Pacific Gas and Electric Company

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December 14, 2022

Mr. Aaron Yue
Project Manager
California Department of Toxic Substances Control
5796 Corporate Avenue
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Subject: *Third Quarter 2022 Well Performance Report, PG&E Topock Compressor Station, Needles, California* (PGE20180115A)

Dear Mr. Yue:

Enclosed is the Third 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. Operation of the IRZ injection and extraction wells using Topock Compressor Station power continued at the start of Third Quarter 2022. After an extended period of unplanned downtime in July and August 2022, continuous operation of the IRZ system resumed using generators in late August 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 Third 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 well performance report.

Sincerely,

Iain Baker
Chromium Remediation Manager

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

Topock Project Executive Abstract

Document Title:	Third Quarter 2022 Well Performance Report, PG&E Topock Compressor Station, Needles CA
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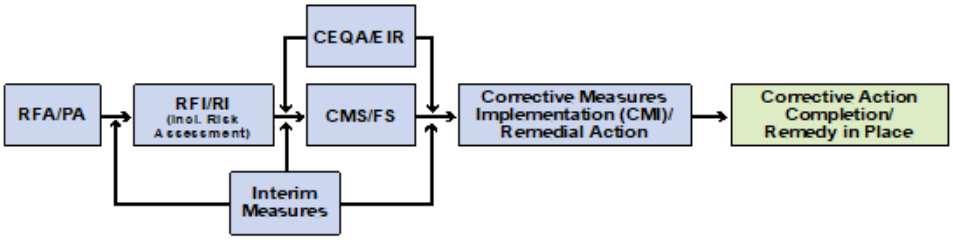
Action Required:	☒ Information Only ☐ Review & Comment Return to: _____ By Date: _____ ☐ Other / Explain:
What does this information pertain to?	☐ Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA) ☐ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment) ☐ Corrective Measures Study (CMS)/Feasibility Study (FS) ☒ Corrective Measures Implementation (CMI)/Remedial Action ☐ California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR) ☐ Interim Measures ☐ Other / Explain:
Is this a regulatory requirement?	☒ Yes ☐ 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:	☐ Permit ☐ Other / Explain:
Brief Summary of Attached Document:	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. Operation of the IRZ injection and extraction wells using Topock Compressor Station power continued at the start of Third Quarter 2022. After an extended period of unplanned downtime in July and August 2022, continuous operation of the IRZ system resumed using generators in late August 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 Third Quarter 2022 well operations, maintenance, and performance monitoring activities; and recommendations and planned activities for the next reporting period. Written by: PG&E
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:	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).  **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

Pacific Gas and Electric Company

Third Quarter 2022 Well Performance Report

Topock Compressor Station

Needles, California

December 14, 2022

Third Quarter 2022 Well Performance Report

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Needles, California

December 14, 2022

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Exhibits (in-text)

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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
NTH	National Trails Highway
NTU	nephelometric turbidity unit
O&M	operation and maintenance
PG&E	Pacific Gas and Electric Company
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, which established coordination guidelines for overseeing implementation of a groundwater response action at the TCS (DTSC and DOI 2011). In a coordinated effort, the Agencies 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 (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 that 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 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 intervals. The NTH IRZ extraction wells include IRZ-9, IRZ-13S, IRZ-13D, and IRZ-23.

Injection well intervals 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, the remedy-produced water conditioning system, and the carbon amendment system, 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 are being performed in accordance with the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a). This report documents well maintenance and well performance and covers the period from July 1 to September 30, 2022 (the Third 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 NTH IRZ 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 NTH 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 of groundwater 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 during operations. Mechanical rehabilitation physically agitates and removes dislodged and detached deposits. Chemical rehabilitation uses additives to remove deposits, for example through dissolution or by increasing solubility. Mechanical and chemical rehabilitation is planned to occur after periods of extended injection well operation and before planned, extended downtime (approximately every 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 is performed regularly to aid in maintaining well health as described in Section 2.1. Long-term performance monitoring consists of specific capacity monitoring, water quality monitoring, and wellhead inspection. Exhibit 2.2 in this section presents the planned frequency of these activities, and specific capacity and water quality monitoring are detailed in the following subsections.

Exhibit 2.2. Performance Monitoring Frequencies

Performance Monitoring Activity	Injection Wells	Extraction Wells
Specific 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 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 Specific Capacity Monitoring

One measure that will be used in the assessment of well performance is a specific 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:

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

Where:
ft = foot/feet
gpm = gallons per minute

As discussed in the First Quarter 2022 Well Performance Report (Arcadis 2022a), baseline specific capacities are determined for each extraction and injection well once the wells are operating consistently and the flowrates and water levels stabilize. Baseline capacities were established in Second Quarter 2022 for wells that operated

As discussed in the First Quarter 2022 Well Performance Report (Arcadis 2022a), baseline specific capacities are determined for each extraction and injection well once the wells are operating consistently and the flowrates and water levels stabilize. Baseline capacities were established in Second Quarter 2022 for wells that operated continuously for the majority of the quarter, including IRZ-13S, IRZ-13D, IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-23, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37 (Arcadis 2022b,c). Extraction well IRZ-9 and injection wells IRZ-15, IRZ-21, IRZ-25, and IRZ-39 did not operate continuously in the Second or Third Quarter 2022; therefore, sufficient data were not available to establish baselines for these wells in Second or Third Quarter 2022. Baseline capacities were modified in Third Quarter 2022 for extraction wells IRZ-13S, IRZ-13D, and IRZ-23, as explained below.

Monthly average specific capacities are provided in Table 3.3. Static water levels were collected for each injection and extraction well during well development. There is a natural variation in static water level depending on time of year. To account for this natural variation, the static water levels collected before system operation were adjusted by the typically observed difference in water levels at time of development and in January, which is the month where water levels are at their lowest at the Site. Continuous operation of the NTH IRZ began on March 10, 2022; however, there were several system shutdowns associated with a storm event, transformer repairs, and TCS turning off power to the remedy based on station activities. The system was on with minimal interruption from May 20 through June 27, 2022, during which the operating injection and extraction wells equilibrated. Accordingly, the equilibrated data from June were averaged and will be used as baseline and a reference point for comparison of future data to evaluate well performance. Specific capacity values may be affected by planned IRZ operational changes such as setting a new target flowrate. Where this occurs, baseline specific capacity values may be adjusted.

In June 2022, little to no drawdown was observed at extraction wells IRZ-13S, IRZ-13D, and IRZ-23 due to operating at lower flowrates and natural variations in static water level based on time of year. This led to elevated extraction well specific capacity values that were not representative of routine operating conditions. Once extraction well flowrates were increased on June 15, 2022, drawdown was observed, and extraction well specific capacities stabilized at lower values. Therefore, baseline specific capacities were modified for extraction wells IRZ-13S, IRZ-13D, and IRZ-23 using data from July 2022 when the wells were consistently operating at the established target flowrates.

Starting in Third Quarter 2022, specific capacities for each well were calculated monthly and compared to the baseline values to assess well performance decline over time. As presented in the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a), specific capacities greater than or equal to 90 percent of the baseline capacities will be classified as having good performance; specific capacities that fall between 80 and 90 percent of the baseline capacities will be classified as having fair performance; specific capacities below 80 percent of the baseline capacities will be classified as having poor performance. Specific capacities that fall below 80 to 90 percent of the baseline capacities will be flagged as needing evaluation and potential additional maintenance such as increasing the frequency of backwashing or rehabilitation. Specific capacity data collected during operations in First through Third 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 quarterly, when operating, during the Third 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 2021), and the PG&E Program Quality Assurance Project Plan (CH2M Hill 2014; Critigen 2020). Sample results are discussed in Sections 3.2.2 and 3.3.2 of this report.

3 NTH IRZ Well Performance

This section summarizes NTH IRZ system operational changes, well specific capacities, and water quality monitoring that occurred during the Third Quarter 2022.

3.1 System Operation Summary

Operation using TCS power continued at the start of Third Quarter 2022. System runtime, ethanol and recirculated groundwater injection volumes and flowrates, and average flowrates are summarized in Table 3.1. An IRZ system operations and non-routine maintenance log is presented as Table 3.2.

Multiple unplanned shutdowns occurred during Third Quarter 2022. On July 12, an unplanned outage occurred, and the TCS shut down power to the IRZ system. The IRZ system could not be restarted following a switchgear fault and required extensive troubleshooting to repair. Additionally, on August 24 and August 26, multiple storms flooded the IRZ vaults causing damage to electrical equipment. Generators were brought on-site to allow system operation while troubleshooting electrical components. A subset of wells was brought back on-line on August 30 following the storms and generator arrival and operated intermittently through September 13. The remaining wells planned for operation, except for IRZ-29 and IRZ-39, were brought on-line on September 13. Additional details on operational status throughout the quarter are provided in Table 3.2.

On September 26, ethanol dosing frequency was increased to twice weekly to increase the distribution of ethanol and treatment of hexavalent chromium throughout the IRZ. The concentration of total organic carbon in each pulse remained the same, meaning the increased frequency of ethanol dosing resulted in doubling the amount of ethanol injected per week into the IRZ system. Additionally, starting on September 28, backwash duration for IRZ injection wells was increased from 13 minutes to 20 minutes per well to determine if increased backwash duration resulted in improved well performance (e.g., increased well specific capacity and improved stability of well specific capacity). The results of increasing backwash duration for IRZ injection wells will be discussed in the Fourth Quarter 2022 Well Performance Report.

3.2 NTH IRZ Extraction Well Performance

Extraction wells in Phase 1 of the groundwater remedy include IRZ-9, IRZ-13S, IRZ-13D, 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 Third Quarter 2022 is provided in the following subsections.

3.2.1 Extraction Well O&M and Specific Capacity Summary

As described in Section 2.2.1 of this report, average specific capacities from June 2022 were established as the baseline specific capacities for extraction wells IRZ-23, IRZ-13S, and IRZ-13D. Baseline specific capacities were modified for these extraction wells using average specific capacities from July 2022 or a portion of July (IRZ-13D) due to flowrate adjustments in mid-June 2022 and natural variations in static water level based on time of year. The July 2022 specific capacities were used to evaluate well performance and guide maintenance starting in Third Quarter 2022. Extraction well IRZ-9 was not evaluated because the well was not operating during Second or Third Quarter 2022.

Extraction well specific capacities calculated during Third Quarter 2022 are documented in Table 3.3. Graphs of average daily specific capacity for extraction wells IRZ-13S, IRZ-13D, and IRZ-23 during this period are presented on Figure 3.1. Average daily specific capacities are presented as percentages compared to the baseline specific capacities for each well. In Third Quarter 2022, IRZ-13S operated at or above 90% baseline capacity throughout the quarter. IRZ-13D operated above 90% baseline capacity for most of the quarter. The periods where IRZ-13D operated below 80% of baseline coincided with an increase in IRZ-13D flowrate and increased drawdown that is greater than proportional, thus influencing specific capacity. Well performance at IRZ-13D will continue to be monitored in Fourth Quarter 2022 to determine if routine maintenance is required. IRZ-23 operated at or above 90% baseline capacity for most of the quarter. The reduced specific capacity at IRZ-23 in August through mid-September occurred when IRZ-23 extraction rates increased. IRZ-23 experienced more than proportional drawdown at this time, leading to reduced specific capacity. However, this well is not fouled because once the flowrate decreased to its prior rate, the specific capacity increased to meet or exceed baseline.

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 Third 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. No notable damage to extraction wells and/or non-routine maintenance occurred during Third Quarter 2022.

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 Third Quarter 2022 Quarterly Progress Report (Arcadis 2022d) provides the extraction well monitoring analytical results; however, the results are also summarized and discussed herein.

Baseline analytical data for extraction wells is provided in Table 3.4 of the First Quarter 2022 Well Performance Report (Arcadis 2022a). Baseline analytical data were collected during December 2021, January 2022, and March 2022, when extraction wells were respectively brought online.

Exhibit 3.1 in this section presents the quarterly analytical results from extraction wells IRZ-9, IRZ-23, IRZ-13S, and IRZ-13D for Third Quarter 2022 and includes the baseline analytical results of key indicator parameters as a reference. Total organic carbon, total iron, dissolved iron, and dissolved manganese concentrations were generally lower than the reporting limits, with several isolated exceptions. The isolated detections do not indicate a consistent trend that would be of concern for causing well fouling; therefore, no adjustments to operations were needed in Third Quarter 2022. Extraction well IRZ-9 was not operated in Third Quarter 2022. The extraction wells will continue to be monitored monthly when operating in Fourth Quarter 2022.

Exhibit 3.1. Third 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

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	September 2022	Not operating	Less than 1	Less than 0.02	Less than 0.02	0.0016
IRZ-23	Baseline: December 2021	8	Less than 10	0.69	0.091 J	Less than 0.0005
IRZ-23	September 2022	87	Less than 1	Less than 0.02	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-13S	September 2022	51	Less than 1	0.021	Less than 0.02	Less than 0.0005
IRZ-13D	Baseline: March 2022	53	Less than 1	Less than 0.02	0.059	0.062
IRZ-13D	September 2022	86	Less than 1	Less than 0.02	Less than 0.02	Less than 0.0005

Notes:
% = percent
mg/L = milligram per liter
J = estimated concentration

Table 3.4 includes field parameter data for extraction wells IRZ-9, IRZ-13S, IRZ-13D, and IRZ-23 collected during Third Quarter 2022. Field parameter data collected include temperature, pH, specific conductance, turbidity, dissolved oxygen, and redox potential. Field parameters will be collected monthly for Fourth Quarter 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 Third 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, IRZ-25, and IRZ-39 remained offline during Third Quarter 2022. Injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, and IRZ-37 operated for varying periods of time during Third Quarter 2022. Operating periods of each injection well are provided in Table 3.2. Routine injection well maintenance during Third Quarter 2022 included weekly backwashing of injection wells during system operation, as detailed in Table 3.2. Each operating injection well was backwashed to remove solids that may have accumulated in the well screen and gravel pack during injections.

Routine operation for injection wells includes daily monitoring of injection well flowrates and water levels. Corresponding injection well average monthly specific capacities, calculated from Third Quarter 2022 operational data, are documented in Table 3.3. Graphs of average daily specific capacities for injection wells operating during Third Quarter 2022 are plotted on Figure 3.2. Average specific capacities are plotted as percentage values compared to the baseline specific capacities established in Second Quarter 2022. Values between 80% and 90% are considered fair and indicate backwashing frequency should increase to once every 0.75 weeks. Values under 80% are considered poor and indicate backwashing frequency should increase to twice weekly.

Well performance was good, or greater than 90% of baseline, on average throughout the operational period in July. In September 2022, monthly well performance was good on average for operating wells, with the exception of:

- IRZ-18 (upper) specific capacity was poor, indicating increased backwashing is needed. IRZ-18 (upper) was still operating on average above 70% of baseline specific capacity.
- IRZ-20 (lower) was fair, indicating more backwashing is needed.

To address these initial decreases in well performance, backwash duration for IRZ injection wells was increased from 13 minutes to 20 minutes per well on September 28 to determine if increased backwash duration resulted in improved well performance (e.g., increased well specific capacity and improved stability of well specific capacity). The results of increasing backwash duration will be discussed in the Fourth Quarter 2022 Well Performance Report. If increasing backwash duration does not have an observed impact on well performance, backwash frequency for IRZ-18 (upper) and IRZ-20 (lower) will increase to twice weekly.

Average specific capacities will continue to be monitored to evaluate well performance and guide maintenance in Fourth Quarter 2022. Additional data evaluation and establishment of baseline specific capacities for the remaining injection wells (IRZ-15, IRZ-21, IRZ-25, and IRZ-39) will occur once those wells have been operating continuously and specific capacities stabilize.

Mechanical and chemical rehabilitation were not performed in Third Quarter 2022. Mechanical and chemical rehabilitation is planned to occur in Fourth Quarter 2022 or early First Quarter 2023 to proactively protect well health for remaining injection wells following approximately 1 year of operation.

Injection 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 injection wells and/or non-routine maintenance during Third Quarter 2022 included the following:

- In July through September 2022, flow control valves in injection well vaults IRZ-18, IRZ-29, IRZ-33, and IRZ-37 were inoperable. Valves were adjusted manually when needed to maintain target flowrates. Valves are in procurement and will be replaced when received.
- Rainstorms that occurred on August 24 and August 26 flooded the IRZ vaults and caused damage to electrical equipment in IRZ-27, IRZ-29, IRZ-35, and IRZ-37. Damaged equipment was replaced, and injection wells IRZ-27, IRZ-35, and IRZ-37 resumed operation on September 13, 2022. IRZ-29 remained offline due to electrical equipment damage and will resume operation once equipment is received and replaced.
- On September 19, 2022, a drip leak between the flange and block valve in the IRZ-35 and IRZ-37 injection vault caused a sump high level alarm. The drip leak was repaired by reinstalling and tightening existing equipment on September 20 through 22, 2022.

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. Baseline analytical results for each injection well are provided in the First Quarter 2022 Well Performance Report (Arcadis 2022a). Baseline analytical data were collected during December 2021 and January 2022. Future analytical results will be collected as needed for fouling troubleshooting purposes.

4 Monitoring Well Performance

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

- 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 indicates that the monitoring well screen and filter pack are intact and functioning.
- Depth to bottom of the well indicates infill (siltation).
- Specific capacity evaluation confirms 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 stripped or missing tabs, are listed. Overall, the wells were in good condition in Third Quarter 2022. The minor issues identified will be addressed during a future sampling event.

A storm/flooding event occurred on August 24, 2022, and August 26, 2022, resulting in partial washout of some of the well access paths. The road leading to the MW-95 well cluster and part of the road from Bat Cave Wash to 24 Bench was washed out, leaving monitoring wells in those areas inaccessible. Both roads are undergoing repairs in Third and Fourth Quarter 2022. The condition of accessible monitoring wells was inspected shortly afterwards during the September sampling event. The majority of the monitoring wells showed no evidence of damage or impacts due to flooding. Some monitoring wells had water in the well box or outer casing, as noted in Table 4.1; however, well integrity for these wells appeared intact.

Turbidity. Turbidity data are presented in Table 3.4. In accordance with Section 4.2.4 of the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a), wells that consistently yield turbidity above the range of 20 to 30 nephelometric turbidity unit (NTU) will undergo additional evaluation to determine if redevelopment is warranted, potentially including evaluation of previous purge data, specific capacity, and longer-term pressure transducer data. Monitoring well MW-22 yielded a turbidity reading of 31 NTU in August. This well yielded turbidity readings of 31 NTU and 37 NTU when sampled in First and Second Quarter 2022. Given turbidity is still close to 30 NTU, this well will continue to be monitored in Fourth Quarter. Monitoring well MW-67-185 has yielded turbidity readings above 30 NTU in since May 2022. Turbidity readings since May have ranged from 37 NTU to 47 NTU. Turbidity data for this well collected in 2021 following the tracer injection study indicate a pattern of high turbidity readings (up to 500 NTU). Accordingly, this well will continue to be monitored. Monitoring well MW-79-058 yielded a turbidity reading of 202 NTU in August, but was just above just 30 NTU in July and September 2022. Given turbidity is generally still close to 30 NTU, this well will continue to be monitored and redevelopment will be considered in Fourth Quarter.

Depth to well bottom. Monitoring well depth-to-bottom data are presented in Table 4.2. Depths to bottom are measured manually during sampling events using a water level meter and compared to the as-constructed well depth and bottom of the screened interval to assess siltation, integrity of the well screen, and integrity of the well casing. If the measured well depth for consecutive sampling events suggests that at least 20 percent of the screened interval is silted in, the well will be flagged for further evaluation to determine if redevelopment is necessary.

The following monitoring wells were resurveyed on July 25, 2022, due to observed discrepancies between constructed and measured well depths while reviewing First and Second Quarter 2022 data: MW-20-70, MW-20-100, MW-20-130, MW-22, MW-38-D, and MW-38-S. Data presented in Table 4.2 include the resurveyed data.

Additional monitoring wells planned for resurvey due to observed discrepancies between constructed and measured well depths are flagged as such in Table 4.2.

The following monitoring wells will be reviewed for possible redevelopment in Fourth Quarter 2022 or First Quarter 2023 due to the measured depth covering greater than 20% of the screened interval: MW-27-020, MW-28-025, MW-30-030, MW-32-020, MW-35-060, MW-39-040, and MW-77-046.

