.5)	67,000	5,700,000	5,600	--	830	ND (0.1)	--	ND (0.5)	ND (0.5)	17,000
IRZ-20	N	12/20/21	--	33,000 J	31 J	1.2	0.92	ND (0.5)	ND (0.5)	2,500	4,500,000	4,600	--	720	ND (0.1)	--	ND (0.5)	ND (0.5)	11,000
IRZ-20	N	12/20/21	--	8,000	8.0 J	3.2	2.7	ND (0.5)	ND (0.5)	67,000	610,000	400 J	--	180	ND (0.1)	--	ND (0.5)	ND (0.5)	1,600
IRZ-21	N	12/20/21	--	6,500 J	7.5 J	3.8	3.5	ND (0.5)	ND (0.5)	67,000	280,000	400	--	180	ND (0.1)	--	ND (0.5)	ND (0.5)	1,200
IRZ-21	N	12/20/21	--	33,000 J	32 J	2.3	2.4	ND (0.5)	ND (0.5)	13,000	5,300,000	4,300	--	840	ND (0.1)	--	ND (0.5)	ND (0.5)	13,000
IRZ-23	N	12/21/21	ND (1.0)	10,000	9.9 J	4.7	4.1	ND (0.5)	ND (0.5)	2,500	610,000 J	580	21 J	220	0.1	ND (0.1)	ND (0.5)	ND (0.5)	2,200
IRZ-25	N	12/20/21	--	7,800 J	7.8 J	9.2	8.6	ND (0.5)	ND (0.5)	13,000	400,000	380	--	270	325	--	ND (0.5)	ND (0.5)	1,500
IRZ-25	N	12/20/21	--	34,000	15 J	11	7.2	ND (0.5)	ND (0.5)	500	3,800,000	420 J	--	790	ND (0.1)	--	ND (0.5)	ND (0.5)	13,000
IRZ-27	N	12/20/21	--	12,000 J	12 J	7.9	7.3	ND (0.5)	ND (0.5)	500	460,000	460	--	310	75	--	ND (0.5)	ND (0.5)	1,700
IRZ-27	N	12/20/21	--	30,000	14 J	12	6.8	ND (0.5)	ND (0.5)	ND (0.1)	1,100,000	780 J	--	560	ND (0.1)	--	ND (0.5)	ND (0.5)	6,800
IRZ-29	N	01/04/22	--	29,000	28	48	45	ND (0.5)	ND (0.5)	0.1	2,700,000	2500	--	770	0.1	--	ND (0.5)	ND (0.5)	6,400
IRZ-29	N	01/04/22	--	29,000	11	47	4.5	ND (0.5)	ND (0.5)	0.1	2,700,000	450	--	400	0.1	--	ND (0.5)	ND (0.5)	1,900
IRZ-31	N	01/04/22	--	13,000	12	9.5	9.5	ND (0.5)	ND (0.5)	2500	470,000	460	--	400	6000	--	ND (0.5)	ND (0.5)	2,000
IRZ-31	N	01/04/22	--	28,000	27	47	42	ND (0.5)	ND (0.5)	100	2,600,000	2600	--	740	0.1	--	ND (0.5)	ND (0.5)	6,600
IRZ-33	N	01/04/22	--	11,000	11	69	62	ND (0.5)	ND (0.5)	500	990,000	940	--	620	325	--	ND (0.5)	ND (0.5)	2,900
IRZ-33	N	01/04/22	--	35,000	31	6.4	16	ND (0.5)	ND (0.5)	20	3,900,000	2700	--	690	0.1	--	ND (0.5)	ND (0.5)	8,200
IRZ-35	N	01/04/22	--	15,000	15	36	37	ND (0.5)	ND (0.5)	13000	1,400,000	1400	--	590	0.1	--	ND (0.5)	ND (0.5)	3,700
IRZ-37	N	01/04/22	--	20,000	18	11	12	ND (0.5)	ND (0.5)	67000	1,300,000	1200	--	480	75	--	ND (0.5)	ND (0.5)	4,500
IRZ-39	N	01/04/22	--	12,000	12	4.2	4.3	ND (0.5)	ND (0.5)	13000	640,000	650	--	470	325	--	ND (0.5)	ND (0.5)	1,800

Table 3.4
NTH IRZ Baseline Sampling Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Type	Sample Date	Total Kjeldahl Nitrogen mg/L	Total Organic Carbon mg/L	Total Phosphorus as P mg/L	Vanadium µg/L	Vanadium, Dissolved µg/L	Zinc µg/L	Zinc, Dissolved µg/L	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	pH pH units	Specific Conductance µS/cm	Temperature deg C	Turbidity NTU
IRZ-09	N	01/25/22	0.22	ND (1.0)	ND (0.02)	2.9	3	ND (10)	ND (10)	3.75	86.8	7.82	9,032	24.1	54.9
IRZ-13	N	03/10/22	ND (0.2)	ND (50)	ND (0.02)	2.1	2.5	ND (10)	ND (10)	5.64	37.3	7.75	17,680	23	0.92
IRZ-13	N	03/10/22	ND (0.2)	ND (1.0)	ND (0.02)	3.8	3.9	ND (10)	ND (10)	3.49	45	7.99	8,788	24.8	6.88
IRZ-15	N	12/20/21	--	ND (50)	--	4.3	3.7	ND (10 J)	ND (10)	2.88	98	8	20,000	24.9	14.99
IRZ-15	N	12/20/21	--	ND (1.0)	--	3.9	3.2	ND (10 J)	ND (10)	3.49	64	7.6	4,230	25.7	9.66
IRZ-16	N	12/20/21	--	ND (1.0)	--	21	4.1	ND (10 J)	ND (10)	2.82	93	7.9	20,100	28.2	24.39
IRZ-16	N	12/20/21	--	ND (1.0)	--	9.8	5	ND (10 J)	ND (10)	3.98	66	7.7	5,150	27	6.51
IRZ-17	N	12/20/21	--	ND (1.0)	--	19	3.4	ND (10 J)	ND (10)	2.8	-9.1	7.7	18,900	26.3	23.15
IRZ-17	N	12/20/21	--	ND (1.0)	--	6.1	5.7	ND (10 J)	ND (10)	2.57	2.6	7.7	6,640	26.4	12.44
IRZ-18	N	12/20/21	--	ND (1.0)	--	22	4.7	40 J	ND (10)	5.05	69	7.9	3,100	27.9	12.34
IRZ-18	N	12/20/21	--	ND (1.0)	--	12	2.4	37 J	ND (10)	3	80	7.8	20,900	27.7	19.29
IRZ-20	N	12/20/21	--	ND (1.0)	--	25	3.7	ND (10 J)	ND (10)	2.46	-20	7.4	17,700	26.8	32.87
IRZ-20	N	12/20/21	--	ND (1.0)	--	21	6.1	ND (10 J)	ND (10)	5.57	40	7.8	2,860	27.2	14.51
IRZ-21	N	12/20/21	--	ND (1.0)	--	77	8.5	21 J	ND (10)	7.05	75	8	2,010	27.2	38.09
IRZ-21	N	12/20/21	--	ND (1.0)	--	62	6	ND (10 J)	ND (10)	2.64	100	7.7	19,800	27.1	21.07
IRZ-23	N	12/21/21	0.23	ND (10)	ND (0.02)	17	9.6	ND (10 J)	ND (10)	6.11	86	7.7	4,610	23.6	7.45
IRZ-25	N	12/20/21	--	ND (1.0)	--	47	5.7	ND (10 J)	ND (10)	7.03	74	7.8	2,220	27.9	82.33
IRZ-25	N	12/20/21	--	ND (1.0)	--	3	5	ND (10 J)	ND (10)	2.31	100	7.6	15,800	27.8	139.61
IRZ-27	N	12/20/21	--	ND (1.0)	--	28	6.1	150 J	ND (10)	6.31	33	7.8	2,440	27.2	112.86
IRZ-27	N	12/20/21	--	ND (1.0)	--	11	6	ND (10 J)	ND (10)	2.79	74	7.4	4,900	27.6	43.76
IRZ-29	N	01/04/22	--	ND (1.0)	--	5.6	1.8	ND (10)	ND (10)	6.12	99.5	7.87	10,565	22.2	5
IRZ-29	N	01/04/22	--	ND (1.0)	--	17	3.9	ND (10)	ND (10)	6.61	95.9	7.74	3,458	24.9	14
IRZ-31	N	01/04/22	--	ND (5.0)	--	4.9	3.9	16	ND (10)	4.92	112.5	7.65	3,418	26.3	52.35
IRZ-31	N	01/04/22	--	ND (1.0)	--	3.7	ND (1.0)	ND (10)	ND (10)	6.64	112	7.74	10,833	27.1	10.9
IRZ-33	N	01/04/22	--	ND (1.0)	--	6.8	4.2	12	ND (10)	4.83	98.9	8.12	4,498	25.8	15.6
IRZ-33	N	01/04/22	--	ND (1.0)	--	4.2	1.5	ND (10)	ND (10)	3.05	114.8	7.72	12,354	26	37.8
IRZ-35	N	01/04/22	--	ND (1.0)	--	8.1	1.9	ND (10)	ND (10)	5.14	121	7.51	9,817	26.6	37.52
IRZ-37	N	01/04/22	--	ND (1.0)	--	15	ND (1.0)	330	ND (10)	6.12	110.4	7.69	6,360	27.6	12.26
IRZ-39	N	01/04/22	--	2	--	15	1.2	57	ND (10)	4.43	6.4	8.23	2,593	27.5	53.02