Specific capacity. Purging data, including purge rate, drawdown, and calculated specific capacity, are presented in Table 4.2. Purging is conducted at rates 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 for a fluvial or alluvial well, the well will be flagged for further evaluation to determine if it needs rehabilitation. Bedrock wells are excluded from this evaluation method due to the potential for larger drawdown during purging. No wells were identified for potential rehabilitation in Third Quarter 2022 based on this criterion, except for MW-21 and MW-77-102. At monitoring well MW-21, more than 1 foot of drawdown was recorded during the September 2022 sampling event. No rehabilitation is planned for MW-21 at this time; however, drawdown and purge rates for this well will continue to be monitored for changes that would warrant rehabilitation during future sampling events. At monitoring well MW-77-102, more than 1 foot of drawdown was recorded during the July 2022 sampling event. Less than 1 foot of drawdown was recorded at MW-77-102 during the August and September 2022 sampling events; therefore, no rehabilitation is planned for MW-77-102 at this time.

5 Recommendations and Planned Activities for Next Reporting Period

Phase 1 groundwater remedy operations and the Phase 1 monitoring program will continue in Fourth Quarter 2022 (October to December 2022) in accordance with the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a) and Phase 1 Interim Monitoring Plan (Arcadis 2021). Arcadis does not recommend modifications to the well maintenance program for Fourth Quarter 2022.

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

- Continue operation of target extraction and injection wells. Injection wells IRZ-15, IRZ-21, IRZ-25, IRZ-29, and IRZ-39, 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. Increase backwashing frequency to twice weekly for injection wells IRZ-18 (upper) and IRZ-20 (lower) if increased backwash duration does not result in improved well performance.
- Monitor average specific capacities for remedial and monitoring wells to determine if additional maintenance is needed.
- Continue quarterly inspections of sampled monitoring wells. Resurvey wells noted in Table 4.2.
- Conduct proactive mechanical and chemical well rehabilitation on each injection well in Fourth Quarter 2022 or early First Quarter 2023.

Well performance monitoring will be reported in a Fourth Quarter 2022 Well Performance Report. A Fourth Quarter 2022 Quarterly Progress Report will also be submitted to document operations and monitoring results in accordance with the O&M Manual (Appendix L, Volume 1; CH2M Hill 2015a).

6 References

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CH2M Hill. 2014. Final PG&E Program Quality Assurance Project Plan. November.

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Tables

Table 3.1
Summary of NTH IRZ Well Operations
Third 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)	Ethanol 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	Upper	Injection	Apr-22	--	--	--	--	--
IRZ-15	Upper	Injection	May-22	--	--	--	--	--
IRZ-15	Upper	Injection	Jun-22	--	--	--	--	--
IRZ-15	Upper	Injection	Jul-22	--	--	--	--	--
IRZ-15	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-15	Upper	Injection	Sep-22	--	--	--	--	--
IRZ-15	Lower	Injection	Nov-21	--	--	--	--	--
IRZ-15	Lower	Injection	Dec-21	--	--	--	--	--
IRZ-15	Lower	Injection	Jan-22	--	--	--	--	--
IRZ-15	Lower	Injection	Feb-22	--	--	--	--	--
IRZ-15	Lower	Injection	Mar-22	--	--	--	--	--
IRZ-15	Lower	Injection	Apr-22	--	--	--	--	--
IRZ-15	Lower	Injection	May-22	--	--	--	--	--
IRZ-15	Lower	Injection	Jun-22	--	--	--	--	--
IRZ-15	Lower	Injection	Jul-22	--	--	--	--	--
IRZ-15	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-15	Lower	Injection	Sep-22	--	--	--	--	--
IRZ-16	Upper	Injection	Nov-21	--	--	--	--	--
IRZ-16	Upper	Injection	Dec-21	18,090	5.1	55	7	5.5
IRZ-16	Upper	Injection	Jan-22	47,945	11	150	20	5.3
IRZ-16	Upper	Injection	Feb-22	3,011	--	10	1	5.0
IRZ-16	Upper	Injection	Mar-22	188,133	8.8	610	82	5.1
IRZ-16	Upper	Injection	Apr-22	201,577	6.0	521	72	6.4
IRZ-16	Upper	Injection	May-22	159,085	6.5	495	67	5.4
IRZ-16	Upper	Injection	Jun-22	204,790	5.3	634	88	5.4
IRZ-16	Upper	Injection	Jul-22	75,254	1.8	250	34	5.0
IRZ-16	Upper	Injection	Aug-22	12,202	1.6	37	5	5.5
IRZ-16	Upper	Injection	Sep-22	192,188	7.9	628	87	5.1
IRZ-16	Lower	Injection	Nov-21	--	--	--	--	--
IRZ-16	Lower	Injection	Dec-21	37,913	10	56	8	11
IRZ-16	Lower	Injection	Jan-22	83,007	21	139	19	10
IRZ-16	Lower	Injection	Feb-22	5,621	--	10	1	9.4
IRZ-16	Lower	Injection	Mar-22	368,922	17	608	82	10
IRZ-16	Lower	Injection	Apr-22	344,997	11	521	72	11
IRZ-16	Lower	Injection	May-22	308,301	13	494	66	10
IRZ-16	Lower	Injection	Jun-22	415,866	10	633	88	11
IRZ-16	Lower	Injection	Jul-22	155,662	3.3	250	34	10
IRZ-16	Lower	Injection	Aug-22	22,502	3.0	37	5	10
IRZ-16	Lower	Injection	Sep-22	400,331	17	629	87	11
IRZ-17	Upper	Injection	Nov-21	--	--	--	--	--
IRZ-17	Upper	Injection	Dec-21	25,091	6.6	56	8	7.5
IRZ-17	Upper	Injection	Jan-22	61,929	15	153	21	6.7
IRZ-17	Upper	Injection	Feb-22	3,761	--	10	1	6.3
IRZ-17	Upper	Injection	Mar-22	253,824	12	636	85	6.7
IRZ-17	Upper	Injection	Apr-22	260,224	7.1	560	78	7.7
IRZ-17	Upper	Injection	May-22	206,311	8.7	484	65	7.1
IRZ-17	Upper	Injection	Jun-22	246,831	5.9	634	88	6.5
IRZ-17	Upper	Injection	Jul-22	95,763	2.0	250	34	6.4
IRZ-17	Upper	Injection	Aug-22	14,714	1.9	37	5	6.6
IRZ-17	Upper	Injection	Sep-22	248,873	10	630	88	6.6
IRZ-17	Lower	Injection	Nov-21	--	--	--	--	--
IRZ-17	Lower	Injection	Dec-21	48,210	13	56	8	14
IRZ-17	Lower	Injection	Jan-22	126,137	30	153	21	14
IRZ-17	Lower	Injection	Feb-22	7,626	--	10	1	13
IRZ-17	Lower	Injection	Mar-22	511,032	24	632	85	13
IRZ-17	Lower	Injection	Apr-22	450,449	12	558	78	13
IRZ-17	Lower	Injection	May-22	361,052	15	480	65	13
IRZ-17	Lower	Injection	Jun-22	521,889	12	635	88	14
IRZ-17	Lower	Injection	Jul-22	202,016	4.5	250	34	13
IRZ-17	Lower	Injection	Aug-22	29,479	3.9	37	5	13
IRZ-17	Lower	Injection	Sep-22	519,697	22	629	87	14
IRZ-18	Upper	Injection	Nov-21	--	--	--	--	--
IRZ-18	Upper	Injection	Dec-21	23,330	6.5	56	8	6.9
IRZ-18	Upper	Injection	Jan-22	57,708	14	150	20	6.4
IRZ-18	Upper	Injection	Feb-22	3,581	--	10	1	6.0
IRZ-18	Upper	Injection	Mar-22	237,093	9.6	598	80	6.6
IRZ-18	Upper	Injection	Apr-22	134,493	2.9	221	31	10

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IRZ-18	Upper	Injection	May-22	204,232	8.1	497	67	6.8
IRZ-18	Upper	Injection	Jun-22	222,597	5.6	635	88	5.8
IRZ-18	Upper	Injection	Jul-22	82,479	1.4	250	34	5.5
IRZ-18	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-18	Upper	Injection	Sep-22	250,454	11	619	86	6.7
IRZ-18	Lower	Injection	Nov-21	--	--	--	--	--
IRZ-18	Lower	Injection	Dec-21	46,126	13	56	8	14
IRZ-18	Lower	Injection	Jan-22	124,878	30	152	20	14
IRZ-18	Lower	Injection	Feb-22	7,496	--	10	1	12
IRZ-18	Lower	Injection	Mar-22	441,208	17	598	80	12
IRZ-18	Lower	Injection	Apr-22	133,829	3.6	221	31	10
IRZ-18	Lower	Injection	May-22	355,640	14	497	67	12
IRZ-18	Lower	Injection	Jun-22	500,638	12	636	88	13
IRZ-18	Lower	Injection	Jul-22	188,924	3.9	250	34	13
IRZ-18	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-18	Lower	Injection	Sep-22	510,878	21	620	86	14
IRZ-20	Upper	Injection	Nov-21	--	--	--	--	--
IRZ-20	Upper	Injection	Dec-21	18,890	5.2	56	8	5.6
IRZ-20	Upper	Injection	Jan-22	48,376	12	151	20	5.3
IRZ-20	Upper	Injection	Feb-22	2,701	--	9	1	5.0
IRZ-20	Upper	Injection	Mar-22	202,257	10	630	85	5.4
IRZ-20	Upper	Injection	Apr-22	253,197	6.9	560	78	7.5
IRZ-20	Upper	Injection	May-22	132,019	5.9	472	63	4.7
IRZ-20	Upper	Injection	Jun-22	197,493	5.0	632	88	5.2
IRZ-20	Upper	Injection	Jul-22	80,078	1.7	250	34	5.3
IRZ-20	Upper	Injection	Aug-22	12,232	1.6	37	5	5.5
IRZ-20	Upper	Injection	Sep-22	196,161	8.4	624	87	5.2
IRZ-20	Lower	Injection	Nov-21	--	--	--	--	--
IRZ-20	Lower	Injection	Dec-21	34,313	9.5	55	7	10
IRZ-20	Lower	Injection	Jan-22	93,639	22	152	20	10
IRZ-20	Lower	Injection	Feb-22	5,767	--	10	1	9.6
IRZ-20	Lower	Injection	Mar-22	388,733	19	631	85	10
IRZ-20	Lower	Injection	Apr-22	384,225	10	559	78	11
IRZ-20	Lower	Injection	May-22	288,041	12	477	64	10
IRZ-20	Lower	Injection	Jun-22	384,856	9.4	633	88	10
IRZ-20	Lower	Injection	Jul-22	160,316	3.4	250	34	11
IRZ-20	Lower	Injection	Aug-22	22,592	3.0	37	5	10
IRZ-20	Lower	Injection	Sep-22	388,169	16	625	87	10
IRZ-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	Upper	Injection	Apr-22	--	--	--	--	--
IRZ-21	Upper	Injection	May-22	--	--	--	--	--
IRZ-21	Upper	Injection	Jun-22	--	--	--	--	--
IRZ-21	Upper	Injection	Jul-22	--	--	--	--	--
IRZ-21	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-21	Upper	Injection	Sep-22	--	--	--	--	--
IRZ-21	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-21	Lower	Injection	Apr-22	--	--	--	--	--
IRZ-21	Lower	Injection	May-22	--	--	--	--	--
IRZ-21	Lower	Injection	Jun-22	--	--	--	--	--
IRZ-21	Lower	Injection	Jul-22	--	--	--	--	--
IRZ-21	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-21	Lower	Injection	Sep-22	--	--	--	--	--
IRZ-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	Upper / Upper Middle	Injection	Apr-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	May-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Jun-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Jul-22	--	--	--	--	--
IRZ-25	Upper / Upper Middle	Injection	Aug-22	--	--	--	--	--

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Well ID	Aquifer Interval	Well Type	Operating Period	Recirculated Groundwater Volume (gal)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-25	Upper / Upper Middle	Injection	Sep-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-25	Lower	Injection	Apr-22	--	--	--	--	--
IRZ-25	Lower	Injection	May-22	--	--	--	--	--
IRZ-25	Lower	Injection	Jun-22	--	--	--	--	--
IRZ-25	Lower	Injection	Jul-22	--	--	--	--	--
IRZ-25	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-25	Lower	Injection	Sep-22	--	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	Nov-21	--	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	Dec-21	36,743	7.3	56	8	11
IRZ-27	Upper / Upper Middle	Injection	Jan-22	103,663	27	154	21	11
IRZ-27	Upper / Upper Middle	Injection	Feb-22	113,867	25	169	25	11
IRZ-27	Upper / Upper Middle	Injection	Mar-22	395,578	15	594	80	11
IRZ-27	Upper / Upper Middle	Injection	Apr-22	160,844	3.6	232	32	12
IRZ-27	Upper / Upper Middle	Injection	May-22	336,518	14	495	67	11
IRZ-27	Upper / Upper Middle	Injection	Jun-22	425,095	9.5	633	88	11
IRZ-27	Upper / Upper Middle	Injection	Jul-22	164,460	3.4	250	34	11
IRZ-27	Upper / Upper Middle	Injection	Aug-22	--	--	--	--	--
IRZ-27	Upper / Upper Middle	Injection	Sep-22	304,227	14	410	57	12
IRZ-27	Lower	Injection	Nov-21	--	--	--	--	--
IRZ-27	Lower	Injection	Dec-21	23,710	7.9	56	8	7.1
IRZ-27	Lower	Injection	Jan-22	47,797	12	154	21	5.2
IRZ-27	Lower	Injection	Feb-22	53,661	12	167	25	5.4
IRZ-27	Lower	Injection	Mar-22	190,998	7.1	594	80	5.4
IRZ-27	Lower	Injection	Apr-22	82,801	1.9	232	32	5.9
IRZ-27	Lower	Injection	May-22	152,496	6.2	495	67	5.1
IRZ-27	Lower	Injection	Jun-22	238,803	5.3	633	88	6.3
IRZ-27	Lower	Injection	Jul-22	109,216	2.3	250	34	7.3
IRZ-27	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-27	Lower	Injection	Sep-22	183,269	8.9	409	57	7.5
IRZ-29	Upper	Injection	Nov-21	--	--	--	--	--
IRZ-29	Upper	Injection	Dec-21	--	--	--	--	--
IRZ-29	Upper	Injection	Jan-22	740	--	3	0.40	4.1
IRZ-29	Upper	Injection	Feb-22	50,817	12	157	23	5.4
IRZ-29	Upper	Injection	Mar-22	121,397	5.2	388	52	5.2
IRZ-29	Upper	Injection	Apr-22	71,497	1.6	241	33	4.9
IRZ-29	Upper	Injection	May-22	155,773	6.6	475	64	5.5
IRZ-29	Upper	Injection	Jun-22	236,587	5.4	632	88	6.2
IRZ-29	Upper	Injection	Jul-22	112,028	2.5	249	33	7.5
IRZ-29	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-29	Upper	Injection	Sep-22	--	--	--	--	--
IRZ-29	Lower	Injection	Nov-21	--	--	--	--	--
IRZ-29	Lower	Injection	Dec-21	--	--	--	--	--
IRZ-29	Lower	Injection	Jan-22	3,450	--	5	1	12
IRZ-29	Lower	Injection	Feb-22	70,677	16	158	24	7.5
IRZ-29	Lower	Injection	Mar-22	167,369	7.4	389	52	7.2
IRZ-29	Lower	Injection	Apr-22	92,461	2.0	243	34	6.3
IRZ-29	Lower	Injection	May-22	200,840	7.9	497	67	6.7
IRZ-29	Lower	Injection	Jun-22	306,910	7.2	637	88	8.0
IRZ-29	Lower	Injection	Jul-22	145,421	3.1	250	34	9.7
IRZ-29	Lower	Injection	Aug-22	--	--	--	--	--
IRZ-29	Lower	Injection	Sep-22	--	--	--	--	--
IRZ-31	Upper	Injection	Nov-21	--	--	--	--	--
IRZ-31	Upper	Injection	Dec-21	--	--	--	--	--
IRZ-31	Upper	Injection	Jan-22	2,620	--	4	1	11
IRZ-31	Upper	Injection	Feb-22	60,855	15	160	24	6.3
IRZ-31	Upper	Injection	Mar-22	141,661	6.2	389	52	6.1
IRZ-31	Upper	Injection	Apr-22	91,150	1.9	247	34	6.2
IRZ-31	Upper	Injection	May-22	180,400	7.6	476	64	6.3
IRZ-31	Upper	Injection	Jun-22	286,700	6.3	633	88	7.5
IRZ-31	Upper	Injection	Jul-22	128,465	3.0	250	34	8.6
IRZ-31	Upper	Injection	Aug-22	19,769	2.6	37	5.0	8.9
IRZ-31	Upper	Injection	Sep-22	313,406	14	586	81	8.9
IRZ-31	Lower	Injection	Nov-21	--	--	--	--	--
IRZ-31	Lower	Injection	Dec-21	--	--	--	--	--
IRZ-31	Lower	Injection	Jan-22	3,380	--	5	0.67	11
IRZ-31	Lower	Injection	Feb-22	60,795	14	161	24	6.3
IRZ-31	Lower	Injection	Mar-22	144,199	6.4	389	52	6.2
IRZ-31	Lower	Injection	Apr-22	90,213	1.9	247	34	6.1

Table 3.1
Summary of NTH IRZ Well Operations
Third 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)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-31	Lower	Injection	May-22	172,157	7.4	474	64	6.1
IRZ-31	Lower	Injection	Jun-22	283,737	6.1	632	88	7.5
IRZ-31	Lower	Injection	Jul-22	137,303	2.9	250	34	9.2
IRZ-31	Lower	Injection	Aug-22	20,210	2.6	37	5.0	9.1
IRZ-31	Lower	Injection	Sep-22	316,969	14	586	81	9.0
IRZ-33	Upper	Injection	Nov-21	--	--	--	--	--
IRZ-33	Upper	Injection	Dec-21	--	--	--	--	--
IRZ-33	Upper	Injection	Jan-22	560	--	2	0.27	4.7
IRZ-33	Upper	Injection	Feb-22	42,259	10	158	24	4.5
IRZ-33	Upper	Injection	Mar-22	97,704	4.2	389	52	4.2
IRZ-33	Upper	Injection	Apr-22	--	--	--	--	--
IRZ-33	Upper	Injection	May-22	92,191	3.1	160	22	9.6
IRZ-33	Upper	Injection	Jun-22	199,182	4.2	634	88	5.2
IRZ-33	Upper	Injection	Jul-22	86,053	1.8	250	34	5.7
IRZ-33	Upper	Injection	Aug-22	12,923	1.7	37	5.0	5.8
IRZ-33	Upper	Injection	Sep-22	202,884	9.0	590	82	5.7
IRZ-33	Lower	Injection	Nov-21	--	--	--	--	--
IRZ-33	Lower	Injection	Dec-21	--	--	--	--	--
IRZ-33	Lower	Injection	Jan-22	480	--	2	0.27	4.0
IRZ-33	Lower	Injection	Feb-22	41,839	9.8	158	24	4.4
IRZ-33	Lower	Injection	Mar-22	97,074	4.2	389	52	4.2
IRZ-33	Lower	Injection	Apr-22	--	--	--	--	--
IRZ-33	Lower	Injection	May-22	119,857	6.1	395	53	5.1
IRZ-33	Lower	Injection	Jun-22	198,892	4.2	633	88	5.2
IRZ-33	Lower	Injection	Jul-22	95,088	1.9	250	34	6.3
IRZ-33	Lower	Injection	Aug-22	11,394	1.7	33	4.4	5.8
IRZ-33	Lower	Injection	Sep-22	218,254	9.5	590	82	6.2
IRZ-35	Upper	Injection	Nov-21	--	--	--	--	--
IRZ-35	Upper	Injection	Dec-21	--	--	--	--	--
IRZ-35	Upper	Injection	Jan-22	800	--	2	0.27	6.7
IRZ-35	Upper	Injection	Feb-22	51,887	12	158	24	5.5
IRZ-35	Upper	Injection	Mar-22	118,638	5.1	387	52	5.1
IRZ-35	Upper	Injection	Apr-22	76,787	1.7	190	26	6.7
IRZ-35	Upper	Injection	May-22	156,513	6.4	327	44	8.0
IRZ-35	Upper	Injection	Jun-22	170,729	5.5	427	59	6.7
IRZ-35	Upper	Injection	Jul-22	114,697	2.4	249	33	7.7
IRZ-35	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-35	Upper	Injection	Sep-22	167,806	9.6	366	51	7.6
IRZ-37	Upper	Injection	Nov-21	--	--	--	--	--
IRZ-37	Upper	Injection	Dec-21	--	--	--	--	--
IRZ-37	Upper	Injection	Jan-22	380	--	2	0.27	3.2
IRZ-37	Upper	Injection	Feb-22	31,301	7.0	153	23	3.4
IRZ-37	Upper	Injection	Mar-22	76,904	3.4	383	51	3.3
IRZ-37	Upper	Injection	Apr-22	60	--	0.3	0.04	3.3
IRZ-37	Upper	Injection	May-22	88,691	4.4	405	54	3.6
IRZ-37	Upper	Injection	Jun-22	100,323	1.3	425	59	3.9
IRZ-37	Upper	Injection	Jul-22	62,768	1.3	249	33	4.2
IRZ-37	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-37	Upper	Injection	Sep-22	99,142	5.6	366	51	4.5
IRZ-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	2.9	72	11	4.0
IRZ-39	Upper	Injection	Mar-22	83,493	4.0	384	52	3.6
IRZ-39	Upper	Injection	Apr-22	5,811	0.15	37	5.1	2.6
IRZ-39	Upper	Injection	May-22	--	--	--	--	--
IRZ-39	Upper	Injection	Jun-22	--	--	--	--	--
IRZ-39	Upper	Injection	Jul-22	--	--	--	--	--
IRZ-39	Upper	Injection	Aug-22	--	--	--	--	--
IRZ-39	Upper	Injection	Sep-22	--	--	--	--	--
IRZ-9	Upper	Extraction	Nov-21	--	--	--	--	--
IRZ-9	Upper	Extraction	Dec-21	--	--	--	--	--
IRZ-9	Upper	Extraction	Jan-22	207,010	--	66	8.9	52
IRZ-9	Upper	Extraction	Feb-22	--	--	--	--	--
IRZ-9	Upper	Extraction	Mar-22	612	--	1	0.13	10
IRZ-9	Upper	Extraction	Apr-22	420	--	0.2	0.02	44
IRZ-9	Upper	Extraction	May-22	1,189	--	0.3	0.04	66
IRZ-9	Upper	Extraction	Jun-22	2,649	--	1.0	0.14	44
IRZ-9	Upper	Extraction	Jul-22	--	--	--	--	--
IRZ-9	Upper	Extraction	Aug-22	--	--	--	--	--
IRZ-9	Upper	Extraction	Sep-22	5,087	--	1.5	0.21	57
IRZ-13D	Lower	Extraction	Nov-21	--	--	--	--	--
IRZ-13D	Lower	Extraction	Dec-21	--	--	--	--	--

Table 3.1
Summary of NTH IRZ Well Operations
Third 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)	Ethanol Volume (gal)	Total Hours Operating (hours)	Active Time Operating (percent)	Average Flow Rate When Operating (gpm)
IRZ-13D	Lower	Extraction	Jan-22	--	--	--	--	--
IRZ-13D	Lower	Extraction	Feb-22	--	--	--	--	--
IRZ-13D	Lower	Extraction	Mar-22	937,033	--	391	53	40
IRZ-13D	Lower	Extraction	Apr-22	353,835	--	220	31	27
IRZ-13D	Lower	Extraction	May-22	728,432	--	472	63	26
IRZ-13D	Lower	Extraction	Jun-22	1,071,385	--	630	88	28
IRZ-13D	Lower	Extraction	Jul-22	469,048	--	250	34	31
IRZ-13D	Lower	Extraction	Aug-22	16,196	--	15	2.0	18
IRZ-13D	Lower	Extraction	Sep-22	1,107,871	--	616	86	30
IRZ-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	29
IRZ-13S	Upper	Extraction	Apr-22	491,289	--	241	33	34
IRZ-13S	Upper	Extraction	May-22	1,115,829	--	470	63	40
IRZ-13S	Upper	Extraction	Jun-22	1,594,436	--	629	87	42
IRZ-13S	Upper	Extraction	Jul-22	697,982	--	250	34	47
IRZ-13S	Upper	Extraction	Aug-22	220	--	0.2	0.027	18
IRZ-13S	Upper	Extraction	Sep-22	891,370	--	364	51	41
IRZ-23	Lower	Extraction	Nov-21	--	--	--	--	--
IRZ-23	Lower	Extraction	Dec-21	307,610	--	56	7.5	92
IRZ-23	Lower	Extraction	Jan-22	583,763	--	148	20	66
IRZ-23	Lower	Extraction	Feb-22	615,500	--	168	25	61
IRZ-23	Lower	Extraction	Mar-22	2,542,801	--	621	83	68
IRZ-23	Lower	Extraction	Apr-22	1,887,412	--	543	75	58
IRZ-23	Lower	Extraction	May-22	1,682,733	--	476	64	59
IRZ-23	Lower	Extraction	Jun-22	2,317,090	--	634	88	61
IRZ-23	Lower	Extraction	Jul-22	984,853	--	250	34	66
IRZ-23	Lower	Extraction	Aug-22	159,004	--	37	5.0	72
IRZ-23	Lower	Extraction	Sep-22	2,341,592	--	627	87	62

Acronyms and Abbreviations:

-- = not applicable

gal = gallon

gpm = gallons 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
Third Quarter 2022 Well Performance Report
Pacific Gas and Electric Company, Topock Compressor Station, Needles, California

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
6/30/2022	--	System re-energized. Wells operating: Extraction wells: IRZ-13S, IRZ-13D, IRZ-23. Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37, IRZ-39.	--
7/5/2022	--	Ethanol dosing occurred.	--
7/5/2022 through 7/6/2022	1.0	IRZ system offline.	TCS power loss.
7/7/2022	--	Processed backwash water into conditioned water storage tank.	--
7/8/2022	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-29, IRZ-31, IRZ-33, IRZ-35, IRZ-37.	--
7/11/2022	--	Reinjected conditioned water into injection wells.	--
7/12/2022 through 8/30/2022	49	IRZ system offline.	TCS power loss. Restart delayed due to switchgear fault and reenergization troubleshooting.
8/30/2022	--	IRZ system resumed operation using generators. Wells operating: Extraction wells: IRZ-13D, IRZ-23 Injection wells: IRZ-16, IRZ-17, IRZ-20, IRZ-31, IRZ-33.	Remaining wells and affiliated equipment inspected for damage from stormwater that entered vaults during 8/24 and 8/26 thunderstorms.
8/31/2022	--	Ethanol dosing occurred.	--
9/1/2022	--	Injection well IRZ-18 resumed operation.	--
9/2/2022	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-20, IRZ-31, and IRZ-33.	--
9/3/2022 through 9/6/2022	2.9	IRZ system offline.	Low diesel exhaust fuel in generators.
9/6/2022	--	IRZ system resumed operating using generators. Wells operating: Extraction wells: IRZ-13D, IRZ-23. Injection wells: IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-31, IRZ-33.	--
9/7/2022	--	Ethanol dosing occurred.	--
9/9/2022	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-20, and IRZ-33. Reinjected conditioned water into injection wells.	Injection wells IRZ-18 and IRZ-31 were not backwashed, as staff prepared wells for expected rainstorms over the weekend.
9/12/2022	0.25	IRZ system offline.	Thunderstorms caused rain to enter vaults. High level alarms in vaults caused system shutdown.

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

Date	Approximate IRZ Systemwide Down Time (days)	Operations and Maintenance Log	Notes
9/13/2022	--	Injection wells IRZ-27, IRZ-35 and IRZ-37 and extraction well IRZ-13S resumed operation.	--
9/13/2022	--	Ethanol dosing occurred.	--
9/14/2022	--	Samples collected from IRZ-9, IRZ-13, and IRZ-23.	--
9/16/2022	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-31, IRZ-33, IRZ-35, and IRZ-37.	--
9/19/2022 through 9/20/2022	0.56	IRZ system offline.	Drip leak between the flange and block valve in IRZ-35/37 vault caused sump high level alarm.
9/20/2022	--	Ethanol dosing occurred.	--
9/20/2022 through 9/22/2022	--	Injection wells IRZ-31, IRZ-33, IRZ-35, and IRZ-37 and extraction well IRZ-13S offline for approximately 2 days to repair leak in IRZ-35/37 well vault.	--
9/23/2022	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-31, IRZ-33, IRZ-35, and IRZ-37. Reinjected conditioned water into injection wells.	--
9/26/2022	--	Ethanol dosing occurred. Increased ethanol dosing to twice weekly to increase treatment throughout the IRZ.	--
9/27/2022	--	Processed backwash water into conditioned water storage tank. Backwash samples collected.	--
9/28/2022	--	Backwashed injection wells IRZ-16, IRZ-17, IRZ-18, IRZ-20, IRZ-27, IRZ-31, IRZ-33, IRZ-35, and IRZ-37. Increased backwash duration to 20 minutes per well.	--
9/28/2022 through 9/30/2022	--	Reinjected conditioned water into injection wells.	--
9/29/2022	--	Ethanol dosing occurred.	--

Acronyms and Abbreviations:
-- = not applicable
IRZ = in-situ reactive zone
NTH = National Trails Highway
TCS = Topock Compressor Station