Table 3.4
NTH IRZ Baseline Sampling Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

- Notes:
1. The lower and upper interval samples collected from wells IRZ-15 (IRZ-15-055 and IRZ-15-200) and IRZ-16 (IRZ-16-055 and IRZ-16-087) were mistakenly switched. This has been corrected in the table.
 2. Values in parentheses in the table indicate the reporting limit.

Acronyms and Abbreviations:

-- = not applicable or not available

µg/L = microgram per liter

µS/cm = microsiemen per centimeter

CaCO3 = calcium carbonate

CFU/mL = colony forming unit per milliliter

deg C = degree Celsius

ID = identification

IRZ = in-situ reactive zone

J = estimated concentration

mg/L = milligram per liter

ml/m = milliliter per minute

mV = millivolt

ND = not detected at reporting limit, as shown

NTH = National Trails Highway

NTU = nephelometric turbidity unit

P = Phosphorus

ppm = part per million

s/L² = second per square liter

Table 3.5
First Quarter 2022 Field Parameters
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
C-BNS	02/16/2022	8.3	952	1.0	10.65	10.90	0.47	610	177.6
C-CON-D	02/17/2022	8.3	948	1.0	12.19	10.80	0.47	610	140.9
C-CON-S	02/17/2022	8.4	950	1.0	12.02	10.80	0.47	610	141.2
C-I-3-D	02/16/2022	8.1	939	1.0	11.13	10.80	0.47	610	185.6
C-I-3-S	02/16/2022	8.2	942	1.0	10.79	10.80	0.47	610	184.3
C-MAR-D	02/17/2022	8.3	1,009	6.0	10.32	11.30	0.50	660	158.6
C-MAR-S	02/17/2022	8.3	1,015	5.0	10.89	11.30	0.50	660	159.6
C-NR1-D	02/17/2022	8.4	952	1.0	11.45	10.80	0.47	610	143.8
C-NR1-S	02/17/2022	8.4	954	1.0	11.38	10.70	0.47	610	145.7
C-NR3-D	02/17/2022	8.4	955	1.0	12.11	10.70	0.47	610	148.5
C-NR3-S	02/17/2022	8.4	955	1.0	12.25	10.70	0.47	610	149.6
C-NR4-D	02/17/2022	8.4	956	1.0	11.12	10.60	0.47	620	153.6
C-NR4-S	02/17/2022	8.4	955	1.0	11.17	10.60	0.47	610	154.2
C-R22A-D	02/16/2022	8.3	946	2.0	11.11	10.80	0.47	610	180.6
C-R22A-S	02/16/2022	8.3	948	2.0	11.08	11.30	0.47	610	176.9
C-R27-D	02/16/2022	8.3	951	1.0	10.60	11.10	0.47	610	177.1
C-R27-S	02/16/2022	8.4	952	1.0	10.60	11.10	0.47	610	177.3
C-TAZ-D	02/16/2022	8.0	920	2.0	11.48	10.80	0.46	590	195.6
C-TAZ-S	02/16/2022	8.1	933	1.0	11.16	10.80	0.46	600	189.6
IRZ-09	01/25/2022	7.8	9,032	54.9	3.75	24.10	nm	nm	86.8
IRZ-23	01/25/2022	7.5	5,527	15.7	4.11	25.90	nm	nm	100.1
IRZ-23	02/21/2022	7.5	5,486	57.3	4.19	24.50	0.00	nm	95.5
MW-20-070	02/03/2022	7.8	2,586	5.0	3.22	28.10	1.32	1,670	107.0
MW-20-070	03/10/2022	7.8	2,611	14.0	0.40	26.40	1.26	1,540	-20.0
MW-20-100	02/03/2022	7.5	2,442	4.0	1.15	29.20	1.25	1,580	104.8
MW-20-100	03/10/2022	7.3	3,490	10.0	0.90	28.60	1.59	1,790	-22.2
MW-20-130	02/03/2022	7.8	12,224	4.0	0.70	27.50	6.95	7,900	123.9
MW-20-130	03/10/2022	7.3	12,915	29.0	0.42	27.00	7.29	8,300	-68.8
MW-21	02/03/2022	7.7	8,251	35.0	3.21	25.60	4.57	5,360	94.5
MW-21	03/14/2022	7.1	11,713	2.0	4.18	27.90	6.67	7,630	97.9
MW-22	03/04/2022	7.4	21,481	37.0	0.96	23.70	0.13	13,870	-36.0
MW-26	02/02/2022	7.6	3,250	4.0	2.12	26.50	1.70	2,110	102.8
MW-26	03/14/2022	7.2	3,882	7.0	2.91	29.80	2.03	2,510	108.4
MW-27-020	03/10/2022	7.2	983	8.0	7.47	16.90	0.49	630	165.1
MW-27-060	03/10/2022	7.3	1,162	4.0	4.15	18.10	0.58	750	-13.1
MW-27-085	03/10/2022	7.3	11,955	2.0	4.02	18.50	6.86	7,760	-15.1
MW-28-025	03/08/2022	7.3	1,186	5.0	5.92	20.40	0.59	770	54.2

Table 3.5
First Quarter 2022 Field Parameters
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
MW-28-090	03/08/2022	7.2	7,212	2.0	1.25	19.10	3.99	4,690	-44.2
MW-29	03/08/2022	7.2	3,647	6.0	0.86	22.80	1.93	2,370	-105.9
MW-30-030	03/09/2022	7.7	3,473	10.0	0.13	23.80	1.55	2,080	-52.5
MW-30-050	03/09/2022	7.5	1,050	9.0	0.20	23.30	0.45	590	-15.0
MW-31-060	02/01/2022	7.7	7,234	5.0	2.65	27.80	3.96	4,700	-139.9
MW-31-060	03/04/2022	7.4	6,255	8.0	1.13	26.90	2.30	2,990	5.7
MW-31-135	02/01/2022	8.0	13,040	5.0	2.01	27.90	7.35	8,350	53.8
MW-31-135	03/07/2022	7.8	15,820	42.0	0.18	27.30	9.22	10,300	-56.3
MW-32-020	03/04/2022	7.1	17,764	43.0	0.89	24.10	0.16	nm	-129.9
MW-32-035	03/04/2022	7.1	7,866	27.0	0.21	24.90	7.60	nm	-133.9
MW-33-040	03/03/2022	7.9	7,053	18.0	0.22	26.20	3.85	4,350	-17.7
MW-33-090	03/03/2022	7.6	8,834	21.0	0.89	26.50	4.92	5,750	10.3
MW-33-150	03/03/2022	7.9	16,782	6.0	0.74	26.20	9.79	10,740	6.2
MW-33-210	03/03/2022	7.9	18,624	8.0	0.54	26.70	0.11	12,100	5.2
MW-34-055	03/10/2022	7.7	1,023	2.0	3.72	17.80	0.51	660	-35.9
MW-34-080	03/10/2022	7.3	9,570	2.0	0.17	18.50	5.40	6,210	-80.5
MW-34-100	03/10/2022	7.6	13,553	2.0	0.19	18.40	7.85	8,800	-74.2
MW-35-060	03/02/2022	7.4	6,745	19.0	1.23	27.80	0.54	nm	-1.2
MW-35-135	03/02/2022	7.7	11,180	16.0	0.41	27.50	0.94	nm	-54.7
MW-36-020	03/09/2022	7.4	1,863	14.0	0.48	20.10	0.89	1,030	-80.3
MW-36-040	03/09/2022	7.4	1,090	5.0	0.19	20.50	0.54	700	-100.3
MW-36-050	03/09/2022	7.5	1,044	2.0	0.29	20.80	0.47	580	-79.7
MW-36-070	03/09/2022	7.6	1,044	7.0	0.60	19.60	0.46	570	-20.2
MW-36-090	03/09/2022	7.1	6,415	3.0	0.55	19.80	3.28	5,870	-26.6
MW-36-100	03/09/2022	7.2	5,835	3.0	0.18	20.90	2.97	3,450	-50.2
MW-38D	03/03/2022	7.9	19,790	10.0	0.41	29.90	0.17	nm	-9.1
MW-38S	03/03/2022	7.7	2,040	15.0	2.39	32.10	0.15	nm	45.8
MW-39-040	02/28/2022	7.8	1,226	9.0	0.58	26.80	0.61	790	-55.8
MW-39-050	02/28/2022	7.2	789	14.0	0.60	25.30	0.38	510	-10.0
MW-39-060	02/28/2022	7.7	852	47.0	0.57	26.00	0.40	550	-12.1
MW-39-070	02/28/2022	7.4	1,824	29.0	0.58	25.80	0.92	1,180	-6.0
MW-39-080	02/28/2022	7.6	4,583	20.0	0.58	25.10	2.46	2,980	-16.8
MW-39-100	02/28/2022	7.4	10,953	10.0	0.86	23.40	8.52	8,130	6.6
MW-42-030	03/10/2022	7.7	1,672	5.0	0.14	20.90	0.85	1,080	-156.4
MW-42-055	03/10/2022	7.6	1,175	4.0	4.07	20.40	0.59	760	-46.4
MW-42-065	03/10/2022	7.2	6,219	6.0	0.83	20.50	3.39	4,030	-52.1
MW-43-025	03/08/2022	8.0	2,031	42.0	0.44	18.80	1.04	1,320	-35.1