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third 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)	Baseline Specific Capacity	Well Performance	Response
IRZ-15	Upper	Injection	Nov-21	--	--	--	NC
IRZ-15	Upper	Injection	Dec-21	--	--	--	NC
IRZ-15	Upper	Injection	Jan-22	--	--	--	NC
IRZ-15	Upper	Injection	Feb-22	--	--	--	NC
IRZ-15	Upper	Injection	Mar-22	--	--	--	NC
IRZ-15	Upper	Injection	Apr-22	--	--	--	NC
IRZ-15	Upper	Injection	May-22	--	--	--	NC
IRZ-15	Upper	Injection	Jun-22	--	--	--	NC
IRZ-15	Upper	Injection	Jul-22	--	--	--	NC
IRZ-15	Upper	Injection	Aug-22	--	--	--	NC
IRZ-15	Upper	Injection	Sep-22	--	--	--	NC
IRZ-15	Lower	Injection	Nov-21	--	--	--	NC
IRZ-15	Lower	Injection	Dec-21	--	--	--	NC
IRZ-15	Lower	Injection	Jan-22	--	--	--	NC
IRZ-15	Lower	Injection	Feb-22	--	--	--	NC
IRZ-15	Lower	Injection	Mar-22	--	--	--	NC
IRZ-15	Lower	Injection	Apr-22	--	--	--	NC
IRZ-15	Lower	Injection	May-22	--	--	--	NC
IRZ-15	Lower	Injection	Jun-22	--	--	--	NC
IRZ-15	Lower	Injection	Jul-22	--	--	--	NC
IRZ-15	Lower	Injection	Aug-22	--	--	--	NC
IRZ-15	Lower	Injection	Sep-22	--	--	--	NC
IRZ-16	Upper	Injection	Nov-21	--	--	--	NC
IRZ-16	Upper	Injection	Dec-21	1.0	--	--	NC
IRZ-16	Upper	Injection	Jan-22	0.95	--	--	NC
IRZ-16	Upper	Injection	Feb-22	0.78	--	--	NC
IRZ-16	Upper	Injection	Mar-22	0.64	--	--	NC
IRZ-16	Upper	Injection	Apr-22	0.62	--	--	NC
IRZ-16	Upper	Injection	May-22	0.53	--	--	NC
IRZ-16	Upper	Injection	Jun-22	0.60	0.60	Good	NC
IRZ-16	Upper	Injection	Jul-22	0.60	0.60	Good	NC
IRZ-16	Upper	Injection	Aug-22	0.76	0.60	Good	NC
IRZ-16	Upper	Injection	Sep-22	0.62	0.60	Good	NC
IRZ-16	Lower	Injection	Nov-21	--	--	--	NC
IRZ-16	Lower	Injection	Dec-21	1.1	--	--	NC
IRZ-16	Lower	Injection	Jan-22	1.1	--	--	NC
IRZ-16	Lower	Injection	Feb-22	0.78	--	--	NC
IRZ-16	Lower	Injection	Mar-22	0.72	--	--	NC
IRZ-16	Lower	Injection	Apr-22	0.69	--	--	NC
IRZ-16	Lower	Injection	May-22	0.69	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third 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)	Baseline Specific Capacity	Well Performance	Response
IRZ-16	Lower	Injection	Jun-22	0.78	0.78	Good	NC
IRZ-16	Lower	Injection	Jul-22	0.74	0.78	Good	NC
IRZ-16	Lower	Injection	Aug-22	0.81	0.78	Good	NC
IRZ-16	Lower	Injection	Sep-22	0.74	0.78	Good	NC
IRZ-17	Upper	Injection	Nov-21	--	--	--	NC
IRZ-17	Upper	Injection	Dec-21	3.7	--	--	NC
IRZ-17	Upper	Injection	Jan-22	3.5	--	--	NC
IRZ-17	Upper	Injection	Feb-22	2.3	--	--	NC
IRZ-17	Upper	Injection	Mar-22	1.8	--	--	NC
IRZ-17	Upper	Injection	Apr-22	0.97	--	--	NC
IRZ-17	Upper	Injection	May-22	0.71	--	--	NC
IRZ-17	Upper	Injection	Jun-22	0.76	0.76	Good	NC
IRZ-17	Upper	Injection	Jul-22	0.78	0.76	Good	NC
IRZ-17	Upper	Injection	Aug-22	0.94	0.76	Good	NC
IRZ-17	Upper	Injection	Sep-22	0.89	0.76	Good	NC
IRZ-17	Lower	Injection	Nov-21	--	--	--	NC
IRZ-17	Lower	Injection	Dec-21	1.5	--	--	NC
IRZ-17	Lower	Injection	Jan-22	1.3	--	--	NC
IRZ-17	Lower	Injection	Feb-22	1.0	--	--	NC
IRZ-17	Lower	Injection	Mar-22	0.86	--	--	NC
IRZ-17	Lower	Injection	Apr-22	0.70	--	--	NC
IRZ-17	Lower	Injection	May-22	0.66	--	--	NC
IRZ-17	Lower	Injection	Jun-22	0.71	0.71	Good	NC
IRZ-17	Lower	Injection	Jul-22	0.67	0.71	Good	NC
IRZ-17	Lower	Injection	Aug-22	0.70	0.71	Good	NC
IRZ-17	Lower	Injection	Sep-22	0.64	0.71	Good	NC
IRZ-18	Upper	Injection	Nov-21	--	--	--	NC
IRZ-18	Upper	Injection	Dec-21	1.5	--	--	NC
IRZ-18	Upper	Injection	Jan-22	1.3	--	--	NC
IRZ-18	Upper	Injection	Feb-22	1.1	--	--	NC
IRZ-18	Upper	Injection	Mar-22	0.85	--	--	NC
IRZ-18	Upper	Injection	Apr-22	0.97	--	--	NC
IRZ-18	Upper	Injection	May-22	0.71	--	--	NC
IRZ-18	Upper	Injection	Jun-22	0.61	0.61	Good	NC
IRZ-18	Upper	Injection	Jul-22	0.55	0.61	Good	NC
IRZ-18	Upper	Injection	Aug-22	--	--	--	NC
IRZ-18	Upper	Injection	Sep-22	0.47	0.61	Poor	Backwash duration lengthened. Will increase frequency of backwashing if no improvement.
IRZ-18	Lower	Injection	Nov-21	--	--	--	NC
IRZ-18	Lower	Injection	Dec-21	1.1	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third 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)	Baseline Specific Capacity	Well Performance	Response
IRZ-18	Lower	Injection	Jan-22	0.96	--	--	NC
IRZ-18	Lower	Injection	Feb-22	0.78	--	--	NC
IRZ-18	Lower	Injection	Mar-22	0.67	--	--	NC
IRZ-18	Lower	Injection	Apr-22	0.57	--	--	NC
IRZ-18	Lower	Injection	May-22	0.66	--	--	NC
IRZ-18	Lower	Injection	Jun-22	0.73	0.73	Good	NC
IRZ-18	Lower	Injection	Jul-22	0.72	0.73	Good	NC
IRZ-18	Lower	Injection	Aug-22	--	--	--	NC
IRZ-18	Lower	Injection	Sep-22	0.74	0.73	Good	NC
IRZ-20	Upper	Injection	Nov-21	--	--	--	NC
IRZ-20	Upper	Injection	Dec-21	1.1	--	--	NC
IRZ-20	Upper	Injection	Jan-22	1.1	--	--	NC
IRZ-20	Upper	Injection	Feb-22	0.79	--	--	NC
IRZ-20	Upper	Injection	Mar-22	0.72	--	--	NC
IRZ-20	Upper	Injection	Apr-22	0.78	--	--	NC
IRZ-20	Upper	Injection	May-22	0.49	--	--	NC
IRZ-20	Upper	Injection	Jun-22	0.59	0.59	Good	NC
IRZ-20	Upper	Injection	Jul-22	0.61	0.59	Good	NC
IRZ-20	Upper	Injection	Aug-22	0.71	0.59	Good	NC
IRZ-20	Upper	Injection	Sep-22	0.62	0.59	Good	NC
IRZ-20	Lower	Injection	Nov-21	--	--	--	NC
IRZ-20	Lower	Injection	Dec-21	0.83	--	--	NC
IRZ-20	Lower	Injection	Jan-22	0.76	--	--	NC
IRZ-20	Lower	Injection	Feb-22	0.68	--	--	NC
IRZ-20	Lower	Injection	Mar-22	0.62	--	--	NC
IRZ-20	Lower	Injection	Apr-22	0.60	--	--	NC
IRZ-20	Lower	Injection	May-22	0.55	--	--	NC
IRZ-20	Lower	Injection	Jun-22	0.54	0.54	Good	NC
IRZ-20	Lower	Injection	Jul-22	0.50	0.54	Good	NC
IRZ-20	Lower	Injection	Aug-22	0.51	0.54	Good	NC
IRZ-20	Lower	Injection	Sep-22	0.45	0.54	Fair	Backwash duration lengthened. Will increase frequency of backwashing if no improvement.
IRZ-21	Upper	Injection	Nov-21	--	--	--	NC
IRZ-21	Upper	Injection	Dec-21	--	--	--	NC
IRZ-21	Upper	Injection	Jan-22	--	--	--	NC
IRZ-21	Upper	Injection	Feb-22	--	--	--	NC
IRZ-21	Upper	Injection	Mar-22	--	--	--	NC
IRZ-21	Upper	Injection	Apr-22	--	--	--	NC
IRZ-21	Upper	Injection	May-22	--	--	--	NC
IRZ-21	Upper	Injection	Jun-22	--	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third 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)	Baseline Specific Capacity	Well Performance	Response
IRZ-21	Upper	Injection	Jul-22	--	--	--	NC
IRZ-21	Upper	Injection	Aug-22	--	--	--	NC
IRZ-21	Upper	Injection	Sep-22	--	--	--	NC
IRZ-21	Lower	Injection	Nov-21	--	--	--	NC
IRZ-21	Lower	Injection	Dec-21	--	--	--	NC
IRZ-21	Lower	Injection	Jan-22	--	--	--	NC
IRZ-21	Lower	Injection	Feb-22	--	--	--	NC
IRZ-21	Lower	Injection	Mar-22	--	--	--	NC
IRZ-21	Lower	Injection	Apr-22	--	--	--	NC
IRZ-21	Lower	Injection	May-22	--	--	--	NC
IRZ-21	Lower	Injection	Jun-22	--	--	--	NC
IRZ-21	Lower	Injection	Jul-22	--	--	--	NC
IRZ-21	Lower	Injection	Aug-22	--	--	--	NC
IRZ-21	Lower	Injection	Sep-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Nov-21	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Dec-21	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jan-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Feb-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Mar-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Apr-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	May-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jun-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Jul-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Aug-22	--	--	--	NC
IRZ-25	Upper / Upper Middle	Injection	Sep-22	--	--	--	NC
IRZ-25	Lower	Injection	Nov-21	--	--	--	NC
IRZ-25	Lower	Injection	Dec-21	--	--	--	NC
IRZ-25	Lower	Injection	Jan-22	--	--	--	NC
IRZ-25	Lower	Injection	Feb-22	--	--	--	NC
IRZ-25	Lower	Injection	Mar-22	--	--	--	NC
IRZ-25	Lower	Injection	Apr-22	--	--	--	NC
IRZ-25	Lower	Injection	May-22	--	--	--	NC
IRZ-25	Lower	Injection	Jun-22	--	--	--	NC
IRZ-25	Lower	Injection	Jul-22	--	--	--	NC
IRZ-25	Lower	Injection	Aug-22	--	--	--	NC
IRZ-25	Lower	Injection	Sep-22	--	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Nov-21	--	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Dec-21	0.93	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Jan-22	0.91	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Feb-22	0.73	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third 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)	Baseline Specific Capacity	Well Performance	Response
IRZ-27	Upper / Upper Middle	Injection	Mar-22	0.57	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Apr-22	0.49	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	May-22	0.60	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Jun-22	0.67	0.67	Good	NC
IRZ-27	Upper / Upper Middle	Injection	Jul-22	0.67	0.67	Good	NC
IRZ-27	Upper / Upper Middle	Injection	Aug-22	--	--	--	NC
IRZ-27	Upper / Upper Middle	Injection	Sep-22	0.64	0.67	Good	NC
IRZ-27	Lower	Injection	Nov-21	--	--	--	NC
IRZ-27	Lower	Injection	Dec-21	0.72	--	--	NC
IRZ-27	Lower	Injection	Jan-22	0.66	--	--	NC
IRZ-27	Lower	Injection	Feb-22	0.57	--	--	NC
IRZ-27	Lower	Injection	Mar-22	0.49	--	--	NC
IRZ-27	Lower	Injection	Apr-22	0.47	--	--	NC
IRZ-27	Lower	Injection	May-22	0.39	--	--	NC
IRZ-27	Lower	Injection	Jun-22	0.49	0.49	Good	NC
IRZ-27	Lower	Injection	Jul-22	0.53	0.49	Good	NC
IRZ-27	Lower	Injection	Aug-22	--	--	--	NC
IRZ-27	Lower	Injection	Sep-22	0.53	0.49	Good	NC
IRZ-29	Upper	Injection	Nov-21	--	--	--	NC
IRZ-29	Upper	Injection	Dec-21	--	--	--	NC
IRZ-29	Upper	Injection	Jan-22	0.47	--	--	NC
IRZ-29	Upper	Injection	Feb-22	0.55	--	--	NC
IRZ-29	Upper	Injection	Mar-22	0.43	--	--	NC
IRZ-29	Upper	Injection	Apr-22	0.41	--	--	NC
IRZ-29	Upper	Injection	May-22	0.36	--	--	NC
IRZ-29	Upper	Injection	Jun-22	0.41	0.41	Good	NC
IRZ-29	Upper	Injection	Jul-22	0.45	0.41	Good	NC
IRZ-29	Upper	Injection	Aug-22	--	--	--	NC
IRZ-29	Upper	Injection	Sep-22	--	--	--	NC
IRZ-29	Lower	Injection	Nov-21	--	--	--	NC
IRZ-29	Lower	Injection	Dec-21	--	--	--	NC
IRZ-29	Lower	Injection	Jan-22	0.89	--	--	NC
IRZ-29	Lower	Injection	Feb-22	0.65	--	--	NC
IRZ-29	Lower	Injection	Mar-22	0.55	--	--	NC
IRZ-29	Lower	Injection	Apr-22	0.52	--	--	NC
IRZ-29	Lower	Injection	May-22	0.47	--	--	NC
IRZ-29	Lower	Injection	Jun-22	0.52	0.52	Good	NC
IRZ-29	Lower	Injection	Jul-22	0.61	0.52	Good	NC
IRZ-29	Lower	Injection	Aug-22	--	--	--	NC
IRZ-29	Lower	Injection	Sep-22	--	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third 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)	Baseline Specific Capacity	Well Performance	Response
IRZ-31	Upper	Injection	Nov-21	--	--	--	NC
IRZ-31	Upper	Injection	Dec-21	--	--	--	NC
IRZ-31	Upper	Injection	Jan-22	1.1	--	--	NC
IRZ-31	Upper	Injection	Feb-22	0.71	--	--	NC
IRZ-31	Upper	Injection	Mar-22	0.56	--	--	NC
IRZ-31	Upper	Injection	Apr-22	0.52	--	--	NC
IRZ-31	Upper	Injection	May-22	0.51	--	--	NC
IRZ-31	Upper	Injection	Jun-22	0.58	0.58	Good	NC
IRZ-31	Upper	Injection	Jul-22	0.62	0.58	Good	NC
IRZ-31	Upper	Injection	Aug-22	0.70	0.58	Good	NC
IRZ-31	Upper	Injection	Sep-22	0.65	0.58	Good	NC
IRZ-31	Lower	Injection	Nov-21	--	--	--	NC
IRZ-31	Lower	Injection	Dec-21	--	--	--	NC
IRZ-31	Lower	Injection	Jan-22	1.1	--	--	NC
IRZ-31	Lower	Injection	Feb-22	0.55	--	--	NC
IRZ-31	Lower	Injection	Mar-22	0.44	--	--	NC
IRZ-31	Lower	Injection	Apr-22	0.40	--	--	NC
IRZ-31	Lower	Injection	May-22	0.41	--	--	NC
IRZ-31	Lower	Injection	Jun-22	0.46	0.46	Good	NC
IRZ-31	Lower	Injection	Jul-22	0.47	0.46	Good	NC
IRZ-31	Lower	Injection	Aug-22	0.53	0.46	Good	NC
IRZ-31	Lower	Injection	Sep-22	0.50	0.46	Good	NC
IRZ-33	Upper	Injection	Nov-21	--	--	--	NC
IRZ-33	Upper	Injection	Dec-21	--	--	--	NC
IRZ-33	Upper	Injection	Jan-22	0.84	--	--	NC
IRZ-33	Upper	Injection	Feb-22	0.69	--	--	NC
IRZ-33	Upper	Injection	Mar-22	0.49	--	--	NC
IRZ-33	Upper	Injection	Apr-22	--	--	--	NC
IRZ-33	Upper	Injection	May-22	0.52	--	--	NC
IRZ-33	Upper	Injection	Jun-22	0.50	0.50	Good	NC
IRZ-33	Upper	Injection	Jul-22	0.53	0.50	Good	NC
IRZ-33	Upper	Injection	Aug-22	0.57	0.50	Good	NC
IRZ-33	Upper	Injection	Sep-22	0.50	0.50	Good	NC
IRZ-33	Lower	Injection	Nov-21	--	--	--	NC
IRZ-33	Lower	Injection	Dec-21	--	--	--	NC
IRZ-33	Lower	Injection	Jan-22	0.54	--	--	NC
IRZ-33	Lower	Injection	Feb-22	0.48	--	--	NC
IRZ-33	Lower	Injection	Mar-22	0.35	--	--	NC
IRZ-33	Lower	Injection	Apr-22	--	--	--	NC
IRZ-33	Lower	Injection	May-22	0.35	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third 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)	Baseline Specific Capacity	Well Performance	Response
IRZ-33	Lower	Injection	Jun-22	0.36	0.36	Good	NC
IRZ-33	Lower	Injection	Jul-22	0.39	0.36	Good	NC
IRZ-33	Lower	Injection	Aug-22	0.40	0.36	Good	NC
IRZ-33	Lower	Injection	Sep-22	0.38	0.36	Good	NC
IRZ-35	Upper	Injection	Nov-21	--	--	--	NC
IRZ-35	Upper	Injection	Dec-21	--	--	--	NC
IRZ-35	Upper	Injection	Jan-22	0.87	--	--	NC
IRZ-35	Upper	Injection	Feb-22	0.63	--	--	NC
IRZ-35	Upper	Injection	Mar-22	0.47	--	--	NC
IRZ-35	Upper	Injection	Apr-22	0.54	--	--	NC
IRZ-35	Upper	Injection	May-22	0.42	--	--	NC
IRZ-35	Upper	Injection	Jun-22	0.48	0.48	Good	NC
IRZ-35	Upper	Injection	Jul-22	0.51	0.48	Good	NC
IRZ-35	Upper	Injection	Aug-22	--	--	--	NC
IRZ-35	Upper	Injection	Sep-22	0.48	0.48	Good	NC
IRZ-37	Upper	Injection	Nov-21	--	--	--	NC
IRZ-37	Upper	Injection	Dec-21	--	--	--	NC
IRZ-37	Upper	Injection	Jan-22	0.53	--	--	NC
IRZ-37	Upper	Injection	Feb-22	0.48	--	--	NC
IRZ-37	Upper	Injection	Mar-22	0.33	--	--	NC
IRZ-37	Upper	Injection	Apr-22	--	--	--	NC
IRZ-37	Upper	Injection	May-22	0.34	--	--	NC
IRZ-37	Upper	Injection	Jun-22	0.35	0.35	Good	NC
IRZ-37	Upper	Injection	Jul-22	0.36	0.35	Good	NC
IRZ-37	Upper	Injection	Aug-22	--	--	--	NC
IRZ-37	Upper	Injection	Sep-22	0.37	0.35	Good	NC
IRZ-39	Upper	Injection	Nov-21	--	--	--	NC
IRZ-39	Upper	Injection	Dec-21	--	--	--	NC
IRZ-39	Upper	Injection	Jan-22	--	--	--	NC
IRZ-39	Upper	Injection	Feb-22	0.79	--	--	NC
IRZ-39	Upper	Injection	Mar-22	0.20	--	--	NC
IRZ-39	Upper	Injection	Apr-22	0.11	--	--	NC
IRZ-39	Upper	Injection	May-22	--	--	--	NC
IRZ-39	Upper	Injection	Jun-22	--	--	--	NC
IRZ-39	Upper	Injection	Jul-22	--	--	--	NC
IRZ-39	Upper	Injection	Aug-22	--	--	--	NC
IRZ-39	Upper	Injection	Sep-22	--	--	--	NC
IRZ-9	Upper	Extraction	Nov-21	--	--	--	NC
IRZ-9	Upper	Extraction	Dec-21	--	--	--	NC
IRZ-9	Upper	Extraction	Jan-22	2.0	--	--	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third 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)	Baseline Specific Capacity	Well Performance	Response
IRZ-9	Upper	Extraction	Feb-22	--	--	--	NC
IRZ-9	Upper	Extraction	Mar-22	0.72	--	--	NC
IRZ-9	Upper	Extraction	Apr-22	--	--	--	NC
IRZ-9	Upper	Extraction	May-22	--	--	--	NC
IRZ-9	Upper	Extraction	Jun-22	--	--	--	NC
IRZ-9	Upper	Extraction	Jul-22	--	--	--	NC
IRZ-9	Upper	Extraction	Aug-22	--	--	--	NC
IRZ-9	Upper	Extraction	Sep-22	--	--	--	NC
IRZ-13D	Lower	Extraction	Nov-21	--	--	--	NC
IRZ-13D	Lower	Extraction	Dec-21	--	--	--	NC
IRZ-13D	Lower	Extraction	Jan-22	--	--	--	NC
IRZ-13D	Lower	Extraction	Feb-22	--	--	--	NC
IRZ-13D	Lower	Extraction	Mar-22	--	--	--	NC
IRZ-13D	Lower	Extraction	Apr-22	--	--	--	NC
IRZ-13D	Lower	Extraction	May-22	17	--	--	NC
IRZ-13D	Lower	Extraction	Jun-22	13	--	--	NC
IRZ-13D	Lower	Extraction	Jul-22	8.1	6.2	Good	NC
IRZ-13D	Lower	Extraction	Aug-22	59	6.2	Good	NC
IRZ-13D	Lower	Extraction	Sep-22	7.8	6.2	Good	NC
IRZ-13S	Upper	Extraction	Nov-21	--	--	--	NC
IRZ-13S	Upper	Extraction	Dec-21	--	--	--	NC
IRZ-13S	Upper	Extraction	Jan-22	--	--	--	NC
IRZ-13S	Upper	Extraction	Feb-22	--	--	--	NC
IRZ-13S	Upper	Extraction	Mar-22	5.5	--	--	NC
IRZ-13S	Upper	Extraction	Apr-22	5.9	--	--	NC
IRZ-13S	Upper	Extraction	May-22	6.5	--	--	NC
IRZ-13S	Upper	Extraction	Jun-22	7.9	--	--	NC
IRZ-13S	Upper	Extraction	Jul-22	9.3	9.3	Good	NC
IRZ-13S	Upper	Extraction	Aug-22	--	--	--	NC
IRZ-13S	Upper	Extraction	Sep-22	9.8	9.3	Good	NC
IRZ-23	Lower	Extraction	Nov-21	--	--	--	NC
IRZ-23	Lower	Extraction	Dec-21	13	--	--	NC
IRZ-23	Lower	Extraction	Jan-22	360	--	--	NC
IRZ-23	Lower	Extraction	Feb-22	21	--	--	NC
IRZ-23	Lower	Extraction	Mar-22	47	--	--	NC
IRZ-23	Lower	Extraction	Apr-22	110	--	--	NC
IRZ-23	Lower	Extraction	May-22	850	--	--	NC
IRZ-23	Lower	Extraction	Jun-22	660	--	--	NC
IRZ-23	Lower	Extraction	Jul-22	41	41	Good	NC

Table 3.3
Summary of NTH IRZ Well Specific Capacities
Third 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)	Baseline Specific Capacity	Well Performance	Response
IRZ-23	Lower	Extraction	Aug-22	19	41	Poor	Lower specific capacities measured when flowrate increased and greater drawdown occurred. Not interpreted as fouling. No action taken.
IRZ-23	Lower	Extraction	Sep-22	30	41	Poor	Low specific capacity continued at higher flowrate. Specific capacity returned when flowrate reduced, confirming not fouling. No action needed.

Notes:
1. Specific capacities are calculated on five-minute intervals as flowrates measured from flowmeters divided by the change in water level measured from transducers compared to baseline. Baseline static water levels were adjusted by the typically observed difference in water levels at time of development and January, which is the month where water levels are at their lowest at the Site. Average monthly specific capacities were then calculated by averaging the five-minute interval specific capacities.
2. Water level data was not collected for well IRZ-13D in March and April 2022 due to a SCADA error and therefore specific capacities were not calculated.

Acronyms and Abbreviations:
-- = not operating or not applicable due to baseline not having been established yet
ft = foot
gpm = gallon per minute
ID = identification
IRZ = in-situ reactive zone
NTH = National Trails Highway
SCADA = supervisory data control and acquisition
NC = no comment

Table 3.4
Third Quarter 2022 Field Parameters
Third 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	08/17/2022	8.3	940	4.0	8.63	22.60	0.46	610	46.9
C-CON-D	08/18/2022	8.1	928	7.0	9.00	21.70	0.46	610	19.9
C-CON-S	08/18/2022	8.3	934	6.0	8.78	22.10	0.46	600	61.9
C-I-3-D	08/17/2022	8.2	937	9.0	5.62	22.90	0.46	610	16.8
C-I-3-S	08/17/2022	8.3	944	13.0	5.63	22.50	0.46	610	32.2
C-MAR-D	08/18/2022	8.3	884	18.0	4.81	23.30	0.44	570	20.0
C-MAR-S	08/18/2022	8.3	857	17.0	3.63	24.80	0.42	550	24.5
C-NR1-D	08/18/2022	8.2	931	8.0	8.97	21.70	0.46	600	20.8
C-NR1-S	08/18/2022	8.1	929	9.0	7.99	21.80	0.46	600	31.9
C-NR3-D	08/18/2022	8.1	928	11.0	7.65	21.70	0.46	600	22.1
C-NR3-S	08/18/2022	8.3	929	15.0	8.16	21.80	0.45	590	24.0
C-NR4-D	08/18/2022	8.3	916	16.0	5.36	21.30	0.46	590	23.7
C-NR4-S	08/18/2022	8.4	924	19.0	8.55	21.40	0.46	600	23.8
C-R22A-D	08/17/2022	8.1	971	17.0	4.85	23.30	0.45	590	89.4
C-R22A-S	08/17/2022	8.4	950	11.0	3.63	23.30	0.46	610	50.1
C-R27-D	08/17/2022	8.4	937	9.0	8.11	22.50	0.46	610	50.2
C-R27-S	08/17/2022	8.4	948	8.0	8.12	22.50	0.46	610	53.8
C-TAZ-D	08/17/2022	8.1	944	5.0	6.53	23.30	0.46	510	3.0
C-TAZ-S	08/17/2022	8.2	946	6.0	3.23	23.20	0.46	610	17.3
IRZ-09-100	09/14/2022	7.8	12,367	3.2	1.77	29.80	nm	nm	16.1
IRZ-13D-210	09/14/2022	7.6	20,565	2.0	3.55	28.40	nm	nm	39.3
IRZ-13S-095	09/14/2022	7.9	8,811	2.5	4.40	27.80	nm	nm	43.0
IRZ-23-143	09/14/2022	7.5	7,721	2.8	1.94	26.80	nm	nm	71.6
MW-20-070	07/13/2022	7.8	3,491	18.0	6.24	30.40	1.82	2,270	96.3
MW-20-070	08/09/2022	7.0	4,361	9.0	0.61	31.00	2.05	2,550	-12.3
MW-20-070	09/14/2022	7.6	2,967	7.0	6.42	30.30	0.91	nm	132.4
MW-20-100	07/13/2022	7.2	7,042	11.0	1.09	30.50	3.80	4,550	93.0
MW-20-100	08/09/2022	7.6	5,512	4.0	0.76	30.90	2.65	3,230	1.3
MW-20-100	09/14/2022	7.0	6,060	9.0	2.18	30.50	0.69	nm	143.9
MW-20-130	07/13/2022	7.2	12,004	13.0	0.62	31.20	6.76	7,780	93.2
MW-20-130	08/09/2022	7.3	12,763	6.0	0.44	30.90	6.50	7,480	-2.8
MW-20-130	09/14/2022	6.8	14,865	9.0	0.46	31.20	0.82	nm	133.6

Table 3.4
Third Quarter 2022 Field Parameters
Third 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-21	07/13/2022	7.2	13,125	6.0	0.40	38.10	5.82	6,820	-125.0
MW-21	08/12/2022	6.9	9,664	9.0	0.39	30.20	6.40	6,290	-44.7
MW-21	09/15/2022	7.7	10,268	14.0	1.29	28.40	5.76	6,650	26.5
MW-22	08/19/2022	7.3	20,386	31.0	0.39	32.20	0.12	13,260	-122.5
MW-26	07/13/2022	7.4	10,146	25.0	1.13	32.20	5.63	6,570	85.6
MW-26	08/12/2022	7.2	9,675	5.0	1.77	30.40	0.53	nm	224.1
MW-26	09/15/2022	7.1	9,976	9.0	0.85	30.50	0.60	nm	141.1
MW-27-020	08/23/2022	7.1	993	3.0	0.40	22.90	0.49	640	-56.8
MW-27-060	08/23/2022	7.3	1,003	5.0	0.41	20.60	0.50	650	-168.8
MW-27-085	08/23/2022	7.3	12,513	5.0	0.32	21.00	7.18	8,110	-65.8
MW-28-025	08/23/2022	7.4	1,234	8.0	2.18	22.70	0.62	820	64.5
MW-28-090	08/23/2022	7.5	7,933	5.0	2.44	20.40	4.41	5,150	47.2
MW-29	08/23/2022	7.5	2,185	8.0	0.18	24.60	1.12	1,410	-18.1
MW-30-030	08/22/2022	7.5	2,862	23.0	0.70	27.40	1.49	1,850	-166.8
MW-30-050	07/12/2022	7.5	1,345	7.0	3.13	24.10	0.67	880	92.3
MW-30-050	08/10/2022	7.7	1,105	4.0	4.51	24.80	0.62	nm	66.2
MW-30-050	09/13/2022	7.8	1,036	9.0	4.92	28.50	0.65	nm	74.8
MW-31-060	07/13/2022	7.6	10,502	9.0	0.19	32.20	5.89	6,840	88.1
MW-31-060	08/10/2022	7.7	10,186	6.0	0.30	31.10	0.88	nm	-133.5
MW-31-060	09/14/2022	7.6	10,506	6.0	0.19	29.80	0.90	nm	-107.2
MW-31-135	07/13/2022	8.0	15,180	41.0	0.32	32.00	8.70	9,810	88.8
MW-31-135	08/10/2022	7.9	14,657	19.0	0.33	31.80	0.85	nm	-11.7
MW-31-135	09/14/2022	7.8	14,853	7.0	0.42	29.50	0.72	nm	-8.3
MW-32-020	08/19/2022	7.7	23,341	25.0	0.15	29.20	0.14	15,210	-178.6
MW-32-035	08/19/2022	7.8	8,301	13.0	0.18	26.40	4.58	5,380	-142.7
MW-33-040	08/24/2022	7.7	24,682	7.0	2.39	25.50	0.15	15,980	86.4
MW-33-090	08/24/2022	7.6	11,378	9.0	3.39	24.90	6.44	7,370	84.1
MW-33-150	08/24/2022	7.6	17,868	3.0	5.29	26.50	0.11	11,690	87.8
MW-33-210	08/24/2022	7.5	20,483	4.0	2.45	25.70	0.12	13,340	96.3
MW-34-055	08/23/2022	7.4	923	2.0	0.57	20.90	0.46	590	-48.8
MW-34-080	07/14/2022	7.2	8,062	13.0	1.53	21.30	4.84	5,620	112.5
MW-34-080	08/11/2022	7.2	8,620	5.0	1.68	21.00	4.82	5,600	-32.4

Table 3.4
Third Quarter 2022 Field Parameters
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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-34-080	09/15/2022	7.6	9,636	8.0	0.34	19.90	5.44	6,260	62.9
MW-34-100	08/23/2022	7.4	12,899	6.0	0.25	21.30	7.34	8,280	-72.3
MW-35-060	08/22/2022	7.6	6,464	13.0	5.33	28.20	3.51	4,200	-123.5
MW-35-135	08/22/2022	7.3	11,014	17.0	1.33	30.00	6.21	7,716,000	-134.5
MW-36-020	08/23/2022	7.2	5,183	11.0	0.33	23.90	2.79	3,360	-141.3
MW-36-040	08/23/2022	7.6	1,066	9.0	0.36	22.80	0.53	690	-160.4
MW-36-050	08/23/2022	7.4	985	7.0	0.34	21.80	0.49	640	-184.1
MW-36-070	08/10/2022	7.9	1,020	5.0	0.41	22.40	0.70	nm	-81.8
MW-36-090	07/14/2022	7.1	3,584	6.0	0.55	24.50	1.91	2,380	-11.1
MW-36-090	08/10/2022	7.7	2,841	8.0	0.34	25.50	0.80	nm	-103.9
MW-36-090	09/14/2022	7.4	3,595	9.0	1.09	21.50	0.71	nm	-101.6
MW-36-100	07/14/2022	7.2	5,523	7.0	0.65	22.40	3.15	3,740	-95.1
MW-36-100	08/10/2022	7.9	2,930	5.0	0.38	30.90	0.88	nm	54.2
MW-36-100	09/14/2022	7.7	3,308	9.0	0.24	22.80	0.90	nm	-19.6
MW-38D	08/25/2022	7.8	20,493	8.0	1.19	28.40	0.12	13,300	115.1
MW-38S	08/25/2022	7.8	2,203	5.0	2.68	29.20	1.12	1,430	93.1
MW-39-040	07/12/2022	8.1	1,119	8.0	0.15	23.40	0.56	720	5.6
MW-39-040	08/09/2022	8.1	1,108	20.0	0.28	24.60	0.60	nm	-169.4
MW-39-040	09/13/2022	7.9	1,212	6.0	0.25	24.60	0.63	nm	-180.0
MW-39-050	07/12/2022	7.8	1,069	5.0	0.15	23.70	0.53	700	88.0
MW-39-050	08/09/2022	7.7	1,038	9.0	0.19	25.60	0.30	nm	39.1
MW-39-050	09/13/2022	7.5	1,072	5.0	0.15	24.60	0.70	nm	16.2
MW-39-060	07/12/2022	7.8	1,220	36.0	0.15	25.60	0.61	790	92.8
MW-39-060	08/09/2022	7.7	1,339	335.0	0.20	27.40	0.84	nm	-50.1
MW-39-060	09/13/2022	7.5	1,388	9.0	0.18	24.20	0.70	nm	-91.9
MW-39-070	07/12/2022	7.7	4,396	8.0	0.21	23.20	2.37	2,880	86.3
MW-39-070	08/09/2022	7.6	2,140	5.0	0.23	25.50	0.40	nm	25.7
MW-39-070	09/13/2022	7.4	3,364	10.0	0.23	24.30	0.65	nm	33.8
MW-39-080	07/12/2022	7.7	7,827	5.0	0.19	24.00	3.28	3,910	84.0
MW-39-080	08/09/2022	7.6	5,150	9.0	0.16	25.20	0.36	nm	5.8
MW-39-080	09/13/2022	7.3	4,416	10.0	0.26	24.90	0.83	nm	-42.1
MW-39-100	07/12/2022	7.8	14,282	28.0	0.18	26.10	8.24	9,260	76.6

Table 3.4
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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-39-100	08/09/2022	7.5	10,820	18.0	0.13	25.30	0.90	nm	56.3
MW-39-100	09/13/2022	7.2	12,460	9.0	0.14	25.00	0.93	nm	49.9
MW-42-030	08/18/2022	7.4	1,693	3.0	0.26	23.40	0.86	1,090	-114.3
MW-42-055	08/18/2022	7.4	1,079	4.0	0.41	23.00	0.53	700	-109.8
MW-42-065	08/18/2022	7.9	9,216	9.0	0.61	23.30	5.16	5,980	-60.9
MW-43-025	08/24/2022	7.0	1,971	24.0	0.69	23.10	1.00	1,280	-103.9
MW-43-075	08/24/2022	7.0	11,634	4.0	0.53	22.10	6.64	7,640	-160.4
MW-43-090	08/24/2022	7.1	16,633	8.0	0.41	23.00	9.57	10,930	-130.2
MW-44-070	08/23/2022	7.4	1,790	10.0	0.30	21.70	0.89	1,140	-179.9
MW-44-115	07/14/2022	7.4	10,104	36.0	0.30	24.40	5.56	6,430	-107.2
MW-44-115	08/11/2022	7.1	10,053	6.0	0.33	22.20	5.60	6,500	-80.9
MW-44-115	09/13/2022	8.0	11,688	5.0	0.25	20.90	6.68	7,580	52.1
MW-44-125	07/14/2022	7.4	10,788	5.0	0.38	23.00	6.31	7,350	-112.0
MW-44-125	08/11/2022	7.4	11,077	8.0	0.38	22.10	6.31	7,200	-75.8
MW-44-125	09/13/2022	8.1	13,034	4.0	0.28	20.60	7.53	8,490	18.5
MW-45-095A	07/14/2022	7.1	8,239	8.0	0.71	22.00	4.89	5,680	-66.0
MW-45-095A	08/11/2022	7.3	8,158	4.0	0.70	21.80	4.54	5,300	-30.0
MW-45-095A	09/15/2022	7.5	9,468	7.0	0.54	20.60	5.33	6,150	83.2
MW-46-175	08/24/2022	8.3	20,238	4.0	3.98	22.00	0.12	13,140	79.9
MW-46-205	08/24/2022	8.2	23,244	5.0	3.37	21.70	0.14	15,120	75.9
MW-47-055	08/24/2022	7.7	6,128	7.0	2.67	27.10	3.38	4,050	72.1
MW-47-115	08/24/2022	7.6	14,020	6.0	3.47	27.90	8.09	9,120	78.8
MW-49-135	08/23/2022	7.6	15,441	5.0	0.82	28.60	8.85	10,020	-8.6
MW-49-275	08/23/2022	8.1	25,404	4.0	0.44	24.70	0.15	16,510	50.1
MW-49-365	08/23/2022	7.6	38,729	3.0	0.76	24.60	0.25	25,120	51.8
MW-51	07/13/2022	7.7	10,837	17.0	1.03	31.50	5.35	6,220	36.4
MW-51	08/12/2022	7.5	9,713	5.0	1.97	30.70	0.77	nm	186.0
MW-51	09/15/2022	7.3	8,460	8.0	0.54	30.20	0.70	nm	139.9
MW-52D	08/24/2022	7.6	20,412	3.0	0.26	23.30	0.12	13,280	-162.6
MW-52M	08/24/2022	7.6	15,925	6.0	0.44	24.10	0.22	10,270	-186.4
MW-52S	08/24/2022	7.6	12,522	11.0	0.28	24.00	7.16	8,130	-111.3
MW-53D	08/24/2022	8.0	25,072	5.0	0.33	23.20	0.15	16,230	-170.0

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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-53M	08/24/2022	7.9	14,190	7.0	0.64	22.80	8.40	9,420	-160.8
MW-53S	08/24/2022	7.0	1,389	6.0	0.51	22.80	0.70	900	-121.8
MW-65-160	08/25/2022	7.4	4,311	34.0	2.21	32.80	2.26	2,760	85.8
MW-65-225	08/25/2022	7.4	9,849	7.0	1.49	28.90	5.47	6,370	81.5
MW-67-185	07/13/2022	7.1	6,392	40.0	2.24	35.00	2.85	3,490	46.1
MW-67-185	08/18/2022	7.5	5,655	46.0	2.78	32.40	3.00	3,680	50.8
MW-67-185	09/14/2022	7.5	5,813	37.0	1.83	32.10	3.10	3,770	68.4
MW-68-180	07/13/2022	7.1	3,557	5.0	3.93	33.80	1.56	1,980	33.0
MW-68-180	08/18/2022	7.5	4,155	22.0	3.42	31.80	2.17	2,690	55.1
MW-68-180	09/14/2022	7.5	4,636	26.0	3.02	31.90	2.45	3,010	64.2
MW-69-195	08/25/2022	7.5	3,128	17.0	1.59	28.60	1.62	2,030	80.8
MW-71-035	07/13/2022	7.1	15,836	13.0	2.00	32.80	7.87	8,960	-9.5
MW-71-035	08/12/2022	7.1	15,288	12.0	2.13	30.10	8.07	9,130	-43.3
MW-71-035	09/15/2022	7.0	15,301	7.0	3.72	28.60	8.87	9,930	85.5
MW-75-033	08/24/2022	7.6	4,285	32.0	0.32	29.10	2.26	2,780	-117.0
MW-75-117	08/24/2022	8.0	11,944	5.0	0.57	29.60	6.74	7,760	-139.5
MW-75-202	08/25/2022	8.0	17,091	7.0	0.95	27.80	0.10	11,110	-71.2
MW-75-267	08/25/2022	8.0	21,957	33.0	0.67	27.70	0.13	14,260	-246.0
MW-75-337	08/25/2022	8.0	28,744	14.0	0.42	28.10	0.18	18,220	-269.5
MW-76-039	07/11/2022	7.7	5,008	37.0	2.03	32.00	2.39	2,430	79.8
MW-76-039	08/08/2022	7.0	4,043	13.0	3.44	29.10	2.12	2,620	32.6
MW-76-039	09/12/2022	7.5	4,281	6.0	3.55	26.90	2.26	2,770	72.3
MW-76-156	07/11/2022	7.7	16,413	48.0	0.89	31.30	2.79	3,370	60.8
MW-76-156	08/08/2022	7.1	15,208	24.0	1.14	32.60	8.76	9,880	18.9
MW-76-156	09/12/2022	7.6	17,161	7.0	0.55	28.80	0.10	11,160	4.9
MW-76-181	07/11/2022	7.2	22,173	45.0	0.35	33.60	0.11	12,640	-41.4
MW-76-181	08/08/2022	7.1	17,155	28.0	0.89	30.70	8.93	10,020	-1.6
MW-76-181	09/12/2022	7.6	17,212	7.0	1.02	27.60	0.10	11,190	74.6
MW-76-218	07/11/2022	7.5	28,603	42.0	0.63	33.50	0.13	14,330	-54.6
MW-76-218	08/08/2022	7.3	18,266	4.0	0.70	32.30	9.18	10,320	-8.1
MW-76-218	09/12/2022	7.9	17,595	8.0	1.46	28.80	0.10	11,430	64.1
MW-77-046	07/11/2022	7.2	7,168	26.0	4.95	31.50	3.51	4,210	-49.8

Table 3.4
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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-77-046	08/08/2022	7.6	10,020	39.0	5.45	32.90	0.60	nm	89.9
MW-77-046	09/12/2022	7.6	7,560	9.0	5.39	30.80	0.70	nm	41.0
MW-77-102	07/11/2022	7.8	11,287	180.0	0.15	29.80	6.35	7,330	73.4
MW-77-102	08/08/2022	7.6	8,841	119.0	0.25	28.70	0.45	nm	-49.9
MW-77-102	09/12/2022	7.3	8,563	11.0	0.27	28.80	0.65	nm	-72.8
MW-77-158	07/11/2022	8.2	10,431	8.0	3.26	29.40	5.97	6,920	66.0
MW-77-158	08/08/2022	8.0	11,332	41.0	4.66	30.30	0.45	nm	-61.1
MW-77-158	09/12/2022	7.9	11,415	5.0	4.48	29.30	0.70	nm	-109.9
MW-77-187	07/11/2022	7.2	18,347	21.0	3.59	31.00	9.59	10,710	80.4
MW-77-187	08/08/2022	8.3	17,060	57.0	5.57	32.90	0.50	nm	93.2
MW-77-187	09/12/2022	8.0	17,739	10.0	6.00	29.90	0.75	nm	-69.6
MW-78-070	07/14/2022	7.7	10,133	40.0	4.41	31.30	5.00	5,790	23.5
MW-78-070	08/11/2022	7.3	7,825	60.0	3.29	32.10	0.85	nm	152.8
MW-78-070	09/15/2022	7.0	9,705	10.0	2.76	29.30	0.90	nm	159.9
MW-78-142	07/14/2022	7.7	11,984	27.0	0.48	32.20	6.62	7,730	96.9
MW-78-142	08/11/2022	7.6	11,519	22.0	0.47	32.10	0.84	nm	124.3
MW-78-142	09/15/2022	7.4	11,956	10.0	0.53	30.20	0.81	nm	145.9
MW-79-058	07/14/2022	7.8	4,154	39.0	3.98	30.50	2.03	2,520	97.8
MW-79-058	08/11/2022	7.5	3,377	202.0	1.63	31.70	0.75	nm	72.8
MW-79-058	09/15/2022	7.3	7,845	32.0	4.75	28.30	4.31	5,090	85.1
MW-79-102	07/14/2022	7.8	10,281	45.0	0.36	31.00	5.24	6,140	100.2
MW-79-102	08/11/2022	7.6	9,921	42.0	1.31	32.30	0.75	nm	126.6
MW-79-102	09/15/2022	7.6	10,558	13.0	2.62	28.80	5.94	6,860	87.9
MW-80-057	07/14/2022	7.7	7,861	18.0	3.70	30.40	4.31	5,100	111.6
MW-80-057	08/11/2022	7.6	6,570	49.0	2.80	31.00	0.70	nm	83.8
MW-80-057	09/15/2022	7.4	7,246	10.0	3.55	29.90	0.80	nm	131.9
MW-80-082	07/14/2022	7.9	10,271	29.0	0.25	30.50	5.77	6,690	100.6
MW-80-082	08/11/2022	7.7	9,850	32.0	0.47	32.40	0.60	nm	40.9
MW-80-082	09/15/2022	7.6	10,407	10.0	0.45	30.00	0.90	nm	83.7
MW-81-043	07/12/2022	7.2	7,130	39.0	1.18	31.10	3.46	4,160	-99.0
MW-81-043	08/10/2022	7.0	8,491	39.0	1.16	29.70	4.28	5,060	-50.6
MW-81-043	09/13/2022	7.7	6,282	18.0	0.36	28.10	3.41	4,090	50.5

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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-81-098	07/12/2022	7.0	16,483	20.0	0.25	35.30	8.61	9,610	-65.0
MW-81-098	08/10/2022	7.0	9,168	9.0	0.88	29.40	4.64	5,460	-42.0
MW-81-098	09/13/2022	7.3	11,228	7.0	1.86	26.80	6.33	7,260	55.1
MW-82-046	07/12/2022	7.8	14,314	42.0	0.26	28.70	7.96	9,040	-162.2
MW-82-046	08/10/2022	7.7	13,777	48.0	0.40	26.50	7.64	8,650	-138.5
MW-82-046	09/13/2022	7.4	10,203	28.0	0.84	24.70	5.79	6,680	-73.5
MW-82-112	07/12/2022	7.6	11,406	15.0	0.30	31.30	5.69	6,640	-80.6
MW-82-112	08/10/2022	7.1	9,583	33.0	1.98	27.90	5.05	5,900	-34.3
MW-82-112	09/13/2022	7.7	9,619	5.0	4.51	24.40	5.40	6,250	71.5
MW-82-168	07/12/2022	7.2	10,384	13.0	0.38	31.10	5.24	6,100	-85.7
MW-82-168	08/10/2022	7.7	9,725	32.0	1.52	27.30	5.23	6,120	-40.0
MW-82-168	09/13/2022	7.9	10,688	7.0	3.19	24.70	6.04	6,930	71.1
MW-82-198	07/12/2022	7.7	18,824	46.0	0.20	33.10	9.45	10,590	-51.9
MW-82-198	08/10/2022	7.8	18,028	44.0	0.90	27.20	0.10	11,320	-23.2
MW-82-198	09/13/2022	7.9	15,789	7.0	3.89	24.90	9.46	10,610	64.1
MW-86-030	08/23/2022	7.4	1,438	8.0	0.31	21.80	0.73	930	58.9
MW-86-066	08/23/2022	7.5	8,059	3.0	2.75	20.80	4.49	5,240	45.9
MW-86-120	08/23/2022	7.8	12,930	3.0	5.21	22.50	7.43	8,390	65.7
MW-86-140	08/23/2022	7.5	11,812	4.0	6.91	23.80	6.74	7,680	68.9
MW-90-031	08/19/2022	7.7	13,235	22.0	0.26	26.10	7.64	9,640	-123.8
MW-96-045	08/11/2022	7.1	11,746	30.0	1.97	27.20	6.64	7,590	-41.5
MW-96-217	08/11/2022	7.0	18,454	3.0	0.63	27.90	0.11	11,970	-22.6
MW-97-042	08/22/2022	7.7	3,871	25.0	5.18	28.80	2.03	2,520	55.1
MW-97-202	08/22/2022	7.2	19,958	9.0	0.52	29.70	0.12	12,970	-28.1
PT5D	08/15/2022	7.4	10,015	7.0	0.32	23.40	5.65	6,610	-58.6
PT5M	08/15/2022	7.3	2,694	9.0	0.53	22.30	1.40	1,740	-17.0
PT5S	08/15/2022	7.6	1,233	5.0	2.18	22.80	0.61	790	-62.6
R-19	08/18/2022	8.3	935	5.0	8.23	22.30	0.46	600	18.3
R-28	08/17/2022	8.2	933	3.0	8.95	23.00	0.46	610	48.2
R-63	08/17/2022	8.4	941	14.0	4.71	23.50	0.46	610	46.1
RRB	08/18/2022	8.1	867	5.0	5.55	21.70	0.46	590	32.3
SW1	08/17/2022	8.1	972	12.0	7.72	22.80	0.48	640	10.6

Table 3.4
Third Quarter 2022 Field Parameters
Third 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)
SW2	08/17/2022	8.2	933	13.0	7.53	22.90	0.46	620	52.8
TW-02D	07/13/2022	7.2	16,930	7.0	0.60	29.00	8.92	9,990	-89.4
TW-02D	08/09/2022	7.2	12,677	5.0	0.90	28.60	6.76	7,720	-11.2
TW-02D	09/14/2022	7.9	16,515	7.0	1.60	26.20	9.69	10,730	104.1
TW-02S	07/13/2022	7.4	3,884	5.0	4.84	29.80	1.86	2,310	-61.0
TW-02S	08/09/2022	7.3	4,100	22.0	1.17	28.90	2.01	2,480	7.1
TW-02S	09/14/2022	7.6	4,859	8.0	2.62	26.90	2.59	3,150	103.6
TW-03D	07/13/2022	7.1	17,047	4.0	0.33	29.90	9.03	10,120	-81.4
TW-03D	08/09/2022	7.1	12,705	7.0	0.51	28.50	6.75	7,720	-33.6
TW-03D	09/14/2022	7.6	18,889	5.0	1.73	26.90	0.11	12,230	96.8
TW-04	08/22/2022	7.6	22,918	4.0	6.45	27.90	0.14	14,880	65.8