Table 3.5
First Quarter 2022 Field Parameters
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
MW-43-075	03/08/2022	7.8	10,898	4.0	0.60	19.30	6.12	7,020	-57.1
MW-43-090	03/08/2022	7.9	18,341	11.0	0.30	18.60	0.11	11,850	-23.4
MW-44-070	03/10/2022	7.4	2,394	8.0	0.74	19.10	1.23	1,550	-108.5
MW-44-115	03/10/2022	7.6	11,579	8.0	0.31	19.80	6.64	7,540	-38.6
MW-44-125	03/10/2022	7.9	13,450	2.0	0.75	19.80	7.78	8,740	-148.1
MW-45-095A	03/08/2022	7.2	8,949	2.0	0.80	19.70	5.02	5,810	57.1
MW-46-175	03/03/2022	8.0	17,515	3.0	0.60	22.60	0.10	11,440	-11.9
MW-46-205	03/03/2022	8.0	21,639	5.0	0.49	23.20	0.13	14,100	-59.9
MW-47-055	03/03/2022	7.5	5,700	23.0	0.99	29.50	0.44	nm	35.7
MW-47-115	03/03/2022	7.5	13,623	14.0	0.19	29.20	0.11	nm	-25.1
MW-49-135	03/08/2022	7.8	14,959	3.0	0.74	22.60	8.73	9,740	41.4
MW-49-275	03/08/2022	8.0	26,351	3.0	0.42	23.80	0.16	17,130	52.6
MW-49-365	03/08/2022	7.1	38,581	2.0	0.61	22.90	0.25	25,070	55.8
MW-51	02/02/2022	7.7	12,200	4.0	0.90	28.30	6.96	7,930	112.1
MW-51	03/14/2022	7.5	13,287	4.0	2.32	28.90	7.62	8,630	106.1
MW-52D	03/08/2022	7.8	21,136	5.0	0.30	20.90	0.13	13,740	-55.8
MW-52M	03/08/2022	7.7	18,673	10.0	0.49	20.50	9.53	10,560	-85.1
MW-52S	03/08/2022	7.3	10,117	2.0	0.33	19.90	5.75	6,650	-87.7
MW-53D	03/08/2022	7.9	26,081	9.0	0.25	20.60	0.16	16,900	-79.5
MW-53M	03/08/2022	7.6	19,880	3.0	0.28	19.00	0.12	12,930	-74.7
MW-53S	03/08/2022	7.9	1,298	6.0	0.26	18.90	0.66	830	-95.6
MW-65-160	03/09/2022	7.2	4,792	7.0	4.91	25.60	2.55	3,110	126.3
MW-65-225	03/09/2022	7.2	12,097	6.0	1.26	29.80	6.86	7,860	114.1
MW-68-180	03/09/2022	7.4	5,418	7.0	5.26	27.70	2.91	3,520	127.3
MW-69-195	03/09/2022	7.2	3,655	8.0	4.18	23.70	1.92	2,370	140.2
MW-71-035	02/02/2022	7.0	15,875	25.0	1.15	24.30	8.31	9,440	-66.4
MW-71-035	03/14/2022	6.7	17,578	4.0	1.15	25.70	0.10	11,410	94.1
MW-75-033	03/02/2022	8.0	3,970	25.0	0.75	27.60	2.09	2,580	-5.7
MW-75-117	03/02/2022	8.0	12,225	7.0	0.60	27.60	6.95	7,940	-9.6
MW-75-202	03/02/2022	7.9	18,050	14.0	0.42	27.60	0.11	11,720	-13.8
MW-75-267	03/02/2022	7.8	22,650	25.0	0.30	26.90	0.14	14,720	-30.3
MW-75-337	03/02/2022	8.0	29,407	13.0	0.71	29.50	0.18	19,110	-14.3
MW-76-039	01/31/2022	7.6	3,708	5.0	0.34	26.30	1.95	2,410	84.0
MW-76-039	03/07/2022	7.7	3,133	17.0	0.70	26.80	1.64	2,050	-18.8
MW-76-156	01/31/2022	7.5	12,205	5.0	0.21	27.20	7.34	8,310	90.9
MW-76-156	03/07/2022	7.6	15,637	4.0	0.17	26.20	9.11	10,100	-48.7
MW-76-181	01/31/2022	7.7	17,285	2.0	0.19	26.30	0.10	11,210	95.1

Table 3.5
First Quarter 2022 Field Parameters
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
MW-76-181	03/07/2022	7.4	18,781	9.0	0.22	26.30	0.11	12,290	-14.8
MW-76-218	01/31/2022	8.8	14,505	5.0	0.17	25.20	8.58	9,660	94.9
MW-76-218	03/07/2022	7.8	20,630	5.0	0.15	26.60	0.12	13,530	-45.2
MW-77-046	03/01/2022	7.4	6,990	38.0	0.71	27.40	0.18	nm	-126.5
MW-77-102	03/01/2022	7.2	8,922	8.0	0.60	26.80	0.13	nm	-13.6
MW-77-158	03/01/2022	7.5	19,300	9.0	0.35	27.60	10.00	nm	-7.6
MW-77-187	03/01/2022	8.1	20,938	8.0	0.30	27.40	10.00	nm	3.3
MW-78-070	02/01/2022	7.7	2,586	9.0	2.33	29.30	1.32	1,680	73.2
MW-78-070	03/10/2022	7.3	3,486	35.0	0.49	26.70	1.45	1,740	-90.2
MW-78-142	02/01/2022	7.6	11,452	10.0	1.20	28.30	6.51	7,460	78.4
MW-78-142	03/10/2022	7.3	10,848	33.0	0.68	28.00	6.07	7,120	-81.9
MW-79-058	02/01/2022	7.6	3,167	8.0	2.16	29.60	1.65	2,050	72.7
MW-79-058	03/14/2022	7.4	3,246	8.0	4.62	29.30	1.69	2,110	109.1
MW-79-102	02/01/2022	7.6	8,077	10.0	1.13	29.40	4.45	5,230	79.0
MW-79-102	03/14/2022	7.5	9,405	9.0	1.51	29.20	5.27	6,120	104.4
MW-80-057	02/01/2022	7.8	5,270	7.0	2.12	30.00	2.81	3,400	73.5
MW-80-057	03/14/2022	7.6	6,087	8.0	3.75	29.60	3.28	3,950	99.1
MW-80-082	02/01/2022	7.6	8,444	7.0	1.13	29.00	4.67	5,490	79.4
MW-80-082	03/14/2022	7.5	10,125	6.0	2.48	29.30	5.67	6,570	106.6
MW-81-043	03/01/2022	8.0	6,701	13.0	1.02	27.80	3.63	4,290	-12.5
MW-81-098	03/01/2022	7.6	7,595	14.0	0.50	28.80	4.21	5,000	-40.0
MW-82-046	03/01/2022	7.1	9,980	18.0	0.65	25.80	5.69	6,630	-78.3
MW-82-112	03/01/2022	7.5	7,408	22.0	0.89	25.40	4.07	4,790	-11.7
MW-82-168	03/01/2022	7.4	18,259	20.0	0.34	25.90	0.11	11,900	-8.9
MW-82-198	03/01/2022	8.2	19,444	17.0	0.58	26.40	0.12	12,610	-45.6
MW-86-030	03/07/2022	7.4	1,287	8.0	1.15	20.10	0.65	830	-46.4
MW-86-066	03/07/2022	7.5	7,336	6.0	6.98	19.70	4.06	4,770	88.7
MW-86-120	03/07/2022	7.6	13,339	2.0	4.19	20.40	7.71	8,660	127.6
MW-86-140	03/07/2022	7.5	14,642	3.0	6.53	20.50	0.10	11,470	164.6
MW-90-031	03/04/2022	7.1	9,982	17.0	0.34	23.60	5.80	nm	-119.2
MW-96-045	03/02/2022	7.4	6,807	34.0	1.37	26.40	3.71	4,410	10.4
MW-96-217	03/02/2022	7.3	18,082	7.0	0.20	26.80	0.11	11,630	-14.0
MW-97-042	03/02/2022	7.5	3,869	46.0	1.00	29.10	0.29	nm	-58.2
MW-97-202	03/02/2022	7.1	8,021	8.0	0.54	27.60	0.16	nm	-204.1
PT5D	03/04/2022	8.0	11,239	9.0	0.93	21.90	6.40	7,520	-72.9
PT5M	03/04/2022	7.8	1,774	8.0	1.87	21.20	0.90	1,150	-112.7
PT5S	03/04/2022	8.0	638	4.0	2.67	21.50	0.32	410	-85.8