Acronyms and Abbreviations:
deg C = degrees Celsius
ID = identification
µS/cm = microsiemens per centimeter
mg/L = milligrams per liter
mV = millivolts
nm = not measured
NTU = nephelometric turbidity units
ORP = oxidation-reduction potential
ppt = parts per thousand

Table 4.1
Monitoring Well Inspection Results
Third 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
HNWR-01A-098	8/18/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
HNWR-01A-174	8/18/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
IRZ-09-100	9/14/2022	no	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
IRZ-13D-210	9/14/2022	no	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
IRZ-13S-095	9/14/2022	no	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
IRZ-23-143	9/14/2022	no	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MTS-1	8/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MTS-2	8/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-20-070	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-20-070	8/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-20-070	9/14/2022	no	n/a	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-20-100	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-20-100	8/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-20-100	9/14/2022	no	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-20-130	8/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-20-130	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-20-130	9/14/2022	no	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-21	9/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-21	8/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-21	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-22	8/19/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-26	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-26	9/15/2022	no	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-26	8/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-27-020	8/23/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-27-060	8/23/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-27-085	8/23/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-28-025	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-28-090	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-29	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-30-030	8/22/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-30-050	8/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-30-050	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-30-050	9/13/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-31-060	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-31-060	8/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-31-060	9/14/2022	no	n/a	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-31-135	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-31-135	8/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-31-135	9/14/2022	no	n/a	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-32-020	8/19/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-32-035	8/19/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-33-040	8/24/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-33-090	8/24/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-33-150	8/24/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-33-210	8/24/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-34-055	8/23/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-34-080	9/15/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--

Table 4.1
Monitoring Well Inspection Results
Third 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-34-080	8/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-34-080	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-34-100	8/23/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-35-060	8/22/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-35-135	8/22/2022	yes	n/a	yes	no	yes	yes	no	yes	yes	yes	Tab stripped or missing.
MW-36-020	8/23/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-36-040	8/23/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-36-050	8/23/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-36-070	8/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-36-090	8/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-36-090	9/14/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-36-090	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-36-100	8/10/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-36-100	9/14/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-36-100	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-38D	8/25/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-38S	8/25/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-040	8/9/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-040	9/13/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-040	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-39-050	9/13/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-050	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-39-050	8/9/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-060	9/13/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-060	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-39-060	8/9/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-070	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-39-070	9/13/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-070	8/9/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-080	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-39-080	8/9/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-080	9/13/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-100	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-39-100	8/9/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-39-100	9/13/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-42-030	8/18/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-42-055	8/18/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-42-065	8/18/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-43-025	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-43-075	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-43-090	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-44-070	8/23/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-44-115	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-44-115	8/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-44-115	9/13/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-44-125	8/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-44-125	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-44-125	9/13/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--

Table 4.1
Monitoring Well Inspection Results
Third 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-45-095a	9/15/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-45-095a	8/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-45-095a	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-46-175	8/24/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-46-205	8/24/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-47-055	8/24/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-47-115	8/24/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-49-135	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-49-275	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-49-365	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-51	8/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-51	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-51	9/15/2022	no	n/a	yes	no	yes	yes	no	yes	no	yes	Tab stripped or missing.
MW-52D	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-52M	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-52S	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-53D	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-53M	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-53S	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-65-160	8/25/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-65-225	8/25/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-67-185	7/13/2022	yes	n/a	yes	no	yes	yes	no	yes	yes	yes	One tab broken.
MW-67-185	8/18/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-67-185	9/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-68-180	8/18/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-68-180	9/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-68-180	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-69-195	8/25/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-70BR-225	7/25/2022	yes	n/a	yes	no	yes	no	no	no	no	yes	--
MW-71-035	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-71-035	9/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-71-035	8/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-75-033	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-75-117	8/24/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-75-202	8/25/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-75-267	8/25/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-75-337	8/25/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-76-039	7/11/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	--
MW-76-039	9/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-76-039	8/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-76-156	9/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-76-156	7/11/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	--
MW-76-156	8/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-76-181	9/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-76-181	7/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-76-181	8/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-76-218	8/8/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-76-218	9/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--

Table 4.1
Monitoring Well Inspection Results
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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-76-218	7/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-77-046	7/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-77-046	9/12/2022	yes	yes	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-77-046	8/8/2022	no	yes	yes	no	yes	no	no	yes	yes	yes	--
MW-77-102	8/8/2022	no	yes	yes	no	yes	no	no	yes	yes	yes	--
MW-77-102	7/11/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	--
MW-77-102	9/12/2022	yes	yes	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-77-158	7/11/2022	yes	yes	yes	no	yes	no	no	yes	yes	yes	--
MW-77-158	8/8/2022	no	yes	yes	no	yes	no	no	yes	yes	yes	--
MW-77-158	9/12/2022	yes	yes	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-77-187	7/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-77-187	9/12/2022	yes	yes	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-77-187	8/8/2022	no	yes	yes	no	yes	no	no	yes	yes	yes	--
MW-78-070	8/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-78-070	9/15/2022	no	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-78-070	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-78-142	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-78-142	9/15/2022	no	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-78-142	8/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-79-058	8/11/2022	yes	n/a	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-79-058	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-79-058	9/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-79-102	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-79-102	9/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-79-102	8/11/2022	yes	n/a	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-80-057	9/15/2022	no	n/a	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-80-057	8/11/2022	no	n/a	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-80-057	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-80-082	8/11/2022	no	n/a	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-80-082	7/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-80-082	9/15/2022	no	n/a	yes	no	yes	no	yes	yes	yes	yes	Water in well box.
MW-81-043	8/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-81-043	9/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-81-043	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-81-098	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-81-098	8/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-81-098	9/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-046	9/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-046	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-046	8/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-112	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-112	9/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-112	8/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-168	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-168	8/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-168	9/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-198	8/10/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-82-198	7/12/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--

Table 4.1
Monitoring Well Inspection Results
Third 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-82-198	9/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-86-030	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-86-066	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-86-120	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-86-140	8/23/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--
MW-90-031	8/19/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-94-030	8/17/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-94-100	8/17/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-94-175	8/17/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-96-045	8/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-96-217	8/11/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-97-042	8/22/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-97-202	8/22/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-99-060	8/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
MW-99-140	8/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
PGE-09N	8/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
PGE-09S	8/16/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
PT5D	8/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
PT5M	8/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
PT5S	8/15/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-02D	8/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-02D	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-02D	9/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-02S	9/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-02S	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-02S	8/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-03D	7/13/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-03D	9/14/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-03D	8/9/2022	yes	n/a	yes	no	yes	no	no	yes	yes	yes	--
TW-04	8/22/2022	yes	n/a	yes	no	yes	n/a	no	yes	yes	n/a	--

Acronyms and Abbreviations:
ID = identification
n/a = not applicable
-- = no comment

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

Well ID	Well Screen Lithology	Sample Date	Constructed Well Depth (feet bTOC)	Measured Well Depth (feet bTOC)	Difference in Constructed and Measured Well Depth (feet)	Screen Start Depth (feet bTOC)	Screen End Depth (feet bTOC)	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/feet)	Measured Depth Covering Greater than 20% of screen?	Flagged for Evaluation	Planned for Resurvey	Considered for Redevelopment
MW-20-070	Alluvial	07/13/2022	69.69	68.40	1.29	49.69	69.69	42.77	42.97	0.20	500	0.66	No	--	--	--
MW-20-070	Alluvial	08/09/2022	69.69	68.23	1.46	49.69	69.69	43.62	43.72	0.10	500	1.32	No	--	--	--
MW-20-070	Alluvial	09/14/2022	69.69	68.62	1.07	49.69	69.69	44.55	44.60	0.05	500	2.64	No	--	--	--
MW-20-100	Alluvial	07/13/2022	100.49	98.10	2.39	88.59	98.59	41.96	42.04	0.08	500	1.65	No	--	--	--
MW-20-100	Alluvial	08/09/2022	100.49	98.08	2.41	88.59	98.59	42.81	42.92	0.11	500	1.20	No	--	--	--
MW-20-100	Alluvial	09/14/2022	100.49	98.10	2.39	88.59	98.59	44.80	44.88	0.08	500	1.65	No	--	--	--
MW-20-130	Alluvial	07/13/2022	131.49	129.57	1.92	120.15	130.15	42.28	42.48	0.20	500	0.66	No	--	--	--
MW-20-130	Alluvial	08/09/2022	131.49	129.57	1.92	120.15	130.15	43.33	43.43	0.10	500	1.32	No	--	--	--
MW-20-130	Alluvial	09/14/2022	131.49	129.57	1.92	120.15	130.15	45.10	45.18	0.08	500	1.65	No	--	--	--
MW-21	Alluvial	07/13/2022	58.95	58.13	0.82	38.45	58.45	47.84	48.12	0.28	100	0.09	No	--	--	--
MW-21	Alluvial	08/12/2022	58.95	58.08	0.87	38.45	58.45	49.40	49.93	0.53	100	0.05	No	--	--	--
MW-21	Alluvial	09/15/2022	58.95	58.26	0.69	38.45	58.45	48.80	50.35	1.55	100	0.02	No	X	--	--
MW-22	Fluvial	08/19/2022	11.15	10.98	0.17	5.15	10.15	4.25	4.43	0.18	200	0.29	No	--	--	--
MW-26	Alluvial	07/13/2022	70.82	69.26	1.56	50.82	70.82	45.04	45.25	0.21	500	0.63	No	--	--	--
MW-26	Alluvial	08/12/2022	70.82	69.23	1.59	50.82	70.82	46.35	46.49	0.14	200	0.38	No	--	--	--
MW-26	Alluvial	09/15/2022	70.82	69.25	1.57	50.82	70.82	45.19	45.28	0.09	500	1.47	No	--	--	--
MW-27-020	Fluvial	08/23/2022	18.92	13.84	5.08	8.92	18.92	5.76	5.80	0.04	500	3.30	Yes	X	--	X
MW-27-060	Fluvial	08/23/2022	61.91	58.82	3.09	50.21	60.21	6.67	6.72	0.05	500	2.64	No	--	--	--
MW-27-085	Fluvial	08/23/2022	100.05	100.28	-0.23	80.05	90.05	6.54	6.60	0.06	500	2.20	No	--	--	--
MW-28-025	Fluvial	08/23/2022	25.10	21.40	3.70	15.10	25.10	12.11	12.16	0.05	500	2.64	Yes	X	--	X
MW-28-090	Fluvial	08/23/2022	101.46	98.11	3.35	73.10	93.10	12.81	12.90	0.09	500	1.47	No	--	--	--
MW-29	Fluvial	08/23/2022	43.73	40.70	3.03	31.71	41.71	30.08	30.11	0.03	500	4.40	No	--	--	--
MW-30-030	Fluvial	08/22/2022	33.92	25.11	8.81	13.92	33.92	12.99	13.34	0.35	500	0.38	Yes	X	--	X
MW-30-050	Fluvial	07/12/2022	55.01	52.54	2.47	42.41	52.41	12.29	12.32	0.03	500	4.40	No	--	--	--
MW-30-050	Fluvial	08/10/2022	55.01	51.63	3.38	42.41	52.41	13.60	13.67	0.07	500	1.89	No	--	--	--
MW-30-050	Fluvial	09/13/2022	55.01	52.54	2.47	42.41	52.41	14.67	14.72	0.05	500	2.64	No	--	--	--
MW-31-060	Alluvial	07/13/2022	65.71	62.59	3.12	43.21	63.21	38.57	38.69	0.12	500	1.10	No	--	--	--
MW-31-060	Alluvial	08/10/2022	65.71	62.54	3.17	43.21	63.21	39.47	39.56	0.09	500	1.47	No	--	--	--
MW-31-060	Alluvial	09/14/2022	65.71	61.60	4.11	43.21	63.21	39.15	39.22	0.07	500	1.89	No	--	--	--
MW-31-135	Alluvial	07/13/2022	133.53	130.90	2.63	113.23	133.23	39.12	39.29	0.17	500	0.78	No	X	X	--
MW-31-135	Alluvial	08/10/2022	133.53	130.92	2.61	113.23	133.23	40.26	40.34	0.08	500	1.65	No	X	X	--
MW-31-135	Alluvial	09/14/2022	133.53	130.78	2.75	113.23	133.23	40.41	40.46	0.05	500	2.64	No	X	X	--
MW-32-020	Fluvial	08/19/2022	22.41	19.33	3.08	12.41	22.41	6.45	7.07	0.62	500	0.21	Yes	X	--	X
MW-32-035	Fluvial	08/19/2022	39.58	36.98	2.60	29.93	37.43	6.62	6.70	0.08	500	1.65	No	--	--	--
MW-33-040	Fluvial	08/24/2022	44.64	40.92	3.72	31.80	41.80	32.42	32.50	0.08	500	1.65	No	--	--	--
MW-33-090	Alluvial	08/24/2022	91.83	88.30	3.53	71.83	91.11	32.45	32.51	0.06	500	2.20	No	--	--	--
MW-33-150	Alluvial	08/24/2022	158.15	155.03	3.12	134.77	154.77	32.82	32.90	0.08	500	1.65	No	--	--	--
MW-33-210	Alluvial	08/24/2022	225.64	222.11	3.53	192.64	212.64	32.76	32.81	0.05	500	2.64	No	--	--	--
MW-34-055	Fluvial	08/23/2022	58.81	56.38	2.43	47.21	57.21	6.45	6.50	0.05	500	2.64	No	--	--	--
MW-34-080	Fluvial	07/14/2022	86.56	84.12	2.44	75.26	85.26	4.55	4.70	0.15	500	0.88	No	--	--	--
MW-34-080	Fluvial	08/11/2022	86.56	84.30	2.26	75.26	85.26	5.40	5.60	0.20	500	0.66	No	--	--	--
MW-34-080	Fluvial	09/15/2022	86.56	84.12	2.44	75.26	85.26	5.34	5.38	0.04	500	3.30	No	--	--	--
MW-34-100	Fluvial	08/23/2022	108.64	115.68	-7.05	83.64	93.64	6.62	6.62	0.00	500	N/A	No	X	X	--
MW-35-060	Alluvial	08/22/2022	61.63	57.30	4.33	41.33	61.33	26.96	27.03	0.07	500	1.89	Yes	X	--	X
MW-35-135	Alluvial	08/22/2022	158.98	154.55	4.42	116.28	136.28	26.50	26.63	0.13	500	1.02	No	--	--	--
MW-36-020	Fluvial	08/23/2022	23.08	22.04	1.04	12.78	22.78	14.20	14.73	0.53	500	0.25	No	--	--	--
MW-36-040	Fluvial	08/23/2022	43.15	42.23	0.92	32.85	42.85	14.52	14.72	0.20	500	0.66	No	--	--	--
MW-36-050	Fluvial	08/23/2022	55.79	53.10	2.69	48.79	53.79	14.57	14.65	0.08	500	1.65	No	--	--	--
MW-36-070	Fluvial	08/10/2022	73.02	67.41	5.61	62.72	72.72	14.21	14.29	0.08	500	1.65	Yes	X	--	--
MW-36-090	Fluvial	07/14/2022	93.35	92.00	1.35	83.05	93.05	13.24	13.44	0.20	500	0.66	No	--	--	--
MW-36-090	Fluvial	08/10/2022	93.35	88.02	5.33	83.05	93.05	14.52	14.60	0.08	500	1.65	Yes	--	--	--
MW-36-090	Fluvial	09/14/2022	93.35	92.38	0.97	83.05	93.05	14.81	14.85	0.04	500	3.30	No	--	--	--
MW-36-100	Fluvial	07/14/2022	111.36	110.35	1.01	91.36	101.36	13.33	13.53	0.20	500	0.66	No	X	X	--
MW-36-100	Fluvial	08/10/2022	111.36	109.81	1.55	91.36	101.36	14.72	14.81	0.09	500	1.47	No	X	X	--
MW-36-100	Fluvial	09/14/2022	111.36	110.36	1.00	91.36	101.36	14.93	15.02	0.09	500	1.47	No	X	X	--
MW-38D	Alluvial	08/25/2022	186.58	185.16	1.42	166.28	186.28	70.35	70.41	0.06	500	2.20	No	--	--	--