Table 3.5
First Quarter 2022 Field Parameters
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Sample Date	pH	Specific Conductance (μS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (deg C)	Salinity (ppt)	Total Dissolved Solids (mg/L)	ORP (mV)
R-19	02/17/2022	8.4	959	2.0	11.27	11.10	0.48	620	158.9
R-28	02/16/2022	8.4	963	1.0	10.29	11.40	0.47	610	177.6
R63	02/16/2022	8.2	951	2.0	9.95	10.80	0.47	610	184.3
RRB	02/17/2022	8.1	1,053	4.0	11.51	9.70	0.52	680	163.9
SW1	02/16/2022	7.9	1,190	5.0	6.38	15.80	0.60	770	185.9
SW2	02/16/2022	7.8	1,076	8.0	6.71	14.60	0.54	710	184.3
TW-02D	03/09/2022	7.6	23,033	8.0	0.14	26.40	0.14	14,970	100.2
TW-02S	03/09/2022	7.6	2,809	2.0	5.27	27.40	1.45	1,830	93.5
TW-03D	03/09/2022	7.1	21,399	3.0	0.27	26.70	0.13	13,860	132.5
TW-04	03/03/2022	7.3	16,625	8.0	0.28	28.40	0.17	nm	20.9

Acronyms and Abbreviations:

μS/cm = microsiemen per centimeter

deg C = degree Celsius

ID = identification

mg/L = milligram per liter

mV = millivolt

nm = not measured

NTU = nephelometric turbidity unit

ORP = oxidation-reduction potential

ppt = part per thousand

Table 4.1
Monitoring Well Inspection Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Date	Well Labeled On Casing Or Pad	Traffic Poles Intact	Concrete Pad Intact	Erosion Around Wellhead	Steel Casing Or Well Box Intact	Any Tabs Stripped Or Missing	Water In Well Box	J Plug Replaced Properly	Well Locked At Arrival	All Bolts Present	Comments
MW-76-156	1/31/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-76-039	1/31/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-76-218	1/31/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-76-181	1/31/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	yes	n/a
MW-31-060	2/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-31-135	2/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-78-142	2/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-78-070	2/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-79-102	2/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-79-058	2/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-80-082	2/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-80-057	2/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-71-035	2/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-26	2/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-51	2/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-21	2/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-20-130	2/3/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-20-100	2/3/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-20-070	2/3/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-99-060	2/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-99-140	2/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
PGE-09S	2/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
PGE-09N	2/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MTS-2	2/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MTS-1	2/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-94-030	2/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-94-100	2/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-94-175	2/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-39-070	2/28/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-39-100	2/28/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-39-040	2/28/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-39-050	2/28/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-39-080	2/28/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-39-060	2/28/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-82-046	3/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-82-112	3/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-82-198	3/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-82-168	3/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-81-098	3/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-81-043	3/1/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a

Table 4.1
Monitoring Well Inspection Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Date	Well Labeled On Casing Or Pad	Traffic Poles Intact	Concrete Pad Intact	Erosion Around Wellhead	Steel Casing Or Well Box Intact	Any Tabs Stripped Or Missing	Water In Well Box	J Plug Replaced Properly	Well Locked At Arrival	All Bolts Present	Comments
MW-77-046	3/1/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	n/a
MW-77-102	3/1/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	n/a
MW-77-158	3/1/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	n/a
MW-77-187	3/1/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	n/a
MW-35-060	3/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-97-042	3/2/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	Mild corrosion on well lock. Lock still functioning.
MW-97-202	3/2/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	Mild corrosion on well lock. Lock still functioning.
MW-35-135	3/2/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	n/a
MW-96-045	3/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-96-217	3/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-75-267	3/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-75-202	3/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-75-117	3/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-75-033	3/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-75-337	3/2/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-38D	3/3/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	yes	Tracer dye present.
MW-38S	3/3/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
TW-04	3/3/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	n/a
MW-47-055	3/3/2022	yes	yes	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-47-115	3/3/2022	yes	yes	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-33-040	3/3/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-33-090	3/3/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-33-150	3/3/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-33-210	3/3/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-46-175	3/3/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-46-205	3/3/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-32-020	3/4/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-32-035	3/4/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-90-031	3/4/2022	yes	yes	yes	no	yes	no	no	yes	yes	no	Replace bolts. Bolts verified in tact in Second Quarter 2022 sampling
PT5S	3/4/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
PT5M	3/4/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
PT5D	3/4/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-22	3/4/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-31-060	3/4/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-76-156	3/7/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-76-039	3/7/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-76-181	3/7/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-76-218	3/7/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a

Table 4.1
Monitoring Well Inspection Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Date	Well Labeled On Casing Or Pad	Traffic Poles Intact	Concrete Pad Intact	Erosion Around Wellhead	Steel Casing Or Well Box Intact	Any Tabs Stripped Or Missing	Water In Well Box	J Plug Replaced Properly	Well Locked At Arrival	All Bolts Present	Comments
MW-31-135	3/7/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-86-030	3/7/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-86-066	3/7/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-86-120	3/7/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-86-140	3/7/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-43-025	3/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-43-075	3/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-43-090	3/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-53S	3/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-53D	3/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-52S	3/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-52M	3/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-53M	3/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-52D	3/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-29	3/8/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-49-135	3/8/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-49-275	3/8/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-49-365	3/8/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-28-025	3/8/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-28-090	3/8/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-36-020	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-36-070	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-36-090	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-36-040	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-36-050	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-36-100	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-30-030	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-30-050	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-45-095a	3/8/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-69-195	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-65-225	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-65-160	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-68-180	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
TW-02D	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
TW-02S	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
TW-03D	3/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-78-070	3/10/2022	yes	n/a	yes	no	yes	yes	no	yes	yes	yes	Tab stripped. Repair tab.
MW-78-142	3/10/2022	yes	n/a	yes	no	yes	yes	no	yes	yes	yes	Tab stripped. Repair tab.