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

Well ID	Well Screen Lithology	Sample Date	Constructed Well Depth (feet bTOC)	Measured Well Depth (feet bTOC)	Difference in Constructed and Measured Well Depth (feet)	Screen Start Depth (feet bTOC)	Screen End Depth (feet bTOC)	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/feet)	Measured Depth Covering Greater than 20% of screen?	Flagged for Evaluation	Planned for Resurvey	Considered for Redevelopment
MW-38S	Alluvial	08/25/2022	97.77	96.94	0.83	77.47	97.47	68.87	68.96	0.09	500	1.47	No	--	--	--
MW-39-040	Alluvial	07/12/2022	44.92	37.97	6.95	32.82	42.82	11.60	11.80	0.20	500	0.66	Yes	X	X	X
MW-39-040	Alluvial	08/09/2022	44.92	37.88	7.04	32.82	42.82	13.49	13.54	0.05	500	2.64	Yes	X	X	X
MW-39-040	Alluvial	09/13/2022	44.92	37.98	6.94	32.82	42.82	13.56	13.62	0.06	500	2.20	Yes	X	X	X
MW-39-050	Alluvial	07/12/2022	57.43	54.46	2.97	49.83	54.83	11.49	11.71	0.22	500	0.60	No	--	--	--
MW-39-050	Alluvial	08/09/2022	57.43	49.51	7.92	49.83	54.83	12.48	12.58	0.10	200	0.53	Yes	X	--	--
MW-39-050	Alluvial	09/13/2022	57.43	54.46	2.97	49.83	54.83	13.54	13.62	0.08	500	1.65	No	--	--	--
MW-39-060	Alluvial	07/12/2022	69.00	61.50	7.50	51.70	61.70	11.73	11.93	0.20	500	0.66	No	X	X	--
MW-39-060	Alluvial	08/09/2022	69.00	61.49	7.51	51.70	61.70	12.59	12.68	0.09	200	0.59	No	X	X	--
MW-39-060	Alluvial	09/13/2022	69.00	61.50	7.50	51.70	61.70	13.74	13.71	-0.03	500	4.40	No	X	X	--
MW-39-070	Alluvial	07/12/2022	74.51	71.56	2.95	62.82	72.82	11.70	11.91	0.21	500	0.63	No	--	--	--
MW-39-070	Alluvial	08/09/2022	74.51	68.21	6.30	62.82	72.82	12.52	12.52	0.00	500	N/A	Yes	X	--	--
MW-39-070	Alluvial	09/13/2022	74.51	71.56	2.95	62.82	72.82	13.60	13.67	0.07	500	1.89	No	--	--	--
MW-39-080	Alluvial	07/12/2022	85.37	82.25	3.12	72.82	82.82	11.50	11.58	0.08	500	1.65	No	--	--	--
MW-39-080	Alluvial	08/09/2022	85.37	77.78	7.59	72.82	82.82	12.36	12.63	0.27	500	0.49	Yes	X	--	--
MW-39-080	Alluvial	09/13/2022	85.37	82.25	3.12	72.82	82.82	13.56	13.66	0.10	500	1.32	No	--	--	--
MW-39-100	Alluvial	07/12/2022	120.53	116.58	3.95	82.82	102.82	11.70	11.83	0.13	500	1.02	No	--	--	--
MW-39-100	Alluvial	08/09/2022	120.53	116.43	4.10	82.82	102.82	12.78	12.80	0.02	500	6.61	No	--	--	--
MW-39-100	Alluvial	09/13/2022	120.53	116.58	3.95	82.82	102.82	14.04	14.13	0.09	500	1.47	No	--	--	--
MW-42-030	Fluvial	08/18/2022	32.55	30.98	1.57	12.25	32.25	8.91	8.94	0.03	500	4.40	No	--	--	--
MW-42-055	Fluvial	08/18/2022	55.29	55.39	-0.10	44.99	54.99	8.92	8.96	0.04	500	3.30	No	--	--	--
MW-42-065	Fluvial	08/18/2022	82.52	83.72	-1.21	58.72	68.72	8.37	8.47	0.10	500	1.32	No	X	X	
MW-43-025	Fluvial	08/24/2022	27.52	26.71	0.81	17.52	27.52	7.69	7.77	0.08	500	1.65	No	--	--	--
MW-43-075	Fluvial	08/24/2022	77.79	77.59	0.20	67.79	77.79	7.94	8.08	0.14	500	0.94	No	--	--	--
MW-43-090	Fluvial	08/24/2022	99.82	102.70	-2.88	82.82	92.82	8.11	8.18	0.07	500	1.89	No	X	X	--
MW-44-070	Fluvial	08/23/2022	72.10	72.47	-0.37	62.10	72.10	16.94	17.30	0.36	500	0.37	No	--	--	--
MW-44-115	Alluvial	07/14/2022	114.52	113.93	0.59	106.52	114.52	15.99	16.05	0.06	500	2.20	No	--	--	--
MW-44-115	Alluvial	08/11/2022	114.52	113.82	0.70	106.52	114.52	16.81	17.05	0.24	500	0.55	No	--	--	--
MW-44-115	Alluvial	09/13/2022	114.52	114.42	0.10	106.52	114.52	17.88	17.93	0.05	500	2.64	No	--	--	--
MW-44-125	Alluvial	07/14/2022	130.35	128.43	1.92	117.55	126.55	15.75	15.80	0.05	500	2.64	No	--	--	--
MW-44-125	Alluvial	08/11/2022	130.35	128.60	1.75	117.55	126.55	16.53	16.90	0.37	300	0.21	No	--	--	--
MW-44-125	Alluvial	09/13/2022	130.35	128.68	1.67	117.55	126.55	17.80	17.86	0.06	500	2.20	No	--	--	--
MW-46-175	Alluvial	08/24/2022	176.84	175.93	0.91	166.34	176.34	28.05	28.11	0.06	500	2.20	No	--	--	--
MW-46-205	Alluvial	08/24/2022	207.91	218.75	-10.84	197.91	207.91	28.26	28.33	0.07	500	1.89	No	X	X	--
MW-47-055	Alluvial	08/24/2022	56.28	56.47	-0.19	46.28	56.28	28.78	28.85	0.07	500	1.89	No	--	--	--
MW-47-115	Alluvial	08/24/2022	116.47	115.65	0.82	106.47	116.47	29.08	29.15	0.07	500	1.89	No	--	--	--
MW-49-135	Alluvial	08/23/2022	136.52	136.25	0.27	126.52	136.52	29.01	29.05	0.04	500	3.30	No	--	--	--
MW-49-275	Alluvial	08/23/2022	276.45	274.73	1.72	256.45	276.45	29.82	29.89	0.07	500	1.89	No	--	--	--
MW-49-365	Alluvial	08/23/2022	368.86	367.30	1.56	347.51	367.51	31.40	31.40	0.00	500	N/A	No	--	--	--
MW-51	Alluvial	07/13/2022	112.94	113.27	-0.33	96.69	111.69	44.64	44.75	0.11	500	1.20	No	--	--	--
MW-51	Alluvial	08/12/2022	112.94	113.32	-0.38	96.69	111.69	45.74	45.83	0.09	500	1.47	No	--	--	--
MW-51	Alluvial	09/15/2022	112.94	113.32	-0.38	96.69	111.69	44.80	44.90	0.10	500	1.32	No	--	--	--
MW-65-160	Alluvial	08/25/2022	159.70	160.41	-0.71	149.60	159.60	140.53	140.63	0.10	500	1.32	No	--	--	--
MW-65-225	Alluvial	08/25/2022	224.68	225.31	-0.63	214.59	224.59	140.20	140.32	0.12	500	1.10	No	--	--	--
MW-67-185	Alluvial	07/13/2022	186.73	186.51	0.22	176.73	186.73	169.33	169.38	0.05	500	2.64	No	--	--	--
MW-67-185	Alluvial	08/18/2022	186.73	186.71	0.02	176.73	186.73	170.16	170.22	0.06	500	2.20	No	--	--	--
MW-67-185	Alluvial	09/14/2022	186.73	186.72	0.01	176.73	186.73	170.04	170.09	0.05	500	2.64	No	--	--	--
MW-68-180	Alluvial	07/13/2022	179.68	180.04	-0.36	164.59	179.59	164.11	164.24	0.13	500	1.02	No	--	--	--
MW-68-180	Alluvial	08/18/2022	179.68	180.02	-0.34	164.59	179.59	164.70	164.81	0.11	500	1.20	No	--	--	--
MW-68-180	Alluvial	09/14/2022	179.68	180.04	-0.36	164.59	179.59	164.82	164.85	0.03	500	4.40	No	--	--	--
MW-69-195	Bedrock	08/25/2022	195.27	195.56	-0.29	175.27	195.27	174.67	174.75	0.08	500	1.65	No	--	--	--
MW-70BR-225	Bedrock	07/25/2022	N/A	221.52	N/A	N/A	N/A	80.32	94.00	13.68	17,640	0.34	N/A	X	X	--
MW-71-035	Bedrock	07/13/2022	35.90	35.52	0.38	25.70	35.70	26.06	26.31	0.25	100	0.11	No	--	--	--
MW-71-035	Bedrock	08/12/2022	35.90	35.52	0.38	25.70	35.70	27.41	27.74	0.33	100	0.08	No	--	--	--
MW-71-035	Bedrock	09/15/2022	35.90	35.52	0.38	25.70	35.70	27.21	27.55	0.34	100	0.08	No	--	--	--
MW-75-033	Alluvial	08/24/2022	35.48	32.40	3.08	18.08	33.08	18.35	18.40	0.05	500	2.64	No	--	--	--
MW-75-117	Alluvial	08/24/2022	119.45	117.22	2.23	97.15	117.15	18.59	18.65	0.06	500	2.20	No	--	--	--
MW-75-202	Alluvial	08/25/2022	204.34	204.27	0.07	182.34	202.34	18.01	18.10	0.09	500	1.47	No	--	--	--
MW-75-267	Alluvial	08/25/2022	269.50	268.51	0.99	247.20	267.20	17.91	18.00	0.09	500	1.47	No	--	--	--

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

Well ID	Well Screen Lithology	Sample Date	Constructed Well Depth (feet bTOC)	Measured Well Depth (feet bTOC)	Difference in Constructed and Measured Well Depth (feet)	Screen Start Depth (feet bTOC)	Screen End Depth (feet bTOC)	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/feet)	Measured Depth Covering Greater than 20% of screen?	Flagged for Evaluation	Planned for Resurvey	Considered for Redevelopment
MW-75-337	Alluvial	08/25/2022	339.79	338.50	1.29	317.49	337.49	20.33	20.40	0.07	500	1.89	No	--	--	--
MW-76-039	Alluvial	07/11/2022	39.10	38.70	0.40	23.60	38.60	25.54	25.65	0.11	500	1.20	No	--	--	--
MW-76-039	Alluvial	08/08/2022	39.10	38.72	0.38	23.60	38.60	26.21	26.29	0.08	500	1.65	No	--	--	--
MW-76-039	Alluvial	09/12/2022	39.10	38.62	0.48	23.60	38.60	25.32	25.40	0.08	500	1.65	No	--	--	--
MW-76-156	Alluvial	07/11/2022	158.01	155.80	2.21	135.71	155.71	26.80	26.91	0.11	500	1.20	No	--	--	--
MW-76-156	Alluvial	08/08/2022	158.01	155.80	2.21	135.71	155.71	26.58	26.68	0.10	500	1.32	No	--	--	--
MW-76-156	Alluvial	09/12/2022	158.01	155.71	2.30	135.71	155.71	27.59	27.65	0.06	500	2.20	No	--	--	--
MW-76-181	Alluvial	07/11/2022	183.12	182.71	0.41	170.82	180.82	27.28	27.38	0.10	500	1.32	No	--	--	--
MW-76-181	Alluvial	08/08/2022	183.12	182.69	0.43	170.82	180.82	26.86	26.96	0.10	500	1.32	No	--	--	--
MW-76-181	Alluvial	09/12/2022	183.12	182.82	0.30	170.82	180.82	27.84	27.91	0.07	500	1.89	No	--	--	--
MW-76-218	Alluvial	07/11/2022	220.05	219.80	0.25	197.75	217.75	26.25	22.87	-3.38	500	0.04	No	--	--	--
MW-76-218	Alluvial	08/08/2022	220.05	219.73	0.32	197.75	217.75	26.81	26.88	0.07	500	1.89	No	--	--	--
MW-76-218	Alluvial	09/12/2022	220.05	219.71	0.34	197.75	217.75	27.15	27.19	0.04	500	3.30	No	--	--	--
MW-77-046	Alluvial	07/11/2022	48.15	39.43	8.72	25.85	45.85	22.61	22.76	0.15	500	0.88	Yes	X	--	X
MW-77-046	Alluvial	08/08/2022	48.15	39.41	8.74	25.85	45.85	23.76	23.92	0.16	200	0.33	Yes	X	--	X
MW-77-046	Alluvial	09/12/2022	48.15	39.41	8.74	25.85	45.85	23.88	23.92	0.04	200	1.32	Yes	X	--	X
MW-77-102	Alluvial	07/11/2022	104.21	104.64	-0.43	81.91	101.91	22.60	23.78	1.18	500	0.11	No	--	--	--
MW-77-102	Alluvial	08/08/2022	104.21	104.66	-0.45	81.91	101.91	24.45	24.93	0.48	500	0.28	No	--	--	--
MW-77-102	Alluvial	09/12/2022	104.21	104.66	-0.45	81.91	101.91	24.18	24.22	0.04	200	1.32	No	--	--	--
MW-77-158	Alluvial	07/11/2022	160.14	160.03	0.11	137.64	157.74	21.28	21.37	0.09	500	1.47	No	--	--	--
MW-77-158	Alluvial	08/08/2022	160.14	160.05	0.09	137.64	157.74	23.99	24.09	0.10	500	1.32	No	--	--	--
MW-77-158	Alluvial	09/12/2022	160.14	160.04	0.10	137.64	157.74	22.92	22.96	0.04	200	1.32	No	--	--	--
MW-77-187	Alluvial	07/11/2022	189.21	189.10	0.11	166.71	186.81	21.97	22.07	0.10	500	1.32	No	--	--	--
MW-77-187	Alluvial	08/08/2022	189.21	188.98	0.23	166.71	186.81	24.08	24.29	0.21	200	0.25	No	--	--	--
MW-77-187	Alluvial	09/12/2022	189.21	189.09	0.12	166.71	186.81	23.14	23.18	0.04	200	1.32	No	--	--	--
MW-78-070	Alluvial	07/14/2022	72.21	71.40	0.81	49.91	69.91	44.55	44.65	0.10	500	1.32	No	--	--	--
MW-78-070	Alluvial	08/11/2022	72.21	71.38	0.83	49.91	69.91	45.44	45.49	0.05	500	2.64	No	--	--	--
MW-78-070	Alluvial	09/15/2022	72.21	71.42	0.79	49.91	69.91	45.91	45.98	0.07	500	1.89	No	--	--	--
MW-78-142	Alluvial	07/14/2022	142.12	141.82	0.30	121.82	141.82	44.63	44.69	0.06	500	2.20	No	--	--	--
MW-78-142	Alluvial	08/11/2022	142.12	141.85	0.27	121.82	141.82	45.51	45.58	0.07	500	1.89	No	--	--	--
MW-78-142	Alluvial	09/15/2022	142.12	141.85	0.27	121.82	141.82	41.23	41.29	0.06	500	2.20	No	--	--	--
MW-79-058	Alluvial	07/14/2022	60.05	60.38	-0.33	47.55	57.55	44.33	44.38	0.05	500	2.64	No	--	--	--
MW-79-058	Alluvial	08/11/2022	60.05	60.39	-0.34	47.55	57.55	45.42	42.47	-2.95	500	0.04	No	--	--	--
MW-79-058	Alluvial	09/15/2022	60.05	60.31	-0.26	47.55	57.55	44.99	45.02	0.03	500	4.40	No	--	--	--
MW-79-102	Alluvial	07/14/2022	104.23	104.49	-0.26	91.43	101.43	44.35	44.40	0.05	500	2.64	No	--	--	--
MW-79-102	Alluvial	08/11/2022	104.23	104.51	-0.28	91.43	101.43	45.31	45.42	0.11	200	0.48	No	--	--	--
MW-79-102	Alluvial	09/15/2022	104.23	104.45	-0.22	91.43	101.43	44.85	44.86	0.01	500	13.21	No	--	--	--
MW-80-057	Alluvial	07/14/2022	59.46	59.42	0.04	46.96	56.96	46.64	46.70	0.06	500	2.20	No	--	--	--
MW-80-057	Alluvial	08/11/2022	59.46	59.40	0.06	46.96	56.96	47.80	47.86	0.06	500	2.20	No	--	--	--
MW-80-057	Alluvial	09/15/2022	59.46	59.42	0.04	46.96	56.96	47.31	47.37	0.06	500	2.20	No	--	--	--
MW-80-082	Alluvial	07/14/2022	84.00	83.98	0.02	66.50	81.50	46.56	46.69	0.13	500	1.02	No	--	--	--
MW-80-082	Alluvial	08/11/2022	84.00	83.92	0.08	66.50	81.50	47.70	47.77	0.07	200	0.75	No	--	--	--
MW-80-082	Alluvial	09/15/2022	84.00	83.98	0.02	66.50	81.50	46.33	46.41	0.08	500	1.65	No	--	--	--
MW-81-043	Alluvial	07/12/2022	44.73	43.22	1.51	22.43	42.43	21.87	21.98	0.11	500	1.20	No	--	--	--
MW-81-043	Alluvial	08/10/2022	44.73	43.13	1.60	22.43	42.43	22.79	22.87	0.08	500	1.65	No	--	--	--
MW-81-043	Alluvial	09/13/2022	44.73	43.91	0.82	22.43	42.43	23.12	23.18	0.06	500	2.20	No	--	--	--
MW-81-098	Alluvial	07/12/2022	99.82	99.84	-0.02	77.52	97.52	21.83	21.93	0.10	500	1.32	No	--	--	--
MW-81-098	Alluvial	08/10/2022	99.82	99.77	0.05	77.52	97.52	22.84	22.90	0.06	500	2.20	No	--	--	--
MW-81-098	Alluvial	09/13/2022	99.82	99.55	0.27	77.52	97.52	23.32	23.40	0.08	500	1.65	No	--	--	--
MW-82-046	Alluvial	07/12/2022	48.87	47.59	1.28	26.57	46.57	28.54	28.65	0.11	500	1.20	No	--	--	--
MW-82-046	Alluvial	08/10/2022	48.87	47.68	1.19	26.57	46.57	28.97	29.07	0.10	500	1.32	No	--	--	--
MW-82-046	Alluvial	09/13/2022	48.87	47.42	1.45	26.57	46.57	29.51	29.51	0.00	500	N/A	No	--	--	--
MW-82-112	Alluvial	07/12/2022	114.78	114.19	0.59	92.48	112.48	28.04	28.14	0.10	500	1.32	No	--	--	--
MW-82-112	Alluvial	08/10/2022	114.78	113.39	1.39	92.48	112.48	29.25	29.35	0.10	500	1.32	No	--	--	--
MW-82-112	Alluvial	09/13/2022	114.78	114.21	0.57	92.48	112.48	29.82	29.90	0.08	500	1.65	No	--	--	--
MW-82-168	Alluvial	07/12/2022	170.34	169.53	0.81	148.04	168.04	27.31	27.40	0.09	500	1.47	No	--	--	--
MW-82-168	Alluvial	08/10/2022	170.34	169.70	0.64	148.04	168.04	28.79	28.89	0.10	500	1.32	No	--	--	--
MW-82-168	Alluvial	09/13/2022	170.34	169.56	0.78	148.04	168.04	28.66	28.66	0.00	500	N/A	No	--	--	--
MW-82-198	Alluvial	07/12/2022	200.25	199.49	0.76	177.95	197.95	27.53	27.63	0.10	500	1.32	No	--	--	--

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

Well ID	Well Screen Lithology	Sample Date	Constructed Well Depth (feet bTOC)	Measured Well Depth (feet bTOC)	Difference in Constructed and Measured Well Depth (feet)	Screen Start Depth (feet bTOC)	Screen End Depth (feet bTOC)	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/feet)	Measured Depth Covering Greater than 20% of screen?	Flagged for Evaluation	Planned for Resurvey	Considered for Redevelopment
MW-82-198	Alluvial	08/10/2022	200.25	199.38	0.87	177.95	197.95	28.88	28.98	0.10	500	1.32	No	--	--	--
MW-82-198	Alluvial	09/13/2022	200.25	199.61	0.64	177.95	197.95	28.62	28.70	0.08	500	1.65	No	--	--	--
MW-86-030	Alluvial	08/23/2022	34.51	31.82	2.69	12.21	32.21	13.41	13.46	0.05	500	2.64	No	--	--	--
MW-86-066	Alluvial	08/23/2022	70.40	69.24	1.16	48.10	68.10	13.60	13.65	0.05	500	2.64	No	--	--	--
MW-86-120	Alluvial	08/23/2022	124.67	123.18	1.49	102.37	122.37	13.99	14.03	0.04	500	3.30	No	--	--	--
MW-86-140	Alluvial	08/23/2022	144.53	143.20	1.33	132.23	142.23	13.87	13.92	0.05	500	2.64	No	--	--	--
MW-90-031	Alluvial	08/19/2022	33.60	31.21	2.39	21.30	31.30	4.35	5.12	0.77	500	0.17	No	--	--	--
MW-96-045	Alluvial	08/11/2022	47.52	46.35	1.17	25.22	45.22	28.60	28.70	0.10	500	1.32	No	--	--	--
MW-96-217	Alluvial	08/11/2022	219.33	218.34	0.99	197.03	217.03	29.03	29.11	0.08	500	1.65	No	--	--	--
MW-97-042	Alluvial	08/22/2022	42.63	41.88	0.75	22.13	42.13	26.60	26.68	0.08	500	1.65	No	--	--	--
MW-97-202	Alluvial	08/22/2022	201.47	200.80	0.67	190.97	200.97	26.94	27.01	0.07	500	1.89	No	--	--	--
PT5D	Alluvial	08/15/2022	107.37	107.42	-0.05	97.37	107.37	18.30	18.35	0.05	500	2.64	No	--	--	--
PT5M	Alluvial	08/15/2022	72.37	72.80	-0.43	62.37	72.37	18.19	18.25	0.06	500	2.20	No	--	--	--
PT5S	Alluvial	08/15/2022	47.35	47.72	-0.37	37.35	47.35	18.11	18.18	0.07	500	1.89	No	--	--	--
TW-02D	Alluvial	07/13/2022	146.50	149.61	-3.11	109.50	144.50	36.80	36.85	0.05	500	2.64	No	X	X	--
TW-02D	Alluvial	08/09/2022	146.50	149.61	-3.11	109.50	144.50	37.61	37.66	0.05	500	2.64	No	X	X	--
TW-02D	Alluvial	09/14/2022	146.50	149.61	-3.11	109.50	144.50	38.65	38.68	0.03	3,785	33.33	No	X	X	--
TW-02S	Alluvial	07/13/2022	100.14	96.27	3.87	45.14	95.14	37.19	37.27	0.08	500	1.65	No	--	--	--
TW-02S	Alluvial	08/09/2022	100.14	96.27	3.87	45.14	95.14	38.00	38.08	0.08	500	1.65	No	--	--	--
TW-02S	Alluvial	09/14/2022	100.14	96.27	3.87	45.14	95.14	38.76	38.80	0.04	3,785	25.00	No	--	--	--
TW-03D	Alluvial	07/13/2022	156.81	152.32	4.49	111.81	156.81	36.20	36.24	0.04	500	3.30	No	--	--	--
TW-03D	Alluvial	08/09/2022	156.81	152.32	4.49	111.81	156.81	37.06	37.13	0.07	500	1.89	No	--	--	--
TW-03D	Alluvial	09/14/2022	156.81	152.31	4.50	111.81	156.81	38.25	38.28	0.03	3,785	33.33	No	--	--	--
TW-04	Alluvial	08/22/2022	256.49	253.91	2.58	211.49	251.49	29.51	29.60	0.09	500	1.47	No	--	--	--

Notes:
1. Slant wells (MW-52D, MW-52M, MW-52S, MW-53D, MW-53M, and MW-53S) are not included in this evaluation.
2. Specific capacity is evaluated for alluvial and fluvial wells. Bedrock wells are not included in this evaluation.
3. Monitoring wells MW-20-70, MW-20-100, MW-20-130, MW-22, MW-38-D, MW-38-S, PGE-9N, and PGE-9S were resurveyed on July 25, 2022, due to observed discrepancies between constructed and measured well depths. PGE-9N and PGE-9S were not sampled during Third Quarter 2022 and are not included in the table.