Table 4.1
Monitoring Well Inspection Results
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Date	Well Labeled On Casing Or Pad	Traffic Poles Intact	Concrete Pad Intact	Erosion Around Wellhead	Steel Casing Or Well Box Intact	Any Tabs Stripped Or Missing	Water In Well Box	J Plug Replaced Properly	Well Locked At Arrival	All Bolts Present	Comments
MW-20-070	3/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-20-130	3/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
Marina-1	3/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-20-100	3/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-27-085	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-27-060	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-27-020	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-34-100	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-34-080	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-34-055	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-44-070	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-44-125	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-44-115	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-42-030	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-42-055	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-42-065	3/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	n/a
MW-71-035	3/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-21	3/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-80-057	3/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-80-082	3/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-26	3/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-51	3/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-79-058	3/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a
MW-79-102	3/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	n/a

Abbreviation:
n/a = not applicable

Table 4.2
Monitoring Well Water Levels and Specific Capacities
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Well Screen Lithology	Sample Date	Pre-Purge Depth to Water (feet bTOC)	Post-Purge Depth to Water (feet bTOC)	Drawdown During Purging (feet)	Purging Rate (ml/min)	Specific Capacity (gpm/foot)	Needs Redevelopment?
MW-20-070	Alluvial	02/03/2022	45.43	45.45	0.02	500	6.60	No
MW-20-070	Alluvial	03/10/2022	44.71	44.90	0.19	500	0.70	No
MW-20-100	Alluvial	02/03/2022	45.70	45.70	0.00	500	--	No
MW-20-100	Alluvial	03/10/2022	44.76	44.88	0.12	500	1.10	No
MW-20-130	Alluvial	02/03/2022	45.90	45.90	0.00	500	--	No
MW-20-130	Alluvial	03/10/2022	44.95	45.05	0.10	500	1.32	No
MW-21	Alluvial	02/02/2022	51.30	58.25	6.95	500	0.02	No
MW-21	Alluvial	03/14/2022	50.04	50.24	0.20	100	0.13	No
MW-22	Fluvial	03/04/2022	5.10	5.35	0.25	300	0.32	No
MW-26	Alluvial	02/02/2022	47.45	47.45	0.00	500	--	No
MW-26	Alluvial	03/14/2022	46.21	46.26	0.05	500	2.64	No
MW-27-020	Fluvial	03/10/2022	4.65	4.71	0.06	500	2.20	No
MW-27-060	Fluvial	03/10/2022	5.36	5.39	0.03	500	4.40	No
MW-27-085	Fluvial	03/10/2022	5.24	5.28	0.04	500	3.30	No
MW-28-025	Fluvial	03/08/2022	10.70	10.73	0.03	500	4.40	No
MW-28-090	Fluvial	03/08/2022	11.41	11.46	0.05	500	2.64	No
MW-29	Fluvial	03/08/2022	29.91	29.99	0.08	500	1.65	No
MW-30-030	Fluvial	03/09/2022	13.31	13.35	0.04	300	1.98	No
MW-30-050	Fluvial	03/09/2022	12.62	12.66	0.04	300	1.98	No
MW-31-060	Alluvial	02/01/2022	40.58	40.60	0.02	500	6.60	No
MW-31-060	Alluvial	03/04/2022	38.97	39.07	0.10	500	1.32	No
MW-31-135	Alluvial	02/01/2022	41.38	41.40	0.02	500	6.61	No
MW-31-135	Alluvial	03/07/2022	40.00	40.11	0.11	500	1.20	No
MW-32-020	Fluvial	03/04/2022	6.98	7.26	0.28	200	0.19	No
MW-32-035	Fluvial	03/04/2022	6.74	6.89	0.15	200	0.35	No
MW-33-040	Fluvial	03/03/2022	32.21	32.28	0.07	500	1.89	No
MW-33-090	Alluvial	03/03/2022	32.03	32.13	0.10	500	1.32	No
MW-33-150	Alluvial	03/03/2022	32.18	32.25	0.07	500	1.89	No
MW-33-210	Alluvial	03/03/2022	31.54	31.60	0.06	500	2.20	No
MW-34-055	Fluvial	03/10/2022	4.70	4.73	0.03	500	4.40	No
MW-34-080	Fluvial	03/10/2022	4.88	4.91	0.03	500	4.40	No
MW-34-100	Fluvial	03/10/2022	5.10	5.15	0.05	500	2.64	No
MW-35-060	Alluvial	03/02/2022	26.88	27.15	0.27	200	0.20	No
MW-35-135	Alluvial	03/02/2022	26.58	26.77	0.19	200	0.28	No
MW-36-020	Fluvial	03/09/2022	13.50	13.60	0.10	300	0.79	No
MW-36-040	Fluvial	03/09/2022	13.00	13.13	0.13	300	0.61	No
MW-36-050	Fluvial	03/09/2022	12.97	13.00	0.03	300	2.64	No
MW-36-070	Fluvial	03/09/2022	12.64	12.70	0.06	300	1.32	No
MW-36-090	Fluvial	03/09/2022	13.20	13.30	0.10	300	0.79	No
MW-36-100	Fluvial	03/09/2022	13.34	13.48	0.14	300	0.57	No
MW-38D	Alluvial	03/03/2022	71.46	71.71	0.25	200	0.21	No
MW-38S	Alluvial	03/03/2022	71.66	71.92	0.26	200	0.20	No
MW-39-040	Alluvial	02/28/2022	13.24	13.32	0.08	300	0.99	No
MW-39-050	Alluvial	02/28/2022	13.12	13.22	0.10	300	0.79	No
MW-39-060	Alluvial	02/28/2022	13.20	13.30	0.10	300	0.79	No
MW-39-070	Alluvial	02/28/2022	13.22	13.28	0.06	300	1.32	No

Table 4.2
Monitoring Well Water Levels and Specific Capacities
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Well Screen Lithology	Sample Date	Pre-Purge Depth to Water (feet bTOC)	Post-Purge Depth to Water (feet bTOC)	Drawdown During Purging (feet)	Purging Rate (ml/min)	Specific Capacity (gpm/foot)	Needs Redevelopment?
MW-39-080	Alluvial	02/28/2022	13.13	13.23	0.10	300	0.79	No
MW-39-100	Alluvial	02/28/2022	13.29	13.39	0.10	300	0.79	No
MW-42-030	Fluvial	03/10/2022	8.08	8.11	0.03	500	4.40	No
MW-42-055	Fluvial	03/10/2022	8.09	8.13	0.04	500	3.30	No
MW-42-065	Fluvial	03/10/2022	7.60	7.63	0.03	500	4.40	No
MW-43-025	Fluvial	03/08/2022	6.45	6.50	0.05	300	1.59	No
MW-43-075	Fluvial	03/08/2022	6.77	6.80	0.03	300	2.64	No
MW-43-090	Fluvial	03/08/2022	7.00	7.03	0.03	300	2.64	No
MW-44-070	Fluvial	03/10/2022	15.82	15.85	0.03	500	4.40	No
MW-44-115	Alluvial	03/10/2022	16.30	16.33	0.03	500	4.40	No
MW-44-125	Alluvial	03/10/2022	16.14	16.19	0.05	500	2.64	No
MW-45-095A	Fluvial	03/08/2022	12.36	12.40	0.04	500	3.30	No
MW-46-175	Alluvial	03/03/2022	26.41	26.48	0.07	500	1.89	No
MW-46-205	Alluvial	03/03/2022	26.91	26.99	0.08	500	1.65	No
MW-47-055	Alluvial	03/03/2022	28.56	28.81	0.25	200	0.21	No
MW-47-115	Alluvial	03/03/2022	28.80	29.11	0.31	200	0.17	No
MW-49-135	Alluvial	03/08/2022	28.43	28.45	0.02	500	6.61	No
MW-49-275	Alluvial	03/08/2022	29.42	29.48	0.06	500	2.20	No
MW-49-365	Alluvial	03/08/2022	31.04	31.09	0.05	500	2.64	No
MW-51	Alluvial	02/02/2022	46.55	46.55	0.00	500	--	No
MW-51	Alluvial	03/14/2022	45.31	45.38	0.07	500	1.89	No
MW-52D	Fluvial	03/08/2022	8.30	8.35	0.05	300	1.59	No
MW-52M	Fluvial	03/08/2022	7.79	7.83	0.04	300	1.98	No
MW-52S	Fluvial	03/08/2022	8.49	8.58	0.09	300	0.88	No
MW-53D	Fluvial	03/08/2022	11.16	11.20	0.04	200	1.32	No
MW-53M	Fluvial	03/08/2022	10.53	10.63	0.10	300	0.79	No
MW-53S	Alluvial	03/08/2022	10.58	10.70	0.12	300	0.66	No
MW-65-160	Alluvial	03/09/2022	141.57	141.62	0.05	300	1.59	No
MW-65-225	Alluvial	03/09/2022	141.41	141.55	0.14	500	0.94	No
MW-68-180	Alluvial	03/09/2022	166.01	166.09	0.08	300	0.99	No
MW-69-195	Bedrock	03/09/2022	175.91	175.98	0.07	300	1.13	No
MW-71-035	Bedrock	02/02/2022	29.48	29.70	0.22	100	0.12	No
MW-71-035	Bedrock	03/14/2022	28.61	28.96	0.35	100	0.08	No
MW-75-033	Alluvial	03/02/2022	18.21	18.25	0.04	500	3.30	No
MW-75-117	Alluvial	03/02/2022	18.35	18.38	0.03	300	2.64	No
MW-75-202	Alluvial	03/02/2022	18.53	18.55	0.02	300	3.96	No
MW-75-267	Alluvial	03/02/2022	18.20	18.25	0.05	300	1.59	No
MW-75-337	Alluvial	03/02/2022	20.60	20.62	0.02	150	1.98	No
MW-76-039	Alluvial	01/31/2022	27.00	27.02	0.02	500	6.61	No
MW-76-039	Alluvial	03/07/2022	25.68	25.75	0.07	500	1.89	No
MW-76-156	Alluvial	01/31/2022	27.56	27.58	0.02	500	6.61	No
MW-76-156	Alluvial	03/07/2022	25.80	25.88	0.08	500	1.65	No
MW-76-181	Alluvial	01/31/2022	27.92	27.95	0.03	500	4.33	No
MW-76-181	Alluvial	03/07/2022	25.71	25.77	0.06	500	2.20	No
MW-76-218	Alluvial	01/31/2022	27.67	27.70	0.03	500	4.40	No
MW-76-218	Alluvial	03/07/2022	25.53	25.60	0.07	500	1.89	No

Table 4.2
Monitoring Well Water Levels and Specific Capacities
First Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Well ID	Well Screen Lithology	Sample Date	Pre-Purge Depth to Water (feet bTOC)	Post-Purge Depth to Water (feet bTOC)	Drawdown During Purging (feet)	Purging Rate (ml/min)	Specific Capacity (gpm/foot)	Needs Redevelopment?
MW-77-046	Alluvial	03/01/2022	24.55	24.80	0.25	200	0.21	No
MW-77-102	Alluvial	03/01/2022	23.77	23.94	0.17	200	0.31	No
MW-77-158	Alluvial	03/01/2022	24.51	24.89	0.38	200	0.14	No
MW-77-187	Alluvial	03/01/2022	24.63	25.04	0.41	200	0.13	No
MW-78-070	Alluvial	02/01/2022	46.80	46.80	0.00	500	--	No
MW-78-070	Alluvial	03/10/2022	46.30	46.44	0.14	500	0.94	No
MW-78-142	Alluvial	02/01/2022	47.33	47.35	0.02	500	6.60	No
MW-78-142	Alluvial	03/10/2022	46.81	46.93	0.12	500	1.10	No
MW-79-058	Alluvial	02/01/2022	46.60	46.60	0.00	500	--	No
MW-79-058	Alluvial	03/14/2022	45.27	45.33	0.06	500	2.20	No
MW-79-102	Alluvial	02/01/2022	46.45	46.45	0.00	500	--	No
MW-79-102	Alluvial	03/14/2022	45.20	45.28	0.08	500	1.65	No
MW-80-057	Alluvial	02/01/2022	49.30	49.30	0.00	500	--	No
MW-80-057	Alluvial	03/14/2022	47.91	47.99	0.08	500	1.65	No
MW-80-082	Alluvial	02/01/2022	48.88	48.90	0.02	500	6.61	No
MW-80-082	Alluvial	03/14/2022	47.60	47.65	0.05	500	2.64	No
MW-81-043	Alluvial	03/01/2022	23.11	23.22	0.11	500	1.20	No
MW-81-098	Alluvial	03/01/2022	23.04	23.10	0.06	500	2.20	No
MW-82-046	Alluvial	03/01/2022	30.39	30.45	0.06	500	2.20	No
MW-82-112	Alluvial	03/01/2022	29.41	29.54	0.13	500	1.02	No
MW-82-168	Alluvial	03/01/2022	28.62	28.74	0.12	500	1.10	No
MW-82-198	Alluvial	03/01/2022	28.11	28.21	0.10	500	1.32	No
MW-86-030	Alluvial	03/07/2022	12.40	12.45	0.05	500	2.64	No
MW-86-066	Alluvial	03/07/2022	11.80	11.82	0.02	500	6.61	No
MW-86-120	Alluvial	03/07/2022	12.60	12.63	0.03	500	4.40	No
MW-86-140	Alluvial	03/07/2022	12.52	12.55	0.03	500	4.40	No
MW-90-031	Alluvial	03/04/2022	4.88	5.12	0.24	200	0.22	No
MW-96-045	Alluvial	03/02/2022	28.73	28.83	0.10	500	1.32	No
MW-96-217	Alluvial	03/02/2022	28.90	28.98	0.08	500	1.65	No
MW-97-042	Alluvial	03/02/2022	27.02	27.34	0.32	200	0.17	No
MW-97-202	Alluvial	03/02/2022	27.11	27.39	0.28	200	0.19	No
PT5D	Alluvial	03/04/2022	18.65	18.70	0.05	300	1.59	No
PT5M	Alluvial	03/04/2022	18.33	18.38	0.05	300	1.59	No
PT5S	Alluvial	03/04/2022	18.31	18.35	0.04	300	1.98	No
TW-04	Alluvial	03/03/2022	29.15	29.53	0.38	200	0.14	No

Abbreviations/Notes:

-- = not applicable or not available
bTOC = below top of casing
ID = identification
ml/min = milliliters per minute
gpm = gallons per minute