Acronyms and Abbreviations:
bTOC = below top of casing
gpm = gallons per minute
ID = identification
ml/min = milliliters per minute
N/A = Not Applicable
-- = not applicable

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

N

0 625 1,250

Feet

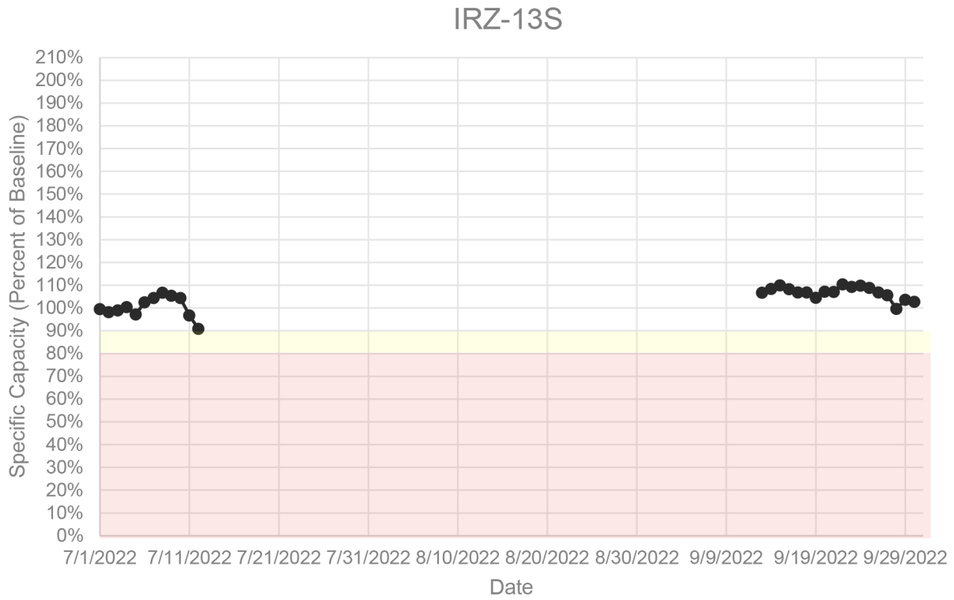
THIRD QUARTER 2022
WELL PERFORMANCE REPORT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

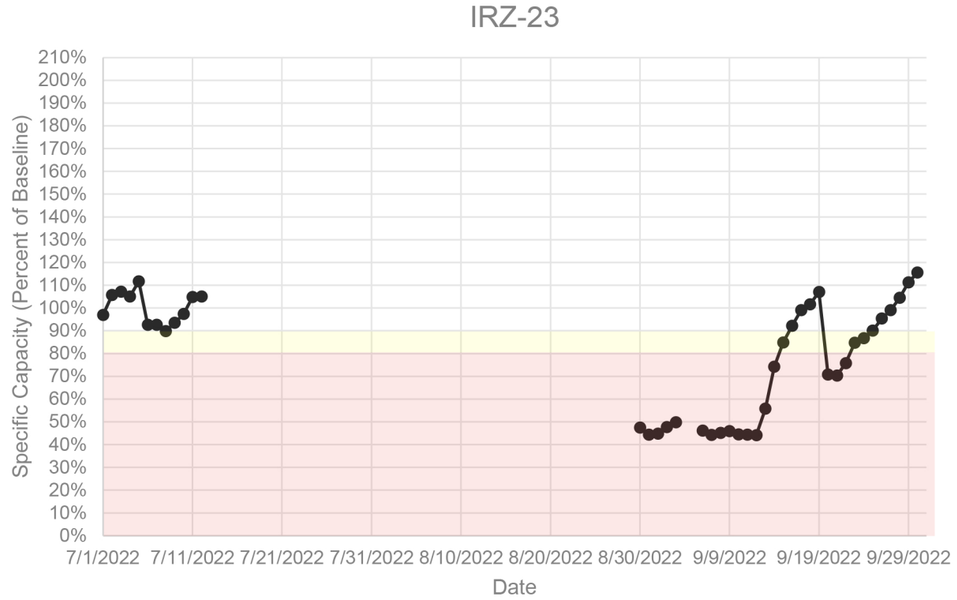
PARTIAL REMEDY SYSTEM LAYOUT

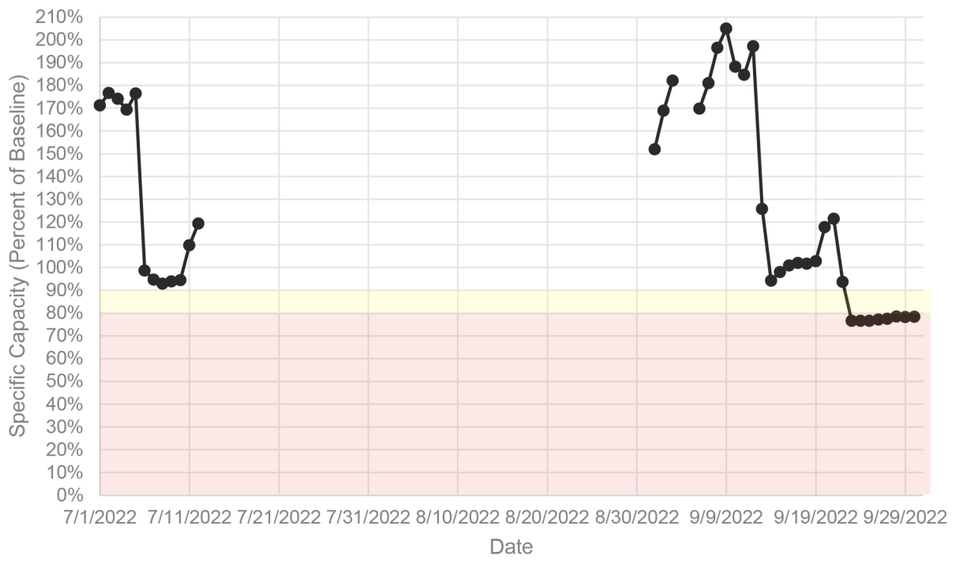
ARCADIS

FIGURE
1.1

T:_ENV\PGE_TOPOCK\GEC\MXD\GMP\1Q22\FINAL\FIGURE1.1_PARTIAL REMEDY SYSTEM LAYOUT.MXD 6/21/2022 6:33:46 PM







Notes:

1. % - percent
2. Baseline specific capacity for each screen interval is represented as 100% on the y-axis.
3. Values greater than 100% indicate performance exceeding baseline. Values between 80% and 90% are considered fair. Values under 80% are considered poor. Values in the 80% to 90% range are shown in yellow, and values in the under 80% range are shown in red. Extraction wells consistently operating below 80% of baseline will be evaluated for potential rehabilitation.
4. IRZ-13D was operating on August 30 and 31, 2022. Specific capacity values from these dates are excluded from the graph due to high water levels resulting in specific capacity values greater than 1500%.

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EXTRACTION WELL SPECIFIC CAPACITY TRENDS

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FIGURE
3.1

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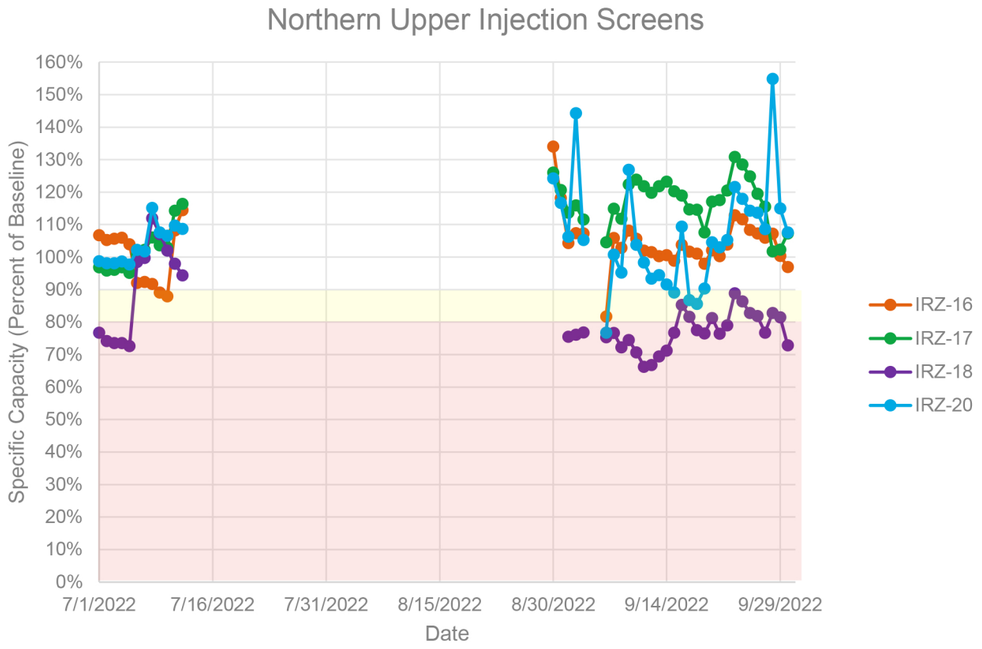

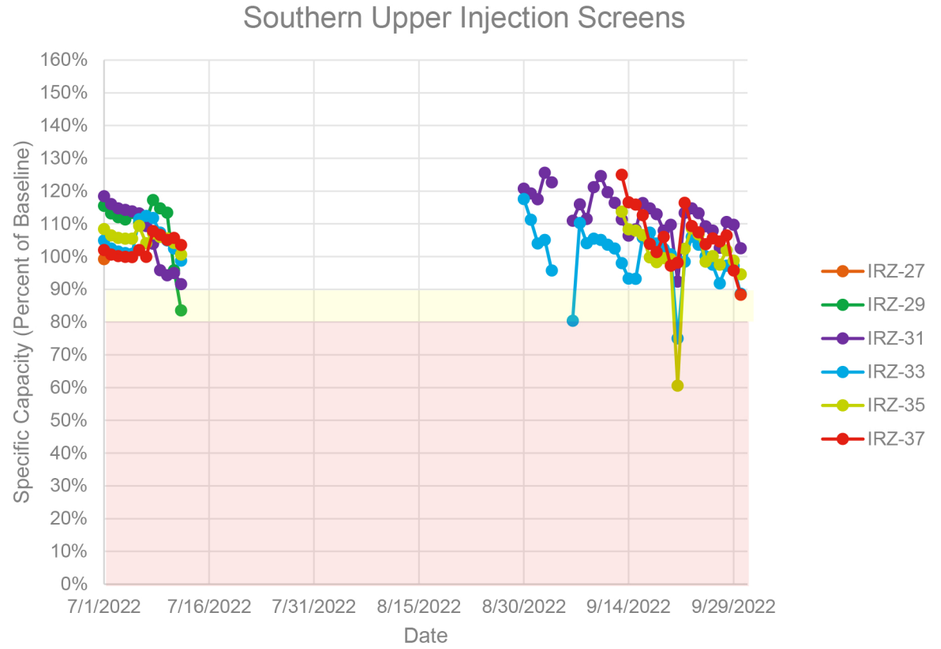

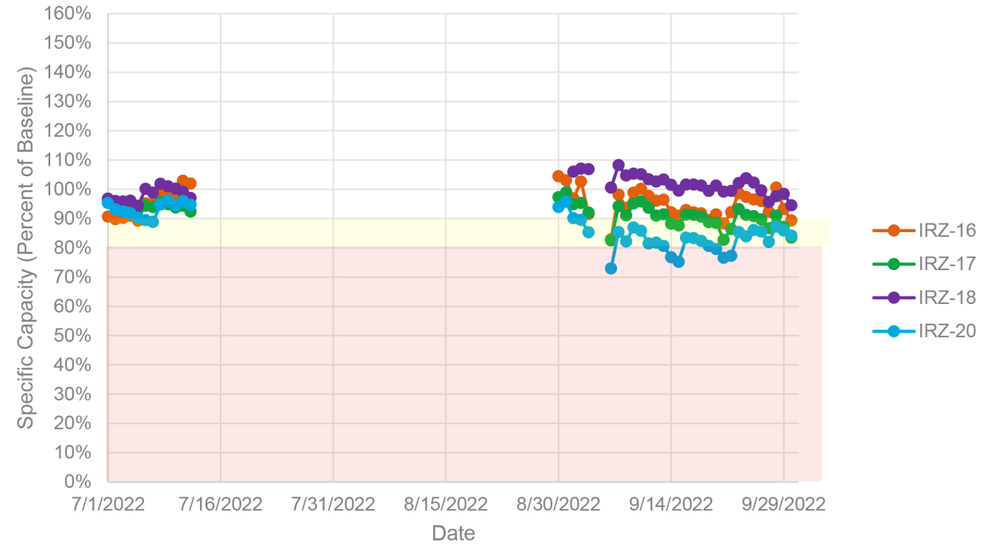

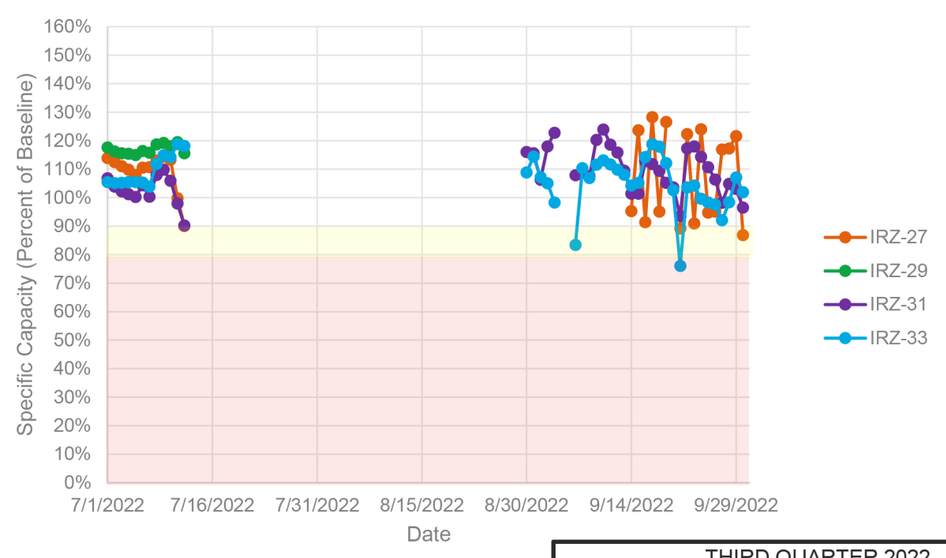

Notes:

1. % - percent
2. Baseline specific capacity for each screen interval is represented as 100% on the y-axis.
3. Specific capacity values greater than 100% indicate performance exceeding baseline. Values between 80% and 90% are considered fair and indicate backwashing frequency should increase to once every 0.75 weeks. Values under 80% are considered poor and indicate backwashing frequency should increase to twice weekly. Values in the 80% to 90% range are shown in yellow, and values in the under 80% range are shown in red.
4. A baseline specific capacity has not been determined for IRZ-39 due to inconsistent operation. Therefore, IRZ-39 is not yet included in the Southern Upper Injection Screens graph.

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INJECTION WELL SPECIFIC CAPACITY TRENDS

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FIGURE
3.2

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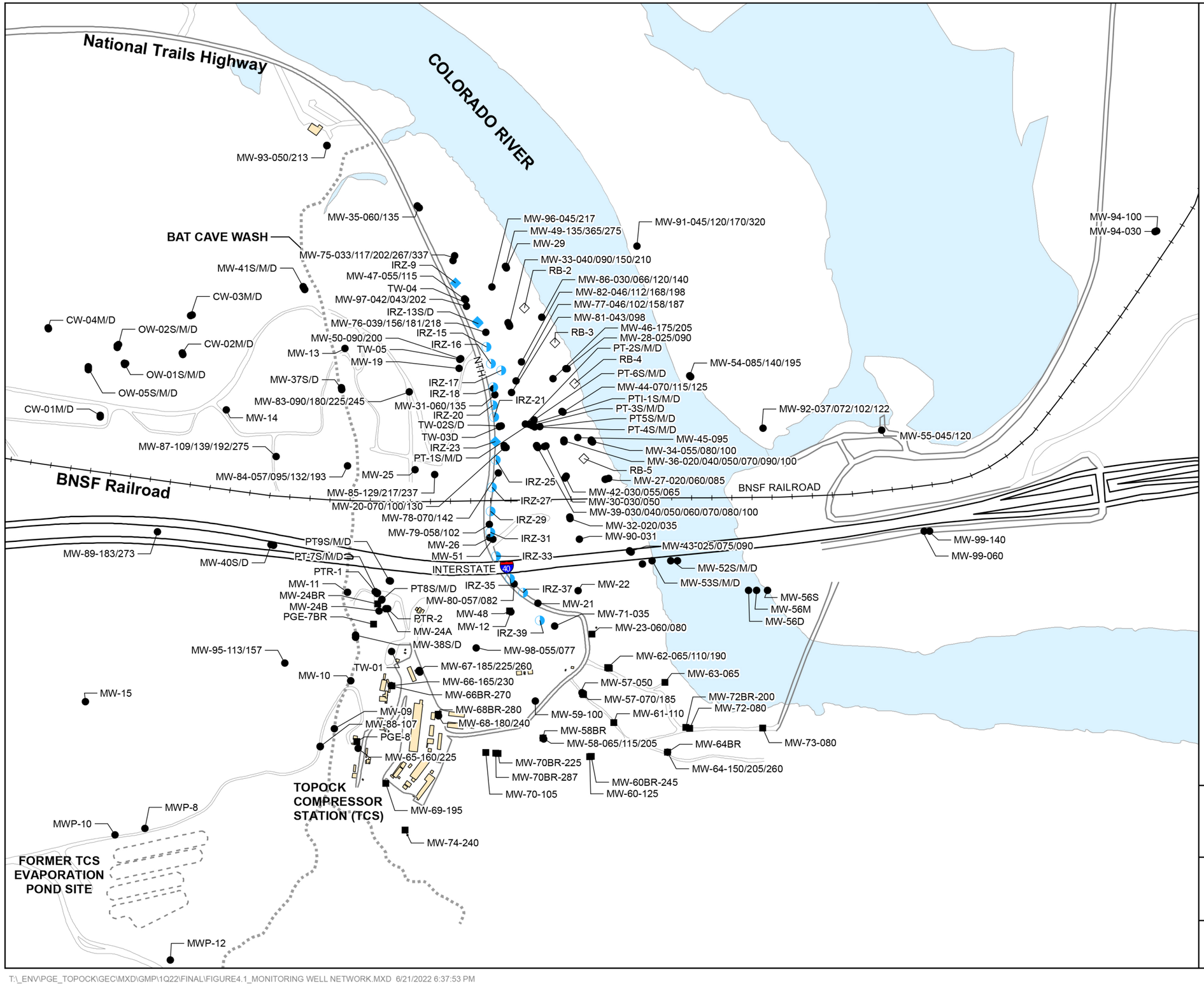

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MONITORING WELL NETWORK

ARCADIS

FIGURE
4.1

T:_ENV\PGE_TOPOCK\GEC\MXD\GMP\1Q22\FINAL\FIGURE4.1_MONITORING WELL NETWORK.MXD 6/21/2022 6:37:53 PM

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