Figures

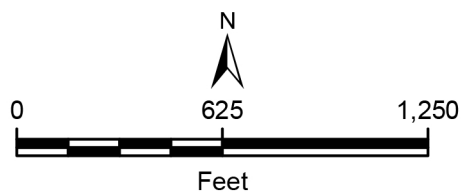


LEGEND

- ◆ 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



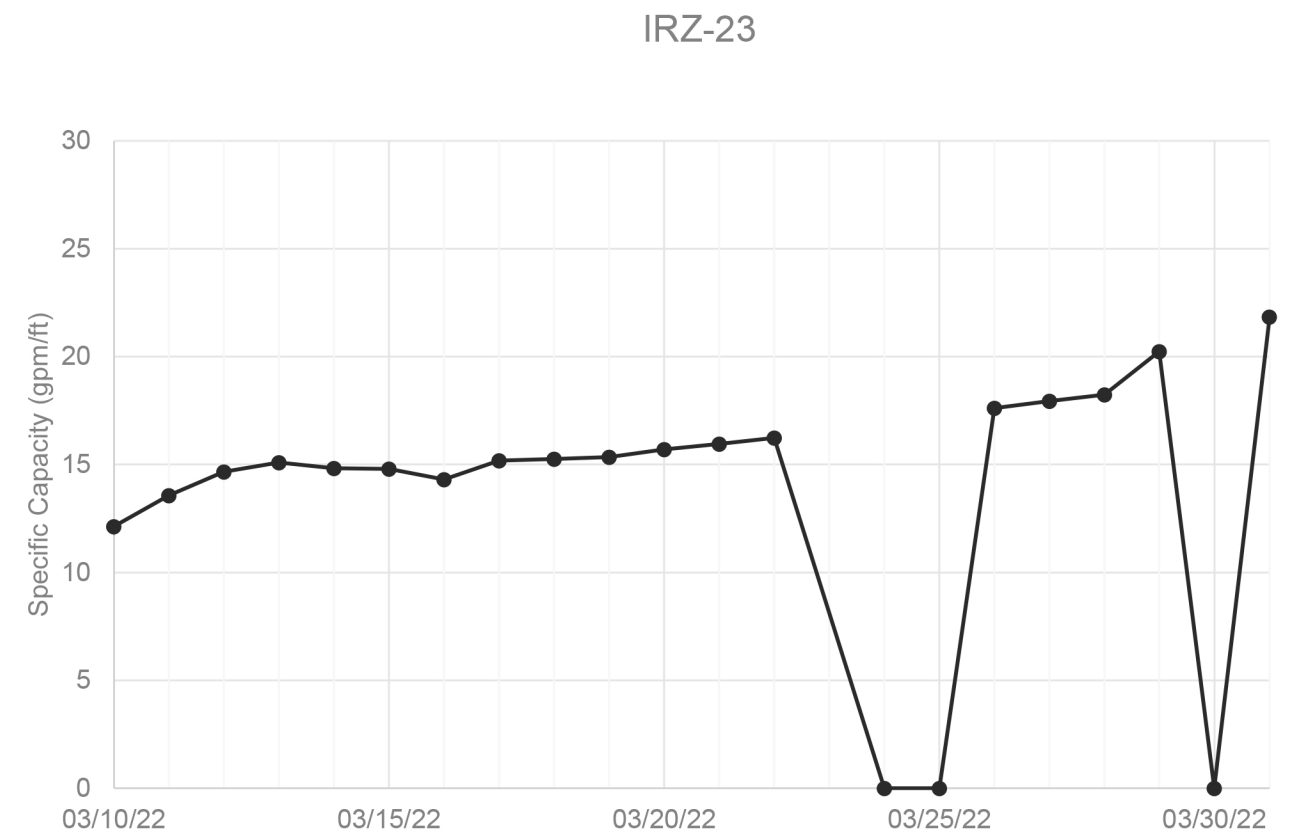
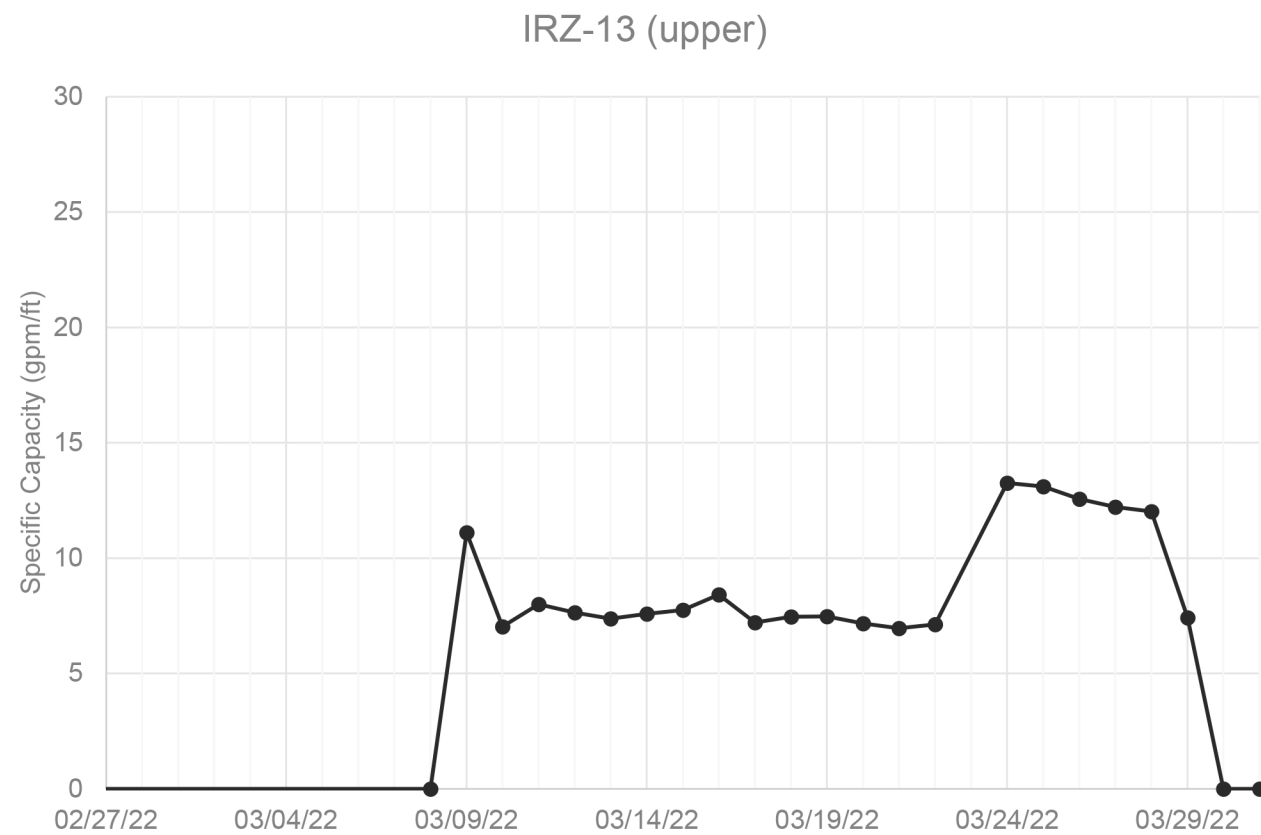
FIRST QUARTER 2022
WELL PERFORMANCE REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

PARTIAL REMEDY SYSTEM LAYOUT



FIGURE

1.1



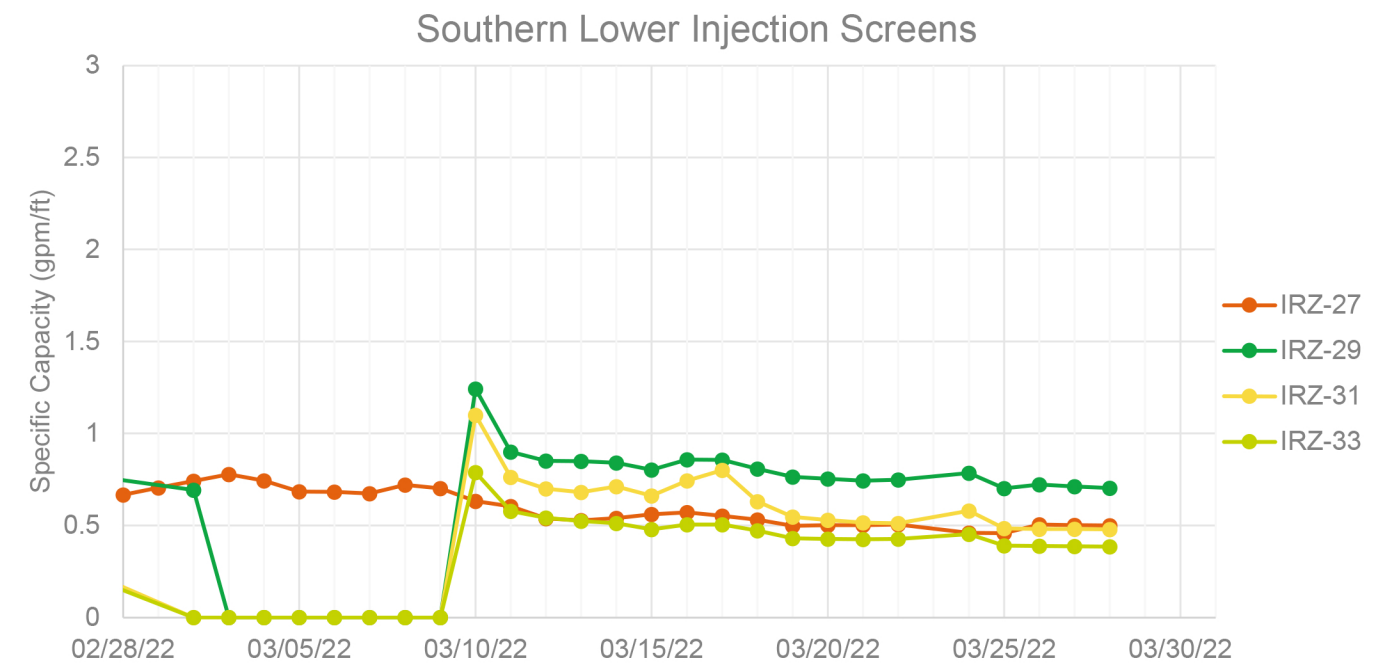
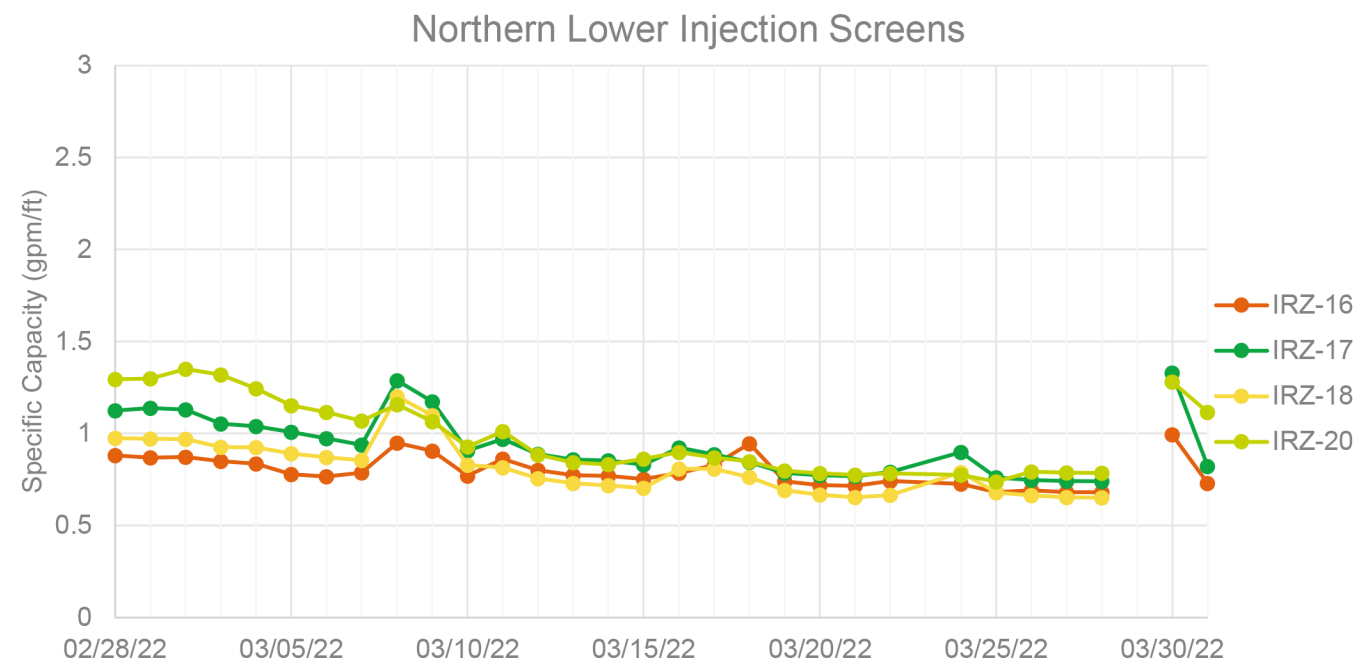
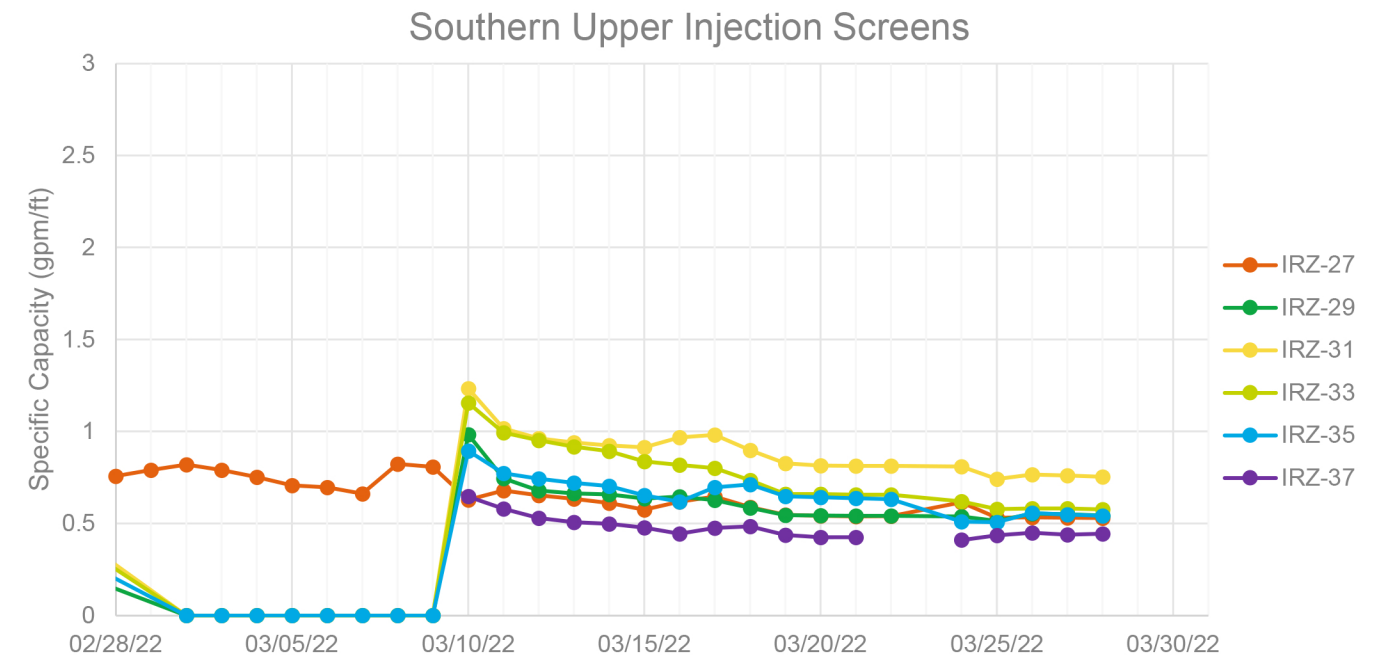
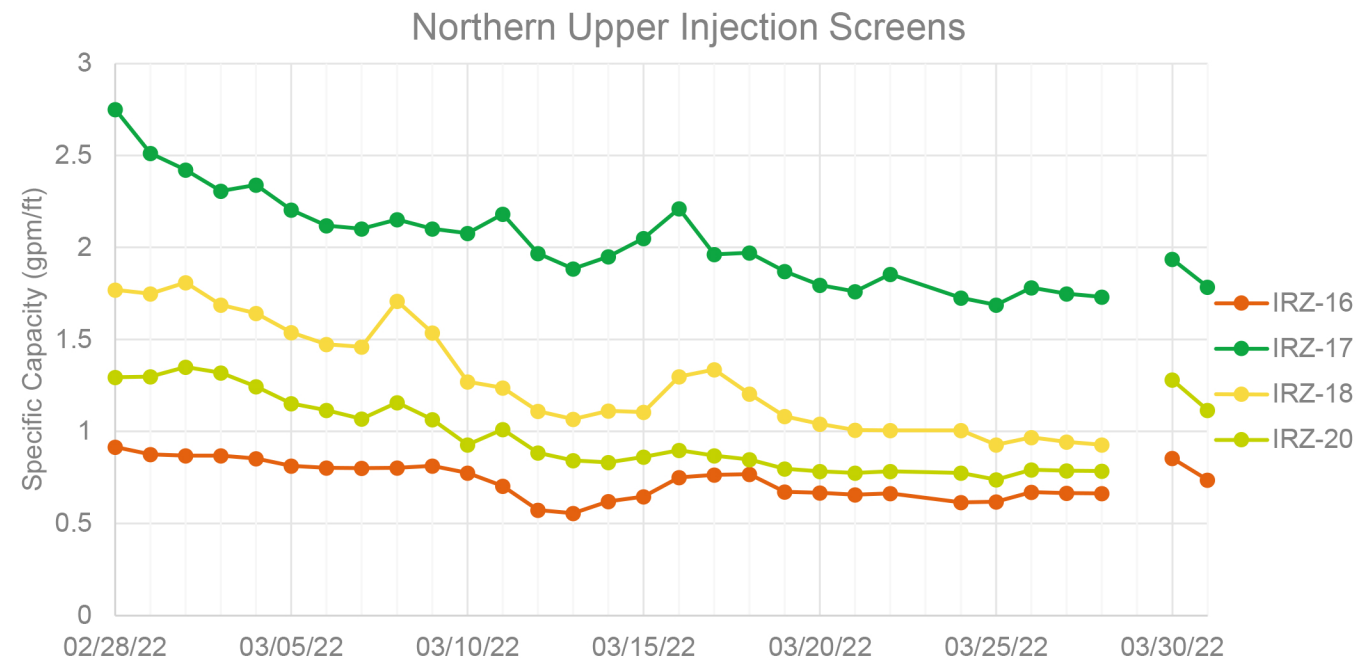
Note:
1. gpm/ft = gallon per minute per foot of drawdown

FIRST QUARTER 2022
WELL PERFORMANCE REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

**EXTRACTION WELL SPECIFIC
CAPACITY TRENDS**



FIGURE
3.1



Note:
1. gpm/ft = gallon per minute per foot of drawup

FIRST QUARTER 2022
WELL PERFORMANCE REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

**INJECTION WELL SPECIFIC
CAPACITY TRENDS**



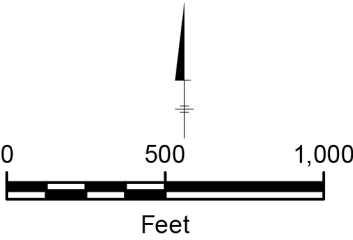
FIGURE
3.2



LEGEND

- GROUNDWATER MONITORING WELL
- REMEDIATION WELL (INJECTION)
- ◆ REMEDIATION WELL (EXTRACTION)
- ◇ REMEDIATION WELL (NOT PLUMBED INTO SYSTEM CURRENTLY)
- BEDROCK WELL
- BAT CAVE WASH

Notes:
1. NTH = National Trails Highway
2. TCS = Topock Compressor Station



FIRST QUARTER 2022
WELL PERFORMANCE REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

MONITORING WELL NETWORK



FIGURE
4.1

Arcadis U.S., Inc.
100 Montgomery Street
Suite 300
San Francisco
California 94104
Phone: 415 374 2744
Fax: 415 374 2745
www.arcadis.com